Higher Education Dynamics 44

Simon Schwarzman
Rómulo Pinheiro
Pundy Pillay *Editors*

Higher Education in the BRICS Countries

Investigating the Pact between Higher Education and Society

Springer

Higher Education in the BRICS Countries

HIGHER EDUCATION DYNAMICS

VOLUME 44

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ISSN 1571-0378 ISSN 2215-1923 (electronic)
Higher Education Dynamics
ISBN 978-94-017-9569-2 ISBN 978-94-017-9570-8 (eBook)
DOI 10.1007/978-94-017-9570-8
Springer Dordrecht Heidelberg New York London

Library of Congress Control Number: 2015930012

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

This volume is dedicated to Evgeny Kniazev and Natalya Drantusova—the authors of Chapter 11—who tragically passed away in November of 2013.

Acknowledgments

The first version of the chapters published in this book were presented at the seminar "Higher education in the BRICS countries: Investigating the pact between higher education and society" ("Tendências recentes do ensino superior nos BRICS: análises em torno do pacto entre ensino superior e sociedade"). The Seminar was held at the State University of Campinas (UNICAMP), Brazil, between November 8 and 9, 2012. It was organized by the Center for Advanced Studies (CEAV) of this university. The authors and editors would like to thank the sponsorship given by the São Paulo Research Foundation (FAPESP—process no. 2012/11709-8), The British Council- Brazil, and the UNICAMP's Rectory.

We would also like to express our gratitude to the Higher School of Economics in Moscow and the Russian Association of Higher Education Researchers for hosting and sponsoring a special panel on Higher Education in the BRICS on the occasion of the IV International Conference "University Traditions: a Resource or a Burden?", Moscow, on September 26–28, 2013.

Our gratitude to SIU, the Norwegian Center for International Cooperation in Education and the University of Bergen, for hosting and sponsoring a high level seminar—"The rise of the BRICS and the role of higher education"—in Bergen, on December 5, 2013.

Finally, we would like to thank two anonymous reviews and Prof. Peter Maassen (University of Oslo, and higher education dynamics series coeditor) for constructive comments throughout the entire process including, personal contributions (Prof. Maassen) at the Campinas and Bergen seminars.

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Chapter 1
The Rise of the BRICS and Higher Education Dynamics

Simon Schwartzman, Rómulo Pinheiro and Pundy Pillay

1.1 Introduction

This book deals with the developments, policies and perspectives of higher education in Brazil, Russia, India, China and South Africa—the BRICS countries. In 2001, Jim O'Neill from the Goldman Sachs Economic Research Group, coined the term "BRIC" to call attention to the growing importance of Brazil, Russia, India and China in the global economy, and proposed that they should become part of the world's main economic policy-making forums. At the time, they already represented 23.3 % of the world's GDP at purchasing power parity value, and were expected to continue to grow at very high rates in the following years (O'Neill 2001). In 2008, these countries started to meet and get organized as a political entity, joined in 2010 by South Africa, which became the fifth state in the official BRICS group. By then, it was clear that the selection of these countries was largely arbitrary and could have included other emerging countries such as Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkey, South Korea and Vietnam-identified by Goldman Sachs as the "next eleven" (Goldman Sachs Global Economics Group 2007). In this book, any of these countries could have been included, were it not for the editors' limitations on space and time.

The BRICS are very different from each other, and the political relevance of their association is far from assured. However, they all share some characteristics

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*, Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_1

Table 1.1 The BRICS countries, 2012. (Source: World Bank Indicators 2012)

	Population	GDP	GDP percapita
Brazil	198,656,019	2,252,664,120,777	11,339.52
Russian Federation	143,533,000	2,014,774,938,342	14,037.02
India	1,236,686,732	1,841,709,755,679	1,489.23
China	1,350,695,000	8,227,102,629,831	6,091.01
South Africa	51,189,307	384,312,674,446	7,507.67

GDP and GDP per capita are stated in purchasing power parity terms (US$)

that justify the attention they get. Beyond their growing economic weight, they are highly influential in their regions, and they are all going through important transformations as they modernize their societies, with the State playing an important role in fostering socio-economic development and its related institutions, including education. All of them, except China, adhere to the formalities of political democracy, however imperfectly, and they all are, including China, making progress in their efforts to end social discrimination, foster the rule of law and enhance human rights. Education, and particularly higher education, plays an important role in this transformation, not only in terms of human capital and access to the resources of modern science and technology, but also by creating channels for social mobility and fostering the values of scholarship, intellectual freedom and individual choice.

Higher education tends to be treated in the literature mainly from two different perspectives. The first, prevalent among economists and international agencies, deals with the possible contribution of higher education to the society's needs for "human capital" (OECD 2008; World Bank 2011; Carnoy et al. 2013). Economists are certainly right when they look at education as a productive factor that requires specific policies to expand and improve its quality and relevance. But education, and in our case higher education, also takes place in peculiar institutions, universities and similar bodies, that shape the life of those who work in them or pass through their facilities. The way these institutions change and develop not only depends on governmental policies, but also on complex processes of social transformation and institutionalization that go beyond as well as set the limits of what the government and policy makers can do (Maassen and Olsen 2007).

Higher education today includes a broad array of institutions providing different kinds of certification, from vocational to doctoral degrees, classified by UNESCO and Organisation for Economic Co-operation and Development (OECD) as ISCED-5 Programmes (OECD 1999) in traditional universities, institutes, academies, professional schools and distance-education organizations. Universities, however, remain the core of higher education and the best conceptual framework from which the dynamics of higher education is understood. Universities are knowledge-intensive institutions, organized around the classic values of collegiality, autonomy and achievement. To work properly, they depend on the existence of professional communities that share a common sense of belonging, are zealous of their intellectual and professional autonomy from governments, churches, clients and public opinion and justify their special standing in society by their achievements in intellectual and educational tasks (Clark 1987; Teichler 2006; Kehm and

Teichler 2013). These values were present since the first universities were established in Europe in the late Middle Ages (Ridder-Symoens 2003), and as Burton Clark has argued in his texts on the entrepreneurial universities, they are equally present in the most successful higher education institutions of today (Clark 2001). This is what links them with their origins hundreds of centuries ago, in spite of the enormous differences in scope, size and organization. At the same time, universities depend on the support they receive from, and the benefits they provide to, the societies where they exist, with their changing values, demands and constraints. In recent years, higher education institutions had to change very significantly the ways in which they have traditionally been organized, as well as their internal and external relations of authority, power and responsibility, renegotiating their "social pact" with society, while retaining their central beliefs and practices (Gornitzka et al. 2007; Maassen and Olsen 2007; Maassen 2013; Pinheiro and Stensaker 2013).

As a starting point, we use this notion of a "social pact" to drive this overview of the evolution of the higher education systems in the BRICS countries, looking less, however, at the institutional dimensions of the universities and more at the broader context (e.g. operational and regulatory) in terms of four main issues or core themes, namely: supply and demand, stakeholders, governmental policy and research and innovation in the light of international trends and globalization.

1.2 Supply and Demand

How are the BRICS being affected by the extraordinary expansion that has occurred in higher education worldwide, particularly in the past decade (Frank and Meyer 2007; Meyer and Schofer 2007)? How has the higher education sector been changing to deal with the exponential growth in student enrolments and institutions?

The widely shared assumption is that the demand for higher education is part of a broader process of social mobility, associated with the widening of basic and secondary education, urbanization and the expansion of working opportunities brought about by the rise of a modern knowledge-based economy (Palfreyman and Tapper 2004; Trow and Burrage 2010). It is possible to look at this demand from two points of view: the demand to access higher education coming from the students and their families, and the demand for qualified labour coming from the job market. For the students, the demand for higher education is related to broad aspirations for social mobility and expectations of higher income (Clark 1960; Haveman and Smeeding 2006). From a temporal perspective this is a long-term process, which can lead to situations in which the job market does not absorb those who graduate, or do not find the persons with the required professional profiles among the graduates (Glytsos 1990). One of the central assumptions of the book is that the growth of higher education is not just a mechanistic response of the human resource needs of the job market, and that this job market is, at least to some extent, shaped by this demand through, for instance, the requirement of formal credential requirements for specific professional activities (Collins 1979; Walters 2004). Moreover, this demand is not homogeneous, varying according to different social and ethnic groups (Reay et al. 2001) and regions (Sa et al. 2004), and leading to different responses

and adjustments both from governments and the higher education sector. In most countries, students from poor families either do not complete secondary education or do not get the necessary competencies and qualifications to apply for the most prestigious higher education institutions (Davies and Guppy 1997; Jimerson et al. 2000) or skip higher education entirely. In some countries, this is related to differences in caste, ethnicity, gender, language, religion and region (Shavit et al. 2007).

1.3 Stakeholders

Who are the main stakeholders shaping the ways in which the higher education systems were originally established and subsequently transformed? This encompasses groups both within the institutions—academics, professional associations, administrators—and outside—government agencies, financial bodies, business enterprises, social organizations, political parties; and, in turn, the various means by which they shape the higher education sector and the internal fabric of institutions. The transition from elite to mass, in some cases universal (Trow and Burrage 2010), higher education has resulted in the opening-up of the sector, and its various institutional providers, to the prevalent interests and agendas of a vast range of stakeholder groups (Jongbloed et al. 2008; Benneworth and Jongbloed 2010), expanding the classic triangle of coordination composed of the state, markets and academic oligarchies (Clark 1983). Stakeholders can be either internal or external to the higher education sector or institutions. These include, but are not limited to: industry; local, regional and national governments; professional associations; labour unions; citizen groups; non-governmental organizations; representatives of minority groups (e.g. on the basis of gender, ethnicity, religion, language); political parties (often through the role of student unions); parents, often the "buyers" of educational services; funding agencies and private donors; in addition to internal constituencies such as academics, professional administrators, senior managers, and students ("the consumers").

Three main sets of stakeholders deserve special attention in the BRICS: the growing "knowledge industry", providing higher education services for profit and creating a new private sector that is different from the traditional ones, more rooted in religious or local communities (Altbach and Levy 2005; Levy 2006); party politics, influencing the selection of higher education authorities, budget allocations and the priorities of the higher education sector (Nicholson-Crotty and Meier 2003); and social movements geared towards greater equity, e.g. in the form of affirmative-action policies (Arcidiacono 2005). Higher education institutions can react to these stakeholders by changing the ways they seek additional resources (Clark 2001), the priorities they give to teaching, research and extension work (Pinheiro et al. 2012), the links they establish with the productive sector (Owen-Smith et al. 2002), the kind of students they wish to recruit (Hossler 1990) and the priorities they give to their local, national and international environments (Marginson and Rhoades 2002). One of the key issues is the extent to which the higher education sector in a given country is moving towards greater diversity and/or differentiation (van Vught

2009), thus creating a complex higher education sector composed of research, teaching and service functions (Pinheiro et al. 2012); elite and mass (Palfreyman and Tapper 2009), public and private institutions (Enders and Jongbloed 2007), or instead becoming more homogeneous and flat (Kyvik 2007; Jaquette 2013).

1.4 Government Policy

In this book we look at the policies being implemented by the BRICS's governments to respond to the interplay between growing demand and multiple stakeholders. More specifically, the country chapters shed light on how governments have dealt with issues of access, financing, quality assurance and social relevance, amongst others. This includes, but is not limited to the following aspects: (a) broad legislation, national plans, blueprints or other broad policy statements establishing the goals and characteristics of the higher education system in the country. This, in turn, raises the following queries: What are the main features of these pieces of legislation and policy documents? Have they changed in recent years, and in what direction? To what extent are they shaped by considerations of human resource planning, social equity and others? (b) control and regulation, raising the following questions: to what extent can the BRICS's governments actually exert control and regulate public and private providers? What are the main bodies in charge of this regulation, and what kind of resources (e.g. legal, economic) do they manage? How autonomous are the various types of higher education institutions, and to what extent do governmental policies affect—enhance or constrain—this autonomy? If there are major tensions and dilemmas, what are they and how are they addressed within policy frameworks? (c) To what extent do governmental regulations affect issues such as internationalization, the expansion of the private and profit sectors, affirmative action, regional development and others? (d) Quality assessment—what types of quality control systems are in place, and how effective are they? Are these quality control systems administered by governments, autonomous agencies and/or via the participation of multiple stakeholders? What is the reputation of these quality assessment mechanisms? To what extent are public policies shaped by these assessments? (e) Information—what kind of information (education and employment statistics, rankings) is available to governments for implementing their policies? Is this information available to the public? Finally, as the higher education sector continues to expand and differentiate, is it possible to expect that these policy orientations and control mechanisms will change and evolve, and if so, in what direction?

1.5 Research and Innovation

Finally, we look at how higher education institutions are responding to the impact of internationalization and globalization, particularly regarding their contribution to the countries' abilities to participate in the changing world of science, technology and innovation that is currently shaping national and regional economies around

the globe (OECD 2012). Although higher education systems are mostly national in the ways in which they are organized (Clark 1983; Musselin 2004; Gornitzka et al. 2007), it is primarily through the research function that these systems link to the broader world by: helping to improve local, regional and national competitiveness by fostering innovation (Nilsson 2006; Lester and Sotarauta 2007); participating in global knowledge networks through different kinds of international cooperation (Gornitzka and Langfeldt 2008) and/or by striving to have some of the universities join the prestigious league of "world class universities" (Altbach and Salmi 2011). The expression "third mission" (Laredo 2007; Pinheiro et al. 2012) is sometimes used to refer to the efforts of higher education institutions to link more strongly to the productive sector, becoming more entrepreneurial and driven by market demands (Clark 2001; Pinheiro and Stensaker 2013). Of particular relevance here are the issues of financing and entrepreneurship on the one hand (Shattock 2008), and that of massification, internationalization and globalization on the other (Scott et al. 1998). Critical queries include but are not limited to the following: Do the universities fund research with their own resources? Are there any science-support agencies to which they can apply? Can universities conclude contracts with private companies and governmental agencies for the implementation of research and innovation? Is there a growing trend for universities to become more entrepreneurial in the area of research and innovation with the freedom to sign contracts and receive external support? How do they deal with intellectual property? Are there differences between public and private universities regarding their freedom to enter this kind of contracts and agreements when it comes to the use of these resources? Regarding the latter query, to what extent is the university research supported by international cooperation? What are the main links between national and international research, in areas such as international cooperation between universities, academic interchange and graduate education overseas? To what extent are the higher education institutions open to foreign students, researchers and teachers? Are there any efforts to build "world class" universities in the country, and what are the links between such efforts and the broader issues of science, technology and innovation policies?

1.6 Summary and Book Structure

Taken together, this is a very broad research agenda, and the individual chapters in this book should be considered as efforts by the authors to address these issues from their national perspectives, given the limits of the available information. The first set of thematic, comparative chapters is an attempt to bring the main findings together. In brief, we noted that all countries are going through an intense process of differentiation, combining Western-type universities with a very broad set of institutes, schools and distance-education arrangements; even the notion of what a university is varies from country to country. In all countries, governments have and continue to play a crucial role in shaping the ways in which the higher education sector has historically evolved by establishing priorities, allocating resources

and creating quality assurance mechanisms. This role is limited, however, by the resilience of the existing cultures, institutions and stakeholders, as well as by their own financial limitations. Governmental agencies across the BRICS have had to deal with issues of social equity, implementing policies of affirmative action, student support and regional imbalances. Further, we noted that private education is expanding everywhere, in large part as business endeavours to compete with the more traditional institutions in the provision of educational services, without necessarily sharing their institutional ethos of collegiality and intellectual autonomy. Similarly, research and innovation were found to be an important concern in all the BRICS countries, albeit the general tendency for the concentration of activities in a selected number of institutions and regions. For the most part, the bulk of the higher education sector deals primarily with education for the professions, with distance education playing an increasing role. Finally, it is clear from this overview that internationalization and globalization affect all the BRICS countries in terms of: the institutional models they have adopted; the quality assurance mechanisms that have been introduced; and, the ways in which the national research systems have developed. Internationalization is also important with regard to the student flows to Europe and the USA, often leading to serious problems of brain drain, but also creating new opportunities to build bridges (networks) and benefit from the experiences of nationals living and working overseas.

It would be impossible for higher education institutions in the BRICS countries to fulfil all the large and often contradictory expectations placed upon them by their societies in terms of social mobility, social equity, the development of human resources and advanced scientific and technical research and innovation, to which one should add the role of strengthening the values of scholarship, intellectual autonomy, freedom and tolerance. In building and renewing the social pact between higher education institutions and society, some countries will do better than others and the same goes for individual providers within each country. Still, the fact that they embody all these aspirations and hopes, makes higher education a central standpoint from which it is better understood where these societies are today and in which directions they are evolving.

The book is organized as follows. Part I (Chaps. 2–4) is composed of thematic summaries providing an overview of the key findings across the BRICS countries. Part II (Chaps. 5–9) presents the country cases in the context of demand for, and supply of, higher education. Part III (Chaps. 10–13) outlines the role played by key internal and external constituencies or stakeholders. Part IV (Chaps. 14–18) sketches the most important elements as far as governmental policy is concerned. Part V (Chaps. 19–23) illuminates the importance attributed to research, innovation and outreach in the light of global dynamics. Finally, the book concludes with a brief epilogue (Chap. 24) which takes stock of the main lessons learnt from this comparative study, and discusses possible implications for future research endeavours.

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Part I
Thematic Summaries

Chapter 2
Demands and Policies for Higher Education

Simon Schwartzman

2.1 Introduction

Access to higher education has been growing dramatically across the world since World War II. In 1900, there were about 500,000 students worldwide pursuing higher education; by 2000, they were about 100 million (Schofer and Meyer 2005). In 2011, according to UNESCO's Institute for Statistics, this figure had reached 190 million. Between 1940 and 1960, the number of such students worldwide increased from less than 20 to 40 per 10,000 of the population. Between 1960 and 1980, it more than doubled to 85 per ten thousand, and doubled again in the year 2000, surpassing 160 per ten thousand. This expansion is sometimes explained by the growing demand for high quality human capital in modern economies, but this functionalist interpretation is insufficient. Expansion occurred in both developed and developing economies with most of this growth taking place in nontechnical fields such as the social sciences and the humanities; consequently, in many countries higher education graduates are finding it difficult to get jobs and have to take up occupations requiring lower qualifications or migrate to other countries. Still, the private returns to higher education, compared to those completing only secondary education, tends to be higher in developing countries than in mature economies, making the incentives for achieving higher education very concrete.

Summarizing the detailed analysis of global evidence, Schofer and Meyer (2005) offered as an explanation the combination of different factors. For them, after the Second World War a new model of society became institutionalized, "reflected in trends toward increasing democratization, human rights, scientization, and development planning. This global, institutional, and cultural change paved the way for hyperexpansion of higher education" (p. 900).

The expansion of democratization and human rights, associated with the growing access to mass communications, corroded the traditional acceptance by the

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_2

populations that societies were naturally stratified in terms of wealth and opportunities, that each person had a predefined place in the social hierarchy, and that knowledge and wisdom was a monopoly of a few. Now everyone could aspire to everything and education is perceived as a channel for social mobility and equity. "Scientization," the growing belief on the importance of scientific and technical knowledge for better public policies and the growth of wealth, does not mean that modern societies require everyone to become a scientist. "Development planning," the notion that societies should plan their economy, and, accordingly, the development of its human resources, was adopted initially in the Soviet Union and later in other Communist states, and copied to a limited extent in a few other countries such as France and Brazil, but never acquired much relevance except in centrally planned economies.

These notions did not lead to significant demands on the higher education sector to deliver more scientists and planners, but helped to spread the general perception that societies needed to provide more support and allow higher education institutions to expand. More significant, perhaps, was the role of global institutions such as UNESCO and the World Bank, private institutions such as Ford and the Rockefeller Foundations and many international agencies created in the developed countries after the World War (such as CIDA in Canada, ORSTOM and the French Development Agency in France, GTZ in Germany, USAID in the USA, DFID in the UK, SIDA in Sweden, and others) to deal with the postcolonial countries and bring to them the gospel of education. For many of these agencies, the priority was not higher education as such, but basic literacy and secondary education; but the sheer expansion of general education increased the demand and aspirations for higher levels of learning. More important than anything else, perhaps, was the extraordinary economic growth of Western Europe and the USA, shortly after the Second World War, associated with the expansion of the welfare state, creating a wave of optimism that swept most of the world. If the developed countries could do it now, then for sure the developing counties could also do it in the near future. As Tony Judt described it:

> The state thus lubricated the wheels of commerce, politics and society in numerous ways. And it was responsible, directly or indirectly, for the employment and remuneration of millions of men and women who thus, had a vested interest in it, whether as professionals or bureaucrats. Graduates from Britain's leading universities, like their contemporaries in French grandes écoles, typically sought employment not in private-sector professions, much less industry and commerce, but in education, medicine, the social services, public law, state monopolies or government service. By the end of the 1970s, 60 % of all university graduates in Belgium took up employment in the public services or publicly subsidized social sector. The European state had forged a unique market for the goods and services it could provide. It formed a virtuous circle of employment and influence that attracted near-universal appreciation (Judt 2006, p. 362).

It is this optimism and expanded aspirations, the new education and scientific gospel and the influence of global institutions that combined, explain how the expansion of higher education became a universal phenomenon, which also occurred in the BRICS, but with different timings and intensities, and leading to different responses.

The expansion not only meant that more and more people entered higher education but also that they wanted university degrees, to the detriment of vocational and technical education, which were considered less prestigious and rewarding. The consequence was a trend toward "academic drift," with different types of institutions striving to get university status for themselves and their students (Neave 1979; Van Vught 2008). They aspired not only to the degrees, but also to the market and professional privileges associated with their formal qualifications and considered access to higher education as a right or entitlement to be provided by governments, if possible for free. In societies marked by cultural, ethnic, and linguistic cleavages, the drive for access to higher education often took the shape of demands for cultural and ethnic compensation or special support, to redress historical cleavages so often related to unequal access to educational opportunities and achievements. Another consequence was the spread of academic corruption, with the development of grey or black markets for university access, degrees, and certifications (Heyneman 2007).

None of the governments could attend to all these aspirations, because of growing and unlimited costs and the fact that education is, to a large extent, a "positional" good, in the sense that the advantages of some depend on their relative standing in the educational hierarchy compared to others (Brown 2003; Hollis 1982). Although the social standing, benefits, and job opportunities created by higher levels of education is, to a significant extent, a function of privileges granted to the holders of education credentials (Collins 1979), it depends also, in the long run, on the holder's productivity and the willingness of society to pay for them. As the demand for higher education increased, governments had to pay more attention to how much it was costing and to the benefits it brought to the society.

The responses varied depending on the history, culture, and political regime of each country, but all of them had to face similar problems, including the scarcity of resources and the need to make sure that public and private monies were not being wasted in an oversized Ponzi scheme. They had also to contend with the political power and influence of academics, students, and public employees, very often associated with unions and associations, having strong links with local governments, political parties, and social movements. In all countries, governments oscillated between granting more autonomy to universities or bringing them under tighter control; into pressing them to look for resources in the market or providing them with more public resources; into granting them equal status or selecting a few for higher missions and greater public resources; to require them to link more strongly with the productive system or to allow them to define their own goals and orientations in teaching and research. It is possible to summarize the policy dilemmas in five broad issues: how to deal with the expansion, equity of access and diversification of enrolments, participation rates, number, and types of institutions; how to deal with the fiscal limitations, particularly during periods of economic stagnation or decline; how to regulate the growing market for private higher education; how to make the higher education institutions more accountable to their students, employees, and to the society as a whole; and how to improve and maintain the quality and social relevance of learning and research in higher education institutions (Johnstone et al. 1998, p. 2).

2.2 The Russian Federation

While Brazil, China, India, and South Africa started the expansion of higher education in the late 20th Century from a very small basis, Russia inherited a very elaborate system of higher education from the Soviet Union that was deeply transformed and became more similar to those in the other countries after 1990.

The Soviet Union was perhaps the extreme attempt ever to manage higher education though manpower planning, according to the functionalist understanding of higher education as a factor of production. Most higher education institutions were linked to specific industries, the government would establish what should be produced and by whom, and prepare the human resources needed to achieve the desired outputs. Priority was given to technical personnel, but the soft sciences also had a place. As described by Isak Froumin and Yaroslav Kouzminov in Chap. 6 of this volume, "each important development in the national economy, as well as social and political life was accompanied by a corresponding development in the higher education sector. For example, after the Second World War the government set up 'communist party schools' for training party apparatus and state machinery. Besides, the Academy of Social Sciences was established for training ideologists and social scientists. These institutions had the status of universities. Special institutions were set up for training specialists in diplomacy and foreign trade. Soviet nuclear production and space development programs led to the establishment of two elite universities: Moscow Physics and Technology Institute and Moscow Engineering and Physics Institute and quite a few engineering universities and departments specializing in nuclear physics and space research."

This meant also that, in principle, students did not have to look for jobs: they were assigned to work in the region and sector to which they graduated, without much choice. This functional arrangement was associated with a clear hierarchy of universities: national sectoral universities, linked to specific branches of the economy (e.g., transportation, mining), often subordinated to the specific sector ministries; regional sectoral universities, linked to their respective national institutions; and more traditional universities destined to train local political elites and teachers. In comparative terms, the size of the Soviet higher education sector was not very different from that of the developed countries in the West: 4900 students per 100,000 population in 1990, compared with 4000 in Canada, 3400 in Finland, 3500 in the UK, and 5000 in the USA (UNESCO's Institute of Statistics).

This complex arrangement was already under strain in the 1980s, given the failure of centralized planning. With the collapse of the Soviet Union and the introduction of the market economy, the Russian government had to "reinvent" higher education, as described by Mark S. Johnson in this volume (Chap. 15), in an erratic behavior that went from attempts to grant the universities full autonomy and leave them open to market competition, to attempts to regain full centralized control of the higher education sector. The demise of centralized planning meant, first, that the amount of money to support higher education was drastically reduced; and second, that the traditional manpower planning approach could no longer be used to set priorities that could guide the allocation of existing resources.

In the first 10 years after *Perestroika*, the Russian government allowed higher education to expand with little or no effort to drive it to a specific direction, without much interference and with dwindling support. After 2000, however, under President Putin, higher education gained priority, absorbing 23.1% of the country's education expenses, up from 16.1% in 2000, while expenditure per pupil as a proportion of GNP per capita went up from 10.9 to 14.2% (UNESCO's Institute of Statistics). This new emphasis was associated with several attempts to introduce quality assurance mechanisms and increase the role of the central government in the steering of the higher education sector. The new measures included a sharp differentiation between federal and local institutions, the establishment of a unified entrance examination for higher education in specific fields, and competitive funds for research and innovative institutions. Institutions were also persuaded to work together with public and private corporations, to introduce business-like managerial practices and to look for additional sources of income besides those coming from the government. In recent years the government moved toward the creation of a three-tiered system of higher education institutions. At the top, there was a small number (10–15) highly competitive, federal, and world-class universities. Secondly, 150–200 regional universities were supported mostly by regional governments; and a third tier of institutions were left on their own and destined to disappear eventually. There was also a movement to link the top universities with the research establishment based on the Academy of Science, and to bring Russia closer to Europe, the country joined the Bologna Process of higher education reform (Fig. 2.1).

While, in the Soviet period, most students were directed toward studies in engineering, production, and construction, now about half of them are in the humanities, social sciences, business, and law. On average, a university degree still means a significant increase in salaries compared with those with secondary education (98% for men, 55% for women according to one estimate) (Gerber and Schaefer 2004) and also a protection against unemployment, meaning that the demand for higher education is not likely to taper off. There are important differences however, depending on the prestige of the institutions, the specialty, and gender, with the higher benefits accruing to men who are able to be admitted to prestigious institutions and to study full-time and for free.

The Russian Federation is a multinational society, with almost 200 recognized ethnic groups and more than 50 minority languages. One would expect large differences in access for members of non-Russian minorities and residents of faraway regions to higher education, particularly to the most prestigious universities of Moscow and St. Petersburg. However, the existing statistics and documents related to Russian higher education seldom mention these differences, giving an image of social homogeneity and equity of access that is clearly misleading.

This is an ongoing process and its outcome is not clear. Summarizing his detailed overview of these policy changes and initiatives, Johnson writes that "the cumulative effect of these ambitious reform initiatives and new state investments is that while the 'modernization' of Russian higher education is neither as coherent nor as successful as the authorities and university leaders often seem to assert, there are,

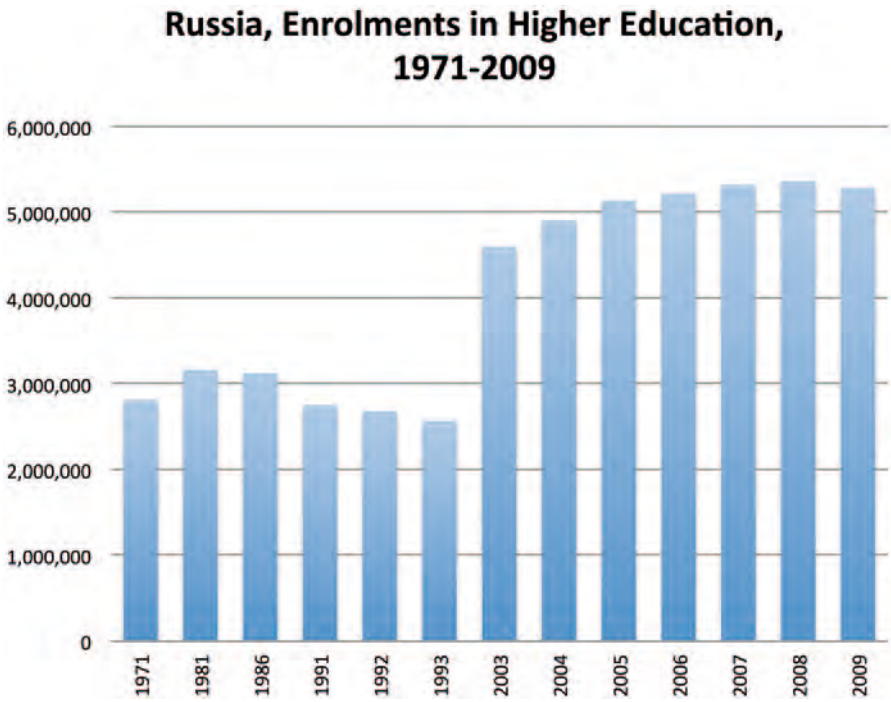


Fig. 2.1 Enrolments in Russian higher education (1971–2009). (Source: UNESCO Institute of Statistics)

nonetheless, significant sector-wide changes underway that could prove transformational in the years ahead. If successful, the reformed universities could play a leading role as Russia carves out its own distinctive path towards (re)modernization and integration with the global economy provided, of course, that Russia's chronic problems of overbearing bureaucratic power, intellectual isolation, patron-client factionalism, and institutional corruption can be mitigated or overcome."

2.3 China

Historically, China had a distinguished tradition of sophisticated education and scholarship along the Confucian tradition, with the Civil Service Examinations, which was, however, restricted to a very small segment of mandarins. The Nationalist government since 1911 developed a modern university system that, by the end of the Second World War, comprised 141 higher education institutions enrolling 84,000 students. As described by Ruth Hayhoe, "modern universities were varied in form, but achieved a degree of autonomy and intellectual freedom that enabled them to be an effective independent force in the wartime struggle, contributing in positive ways to national development, yet resisting negative aspects of Nationalist

regimentation. Also in this period, modern higher education finally reached most parts of the country, thereby becoming both more accessible and more connected to its indigenous roots" (Hayhoe 1996, p. 57).

After the Second World War, with the victory of the Communist Party in the Civil War, the People's Republic of China adopted the Soviet model of central planning and functional education, replacing the institutions from the Nationalist period. Most of the population lived in rural areas working on agricultural fields, having limited access to education. With the Cultural Revolution of 1966–1968, most of the newly educated elite that emerged with the new regime lost their jobs and were sent to "reeducation camps" in rural areas, and all secondary and higher education institutes were closed untill 1972 (Deng and Treiman 1997). In 1973, there were just about 200,000 students in higher education, according to UNESCO's Institute of Statistics, for a population approaching one billion people, as reported by the 1982 Census, of which 80 % were living in the countryside.

In the following years, and particularly after the liberalization reforms introduced by Deng Xiaoping in 1979, the country started to change dramatically. By 1990, 26 % of the population lived in urban areas; in 2000, 36 %; and in 2010, the number of urban dwellers surpassed those in the countryside. This movement of hundreds of millions from country to city occurred because of the new life opportunities created in the cities by the economic reforms, which created a market economy that stimulated private initiative. Chinese scholars often attribute these changes to policy decisions of the Communist Party leadership, but it is doubtful that China could remain isolated forever from the changes towards urbanization, industrialization, and education that were happening everywhere; what the political leadership would do, and did, was to try to steer this process as much as they could, while preserving its power.

Higher education expanded very rapidly with urbanization and industrialization. By 1980, there were already 1 million students; 10 years later, it had increased fourfold, to 4 million. As Yuzhuo Cai and Fengqiao Yan write in this volume (Chap. 8), the first move of the Chinese government to reform the higher education sector took place in 1985, but only started to be implemented in 1993, with the launch of the "Outline for Education Reform and Development in China," when the transformation was already well on its way. This reform consisted basically in allowing the institutions to admit more students, in transferring responsibilities for higher education to local authorities and, since 1997, in allowing them to charge tuition fees in public institutions, which created incentives for the institutions to expand enrolment still further. Since then, enrolment continued to expand exponentially, reaching 9.3 million in 2001 and about 31 million in 2010 (Fig. 2.2).

Qiang Zha and Ruth Hayhoe, in their chapter for this volume (Chap. 17), argue that, "in general, Chinese universities are much more closely articulated with national and local development plans and strategies than their Western counterparts. Chinese universities are, to a large extent, the government's educational and research arm for economic and social development," adopting the functional approach to educational policy that seems to have been abandoned in other places. This may have been the official line, but, in practice, this was not done by setting admission quotas and tying the educational institutions to the productive sector,

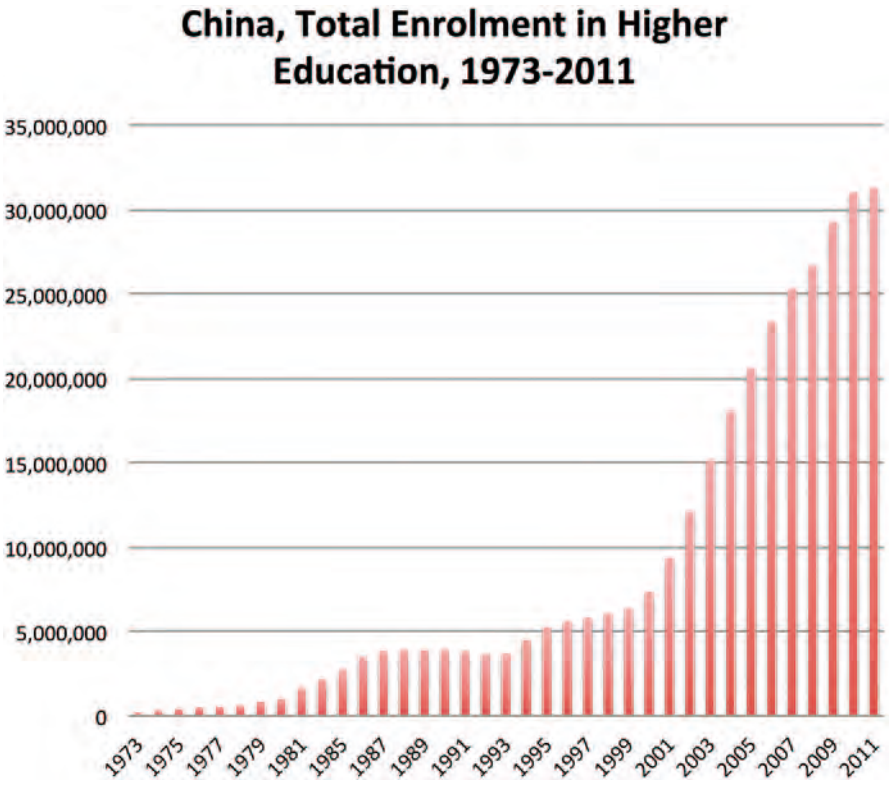


Fig. 2.2 Enrolments in higher education in China (1973–2011). (Source: UNESCO Institute for Statistics)

but by "decentralization of steering and management in exchange for institutional performance and accountability, while at the same time tightening its control over normative criteria for knowledge production." The main instrument for this was the division of higher education institutions into four tiers—research institutions, research and teaching institutions, teaching institutions, and application-oriented institutions. Besides, a top tier of about one hundred were selected on a competitive basis for inclusion in the so-called "Project 211," which provides additional support along with expectations for them to reach world standards in the 21st century. Within this group, 39 top universities were selected by "Project 985," which provides financial support at levels similar to leading institutions in Europe and the USA and is largely responsible for the growth of scientific papers published by Chinese authors in recent years. Another instrument was the creation of a unified national exam for admission to the universities, which follows strict meritocratic principles and places the best students in the leading universities (this has a long pre-1949 history, was put in place in "new China" in 1956, attacked in the Cultural Revolution, and restored in 1977).

In spite of all this growth in the public sector, it is remarkable that private institutions are also expanding and that many Chinese students prefer to study abroad

if they can. In 2011, there were about 700 private universities in the country, with over 5 million students, comprising almost 22% of the total enrolment. These institutions are also under the supervision of government authorities. Private universities largely attract students who cannot get into the upper tier of public universities—some would prefer a private university in an attractive city or with attractive programs over a low-level public university in a more remote area. China is also the country with the most students abroad. According to the Ministry of Education in China, by the end of 2011, the total number of students overseas has reached 2,244,100 and the number that returned was only 818,400, i.e., about 36%.

Clearly, China has been very successful in expanding its higher education sector, and the eventual problems of quality and access that may exist, are difficult to gauge from the existing literature. Regarding access, there are 56 officially recognized ethnic groups in the country and almost 300 languages. Most of the population belongs to the Han group and speaks Mandarin along with a local dialect such as Cantonese, but there are at least 15 other groups with more than a million members. China has a very complex system of affirmative action instruments providing certain advantages for minorities to access higher education, including specialized institutions for minorities, quotas and additional points given to minority students in the national exams (Postiglione 1999; Sautman 1998). As noted by Sautman, "preferential admissions are mainly practiced by minority institutions. While many predominantly Han institutions of higher learning engage in affirmative action as well, most preferential admissions scarcely, if at all, diminish the opportunities of Han students," since higher education as a whole continues to expand (1998, p. 106). These policies have resulted in benefits for minority students who would not otherwise have the chance to enter higher education but they are probably still underrepresented in the mainstream and higher level institutions.

Regarding quality, there is a perception, discussed by Zha and Hayhoe in this volume, that Chinese scientists and professionals are well trained but lack initiative and creativity, and this is attributed both to the Confucian tradition that gives priority to authority and discipline over independent and critical thinking and to the tendency for narrow specialization inherited by the functionalist view of higher education that still prevails in the country as a result of the early Soviet influence, but it is difficult to say to what extent this is true. The current policy toward academic excellence by the Chinese government tends to value and support quality in very broad terms and not in terms of the functional utility of the knowledge imparted by the universities. At the same time, it is true that few Chinese universities have reached the high, global standards expected of them. The best Chinese universities in the Shanghai Jiao Tong University rankings are all in the 100–150 level, below both the leading Brazilian and Russian universities. Chinese science has grown enormously in recent years in terms of papers published, being the second in the world, but its impact is not very high. According to one estimation by the Royal Society, between 1999 and 2008, "China's citation share rose from almost nothing to 4%. However, this is dwarfed by the 30% share held by the USA. Although China ranks second to the USA in terms of publication output, the report found that, in 2008, it ranked only joint ninth in citation numbers" (Peng 2011).

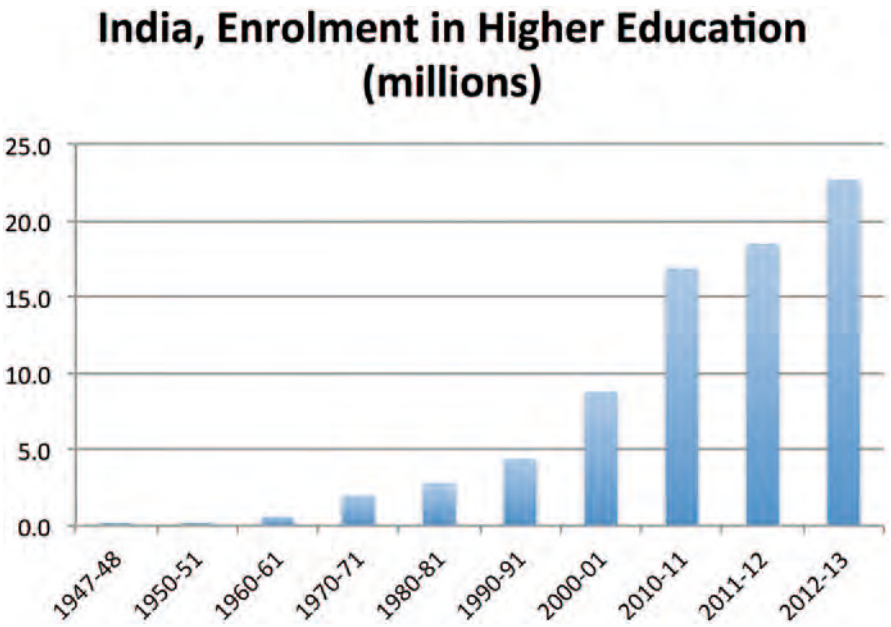


Fig. 2.3 Higher education enrolments in India (1947–2013). (Source: India's University Grants Committee 2013)

2.4 India

Like Russia and China, India is a vast country with hundreds of different ethnic groups and languages, and a strong caste system that, for centuries, has kept social mobility to a minimum. Most of the population lived and still live in the rural areas, about 30 % is still illiterate, and the country never experienced the intense periods of industrialization and urbanization that changed China so dramatically in the last few decades. Over this vast subcontinent, the British Empire created a large administrative bureaucracy and offered to the Indian elites opportunities to study in British universities, and these elites where later responsible for the movement for independence and the organization of India's modern state. In 1950, India had just 200,000 persons with higher education, for a population of about 400 million. By 1970, enrolment more than tripled to 2 million, reaching close to 9 million in 2000, and 22 million in 2012. The gross enrolment rate, of 18.8 %, is still small in comparative terms, but it is one of the largest higher education systems in the world, with about 35,000 institutions of all kinds. About 20 % of the undergraduate students take courses in engineering, with the remaining in arts, the social sciences, and teaching professions, among others (Fig. 2.3).

While in China most of the traditional social privileges associated with education were eliminated with the Civil War and the Cultural Revolution, in India the

social inequalities related to wealth, ethnicity, caste, and gender remained in place after independence and became central to all different policies that were proposed or implemented by the democratic governments since then. At the same time, as elsewhere, the government had to deal with the proliferation of institutions, the limitation of resources and problems of quality assurance, in an extremely complicated political environment marked by vocal opposition and strong and autonomous states.

K. M. Joshi (Chap. 7) provides the main data and figures for Indian higher education in his contribution to this volume. The proliferation of institutions was handled by a formal recognition that not all higher education institutions are equal. Besides the distinction between Universities and Colleges (similar to that of the USA and England), universities are divided into Central, State, and "deemed" institutions (created by executive order and not by state legislation), and except for the central national institutions, can be public or private. Of the 690 existing universities, 48 are central, 60 are considered of national importance, and the remaining are either private or under state governments.

Public expenditure for higher education, at about 1.2 % of GNP, is not small by international standards, but far from enough, given the size of the sector. Public universities are allowed to charge tuition fees, but do not raise more than 10 % of their income from this source. This means that most public universities, particularly at the state level, are underequipped and academic salaries are among the lowest (Rumbley et al. 2008)

At the same time, private higher education institutions are growing fast, enrolling almost 60 % of the students. As described by Roopa Desai and Sheila Embleton (Chap. 6) in this volume, citing different sources:

> There has been de facto not de jure expansion of the private higher education system in India. This is of particular relevance as the sector has grown the fastest and now accounts for 2/3 of all colleges, 4/5 of all professional schools, and 1/3 of general program colleges. The impact of the growth of private higher education institutions is greatest in professional programs where, for example, private engineering colleges, which accounted for 15 % of all engineering colleges in 1960, had by 2003 come to represent 86 %. Similarly, private medical colleges went from about 7 to 41 % of the total pool of medical colleges and private business colleges to close to 90 % of all business schools.

Some of these institutions receive support from the government and work, in practice, as charter organizations. Others depend entirely on private resources they can raise and are subject to intense criticism from many sectors. This is partly because they are teaching-only institutions, with no research and development facilities, and are profit-oriented. In India, as elsewhere, there is a general view that higher education is a public good and should not be guided by market considerations. The fact is that most public institutions do not involve in any research and development either, and the private sector has created possibilities of access to higher institutions while the public sector could not. Today, like in Brazil, the private sector in India is a huge business. Triolokekar and Embleton state that "the demand for higher education and related services being in surplus of supply, there are high returns to

be expected from investing in this sector. Thus, there has been a growth of private higher education not only in degree-granting colleges and universities, but also in parallel educational services, vocational schools, diploma and certificate programs, and extremely popular coaching and testing preparatory centres." Again, this is very similar to Brazil, where some of the largest private institutions that exist today started as coaching institutions preparing students for the competitive entrance examinations to prestigious public universities. Another important and recent development is the expansion of distance education, provided mostly by public institutions such as the Indira Gandhi National Open University and State Open Universities. The estimation is that 22 % of the enrolment in higher education institutions in India are in distance education programs.

Affirmative action is a central theme in India's higher education, with great attention being paid to the relative exclusion of women and members of what are called "Scheduled Castes" and "Scheduled Tribes." According to Joshi, "the central government has reserved 7.5 % of seats in higher education institutions for Scheduled Tribes and 15 % for Scheduled Castes. The percentage of reservation varies across the States in accordance with the population of these groups in respective States (…). Along with reservation, the government provision of scholarships, special hostels, meals, book loans, and other schemes exclusively for SC and ST students have encouraged the participation of these groups." It has been argued that, since access to higher education, and particularly to high quality and prestigious institutions, depend on previous achievements in secondary education, the government should invest more in the improvement of general and secondary education, allowing the higher education sector to be more competitive and meritocratic. This is being done to some extent, although the quality of general education still leaves much to be desired. Besides, for India, given the discriminatory nature of the caste system and the cultural isolation of minority tribes, improvement in basic education would not be enough to provide equal access for persons from these sectors to higher education and there are studies showing that these policies have indeed created opportunities for access that would not exist otherwise, although it is true that most of the beneficiaries of the affirmative policies are members of the "creamy layer" of the SC and ST communities (Weisskopf 2004). There are no gender reservations, however, and the gender gaps that exist are related to deep cultural characteristics of India that may vary from one region to another.

India has a few high quality institutions, as witnessed by the country's impressive achievements in different fields of science and high technology, but the general quality of its higher education system is considered low. To deal with this problem, in 1994 India established a National Assessment and Accreditation Council (Stella 2002) as well as an extremely complex web of policy institutions, often with overlapping responsibilities. Again, described by Triolokekar and Embleton (Chap. 16):

> India has 13 professional and vocational regulatory bodies, in addition to the All India Council of Technical Education and the University Grants Committee. The large number of bodies, each with its own reporting structures, some of which report to other Ministries (i.e., not the Ministry of Human Resource Development), makes for a complex regulatory structure, one that works against a cohesive and coherent policy approach The mandates of

> these regulatory bodies are expansive and they enable control of all aspects of institutional governance—financial, administrative, and academic. The result is a lack of academic freedom and institutional autonomy, as many activities such as hiring of faculty/administrators, setting of salaries and fees, curriculum and testing, and many more aspects of higher education are centralized and standardized by these regulators (…) What has made matters worse is that this already complex regulatory system has also been plagued with political interference and unethical and illegal practices….

Internationalization, for India, is not a new issue, given its recent past as a British colony. Most institutions are organized according to the English model and English is adopted as the teaching language in higher education institutions. All academic publications are also in English, freeing the country from the dilemmas and problems of publishing in the local language, as in Russia, Brazil, or China. There are many advantages in this adoption of English, making it relatively easy for foreign higher institutions to settle in India, to export different kinds of services worldwide (including those of the hugely successful IT sector), and to send Indian scholars to study and work abroad and to bring them back.

At the same time, only a few hundred thousand Indians have English as their native language. Hindi, with its different dialects, is spoken by 40 % of the population, and the remaining speak more than 1600 languages, 12 of which have more than 10 million speakers. Although the teaching of English is widespread and most of the population knows the language to some extent, it is difficult to estimate how many are actually able to read and understand English enough to read books and follow classes at the higher education level. Proper mastery of English, strongly related to family culture and access to good quality basic education, is a huge differential in Indian society today and is a strong determinant of who gets access to the best education and the best jobs.

The colonial past and access to the English language helps to explain also the large number of educated Indians going to study and staying abroad. Another factor may be the restrictions on access to the best institutions for students coming from higher castes because of the policies of reservation. In 2012, there were 200,000 Indian higher education students abroad, of which 103,000 were in the USA[1], the largest in the world after China. This group is just a small part of the huge Indian Diaspora, which is strongly skewed toward highly skilled persons. According to a recent report:

> The number of Indian migrants, especially those with qualifications, has progressively increased. In 2010, India recorded 11.4 million departures: the second highest number of emigrants after Mexico, with 11.9 million. In absolute terms, India is one of the main suppliers of qualified personnel to international markets. The country's skilled human capital abroad is highly varied and covers almost all fields of activity, though there is a prevalence in IT and the medical sector. India is also a prime supplier of one of the primary sources of skilled human capital, i.e., students. Along with China, it is the main exporter of international students. (Giordano and Terranova 2012; Hawthorne 2008; World Bank 2010)

Indians abroad send a considerable amount of money to their families in the country, and in recent years, with the liberalization of the Indian economy on one hand,

[1] http://www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx.

and the economic downturn in the USA and Western Europe on the other, many high-skilled Indians have decided to come back, the estimation being that more than 100,000 Indians returned to their homeland in 2010 (Giordano and Terranova 2012).

To bring some coherence to its policy, the government recently put forward a proposal to establish a unified body for the whole higher education sector, a National Council for Higher Education, a project that was however abandoned in 2013, after not getting the approval of the Parliament. Scholars debate whether, with this institutional paraphernalia, India's higher education policy is adrift or headed in some specific direction. Trilokekar and Embleton argue that "a closer look at the higher education policy in India over the last five or more years would not support Tilak's claims (Tilak 2010) that there is a vacuum in the higher education policy in India, or that the hallmark of Indian policy is in fact the absence of a clear, coherent, explicit, and long term policy perspective." In their view, although the field of higher education is unavoidably controversial and subject to conflicting interests and often contradictory policies, particularly in a democratic society such as India, there is, however, a sense of direction, marked by the growing centrality of concepts such as the knowledge economy, economic competitiveness, and concerns with the needs of the labor market, which rationalizes specific policy initiatives such as the promotion of innovation, autonomy, privatization, and investment in world-class universities.

A more negative view, expressed by Kapur and Mehta (2004), is that India's higher education is drifting toward privatization, not as a deliberate policy but as a consequence of policy and institutional breakdown. For them:

> Instead of being part of a comprehensive program of education reform, much of the private initiative remains hostage to the discretionary actions of the state. Consequently, the education system remains suspended between over-regulation by the state on the one hand, and a discretionary privatization that is unable to mobilize private capital in productive ways. The result is a sub-optimal structuring of higher education. The most potent consequence of this is a secession of the middle class—ironically the very class whose interests these institutions were supposed to serve—from a stake in public institutions. (Kapur and Mehta 2004, p. 2)

2.5 South Africa

More than in India, higher education policies in South Africa are centered on the issues of race and affirmative action, for very good reasons. The history of South Africa is marked by centuries of white colonization and wars in a vast territory populated by different African societies that culminated in the Apartheid project that, between 1970 and 1993, took to the extreme the intent of building a modern nation-state based on race dominance and race discrimination. As described by Posel:

> Apartheid (…) was never an exterminationist project—unlike other systematically racialised regimes such as the Nazi state. On the contrary, one of the abiding imperatives of apartheid was to keep (most) black people alive, albeit under conditions of perpetual servitude and submission, so as to keep the structures of white supremacy intact. This did not

> exclude—indeed, it was inextricable from—tactics of violence and brutalisation. Racialised terms of access to health services—worst for black people in rural areas—also created conditions of neglect and disinterest for the most vulnerable and marginal, whose lives counted for little. But in the main, black life remained the condition of white prosperity, and the apartheid project proliferated myriad laws, regulations and proscriptions designed to sustain and regulate the conditions of black life accordingly. (Posel 2011, p. 322)

South Africa under apartheid was not composed of "two nations" living separately, but one society with complex links and strong hierarchies among different sectors of the population. While large sections of the African population were left marginalized and contained in their "homelands," others were brought to work in the modern economy created by the white settlers and had limited access to social services, including education.

The first South African university, the University of the Cape of Good Hope, was established in 1873, and in 1918 was incorporated into the University of South Africa, created as an "examining university," along with two other teaching universities, Cape Town and Stellenbosch. They were followed by Rhodes, the University of the Witwatersrand (1922) and later the Universities of Natal, Pretoria, Potchefstroom, and Free State. Most students in these universities where white and the main alternative for blacks and coloreds willing to continue their education was the University of Fort Hare, established by Christian missionaries in 1916. Starting with the Bantu Education Act of 1953, the South African government created a Black Education Department housed in the Department of Native Affairs that led, in 1959, to the creation of segregated black educational institutions (including the University of the North, University of Zululand, Medical University of South Africa, Vista University, Mangosuthu Technikon, and Technikon Northern Transvaal) while limiting the access of nonwhites to the traditional universities. By the end of Apartheid in 1994 South Africa had 21 public universities and 15 Technical Colleges (Technikons), some for white English speakers, others for Afrikaners, one for coloureds, and others for the black population.

The expectation from the white rulers was that the segregated institutions would educate a black elite who would be properly trained and be submissive to the political regime. The "bush colleges," however, had the opposite effect—as more Africans entered higher education, these colleges became the breeding ground for student mobilization and activism against the apartheid regime. As described by Reddy in his 2004 report to the Council of Higher Education:

> The development of black universities, increased student numbers, and the repressive and conservative cultures within these institutions failed to successfully establish social control in keeping with the visions of the architects of higher education planning. Ironically, the growth of black university student numbers between 1960 and 1976 studying courses in the humanities and education, the repressive conditions on the black campuses, and the conservative stance of the teaching staff created the conditions that contributed to student unrest. After an initial period of passivity, increasing student frustration and alienation produced student organisations and campaigns for university reforms. (Reddy 2004, p. 19)

In dealing with higher education, the African National Congress (ANC), that became the first government of the democratic South Africa, had to reconcile different and sometimes contradictory goals. Coming from the left, in partnership with

the Communist Party, the new ANC government was imbued by the importance of planning and had a functional view of higher education, as an important contributor to the country's economic development. At the same time, it had to give priority not only to ending the apartheid legislation, but also to developing policies to reduce the racial imbalance in accessing higher education, particularly in the better-endowed and more prestigious institutions, and to invest more resources into the formerly neglected black universities. Finally, although the government was firmly convinced of the importance of government planning and centralization, there were also strong claims in South African society for more decentralization and the interplay of market forces, not only in the business sector, but also in higher education.

One of the first measures of the new government was to establish a unified national Department of Education, placing the universities under the same jurisdiction and eliminating the racial barriers. This did not mean, however, that actual segregation disappeared. Predominantly white institutions such as Stellenbosch, Cape Town, and Rhodes remained so, while few whites enrolled in traditionally black institutions. There were cultural and geographical reasons for that, but most important was that the end of apartheid did not mean the end of the large economic and educational differences that existed between the whites and most of the black population and there were just not enough black applicants that could compete with whites in the selection procedures for the most prestigious universities. Affirmative action, with all its pros and cons, became a central policy in all aspects of the Republic of South Africa, reducing to some extent the racial imbalances, but also being open to criticisms for favoring just the "creamy top" of the black population, and risking making race credentials and identity more important than proven merit and competence (Alexander 2006).

A series of documents, white papers, and government bills shaped the new South Africa's attempts to deal with these issues. They include the 1994 African National Congress' comprehensive "Policy Framework for Education and Training", before the elections; the 1997 "White Paper 3: A Programme for the Transformation of Higher Education" and the Higher Education Act of the same year; the 2000 report of the Council for Higher Education Report, "Towards a New Higher Education Landscape"; and the 2001 National Plan for Higher Education, which led to the "Size and Shape" decision to merge the formerly segregated institutions into a small number of more integrated universities.

Between 1995 and 2012, higher education in South Africa increased from 500,000 to 900,000, a relatively low growth if compared with that of Brazil, India, or China. The participation rate is currently estimated to be 17.7 % of the relevant age group, far from the official expectation in 1995 that it would reach 30 % in 10 years. Summarizing the main trends, Kirti Menon, in her contribution to this volume (Chap. 9), notes that, "between 1994 and 2010 there has been a 200 % growth for African students. Despite the growth, the participation rate of African students was 12 % in 2011" and concludes that "the pace of higher education growth in relation to growth in population for the age group 18–24 is not synchronized at all. It is clear that massive investment in higher education would be required to sustain

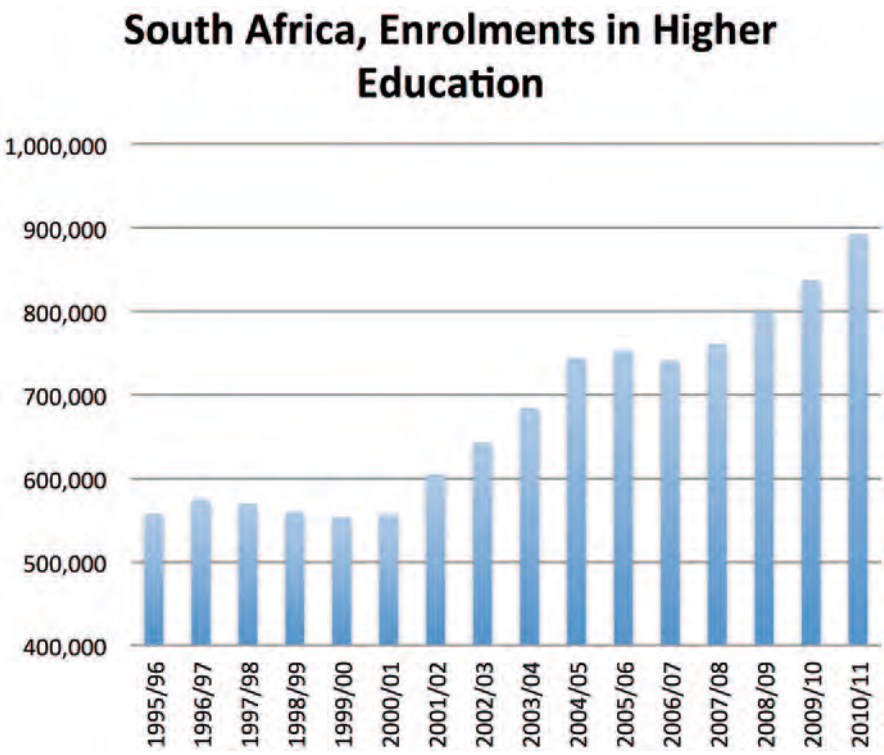


Fig. 2.4 Higher education enrolments in South Africa (1995–2011). (Source: South Africa Higher Education Management System (HEMIS))

growth though it is not evident that the inflows from the school system would provide the required outputs" (Fig. 2.4).

These gross figures, moreover, do not reveal that almost half of the higher education students are in distance education programs, provided mostly by the University of South Africa, which boasts a student body of 350,000. Graduating rates have been very low and most students enroll in the social sciences because they are cheaper to provide and easier to attend, particularly for those coming from poor and less educated backgrounds. Public investment in higher education has not changed significantly during the period. There is a growing debate in the country about the funding formula used by the government to support the higher education institutions, as well as about the tuitions charged by the universities to the students, with a growing demand for free higher education, in spite of the existence of financial aid for poor talented students (Wangenge-Ouma 2012).

As in other developing countries, private higher education also grew in South Africa in recent years, although not to the same extent as in Brazil or in India. Citing different sources, Michael Cross, in this volume (Chap. 18), states that "the number of private schools increased from 518 in 1994 to around 1500 in 2001, while more than 100,000 students were registered in 145 private higher education institutions

by 2004. The market of private providers is mostly concentrated on further education and training and restricted to commercial and business curriculum and do not pose any significant competition to the public sector." Another important trend was the migration of highly qualified South Africans, particularly white, to study or work abroad. There are no reliable figures on this, but data gathered in 1999 showed that "a significant brain drain is underway. A total of 24,196 professionals emigrated from South Africa in the period 1994–1997" (Kaplan et al. 1999). This was not a new phenomenon, since many persons left South Africa for political and economic reasons in the years of apartheid, but according to this report, emigration has increased since 1994. It was further estimated that between one-eighth and one-fifth of South Africans with tertiary education now reside abroad. A more recent figure is that there were at least 590,000 individuals born in South Africa living in the 19 OECD countries, particularly in the UK, Australia, the USA, and Canada. According to Politicsweb, the Internet site that compiled these figures, "the major push factors, particularly for white South African emigrants, have traditionally been put down to high levels of violent crime (often personally experienced) and the racial employment policies of the African National Congress government. To these one could perhaps add the growing evidence of state decay and a resurgence of demands by ANC politicians for something to be done about continued white wealth."[2]

For many who did not leave the country, one alternative was to study in a private institution. Most private higher education in South Africa is for profit. Summarizing an extensive analysis of the country's private sector, Daniel C. Levy points out that "the successful commercial private institutions place students at the core. Students are consumers with power of choice and purse. Managers and owners run the institutions to attract the students and of course to make money through efficiency. This leaves faculty, overwhelmingly part-time but ideally with valuable practical expertise, without the power they have in classical universities. Their role is largely to fit in to the curriculum and other institutional dynamics of practicality. South Africa is not a private higher education world leader in the sense that other countries have looked to emulate its example. But it stands near the forefront of global trends in commercial private higher education that emphasizes profits and practicality."

2.6 Brazil

With a population of 200 million, Brazil is also a large country, with high levels of social inequality, but without the multiplicity of nationalities and languages that are a common feature of China, India, Russia, and South Africa. Brazil was a Portuguese colony from 1500 to 1822. When the Portuguese arrived they found a large native population speaking different languages and dispersed in an extended tropical territory, without having ever developed the complex agricultural economy, political

[2] http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page71619?oid=318618&sn=Detail.

institutions, and demographic density that existed among the Maya, Aztec, Inca, and other pre-Colombian cultures in Mexico, Central America, and the Andean region. While in Spanish America the conquistadores forced the local population into submission to work on their plantations and mines, in Brazil the Portuguese either annihilated, assimilated or forced the native population to withdraw to remote areas and remain in isolation (except for a small group that came under "missions" organized by Jesuit priests located in the South of Brazil and in what is today Paraguay, where most of the population speaks Guarani, one of the pre-Colombian languages from Brazil) (Livi-Bacci and Maeder 2004). To work in their sugar plantations in the Northeast and gold mines in the highlands, the Portuguese brought millions of African slaves, making Brazil the largest destination of the slave trade in the Americas (Klein 1999). While, in the Northern countries, the European settlers came with their families and kept the slave population segregated, in Brazil the Portuguese men usually came alone and intermingled with the local women, generating a large, free, mixed-blood population that often outnumbered both the European settlers and their slaves (Klein 1969). The slave trade ended in 1850, and in 1899 slavery was formally abolished, when it was not economically productive any longer. By then Brazil started to receive waves of immigrants from Italy, Germany, and later, Japan, among other countries, who came to work mostly in the coffee plantations in the Southwest and South of the country, moving later to the cities.

This history explains why Brazil developed into a very unequal society, but without clear barriers dividing the population into ethnic, racial, or linguistic subgroups. By the end of the 19th century, Portuguese became the dominant language. The native languages had either disappeared or were limited to small and isolated indigenous groups; the African slaves did not keep their languages except for some religious and other expressions that were incorporated into Brazilian Portuguese and most of the European and Japanese immigrants that arrived in the late 19th and early 20th century also assimilated and did not transmit their languages to their descendants. To get a sense of the ethnic composition of the Brazilian population, the Brazilian Census Office asks how the respondents define their "colour"—white, black, brown, or yellow, the latter divided into native Brazilians and Orientals. In the 2013 national household survey, 46.3% defined themselves as white, 45.0% as brown ("pardo"), 8.0% as black, 0.3% as native Brazilians, and 0.5% as Orientals. Those who call themselves white or Orientals are on average wealthier and more educated than those calling themselves black, brown, or native Brazilians—differences that are strongly related to their social origins and regions of residence, rather than to their biological ancestry (Parra et.al. 2003).

Under the Portuguese, Brazil remained mostly an illiterate country, except for a tiny group of bureaucrats, merchants, and priests. By 1950, 57% of the population of 5 years or more was illiterate. The first higher education institutions were established after independence in the 19th century (a couple of schools of Law, Medicine, and Engineering) and the first universities in São Paulo and Rio de Janeiro are from the 1930s. Basic public education started in some state capitals in the late 19th and early 20th centuries and universal coverage for primary education was only achieved in the 1990s.

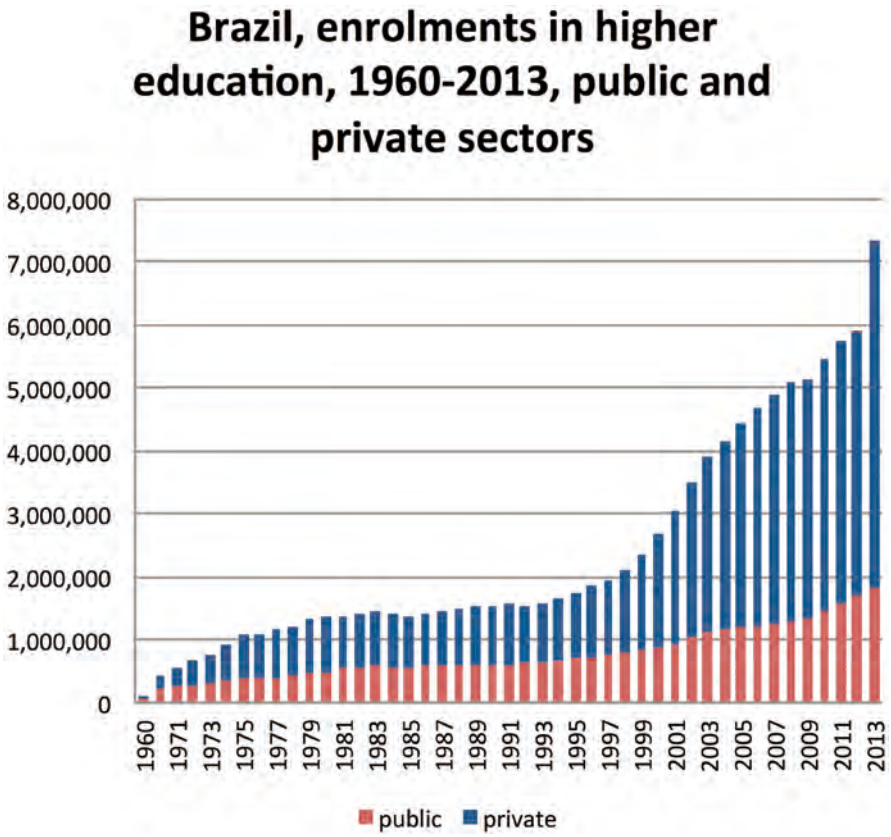


Fig. 2.5 Enrolments in Brazilian higher education (1960–2013). (Source: Brazil, Ministry of Education/INEP)

As the federal government moved slowly to create its own public universities, some states and private groups took the initiative. The state of São Paulo, wherein was concentrated most of the wealth generated by the coffee plantations and early industries, created its own schools of engineering, medicine, agriculture, and others in the late 19th century, and organized the country's first university in 1936, bringing professors from Europe to teach and research in the natural and social sciences. The Catholic Church, already involved in basic and secondary education, created its first university in the 1940s and in many states the local communities organized to establish their own schools of law, medicine, and engineering. As Clarissa Baeta Neves states in her contribution to this book (Chap. 5), Brazil has undergone two waves of enrolment expansion. The first period of significant growth occurred from the mid-1960s to the beginning of the 1980s. Enrolments in 1960 consisted of just 93,000 students, 55.9% of which were in public institutions. In 1970, enrollments jumped to 425,478 students. Out of this total, 49% were in the public sector. Already in 1975, the number of enrolments was 1,072,548 students, about 62% of them in the private sector. As of 2013, Brazil had 7.3 million students in higher education, 75% in the private sector (Fig. 2.5).

The first attempt by the national government to establish a policy for higher education took place in the 1940s, with the ambitious project to create a National University in the Federal Capital in Rio de Janeiro that could become the model to be replicated in other states (Schwartzman et al. 2000). After the Second World War, with the new wave of economic growth and urbanization, the federal government took charge of several small universities created by state and local governments in previous years (except São Paulo) and created a network of Federal Universities that, together with the expanding private sector, was responsible for the first wave of expansion. These universities had to follow the organizational model created at first by the National University in Rio de Janeiro, which soon became just one among other Federal Universities. This model consisted mostly of a collection of professional schools in the traditional fields of law, engineering, medicine, architecture, dentistry, and others, and a Faculty of Philosophy, Sciences, and Letters that was supposed to prepare teachers for secondary education and also to do research (which, in practice, existed only at the University of São Paulo, in some medical schools in Rio de Janeiro and São Paulo, and in some federal research institutions). Teacher-preparation for basic education was done at the secondary level, in "normal schools" that later were upgraded to schools of education. There were no undergraduate colleges in the British or American sense, and no graduate education. University professors were usually professionals who took classes for a few hours a week and derived most of their income from their professional careers. In the public institutions, however, they became civil servants and gradually organized themselves to demand equal payment and other employment benefits.

The second reform took place in 1964, in a very different climate. Brazil was then under a military regime and the capital had moved to Brasilia. In the previous years, university students had participated in left-oriented organizations and the government decided that the Brazilian universities should be modernized. With the help of US advisors (Atcon 1966), the government decided to transform the Brazilian universities according to the American model, replacing the old chairs with academic departments, allowing the students to work for credit instead of following rigid course sequences, creating graduate schools, and requiring the professors to hold a doctoral degree and to combine research with teaching.

A glaring error of the reform was to take the American research university as the model, instead of the community colleges, or a combination of both. Under the new system, students continued to enter the professional schools for course programs lasting 4–6 years and only then could eventually get into graduate education, where it existed. The reformers did not consider that Brazil did not have enough qualified professors to teach full-time and do research and the creation of graduate programs in a haste led to the proliferation of low quality degree holders and the hiring of "provisional" professors who could not be fired from their posts. The civil servant status granted to all academic staff made the Brazilian public universities by far the most expensive in Latin America. But the most serious error was not to have realized that the demand for higher education in Brazil was about to explode and could not possibly be handled by the few expensive public institutions that existed. The solution was to limit access to public universities through very competitive entrance examinations and allow the private sector to expand without much control.

The outcome of the 1964 reform was that Brazilian higher education became, on paper, unified under the single model of the American research university, but, in practice, highly stratified. Some universities came closer to the ideal model, maintaining the quality of their professional schools, particularly after the late 1970s, creating good quality graduate programs in the natural and social sciences. This group included some federal universities and also the state universities of São Paulo, which were better endowed and remained independent but adopted the same model. It also included at least one private institution, the Pontifical Catholic University in Rio de Janeiro, which, for a period, enjoyed federal support for its graduate and research programs. The second tier included most of the federal universities and also state universities that were never able to develop graduate education and worked mostly as teaching institutions. The third group was formed by a large number of private institutions, most of them providing evening courses in one or two social professions (typically law, administration, or education) for low fees, and paying their teachers by the hour. Large organizations could be recognized by the government as "universities," while the small ones remained with the title of "faculties" or "schools." Regardless of their ownership and formal status, all the degrees provided by these institutions are equally valid according to Brazilian legislation. Students with better secondary education, usually from richer families who could afford to place them in good private schools and pay for coaching and training, could get access to the most prestigious careers in the best public universities, which were and remain free from tuition. Poorer students, coming mostly from low quality public schools and often having to work during the day, could only enter the evening courses in the private sector, or at the most, the least competitive courses in public universities, in fields like education and social work.

As Maria Helena Magalhães Castro shows in her contribution to this book (Chap. 14), this disconnect between the legislation and reality created a problem of regulation and quality assurance that could never be solved. Since the 1990s, the Ministry of Education has tried to make the private sector comply with the formal requirements of the research university model, requiring them to have full-time faculty with graduate degrees and to do research, which most of them could not possibly meet. The Ministry also developed an ingenious assessment process for graduating students in different fields (Schwartzman 2010) and used these results, combined with other indicators, to establish a ranking of course programs and universities, threatening to close those that underperformed repeatedly. Both public and private universities were subject to the same assessments, but, while a few private institutions were actually punished with suspension or even closure, the Ministry was powerless to deal with their own universities, which were autonomous, created by law, and staffed by well-organized teaching unions.

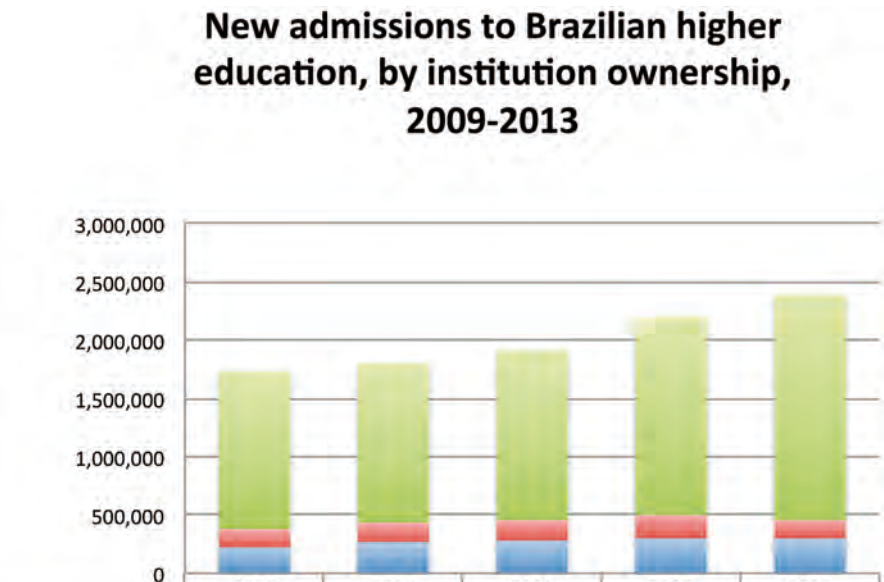
As in most other countries, the Brazilian legislation assumed that all private universities were nonprofit or philanthropic, which may have been true for the Catholic universities and some community-based institutions, but was not the reality for most institutions that emerged since the 1980s (Levy 1986). The government decided to recognize this fact and allowed higher education institutions to declare themselves for-profit, becoming therefore subject to taxation, while demanding that

those that remained nonprofit should demonstrate their philanthropic nature. The consequence of this legislation was that the private sector started to consolidate into large business conglomerates, either by buying out smaller institutions or by creating new ones. Some of these conglomerates became public companies with shares in the stock exchange, attracted large national and international investors and adopted modern management and teaching technologies to reduce their costs and standardize their products. Today, five of these corporations are responsible for 20% of the higher education enrolment in Brazil. They are powerful enough to lobby the Congress and negotiate with the Ministry of Education to make their regulations more flexible and. if needed, can take the Ministry to Court.

In the 1990s, the attempts of the Ministry of Education to reign in the federal universities to make them more accountable and the private sector to make them similar to the public institutions, ended in failure. After 2002, under the populist presidency of Luiz Inácio Lula da Silva, the government chose to put more resources and expand the public institutions and to create a program to exempt the private sector from taxes in exchange for fellowships for low-income students. There was also a decision to create quotas for low-income and nonwhite students in public universities, in an effort to redress the social inequities in access to higher education. In 2012 the Brazilian Supreme Court declared that racial quotas were constitutional; in the same year Congress passed legislation requiring that 33% of the openings in public universities should be reserved for students coming from public schools, with preference given to nonwhites. Also, between 2008 and 2013, the number of admissions to the Federal Universities increased by 33%, without, however, reducing the dominance of the private sector, which grew by 43% in the same period much less, however, than (Fig. 2.6).

The impacts of these recent policies are still being debated. There are complaints from the Federal Universities that they were forced to expand without enough resources and preparation and cannot cope with the new inflow of students and professors hired with working conditions that do not match with the previous standards. Supporters of affirmative action maintain that the achievement of these students, once admitted, are similar or even better than those admitted by conventional routes. Critics, on the other hand, argue that courses are being forced to lower their academic standards and that the official use of race in public policy goes against the constitutional principles against discrimination, notwithstanding the Supreme Court's opinion; and also argue that the best policy to increase access to higher education for students coming from low-income families who could not get good quality secondary education would be to provide them with financial support to allow them to study full-time and to open more alternatives for vocational and professional education that are very limited in Brazil and almost nonexistent in federal universities.

Another criticism is that, with all the emphasis placed on the popular issue of access, the government has neglected the issues of academic quality and does not follow the line of other countries that are investing heavily on its top universities, to reach international academic excellence. In fact, the only two Brazilian universities that appear in the international rankings, although not very highly placed, are the University of São Paulo and the University of Campinas, both state institutions



	2009	2010	2011	2012	2013
Private	1,353,479	1,366,191	1,458,463	1,705,086	1,938,826
State, Municipal	155,510	166,494	174,628	198,917	156,954
Federal	223,624	269,216	282,007	300,453	299,093

Fig. 2.6 New admissions in Brazilian higher education, by type of institution (2009–2013). (Source: Ministry of Education)

that were not affected by the policies of the federal government and benefit from generous support from the state government. However, graduate education and research programs in Brazil, even when placed within universities, have their own systems of assessment and support and have shown remarkable achievements in the last few years, producing more than 12,000 PhDs a year and increasing Brazil's share of scientific international publications. This sector is not immune from criticism—the production of patents is very limited, citation levels are low, links between research and the productive system are poor,—but still, Brazilian graduate education and research is by far the largest and most developed in Latin America.

Most of the top-level scientists in Brazilian universities received their degrees from universities in the USA and Europe, thanks to a steady flow of fellowships provided by the Brazilian government as well as by international foundations and foreign governments. In contrast to the other BRICS, Brazil does not have a significant problem of brain drain, there are not many students opting to go abroad for their undergraduate studies, and most of those who go out with fellowships eventually return. Still, Brazilian higher education as a whole is very isolated from the international flow of students, knowledge, and institutions. All the teaching is done in Por-

tuguese, there are few foreign students, it is difficult for a non-Brazilian to become a permanent professor in the country, and Brazilian universities, except for a few elite economics and business schools, do not participate in the international market for talent. Recently, the government announced an ambitious program called "science without borders" which was supposed to send 100,000 Brazilians to study abroad for 4 years that created lots of excitement. A closer look, however, shows that this program was mostly for short stays for undergraduates, with a large number going to Portugal or Spain because of their inability to speak English or French (Castro et al., 2012).

2.7 Conclusions

This summary of the experiences of the BRICS countries, combined with the detailed analyses presented in this volume, shows that most countries, except Brazil, dealt with growth by diversifying their institutions, selecting a few to receive additional support to reach world-class standards, allowing the others to survive with less public resources or to go out to the market to seek resources, and also by allowing the expansion of private higher education institutions. Besides, higher education is usually divided into two main tiers: one, more academic—the universities—and the other, more introductory or vocational—the colleges and technical institutes. In Brazil, in spite of the legislation that assumes that all higher education institutions should adhere to the Humboldtian model of the research university, in reality, they are highly differentiated into a few leading universities and many teaching-only institutions and most of the students are in private teaching institutions, whereas vocational education has not developed. Another trend is the expansion of distance education, particularly large in South Africa, where UNISA is the largest institution in terms of enrolment, but also growing steadily in other nations. It is still too early to assess the impact of the new technologies of the new customized distance learning and the Massive Online Open Courses—MOOCS—in the BRICS, but they are likely to grow substantially in the next few years.

Except Brazil, in the other BRICS, students pay tuition in public universities, with a peculiar situation in Russia where public institutions combine students selected through public exams who study for free with others who are admitted for a fee. One assumption common to all countries is that higher education is a public good that should help the country to develop the quality of its human capital and it is also a right that should be provided by the government to its citizens. It is not easy to fit the private higher education sector in this picture. For most countries, private education can only exist as nonprofit, philanthropic institutions, an understanding that makes sense for religious or community-based institutions, but not when the provision of higher education becomes a business enterprise. In all countries, governments try to regulate and impose quality standards on private institutions, but not very successfully, and both Brazil and South Africa accept that higher education

can be provided for profit. This has led to the creation of education providers, some of them very large, that operate as service companies delivering standardized products to millions of students whom the public institutions cannot accommodate. The private sector in Brazil is responsible for more than 70% of the total enrolment, combining a smaller segment of nonprofit institutions and also including some elite institutions that compete with the public sector for excellence, particularly in business and economics education. It is also very large in India, but much smaller in Russia, China, and South Africa.

To deal with the social diversity of the students, China, India, South Africa, and Brazil have developed affirmative action policies to facilitate access to higher education for persons coming from poorer segments or ethnic minorities. Russia inherited from the Soviet Union a complex and sometimes contradictory history of policies regarding its national, linguistic, and religious minorities, but currently there is no national policy for affirmative action in higher education (Martin 2001; Roeder 1991). In all countries, these policies are surrounded by controversy, with the recognition that, while these policies allow an increase in access to higher education by members of some groups, creating opportunities that would not exist otherwise, the beneficiaries are mostly persons at the top of their communities, leaving social inequality mostly unchanged.

The assumption that higher education is expanding to provide more qualified human capital to economic and technological development is challenged by the fact that most of the growth in enrolment takes place in the social sciences, the humanities, and the social professions, as well as in education rather than in science, technology, and engineering. To some extent, this trend corresponds to the fact that, except in China, the industrial sector is diminishing in size while the services sector, including education and health, are growing steadily. But it also reflects the fact that many students who reach and have access to higher education are handicapped by very poor schooling and cannot follow the academic requirements of science-based professions.

It is possible to summarize the policy dilemmas in five broad issues: how to deal with expansion, equity of access, and diversification of enrolments, participation rates, number, and types of institutions; how to deal with the fiscal limitations, particularly in periods of economic stagnation or decline; how to regulate the growing market for private higher education; how to make the higher education institutions more accountable to their students, employees, and to society as a whole; and how to improve and maintain the quality and social relevance of learning and research in higher education institutions.

Finally, the issue of internationalization has been very high on the agenda of higher education in the BRICS, but the results are not very impressive. In spite of their efforts, none of the countries were able to elevate their leading institutions to the top positions in the international rankings, although China might be moving more strongly in that direction. China and India have the largest number of students and university-level persons studying and living abroad and are, to some extent, benefiting from the knowledge brought by those that return and also by establishing business and academic networks between residents in the country and those abroad.

South Africa also has a sizeable number of students and professionals overseas, particularly in England, but does not seem to be able to attract them back to link them more strongly with the local institutions and the economy. Brazil has a tradition of sending students for graduate studies abroad and getting them to return, without a significant diaspora. Russia has also experienced some emigration with the end of the Soviet Union, particularly among Jews, but otherwise its higher education system is mostly self-contained (Altbach and Knight 2007).

If one compares China with the other BRICS, one gains the impression that the growth of change in higher education in China was the consequence of careful planning and foresight, while in the other countries the governments are at most trying to steer and manage a global trend that is happening regardless of what they do. It is true that some countries, China in particular, may be more able to influence this trend than others, but even there, it is a flow that mostly follows its own path and cannot be manipulated at will.

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Chapter 3
The Role of Internal and External Stakeholders

Rómulo Pinheiro

3.1 Introduction

According to R. Edward Freeman, the (grand)father of the stakeholder theory, a stakeholder is "any group or individual who can affect or is affected by the achievement of the organization's objectives." (Freeman 2010, p. 46) Stakeholder theory and/or stakeholder management have, for some time, been prominent issues in the social sciences, mostly but not exclusively within the business management literature. For example, attention has been paid to the strategic significance attributed to ethical principles such as *trust*, *trustworthiness*, and *cooperativeness* as sources of sustainable competitive advantage (Jones 1995). Within the management literature, stakeholder theory has increased in popularity in part due to its emphasis on explaining and predicting how an organization functions with respect to the relationships and influences existing in its surrounding environment (Rowley 1997), and also because of its descriptive accuracy, instrumental power, and normative validity (Donaldson and Preston 1995).

The essential premises of stakeholder theory have been summarized succinctly by Jones and Wicks (1999, p. 207) as: Organizations (i.e., corporations, in the management literature) have relationships with many constituent groups ("stakeholders") that both affect and are affected by their decisions. The theory is concerned with the nature of these relationships in terms of processes as well as outcomes both for the organization and its stakeholders. The interests of all (legitimate) stakeholders—since the theory is not interested in others (nonlegitimate)—have intrinsic value, and no set of interests is assumed to dominate others. And, finally, at its core, the theory sheds light on managerial decision-making processes.

The field (of stakeholder theory) has traditionally been characterized by three relatively distinct approaches, namely: *descriptive*, *instrumental*, and *normative* or

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_3

ethics-based. Proponents of descriptive approaches contend that the nature of an organization's stakeholders, their values, their relative influence on decisions, and the nature of the situation are critical (input) factors for predicting organizational behavior (Jones and Wicks 1999, p. 208). Instrumental perspectives shed light on the (competitive) advantages that accrue to the direct interaction—social relations—between organizations and external stakeholders on the basis of mutual trust and cooperation (Jones 1995; Jones and Wicks 1999, p. 208). Finally, advocates of a normative/ethical approach are keen to specify what type of moral obligations are placed on leadership structures, particularly when it comes to the relative importance of obligations to shareholders and other stakeholder groups (Boatright 1994; Jones and Wicks 1999, p. 209). Scholars following this line of thought argue that organizations (firms) ought to treat stakeholders as "ends" or alternatively ought to view stakeholders' interests as having intrinsic value.

More specifically, social science scholars have used stakeholder theory to shed light on a variety of organizational phenomena, ranging from corporate social responsibility (Roberts 1992) to value maximization and functions (Jensen 2010) to the rise of e (electronic)-government (Scholl 2002). A recent review of the state of the art of stakeholder theory reveals the significant impact the theory has had on academic/professional fields such as management, accounting, marketing, and finance (Parmar et al. 2010). With respect to the field of management, it is suggested that the areas in which the theory has had a stronger impact pertain to leadership, organizational effectiveness, and human resource management (Parmar et al. 2010, pp. 427–428). More broadly, it could be stated that the importance attributed to stakeholders, particularly external ones, is part and parcel of the move (during the last half a century) of organizations from *closed* to *open* systems (Scott 2003), thus stressing the critical importance of the linkages with the environment.

In the applied field of higher education studies (Schwarz and Teichler 2000; Tight 2003), the strategic attention attributed to internal and external stakeholders—albeit always somewhat omnipresent—can be initially traced to Burton Clark's seminal work on the ways higher education systems across the world have traditionally been structured, and more specifically, the so-called "triangle of coordination" composed of the *academic oligarchy*, the *state* and the *market* (Clark 1983). Yet, in Europe, the beginning of the 21st century marked the period in which a number of scholars started to pay increasing attention to the role of (external) stakeholders in higher education affairs. In December 2000, the *European Journal of Education* dedicated a special issue to the topic entitled "Higher Education and the Stakeholder Society." In the introductory remarks, Maassen states that:

> In the relationship between higher education and its environment the involvement of external actors in policy processes has changed in two ways. First, in national higher education policy networks the dominant actors were traditionally government and institutional representatives. The reforms implied that the role of other external actors in these networks has become more prominent. Second, external actors have become more directly involved in the internal affairs of higher education institutions. This includes both participation in institutional governance structures and involvement in the basic activities of universities and colleges, especially teaching (Maassen 2000b, p. 377)

On the basis of numerous contributions from across Northern and Southern Europe (Hölttä 2000; Larsen 2000; Maassen 2000a; Magalhães and Amaral 2000), Maassen goes on to conclude that the "growing influence of stakeholders and the reduced role of politics is a direct consequence of changes in the government steering approach to higher education" (Maassen 2000b, p. 382). During the 1980s, European governments such as the Netherlands (Kickert 1995), begun departing from traditional government steering mechanisms in the form of legislation, prohibitions, and regulations toward strengthened institutional autonomy and self-responsibility, a phenomenon that became commonly known as "self-regulation" (Maassen and Stensaker 2003; van Vught 1988).

It is a rather compelling fact that Clark's seminal work (1983) refers to the terms "state" 100 times and "market" about 60 times, yet no single mention is given to the term "stakeholder(s)." Having said that, and in fairness, "external interests" are referred to by Clark about 16 times. For example, it is mentioned that: "(A)s top state officials, external interest groups, or emerging internal constituencies enter the power arenas of higher education, they generally seek changes that seem favourable to their own interests" (Clark 1983, p. 202).

While discussing the emerging role of external stakeholders in European higher education governance, Amaral and Magalhães (2002, p. 2) define two categories of stakeholders, *internal* (members of the academic community) and *external* (outsiders), and highlight that the latter concept "refers to the presence of representatives of the interests of the 'outside world' in university governance." Furthermore, it is argued that the presence of such external representatives is, first and foremost, designed to make higher education institutions more responsive to their surrounding environment (Amaral and Magalhães 2002), thus making their impact on the internal affairs of institutions both legitimate and useful (see also Hölttä 2000).

Jongbloed et al. (2008) contend that in order to successfully achieve their obligation as socially accountable organizations and prevent mission overload, higher education institutions will have to carefully select key stakeholder groups with whom strategic partnerships are to be forged over the long run. Echoing earlier accounts, the authors contend that "the issue of representation of stakeholders is directly related to that of responsiveness and legitimacy," (Jongbloed et al. 2008, p. 307), to be reflected with respect to the nature, quality, and evolving ties with the so-called "Stakeholder Society" (see Neave 2002). On the basis of the theory of *stakeholder salience* by Mitchell et al. (1997), attention is paid to three types of stakeholder attributes, namely: (a) stakeholder's *power to influence the organization*; (b) the *legitimacy of the stakeholder's relationship with the organization*; and (c) the *urgency of the stakeholder's claim on the organization* (Jongbloed et al. 2008, pp. 308–309). The authors advance a typology of stakeholders on the basis of the number of key attributes: *latent* (one attribute), *expectant* (two), and *definitive* (all three attributes). "Stakeholder salience is *low* for the group of latent stakeholders, *moderate* for expectant stakeholders, and *high* for definitive stakeholders." (Jongbloed et al. 2008, p. 210).

Benneworth and Jongbloed (2010) discuss the issue of stakeholder salience with respect to academic fields or knowledge domains and against the backdrop of

society's valorisation toward the skills being transmitted and the knowledge being produced/transferred by higher education institutions. They argue that the lower degree of policy attention attributed to "softer" fields such as the humanities, the arts, and the social sciences compared to the so-called "hard" sciences (Becher and Trowler 2001) is part and parcel of the lack of stakeholder salience across the former fields. On the basis of empirical data, the authors contend that the degree of responsiveness by higher education institutions to certain types of stakeholder groups "does not evolve simply and functionally but in response to the networks of relationships in which they are situated." (Benneworth and Jongbloed 2010, p. 567; see also Becher and Trowler 2001, p. 567; Chatterton and Goddard 2000; Pinheiro et al. 2012; Benneworth 2013).

Finally, the importance attributed to stakeholder issues in contemporary higher education affairs across the globe is, in our view, a reflection of the changing nature of the *social pact* between higher education and society (Maassen 2014), brokered via the state, with new notions of trust and accountability (Stensaker and Harvey 2011) as well as responsiveness to societal needs and demands (Clark 1998; Etzkowitz et al. 2000) as key attributes.

3.2 Brazil

The starting point for Balbachevsky's analysis (Chap. 10) is the fact that Brazilian higher education is characterized by a wide array of individual providers, each with quite distinct characteristics. Not only is there horizontal diversification but also there is the equally important considerable heterogeneity among institutions of the same type, e.g., publicly run and funded universities. The author substantiates her analysis on the combination of two relative distinct concepts; traditional stakeholder analysis and the so-called advocacy coalitions framework (ACF), proposed by Sabatier (1988). ACF pays considerable attention to the dynamics of the policy system with a special emphasis on the interaction (i.e., nature and patterns of coalition) among actors representing different institutions and interests, in addition to the role played by their respective (shared) belief systems.

In Brazil, system-wide dynamics in the past two decades have been characterized by two major macropolitical and economic events: the democratization process initiated in the mid-1980s (fall of the military dictatorship); and the long lasting economic crisis (e.g., uncontrolled inflation) from 1980s up to the mid-1990s with the introduction of the Plano Real ("Real Plan"), i.e., a series of key policy (fiscal) measures that have successfully stabilized the domestic economy. These two aspects are significant since democratization and the so-called "democratic pact" that followed increased the expectations of, and the role played by, various stakeholders in society as far as equity and social inclusiveness are concerned, and also since improvements in the public purse directly affect dynamics across the public sector

more generally.[1] Balbachevsky, in Chapter 10, reports that the 1980s were years of penury for public universities, "when academic salaries and resources for maintaining the conditions for teaching and research were drastically reduced."

The discussion on the role of stakeholders makes a distinction between those *internal* to the system and the *outside parties* likely to influence developments. With the first group, particular attention is paid to the academic profession which, in Brazil, is as diverse and stratified as the institutional landscape. Four main audiences are included in this group: the (professional) *oligarchy*, associated with the prestigious professional fields such as medicine and law; the *scientific community* at large, i.e., tenured scientific scholars; *unionized lecturers*, who hold full-time contracts at universities yet are hardly involved with research activities partly, since they do not possess doctoral degrees; and academics employed throughout the *private sector*. Table 3.1 provides a summary of the role played by these (four) stakeholder groups, as well as the prevalent strategic issues surrounding them.

In addition to the four key groups of stakeholders shown above, three other internal stakeholders are referred to by Balbachevsky: student movements and unions, employee unions, and the central administration.

Student unions have gradually lost their power and influence—also over the broader political system—in the last 20 years. Their major priorities are centered around maintaining public institutions tuition-free, expanding the amount of public resources redirected to the sector, and supporting democratic governance ("one person, one vote") when it comes to electing the central administration.

Table 3.1 Internal stakeholders in Brazilian higher education. (Source: Based on the data provided by Balbachevsky, Chap. 10)

Type of stakeholder	Relevant issues	Influence
Professional oligarchy	Protect the autonomy of the internal "Foundations" they are associated with, and the shared interests of the profession	Strong—regional and federal professional boards with influence over curricula (Medicine, Engineering, and Law)
Scientific community	Limits on autonomy by outsiders (including funding agencies). Graduate programme rankings (peer evaluations)	Strong—as an integral part of peer review committees (funding agencies). As policy-advisors
Unionized lecturers	Keep the egalitarian ethos intact. Intrinsic rewards like "being a good teacher"	Strong (academic unions)—internal governance structures and communication channels (local authorities and media)
Private sector academics	Contractual conditions and classroom autonomy	Weak

[1] Consult Giavezzi et al. (2005) for the relation between inflation and debt in Brazil in the period 1999 and 2003.

Notwithstanding, students still exercise considerable influence not least because of their partnerships with academic and employees' unions, both as regards internal elections (Rectorate) as well as when it comes to mobilization for radical action inside and outside the campus.

Employees' unions represent the shared interests of nonacademic staff and are particularly concerned with issues pertaining to work conditions, including salaries and career trajectories. In addition, as Balbachevsky reports, they play a prominent role in keeping universities tuition-free, sustaining an internal system of democratic governance, and resisting any type of performance appraisal. Albeit generally weak, the role of employees' unions is particularly pronounced during electoral years, largely as a result of their collaboration with other unionized groups.

Finally, as far as the *central administration* is concerned, its members tend to emanate from the scientific community and thus are keen to stress performance-related issues in the realms of research and graduate education. In the case of regional-based institutions where graduate education is less of a concern, the focus tends to be on expanding undergraduate enrolments and in securing adequate resources from governmental agencies at the federal and state levels. Private institutions, on the other hand, face two competing forces: the ever changing demands of the market place and governmental impositions, and the private sector in Brazil being tightly regulated compared to other countries.

With respect to the role played by *external stakeholders* in Brazilian higher education, Balbachevsky starts her analysis by referring to the "social pact" that historically speaking, emerged around the fight for democratization, substantiated around the notion of *equity* (access) and *social mobility* or inclusion. These two issues are at the forefront of the strategic agendas of two influential external stakeholders—*nongovernmental organizations* (NGOs) and *grassroots movements*—manifested in the form of quotas for racial minorities. Another influential external stakeholder is that of the *Judiciary*, most notably those in charge of interpreting the country's legal framework. This group is particularly keen to protect the public character of higher education and in restricting the use of public funds, including but not limited to academic collaborations with external parties such as industry. The latter party, generally speaking, is a rather weak stakeholder in higher education largely due to the absence of a proper articulation of the specific demands placed upon the sector beyond the provision of "qualified candidates."

Moving now to *governmental agencies*, at the federal level the dominant postures of the Ministries of Education and of Science and Technology lie in the strategic concentration of funds around particular areas (e.g., consolidated research groups and networks) as a means of enhancing the country's competitive standing along a selected set of international comparative indicators. At the regional level, state and local authorities are part of "regional elites" with considerable influence over policy-related aspects such as funding allocations and the establishment of new federal institutions within their respective jurisdictions. Finally, "flagship" universities located in more resourceful regions such as Sao Paulo have historically enjoyed a considerable degree of institutional autonomy, and as a highly regarded *oligarchy* (Clark 1983) they play an instrumental role when it comes to shaping the dominant

legitimate models for graduate education and research. In short, the stakeholder picture presented here and elaborated further by Balbachevsky in Chap. 10 underpins the inherent complexity of policy dynamics surrounding Brazilian higher education.

3.3 China

The starting point for the discussion on the role of stakeholders in Chinese higher education, by Yang (Chap. 12), is the naïve assumption (in previous studies) that a state-regulated system minimizes the existing tensions among stakeholder groups. The last few years have seen the appearance of external stakeholders in an area that has traditionally been dominated by the bilateral relations—a key element of the "social pact" (Maassen 2014)—between the state and higher education institutions. The chapter focuses on the role played by three influential stakeholders: *governmental agencies* (funders), *students and parents* (users and customers), and *industry* (beneficiaries). Conceptually, Yang explores the link between the rise of market-based mechanisms (cost-sharing) and the role of stakeholders in higher education affairs.

Stakeholder views with respect to the legitimacy and usefulness of cost-sharing as a method differs, leading to tensions and disagreements. From a governmental perspective, legitimation occurs in the form of the adoption of Western concepts, albeit with a lack of solid evidence on how they work in reality. This is aggravated by persisting social inequalities with respect to access to higher education, most notably as regards the substantial "rural–urban divide." At the system level, and largely due to the exponential growth in enrolments, the proportion of governmental funding targeting higher education has declined from 80 % in the mid-1990s to about 48 % by 2008. This decline, however, has not resulted in the erosion—among policy circles—of the belief that higher education is a critical sector in institutional capacity building and global competitiveness, with science and innovation playing a key role (see Chap. 22 by Mok and Yue). Yet, as far as policy is concerned and in tandem with global trends, a special focus has been given to the nurturing of a selected set of institutions aimed at either cultivating high-level talents for national and social development or at reaching the desired status of a "world-class university."

The gradual decline in state's contributions to higher education was accompanied by the concomitant rise of cost sharing mechanisms. Between 1996 and 2008 the proportion of tuition and fees paid by students and their families more than doubled, from 14 % to about 34 % of total institutional revenue. One direct consequence of this was the reduction in the number of students originating from rural areas, from 30 % in the early 1980s to about 19 % by 2004. Students from low income families, who tend to enrol in less prestigious institutions and academic fields (e.g., agriculture, teacher education, and geology) when compared to their middle-and upper-class counterparts who tend to enrol in prestigious programs (e.g., law, medicine, languages) and institutions, tend to have lower economic (private) returns on their educational investments. The government has attempted to correct this situation by introducing a system of loans and grants, yet these programs are rather competitive

in nature, and thus limited in scope. Yang refers to cost sharing as a double-edge sword. On the one hand, it has played a key role in the massification of higher education, yet on the other, it has increased the financial burden of many families, thus leading to mass discontent.

Yang reports that the business community—a major beneficiary of the expansion of the system in recent years—provides no major direct contributions to higher education, thus enjoying a "free ride". There have been recent calls for charging companies an additional tax upon the recruitment of graduates, as for example in India, but no major policy initiates have been enacted so far. The traditional policy approach has been the reverse, i.e., to provide companies, including the foreign-owned, with tax benefits in order to stimulate investments and creation of new jobs and market innovations. Finally, Chinese academics—particularly those employed by prestigious institutions—are relatively satisfied with the status quo, and, for the most part, still subscribe to the notion of higher education as a highly autonomous sector that is relatively oblivious to external events and demands.

3.4 Russia

The starting point for the discussion on the role of stakeholders in Russian higher education by Knyazev and Drantusova (Chap. 11) is the notion that the emergence of new (mostly external) interest groups is part and parcel of the increasing complexity inherent in the social and economic structure of Russian society. The conceptual perspective adopted in the chapter is that of resource dependency (Pfeffer and Salancik 2003), i.e., stakeholders as providers of various types of resources that enable higher education institutions to sustain and/or further develop their competitive advantage vis á vis other providers. As a result, it is contended that (external) stakeholders play a key role in the formation of internal structures and academic behavior. Based on Clark's (1983) triangle of coordination and the notion that "university–stakeholder relations must be conceived in the totality of the networks of relations and connections," the authors' analysis focuses on three types or relations: "state-market," "market-academic oligarchy," and "state-oligarchy."

With respect to the axis of relations between the state and the market, a major aspect pertains to the critical role of the private sector in aiding the further expansion (massification) of the system. Enrolments across nonstate universities more than doubled between 2000 and 2011, with a more moderate growth across the public sector. In addition to the exponential growth of fee paying students across the public and private sectors, another distinctive feature of the Russian system is that of the growth in the number of students completing their education in the fields of social sciences, business, and law (56 % of the total). However, after 2008, and due to a combination of demographic decline and the financial crisis (after 2010), the market for fee-paying higher education has gradually been declining. From a governance point of view, the relatively weak regulative framework for private providers means that they enjoy considerable autonomy. Across the system, the state has exercised its influence largely through the introduction (in 2009) of the Unified State Exam

(USE), the primary mechanism for the selection of new entrants into the system. In spite of its positive outcomes (e.g., enhancing equity), this policy instrument has led to substantial dissatisfaction among key stakeholders such as students, parents, and universities.

The authors stress that the allocation of stated-funded study places is a rather opaque process, full of contradictions and the target of strong administrative influence. Recent changes in the regulative framework not only preserve the regulatory function of the state, but also extend the latter's equally important influence over the behavior of other key stakeholders such as the state-run universities. Recent policy measures aimed at increasing selectivity and restricting access to higher education have received widespread criticism by universities and society at large. Yet, as the authors report, resistance by universities has little to do with the wellbeing of students as such. Instead these are more aligned with the preservation of institutional interests such as faculty and income.

In the realm of research, the recent interest by the state toward world-class institutions has led to increasing policy attention paid to the development of capacity building at selected public universities, despite the fact that the bulk (around 53%) of domestic R&D still occurs at the Russian Academy of Sciences. The renewed attention given to the university sector is also linked to governmental attempts to bring to the fore another key stakeholder—industry—in the form of university–industry collaborations in the context of technology transfers and innovation (see Chap. 20 by Smolentseva). In this respect, a new regulatory framework (2006) provides universities with increasing autonomy to develop their own entrepreneurial profiles, yet such measures have been received with some scepticism by universities, for the fear of loss of property and the "hidden" risks associated with enhanced accountability. Moreover, quality concerns (relevancy) have led to increasing efforts to directly involve employer associations when it comes to the development of professional standards, curricula, and the process of training.

In short, the Russian story reflects the predominant role of the *state*, as the main resource provider and legislator, the limited impact of the *market* (private providers) partly due to demographic decline and in part as a result of resistance by the established universities to become more selective, and finally an *academic oligarchy*, that is, for the most part, interested in keeping the status quo unaltered and is rather detached from system-level coordination, hence playing a rather negligible role overall.

3.5 South Africa

Lolwana (Chap. 13) provides a chronological account of the role undertaken by internal and external stakeholders in South African higher education. She divides her analysis along two key periods: the so-called *predemocratic* period which includes both the colonial and the apartheid eras, and the *reconstruction* period, coinciding with dramatic changes in the socioeconomic environment resulting from the shift toward a democratic regime. In doing so, the conceptual approach adopted is based

on the combination of seminal contributions by Gornitzka (1999), Trow (2000) and Olsen (2005)—shedding light on the interplay between the phenomena of massification, system level change, and different modes of governance.

From an historical viewpoint, the dynamics of the system have been largely shaped by the introduction (early 1950s) of a dual higher education structure composed of universities targeting specific race and ethnic groups. The primary aim, by the government of the time, was "to ensure and maintain a rigid social order and occupational structure where blacks were being prepared for a subordinate and geographically isolated role in the society". The so-called "disadvantaged institutions" were run by a highly centralized leadership structure nominated by the government to ensure the successful implementation of the latter's policy objectives and priorities. As far as governance was concerned, white universities enjoyed some degree of discretion and autonomy despite the fact that content was dictated by the state, whereas black institutions faced tight control. Thus, by the mid-1990s when Apartheid finally collapsed, the country had inherited a rather disjointed and highly unequal higher education system.

From the early 1990s to the early 2000s, strong emphasis was given to redress existing inequalities, including opening up the sector to a wide variety of stakeholder groups. These included, in addition to the higher education institutions themselves, the state, the newly created council on higher education, as well as institutional forums that were supposed to be the representative of society at large. The period 1994–1999 was characterized by wide consultation and active debate among internal and external stakeholders. Yet, by the end of the 1990s, governmental concerns about efficiency led to the increasing centralization of the policy making process, thus putting into question the active (participative) role of stakeholders in it. By the early 2000s, Lolwana reports that the rise of professional management in tandem with the focus on resources and performance led to a collapse of the notion of a cooperative governance system based on democratic decision-making procedures. Interestingly, system level responses varied in the light of historical characteristics and institutionalized traditions. Afrikaans-speaking universities responded rather favorably to the new managerial tendencies whereas their English-speaking counterparts found it more difficult to operate within the new managerial ethos due to their more collegial (democratic) orientations, thus continuing "business as usual". As for the predominantly black (disadvantaged) institutions, these were, for the most part, largely unable to efficiently respond to the new set of demands being imposed upon them. Yet, irrespective of their historical trajectories, various internal stakeholders at universities—academics, students, and unions—largely opposed the rise of managerialism in higher education.

The new managerial orientation resulted in a stronger executive or *central steering core* (Clark 1998) and a more personalized (Vice Chancellor and Senior Managers) leadership style. In contrast, the power and influence of the more collectively-oriented governance structures such as the institutional forum, council, and senate gradually deteriorated. On the other hand, influential internal stakeholders such as student unions—who were now much better organized than before—were able to pressurize institutions (particularly the previously advantaged ones) to "open up" their admission policies. Combined with new policy measures aimed at enhancing

equity, student demands led to a considerable change in the racial composition of "historically-advantaged" universities. However, the situation of students under the new managerialism regime changed rather dramatically, from being seen as partners in the internal governance of university toward being approached as consumers whose needs and demands needed to be appropriately addressed by the managers (see also Luescher-Mamashela 2010). Finally, as far as external stakeholders such as civil society and industry are concerned, these have traditionally played (and still continue to do so) a rather limited role when it comes to the internal university governance on the one hand, and the role of higher education in society on the other.

3.6 India

Although we were unable to include a thematic chapter on the role of stakeholders in Indian higher education as part of this volume, a number of key aspects come to the fore in the analysis provided by the three Indian chapters on policy, supply and demand, and research and innovation. While referring to Kapur (2010) and the notion that Indian higher education is arguably one of the most difficult sectors to reform, Trilokekar and Embleton (Chap. 16) contend that this is partly the result of the vast number of stakeholders with vested interests in both the role and purpose of the sector, and also as a consequence of "a political system that allows for healthy debate, sometimes to the detriment of the government's ability to dictate policy efficiently and effectively." As is the case elsewhere (e.g., the Nordic countries), Trilokekar and Embleton report that the national government often uses external assessments—by commission taskforces, reviews, and independent reports—to assist with policy-making, yet they underline that the end result (degree of influence) is largely determined by numerous political factors such as the alignment or absence of strategic interests among various factions composing the policy-making community.

As far as central government is concerned, the authors shed light on the significance of particular actors occupying positions of power, e.g., the Prime Minister and the Minister of Human Resources Development (supported by their inner circle of advisors). That said, it is shown that, in recent years the influence of central government in determining policy directions and developing relevant mechanisms has been challenged by a number of stakeholder groups, including opposition parties (a basic feature of a modern democratic system) as well as the mass media (representing the general interest of civil society). Yet, on the whole, it is demonstrated that, as far as critical issues surrounding the governance of higher education in India (e.g., accountability, quality) are concerned, the general tendency is for an increasing centralization of decision making procedures, unavoidably resulting in "greater regulatory powers for the Indian state." (p. 327) Having said that, Joshi (Chap. 7) reports that increasing centralization does not necessarily enhance oversight since the multiplicity of regulatory mechanisms has created problems in the governance of higher education at both the national and state levels. For example, the various

regulatory bodies[2] lack power in the eyes of the constitution and, as a result, have largely failed to formulate an effective system, including a clear set of rules and regulations.

As far as the role played by individual providers, the picture is not entirely clear, yet one can conclude from the information provided by the Indian authors that, generally speaking, the power held by institutions (Burton Clark's academic oligarchy) is relatively weak. This is partly a result of the considerable fragmentation and degree of differentiation across the system. Having said that, it is worth stressing the fact that as part of the central government plans to centralize resources in a handful of universities—with the aim of elevating those to world-class stature—one would expect this rather selective group of institutions to exercise considerable more influence in matters related to sector-wide policy as well as the degree of autonomy[3] they currently enjoy. However, Trilokekar and Embleton report that there is considerable resistance by a variety of stakeholder groups—universities included—toward the opening up of the domestic system to foreign providers, in the context of internationalization strategies. This, in itself, may be indicative of the power held by current providers—public as well as private—in defending their vested interests (e.g., market share) against the perceived, potential "invasion" of foreign-based universities.

As far as the role of the *student unions* is concerned, Altbach (in Agarwal and Altbach 2012, p. 433) reported that the growing heterogeneity of the student body across Indian higher education institution—largely a result of the exponential expansion of the system throughout the 1960s (see Joshi's chapter)—made student mobilization an impossible enterprise. In addition, it is stated that, the "economic uncertainty of many Indian students is clearly a cause for ambivalence…," with many students holding part-time jobs thus dividing their precious time between seasonable work and the campus (Agarwal and Altbach 2012, p. 432). A more recent account suggests that both problems are still rather prominent, thus considerably hampering the role that students and their official representatives (student unions) play in the governance of higher education (Agarwal and Altbach 2012, pp. 494–495).

Finally, when it comes to the role played by external stakeholders such as industry and other knowledge intensive actors—who have traditionally not played a critical role in matters pertaining to higher education—there is evidence that, in the near future, they are likely to become key partners for research-intensive universities in the context of knowledge transfer and innovation. Gorur and Rizvi (Chap. 21), in their analysis of the role of research and innovation in Indian higher education, refer to the new "Roadmap for Innovation" encompassing among other things the establishment of *Cluster Innovation Centres* with the aim of stimulating collaborative networks between universities and other key actors responsible for domestic

[2] For a thorough analysis of one such regulatory body—the University Grants Committee—see Singh (2004).

[3] For a recent discussion on the autonomy enjoyed by Indian universities consult Powar (2002, pp. 160–166).

knowledge and innovation ecosystems as well as industries, national laboratories, NGOs, and business houses.

In short, the brief analysis provided here on the basis of the more detailed accounts on the role of the stakeholders across the BRICS in the individual chapters, composing part III of this volume sheds light on the complexity inherent in the governance of contemporary higher education systems. In addition, and taking into account historical developments, we would contend that the observed dynamics across the five countries are indeed a reflection of the evolving social pact between higher education and the state (Maassen 2014), which in a number of countries is currently being reassessed and renegotiated, not least through the ways in which various stakeholder groups (and their respective vested interests) manifest themselves in the governance and running of higher education.

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Chapter 4
Linking University Research and Innovation in the BRICS

Creso M. Sá

4.1 Introduction

Globally, university research and industrial innovation are concentrated in a few major economies: the USA, Japan, and the European Union. Nevertheless, these activities have become more dispersed internationally over the last few decades. The usual indicators of national research capacity, such as the number of scientists and engineers, internationally indexed scientific publications, and university research expenditure demonstrate the relative growth of emerging economies (UNESCO 2010; OECD 2010). Aggregate investments in R&D have expanded outside of traditional centers, and the BRICS are some of the most relevant cases. Government investments in university research infrastructures and incentives for industrial R&D have enabled these countries to take on a larger share of global research activity.

Major multinational companies still retain most of their R&D laboratories in advanced economies, in their own home countries. However, industrial innovation has become more geographically dispersed, as firms engage in complex collaborative arrangements across countries (Sá 2013). Brazil, China, and India for instance, have seen their industrial R&D expand in recent years. Multinational companies seek new sources of knowledge and expertise globally. In addition to competitive pressures and new patterns of innovation, mergers and acquisitions also influence where multinationals base their R&D efforts (Thursby and Thursby 2006). A number of countries, including the BRICS, seek to capture some of these investments and devise policies and make investments to that effect. Part of that entails bolstering scientific and technological infrastructure, including universities.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_4

The amount and nature of university research and industrial R&D activities vary widely. Where and how scientific research is performed is linked to the configuration of national higher education and research systems (Clark 1995). Industrial research and development, one important source of innovation, relates to the industrial composition of national economies (Mathieu and van Pottelsberghe de la Potterie 2008). The intersections between research that take place in universities, and the activities leading to innovation in the marketplace, are likewise variegated. Similar patterns of variation are thus to be expected among the BRICS. Even among countries regarded as successful in science and industrial technology, as Germany and Japan for example, the role that universities play in fostering inventions and technological advancement are quite distinct. When purportedly seeking to achieve similar objectives at a fairly broad level of generalization—say strengthening partnerships between firms and universities—governments in the BRICS and elsewhere are dealing with disparate realities. Such realities involve the peculiarities of national academic cultures, business climates, macro- and microeconomic policies, corporate innovation strategies, and relevant institutional arrangements.

Acknowledging these complexities is not popular in contemporary policy talk. Crossnational analyses lean toward more reductionist perspectives that are more amenable to generate practical policy advice (e.g., OECD 2010). The problem of enhancing university–industry linkages is often portrayed as involving a series of on/off switches that need to be adjusted, including for instance the existence or lack thereof of favorable intellectual property regimes, university technology transfer structures, and supportive governance structures. While such issues are clearly not irrelevant, more detailed analyses usually show the resilience of more fundamental orientations and behaviors, related to the broader cultural, economic and institutional factors mentioned above (e.g., Dill and Van Vught 2010).

Acknowledging these complexities does not preclude the identification of common patterns in university and firm behavior, in public policy, and in innovative activity. It is possible to identify trends while understanding the nuances of history and context that influence national trajectories. By delving into the university's engagement with innovation in the BRICS in the relevant chapters in this volume, this analysis brought to the forefront major developments in these emerging economies that help illuminate their unique trajectories. The sections below distill some key findings and conclusions from the country chapters, highlighting distinctive issues that each of the BRICS needs to tackle to link university research and innovation.

4.2 Brazil

Over the past decade, Brazilian Science and Technology (S&T) policy has emphasized innovation. Laws were passed to encourage greater university–industry partnerships, and a number of programs at the federal and state levels have sought to induce commercial and entrepreneurial engagements on campuses. Nevertheless, innovation as measured by traditional indicators such as patents has remained

relatively low. A number of issues continue to prevent Brazilian universities from taking on a more salient role in linking academic research to innovative activity in industry, beyond a few well-known exceptions.

First, the Brazilian higher education system operates within a logic that privileges local orientations and academic outputs, as opposed to a more global outlook and an orientation toward innovative or commercial endeavors. Second, Brazilian industry remains a marginal player in terms of research-based innovation, which limits the demand for academic inputs into the process. Third, while S&T plans and policies have for a number of years emphasized innovation, the underlying policy instruments have reinforced incentives for universities to produce academic outputs, as opposed to engaging in third stream activities.

As a result of these factors, leading Brazilian universities have not been able to establish a role as "national flagships" or "world class" institutions that might serve as anchors for major sustained investments in innovative activity. The most productive research universities in Brazil such as the University of São Paulo and Unicamp do not project their capabilities internationally as leading innovative hubs, although Unicamp has played an important role as a champion of technology transfer activity. In the context described above of increasingly global R&D, national or even local frames of reference remain dominant among Brazilian universities.

Notwithstanding this situation, progress has been made in the country's scientific capacity. Brazil has more than doubled the number of PhDs per 100,000 residents over the last decade. The same is true for internationally indexed scientific papers, but much of Brazil's research is not in the physical sciences and technology-related disciplines. On the other hand, industrial R&D remains relatively limited, although there have been many attempts to enhance such activity. In terms of internationalizing the country's insular higher education system, new institutions have been created over the past decade with regional mandates. Along with scholarship programs that send Brazilian students abroad, such investments have reflected a human resource development orientation, catering both to domestic and international students in the case of the regionally focused universities recruiting South American and Portuguese-speaking African students.

In spite of the scenario described above, Brazilian universities seem to be engaging in technology transfer efforts more intensively. Technology transfer offices, business incubators, and technology parks have been established. University patenting has also been growing in volume, although the "quality" of such patents remains unclear. Sustained, long-range investments in the R&D infrastructure of universities (and industry) are still needed if Brazil is to become a magnet for high value added innovative activities. However, the likelihood of substantial changes occurring in the short term seems quite small. Unlike some BRIC peers, there is no palpable sense in the Brazilian policy debate that the country's universities are "falling behind" or not "up to par" globally, which might motivate greater investments in the academic infrastructure.

4.3 China

China is certainly an outlier internationally in the pace of growth of public and private R&D, as well as patenting activity, as measured by commonly used indicators (UNESCO 2010; OECD 2010). As Mok and Yue describe, the Chinese government has been encouraging university–industry partnerships as a means to induce innovation in industry since the 1980s through various programs. Corporate R&D expenditures have increased substantially over the last decade: by the mid-2000s the industrial sector carried out most R&D in the country (65 %). The Chinese government intends to continue this upward trajectory in research expenditures, with ongoing plans to double the share of national GDP devoted to R&D by 2020, relative to 2004 (to 2.5 % from c. 1.2 %).

A few important trends are identified in universities. A first and more general development concerns the strengthening of university research capacity. The government has invested since the mid-1990s in a number of universities through projects 211 and 985, which purportedly aspire to support "world class" universities. Through these projects the government essentially "picked winners" for additional funding for the most part using political criteria. While often cited for a number of years as evidence of the international race to build competitive research universities (see also Altbach and Balán 2007), Mok and Yue's review suggests that their effectiveness remains to be evaluated.

Second, fostering entrepreneurship has become a goal for the university sector over the last decade through curricular and extracurricular initiatives. Mok and Yue argue that entrepreneurship education programs have expanded since early 2002 when the Ministry of Education launched a pilot program on entrepreneurship education in nine universities. They illustrate the trend with examples of the different models that have been implemented across Chinese universities. They assert that such curricular programs respond to student demand for learning opportunities in this area.

In terms of extracurricular initiatives, science parks have emerged as sites linked to universities to support entrepreneurship, the incubation of technology-based companies, and R&D partnerships. Eighty-six parks have been created in 134 higher education institutions across the country. Evidence on their success in achieving these goals is mixed. Still, the authors claim that in general, the number of university spin off companies has escalated. Government-funded foundations that provide seed and venture capital funding, such as the pioneering Shanghai Technology Entrepreneurship Foundation for Graduates, support the creation of these firms.

The sort of creative and risk-taking behavior underlying entrepreneurial activity can be thwarted in environments shaped by rigid bureaucratic rules and political favoritism. Although characterizing the various government initiatives briefly summarized above as "serious efforts to promote innovation and entrepreneurialism in higher education," Mok and Yue hint at some of the realities of the Chinese context that have a bearing on their actual implementation. They warn that "without serious reviews and critical reflections upon its current university governance structure

with strong political influences from the party in university governance, it would be difficult to see significant changes being introduced to Chinese higher education." This is indeed a distinctively Chinese arrangement of university governance that cannot be ignored, which presents an interesting albeit challenging opportunity for further investigation.

Furthermore, Mok and Yue note that the promotion of entrepreneurship education is strongly directed by the government, following an agenda of employment generation. Universities remain isolated from the private sector and simply comply with ministerial mandates in this area. Such a situation is clearly at odds with the more interactive and collaborative relationships between universities, the business community and relevant government agencies commonly associated with entrepreneurial programs internationally (Kretz and Sá 2013). While Mok and Yue critique this state of affairs, they also recommend that "legislation should be adopted and funding mechanisms created to support relations between private enterprises and HEIs in developing action learning programmes, leading to the new entrepreneurial skills." It might well be the case that in such a centrally controlled system, the government would need to sanction and induce such partnerships. On the other hand, passive and symbolic compliance is a possible unintended outcome that needs to be considered.

More fundamentally, Chinese universities could use a greater degree of autonomy and flexibility if they are to extend their roles in supporting an innovative economy. Recognizing this need, Mok and Yue call for the Chinese government to consider structural reforms in higher education, in the hope that this would lead to more dynamic institutions that can respond more proactively to changing demand.

4.4 India

As the Indian government embraced an innovation agenda in recent years, the role of universities in supporting technological advance has become a matter of policy debate. India has gained significant visibility internationally in the 2000s as a hotbed of global IT outsourcing. Counting on a large contingent of English-speaking university graduates, the country has been at the receiving end of the corporate offshoring trend. Nonetheless, these investments have not been at the high-end of industrial innovation, a situation that policymakers appear to be sensitive to and seeking to address. A consensus seems to have emerged that Indian universities are underperforming in research and advanced education, and hence contributing less than they could to uplift the innovation activities of Indian industry.

Some structural factors contribute to this state of affairs. The institutional differentiation between research institutes and universities has afforded the former a more prominent role in advancing scientific activity. Besides, a small fraction of India's research funding goes to universities. More than 60 % of national R&D expenditure is concentrated in three government agencies: The Indian Space Research Organisation (ISRO), Department of Defence Research Organisation (DRDO), and

the Department of Atomic Energy (DAE). Gorur and Rizvi regard these institutional arrangements as "disastrous" for universities and for the standing of Indian science.

Moreover, the scale of the Indian research enterprise is relatively small. In spite of a massive higher education system in absolute numbers, India has not established a national research base commensurate with its size as compared to its BRICS peers. For example, Gorur and Rizvi point to the number of professional researchers engaged in R&D per million people in India, which is about seven to ten times smaller than the corresponding figures in Brazil and China. This is reflected in India's lower scientific productivity.

The Indian industrial sector remains a marginal player in terms of R&D. Most of the national investment comes from the government, and public institutions perform most research. There are bold plans in place to shift the balance in terms of public and private investment, but it is not clear how this will be achieved. Gorur and Rizvi claim that the reluctance of firms to invest in R&D relates to the business climate and government regulations: "it is not easy to borrow capital or obtain government approvals." Without such measures to address these underlying issues, it is hard to imagine how the government could meet its 2013 goals of doubling the share of GDP invested in R&D. The government is counting on a significant increase in private sector spending.

Gorur and Rizvi discuss the contemporary policy context in India as conducive to addressing the overall underperformance of universities, and their lack of participation in efforts to spur innovation. Several government plans and policy documents discuss the need to reform the country's universities and bolster the national research infrastructure. In particular, the 11th and 12th Five-Year Plans (2007 and 2012) provided for increases in government research expenditures and relaxing regulations that inhibited universities from taking proactive steps to enhance their research profile. Furthermore, the authors point to the creation of technological parks and innovation centers as leading to more applied research efforts. The extent to which such units are related to universities remains unclear, but their establishment does follow an international trend around this form of support.

4.5 Russia

The present context of Russian research still reflects the country's post-Soviet decline. Following the demise of the Soviet Union, R&D investments diminished, and it was not until the 2000s that dramatic reductions in funding stopped. Scientific productivity expectedly suffered during these decades (1990–2010), and Russia has seen its participation in global science shrink. Federal investments in R&D have increased in recent years but from a very low base, and represent just about half a percent of national GDP. This growth seems to have taken place in applied research activities.

Like India, Russia displays a combination of two major structural factors that inhibit a more vigorous role of universities in research and innovation. First, it has

long been known that Russian universities are historically and presently junior partners in the national division of research labor. Second, despite some isolated successes in specialized technological sectors (related in Russia's case to the Soviet past), the country does not have an industrial technology base that propels R&D activities and creates a demand for advanced knowledge as input into innovation processes.

The Russian Academy of Sciences has concentrated scientific expertise and production in the country for some time. Despite recent efforts to build up research capacity in universities, the Academy remains the indisputable driver of Russian science. This is reflected in investments made, personnel, and production. To mention but one of the indicators Smolentseva uses, the Academy produces almost five times as many scientific publications (from the Scopus database) as the second next Russian performer, the Moscow State University. This is the only Russian university to produce as many publications as other leading universities in the BRICS. Other universities are much further behind. Furthermore, the Academy is the major producer of basic science research. Universities in fact conduct more applied research than basic investigation. The share of funding for university research has increased over the last decade; however, it seems to be skewed toward the applied end of the R&D spectrum.

Smolentseva argues that there have been some efforts at improving the research capacity of universities, as part of a broader realization that Russia cannot rely on resource-intensive industrial sectors. Such efforts include investments to set up laboratories in universities for distinguished researchers, institutional mergers, and national programs purported to identify and support "world class" universities. According to Smolentseva, none of these seem particularly transformational. These national programs have something in common with the Chinese projects 211 and 985, namely the prevalence of political criteria in the selection of institutions. Mergers intended to make new universities more regionally responsive were not accompanied by changes in funding models and institutional autonomy, which would provide more latitude for those universities in serving local demand.

Government initiatives have also sought to close the gap between universities and industry. New legislation introduced in 2010 allowed universities to create spin-off companies, commercialize inventions, and partner with businesses in such endeavors. Smolentseva argues that although new projects and firms were funded, their economic impact was limited. It seems that several fundamental issues need to be addressed before Russian universities are able to make more substantive contributions to innovation. Smolentseva calls for reforms in areas ranging from university financing, management, and academic freedom, as greater transparency and professional capacity are needed to strengthen university quality. As government policy adopts the rhetoric around promoting an innovation-driven economy, this "cultural component might be an essential obstacle in the search for excellence" in the university sector.

4.6 South Africa

South Africa is the scientific and technological leader in Africa. It counts on a relatively more advanced economy, and some better performing research universities. More than a third of the scientific output in the African continent comes from South Africa. Given these conditions, Pillay claims that South Africa's "potential for innovation is much greater than elsewhere on the continent." Shifting the parameters to the BRICS, however, South Africa lags behind its peers in terms of R&D, university research performance, and the links between academia and industry.

Universities were reformed in the early- to mid-2000s, and the University of Cape Town is presently the strongest research performer. Nonetheless, the scale of South Africa's academic research enterprise is quite small. Brazil's University of São Paulo alone produces more PhDs than the whole of the South African higher education system, and a comparable number of indexed publications. Given the scale of the higher education sector and difficulties in the institutional basis of academic research, there appears to be very a limited interface between universities and industry to account for.

As elsewhere, the promotion of innovation has been part of the government policy agenda. For instance, a Ten-Year Innovation Plan released in 2008 identifies gaps in national innovation and seeks to bolster scientific and technological infrastructures. This is viewed as necessary to increase the knowledge-intensive sectors of the economy. In the context of the geographical dispersion of global R&D described above, South Africa failed to capitalize on mobile investments in innovation as did other BRICS. Unlike other BRICS, South Africa's private sector accounts for the bulk of national R&D investments. Yet, the internal makeup of the country's national research effort has not translated into a stronger connection into global R&D networks.

This suggests that the distribution of R&D investments in South Africa may be a symptom of an underlying weakness in higher education research support and infrastructure, which house 70 % of all researchers, rather than an indicator of strength in business research activity. Moreover, recent trends show a continued relative decrease in investments in R&D. To illustrate this pattern, Pillay reports that South Africa's R&D expenditures experienced a declined between 2008 and 2010 in real terms. As a share of national GDP, research expenditures declined from 0.92 to 0.87 % in this period, following a period where it had increased from a low of 0.60 % in 1997. Most of this decline is attributed to reductions in private sector expenditures, suggesting a difficult climate for university–industry partnerships.

4.7 Concluding Remarks

The BRICS comprise a variegated set of countries in their patterns of research and innovation. Nonetheless, they share similar challenges. Although in all the BRICS there is attention to innovation in the S&T policy debate, there remain significant obstacles in linking university research to technical advances in industry. As synthesized above, the BRICS need to tackle major issues such as the governance and organization of their universities, the culture and orientation of the academic research enterprise, and the policy and regulatory environment that influences university–industry R&D.

South Africa's university sector lacks the capacity to support innovative research programs that interface with technology-intensive industrial sectors, domestically and internationally. Greater knowledge of the interactions that do take place would be welcome in future research. Moreover, the role of South African's universities in supporting "low-tech" innovation would be a useful addition to the literature as well.

China is clearly the locomotive pulling this group forward in terms of a number of proxies for research productivity and innovation. However, the rapid expansion in publication rates and patent filings in recent decades makes China an outlier internationally, rather than simply a good illustration of the relative growth of the BRICS. Chinese expansion in scientific and technological input rests on unique characteristics, such as the size and rate of growth of its economy, and the ability of an authoritarian government to direct investments in key sectors. Underlying the recent expansion in scientific productivity and patenting activity, universities remain tightly controlled and governed through a system of direct political intervention. The ability of universities to evolve as contributors to an innovative economy under these conditions is likely to be limited. Can the "black box" of party-influenced university governance in China be opened, so as to clarify how it impacts decision-making, particularly as it refers to the pursuit of creative and entrepreneurial endeavors? Glossing over such fundamental institutional arrangements when attempting to understand the evolution of university roles in China would be akin to ignoring the role of fundraising in the behavior of American universities.

Brazil and India share some similarities. In both countries innovation has been emphasized in policy over the 2000s, with apparently underwhelming results. India, in spite of its international role as home to important global players in the IT industry, has been mistakenly grouped with China for the good part of the past decade as a rising S&T giant. On closer inspection, it is evident that India lags behind other BRICS in the development of its national research capacity. Like Brazil, India has a small number of research-oriented institutions in a large, but in many ways unresponsive higher education system. In both countries there is a distinctive lack of international orientation and competitive outlook in the leading research institutions, for all their productivity and selectivity at the national level. In India there seems to be a recent awareness of and urgency to address this issue. In Brazil this is not yet the case, but the academic research infrastructure in place is larger than that in India.

Russia finds itself in an unsettling transition: the Soviet Union's geopolitically fueled scientific and technological prowess for part of the twentieth century has virtually evaporated. A shrinking research base and large resource-intensive business conglomerates, neither of which places the country as a major player in global innovation, have succeeded it. Russia distinguishes itself from India by the still significant role of the National Academy of Sciences in basic research, and a larger contingent of trained researchers. Still, its universities remain mostly teaching-oriented, and operate under institutional arrangements that do not provide incentives for innovative research programs and partnerships with industry.

In conclusion, each of these contexts presents substantial challenges for university leaders, researchers, and policymakers who seek to facilitate a larger role for academic research in innovation. It seems evident that it is not possible to address this issue in isolation. The general rules, regulations, incentives, and cultures shaping each university system have an impact on what and how research is conducted, and with what consequences. Solutions will likely not be found in the piecemeal adoption of certain organizational structures such as technology transfer offices and science parks, although their presence may spark new activities and orientations among the actors involved. In some cases much larger decisions about the research mission of universities are necessary, whereas in others, the general policy frameworks under which universities operate and associated institutional outlooks need to be revisited. In the context described above of increasingly decentralized global R&D and innovation activities in industry, more responsive and dynamic research universities would be an asset for the BRICS moving forward.

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Part II
Supply and Demand

Chapter 5
Demand and Supply for Higher Education in Brazil

Clarissa Eckert B. Neves

5.1 Introduction

The chapter discusses higher education (HE) in Brazil in the last 15 years, a period during which Brazil underwent a process of continuous economic growth and marked social inclusion, with significant impact on HE. In 1990 there were a total of 1,540,080 students in HE; this number rose to 2,694,245 in 2000 and to 7,271,488 in 2013. The HE professions gained visibility and value in the labor market, and HE became the goal in life of an ever broadening strata of society.

Two factors explain this expansion, the raising aspirations for the benefits of HE by the students and their families, and changes in the labor market. It has been easier, however, to respond to the demands for social mobility than to the requirements of a modern economy.

The transformation of the Brazilian HE sector will be analyzed in this chapter, considering these two orders of pressure. The text is organized into four parts. It starts with a description of the HE system. In the second part, we discuss the profile of the demand for HE in Brazil. In the third part we present how the system as a whole has responded to the challenge of expansion and inclusion. In the fourth and final part, we analyze the characteristics of Brazilian higher education institutions (HEIs) in the offer of courses and the market demand for qualified people.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_5

5.2 The System of HE in Brazil: Main Characteristics

The transformation of HE in Brazil in recent decades, especially concerning how demand is formed and the institutional responses, bring us to a few basic characteristics of the system: (a) the coexistence of the private and public segments in HE; (b) the prominence of the federal system in the ensemble of Brazilian HE and the strong concentration, in the Ministry of Education, of the prerogatives to formulate policies, supervise, control, and evaluate the federal and private systems; (c) the weak differentiation of HE offerings; and (d) the model of funding that compromises the expansion of enrolments and constrains social inclusion.

5.2.1 The Public and Private Sectors

Until the end of the 1960s, enrolment in HE in Brazil grew slowly. From 1945 to 1964, the number of students rose from 41,000 to 95,000. During this period the network of federal universities and a series of Catholic universities were formed, the São Paulo state university system was expanded, and new, smaller, state, and municipal institutions were established in all regions of the country (Durham 2004). In this period, although 55% of enrolmennts were concentrated in public HEIs, it appears that the private sector had been growing and already held 45% of enrolments. The National Education Law of 1961 (LDB-Lei de Diretrizes e Bases) defined the legality of private enterprise in offering HE.

Two factors helped to change this reality: the 1968 University Reform and the pressure for places in HE during this period. The university at the end of the 1960s, under a military government, represented an effort to modernize Brazilian HE, bringing it closer to the American model. The reforms replaced the old "chair" system in academic departments, required the adoption of full-time contracts for faculty, and created a framework for graduate education and research. It also introduced the credit system in undergraduate education, replacing the traditional sequential courses (Neves 2002; Balbachevsky and Schwartzman 2007). These reforms assumed that HE should be organized in universities with these characteristics, and the new model was implemented to a large extent in the public sector.

At the same time, in the 1960s and 1970s, there was an exponential growth in the demand for HE, which the public institutions could not absorb (see Fig. 5.4 below). Access to public institutions was limited by entrance examinations, and the government allowed the expansion of private HE in teaching institutions that did not meet the requirements of the 1968 reform—full-time faculty, graduate education, and research—but were considered adequate to provide the students with professional degrees, particularly in the social professions. While public education was free, and fully supported by the public budget, private institutions were maintained through student tuition fees.

However, this massive growth was not taken into consideration in the reforms (Neves 2009). Public universities, maintained by the federal government and a few states, remained multifunctional, tuition-free, research oriented institutions, with a limited offer of places. Meanwhile, the private sector grew significantly through a

number of teaching oriented, nonuniversity colleges, with low-cost courses, primarily in the fields of the humanities and applied social sciences. Their entrance exams, if any, were less competitive, and they offered the further advantage of evening courses. These private institutions operated under the centralized control of the Ministry of Education and the Federal Council of Education, which had to authorize new institutions, new courses, and changes in the curricula. The lenient attitude of the military governments regarding the private sector provided an opportunity for the private sector to expand, but it also had the effect of allowing public institutions to maintain their elitist or selective character (Neves 2009; Nunes 2011).

5.2.2 The Institutional Framework

The institutions of HE in Brazil are regulated by the Federal Constitution of 1988, and the National Education Law of 1996 (LDB-Lei de Diretrizes e Bases), and by various official decrees and resolutions of the National Council of Education. The Constitution ensures free tuition at public institutions (Article 206) and allows for the existence of private institutions (Ranieri 2000; Nunes 2011).

Public and private HEIs vary according to their administrative status and academic organization. Public institutions can be established and maintained by the national (federal) and state governments, and are considered part of the civil service. Municipal institutions, in small numbers, can be organized as non-profit foundations, ruled according to the private law and can charge tuition. Private institutions can be community-based, denominational, philanthropic, and for-profit (Neves 2002).

Community institutions appeared at the end of the 1980s, as a specific model characterized as "public, non-state," strongly connected with the local and regional communities. Denominational institutions are maintained by religious organizations and are also philanthropic, the most important being the Catholic universities. Until 1999, all private institutions were supposed to be nonprofit, although in fact many of them were not. In 1999, the government introduced legislation (Law 9870 of 23/11/1999) authorizing private institutions to declare themselves for profit, and submit to commercial law regarding fiscal, parafiscal, and labor charges; i.e., they become liable as commercial entities (Sampaio 2011). Those who remained nonprofit, and entitled to tax exemption, had to demonstrate that they were in fact philanthropic.

According to the legislation, the federal government is responsible not only for administering its own institutions but also to supervise and regulate the private sector, while state institutions came under the jurisdiction of state governments. According to the 1996 Education Law, the National Council of Education was supposed to be an independent body with normative functions, establishing policies, and guidelines to be implemented by the Ministry of Education. Later, however, the council became just an advisory body, with the Ministry taking all the initiatives in all aspects of national education policies. The state and local HEIs are outside the purview of the federal government, but are still subject to federal laws and standards, since they make use of federal public resources, such as scholarships and research funds.

In terms of academic organization, HEIs encompass four categories: universities, university centers, technological institutes, and nonuniversity institutions. Universities are required to carry out research, teaching, and community outreach. At least one-third of their teaching staff must have Masters or PhD degrees, and at least one-third of their teaching staff must work full time. University centers are multicourse teaching institutions, which need not conduct research. They enjoy autonomy to create courses and open new locations without the government's authorization. In 2008 the Ministry of Education created a new model of vocational and technological education, the Federal Institutes of Technology, Science, and Education. Nonuniversity institutions are basically teaching institutions with no autonomy; the National Council of Education approves their courses and vacancies (Neves 2002). To gain autonomy, there was a movement by private institutions to come together and gain the status of universities or university centers, gaining greater flexibility to close or open new courses and increase the offering of new places without the government's authorization (Magalhães 2013).

5.2.3 HE: The Supply-Side

Regardless of their legal status and type of organization, all HEIs in Brazil provide the same formal qualifications. The standard undergraduate level of 4-year bachelor degrees; the *Licenciatura* to train teacher for basic education, also lasting 4 years; the technological courses, most of them lasting 3 years; and the distance education courses, in different formats. At the graduate level, academic and professional 2-year-master's programs and 4-year-doctorate programs are offered. The extension programs vary in format, with respect to duration and type of course offered. In practice, the quality of these courses varies, and most of the research and graduate education is concentrated in public institutions.

While the public sector remained limited in size because of its high costs and stronger academic requirements, the private sector expanded rapidly in response to growing market demand. Currently, Brazil has 2365 HEIs, which are very different from each other. Only 284 of them are public, the other 2081 (89%) are private. Figure 5.1 shows that while most public institutions are organized as universities, there is a large variation in the private sector, with a small number of large universities and university centers and a large number of small, nonuniversity institutions. As of 2013, the private sector was responsible for 75% of enrolment (Fig. 5.1).

In general, the public federal and state universities are very heterogeneous. Some are outstanding as public research universities, characterized by offering teaching, research, and maintaining high quality graduate programs. The teachers are highly qualified (about 90% have a doctorate and 70% have full-time contracts). Other public universities are mostly oriented toward the undergraduate level. The teachers usually have full-time contracts but a smaller proportion possesses a PhD degree (Balbachevsky and Schwartzman 2011).

Differences are still greater in the private sector (Sampaio 2000; Magalhães 2013). There are a small number of elite private institutions, including among others the Catholic universities and some schools specializing in business and economics (about 10%), combining academic density, and institutional entrepreneurialism. In

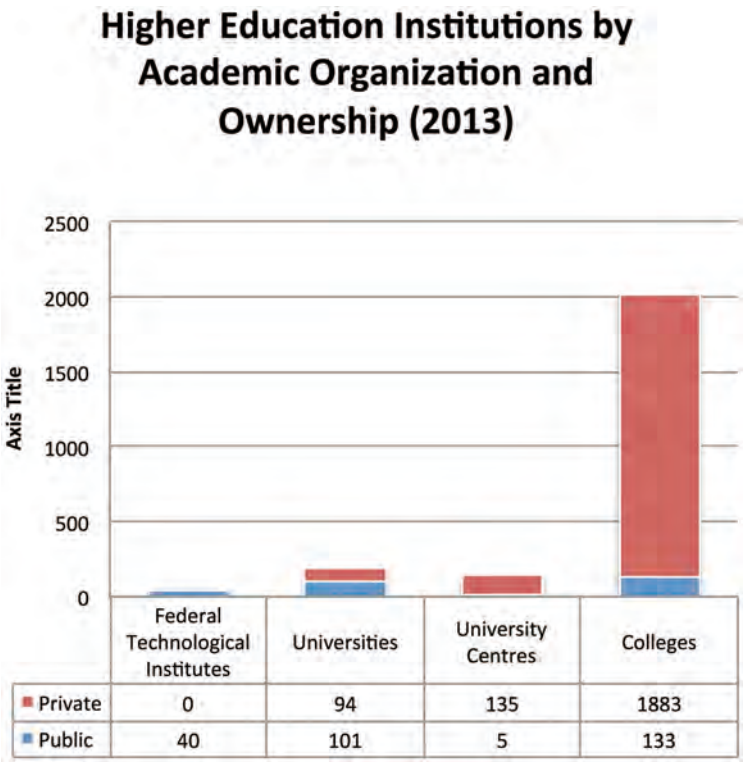

Fig. 5.1 Number of higher education institutions (HEIs) by academic organization and administrative status, in 2012. (Source: INEP/MEC 2013)

addition, there are a large number of private mass-oriented universities, and a huge scattering of small institutions. More than 90 % are nonuniversity and a vast majority of them are of relatively poor quality largely because of the low qualifications among staff and lack of proper learning conditions.

Out of a total of 2081 private institutions, 40 % are for profit. There are also 36 educational enterprises that are listed on the stock market. Each of these groups controls many educational establishments, which are spread throughout Brazil; overall, these groups have considerable influence (Sampaio 2011). Some of these groups have received investments of foreign capital, and the estimation is that they enroll about 20 % of the HE students in the country.

5.2.4 Funding HE

Brazil goes against the worldwide tendency to implement cost-sharing mechanisms in the public sector as a response to expanding costs and increasing austerity. Cost sharing, according to Johnstone (2006, p. 38) means sharing the costs of HE between the government; parents or students, through the payment of fees; donors; and institutional entrepreneurs. In Brazil, HE has largely expanded due to increased

capacity in the private sector, which charges tuition fees. Meanwhile, the public sector, federal and state, remains free of charge for students who pass the entrance examinations.

The federal institutions are basically maintained with funds from the National Treasury. The Ministry of Education establishes individual budgets for each federal university, covering expenditures on personnel (active and retired), current expenditures, and investments. The distribution of these funds traditionally follows a historical matrix in which the most important item is personnel costs, i.e., the payroll for faculty and staff (Schwartzman 2002). State institutions are funded by the state governments, and are likewise free. Resources for research are provided by the Ministry of Science and Technology (MCT) and by special public funds to support scientific and technological research. In recent years, providing consulting services to the public and the private productive sector, such as industry and business is being developed as an additional source of revenue (Schwartzman 2008).

In the private sector, funding depends mainly on tuition. Brazilian law allows private HEIs to set their monthly fees. The cost of private education varies significantly depending on the region, the type of course (medicine, dentistry, and engineering are expensive while management, economics, pedagogy, and social sciences are less expensive), and the type of institution (university, university center, and college). However, there are many indirect sources (fiscal and social security exemptions and tax waivers) of public funds for private philanthropic HEIs, while direct sources (e.g., educational loans) provide a significant contribution to their expansion and maintenance (Schwartzman 2004). In 2005, the government launched a new program (ProUni) that included tax exemptions for private HEIs, which, in turn, were to offer scholarships for low-income students.

In general, private HE has become a major sector of the national economy. It is therefore natural that a significant group of institutions (whose existence is expressly acknowledged by law) should employ instruments and strategies typical of capitalist activity to deal with their funding problems (Slaughter and Rhoades 2004). These activities encompass buying and selling institutions, going public with their capital, streamlining costs, employing vigorous marketing, and demonstrating a clear tendency toward more entrepreneurial management (Sampaio 2011).

In spite of the rapid growth in recent years, Brazilian HE is still small. Expansion is needed, but this will require new public policies and public funds. In recent years the government has invested in the expansion of the public sector, but this will not reverse the strong numerical dominance of the private sector. Thus, the issue of HE funding will continue as a serious problem for a growing number of stakeholders (see Chapter by Balbachevsky).

5.3 The Profile of the Demand for HE

In most of the world, access to HE is increasing and becoming almost universal in some countries (Trow and Burrage 2010). Brazil presents a very different situation.

Despite the growth that has occurred in the last 15 years, the net rate of enrolment is persistently low. In 2013, 70% of the 18 to 24 year old cohort was not

enroled in any school. their mean level of schooling was around 9 years. Among those who are studying, 16.3% were in HE, 1.8% were still lagging behind at the primary level, and 9.4% were in secondary schools. About 50% of the students in HE are of 25 years and above (PNAD-IBGE 2013). Clearly, enrolment rates have grown as a result of youth and other people outside this age group returning or starting later in formal education, than because of the demand by people who have finished secondary education (figure 5.2).

5.3.1 The Potential and the Qualified Demand

In principle, students who are concluding secondary education are potential entrants to HE. Primary and secondary education in Brazil takes place mostly in public institutions, which are usually of lower quality than private schools, contrary to what happens in HE, where most of the students are in private institutions of lower academic standards (Table 5.1).

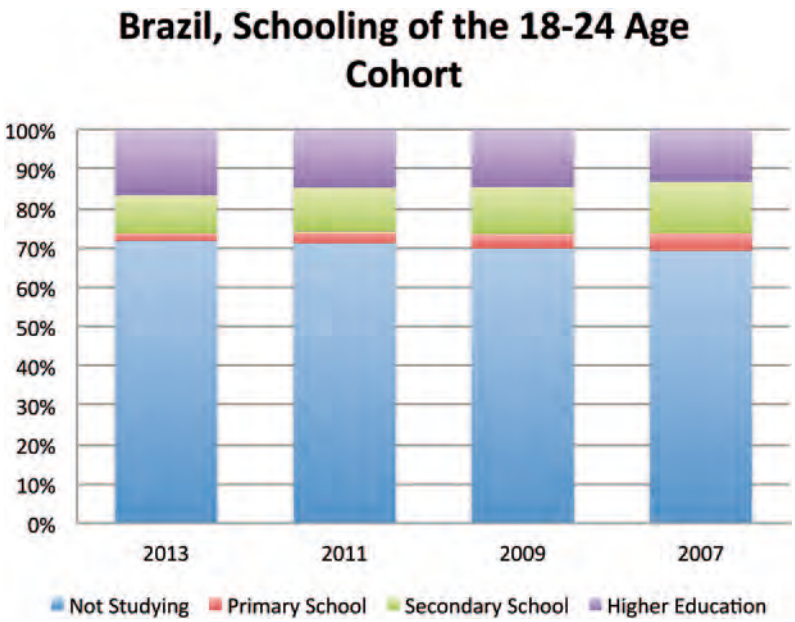

Fig. 5.2 Population of the 18–24-year-old cohort. (Source: PNAD-IBGE, different years)

Table 5.1 The potential demand for higher education (HE) in Brazil. (Source: INEP/MEC 2011)

	Secondary School			Higher Education	
	Enrolment		Graduates	Places	Entrants
	1st year	3rd year			
2000	33,04,837	20,79,628	12,16,287	12,16,287	8,97,557
2005	36,60,934	24,12,701	24,35,987	24,35,987	13,97,281
2011	32,75,265	21,27,319	32,28,671	32,28,671	16,86,854

In 2011, the number of students finishing secondary education was practically the same as in 2000 and, because of the low standards of most secondary schools, many students would not pass the entrance examinations of public universities. In 2011, the number of young people aged 15–17 years who attended school (primary and secondary levels) in Brazil has diminished even further. Between 2009 and 2011 the rate went down from 85.2 to 83.7%. Currently, 8.8 million Brazilians in this age group attend school, while 1.7 million are not studying at all (INEP/MEC 2011). Of those studying, only 50.9% are at the appropriate level of education. One would assume that those who left school decided to work instead of studying, but the fact is that a significant number neither study nor work, joining what is being called the "neither nor" generation (PNAD-IBGE 2011).

Access to HE requires a secondary education certificate and approval in a selection process through formal exams carried out by the institutions themselves (the so-called "vestibular"), and increasingly, according to the student's scores in the National Secondary Education Examination (ENEM) carried out yearly by the Ministry of Education. Currently 1217 HEIs use the ENEM results as a criterion for selection, mostly public, for their undergraduate courses—either replacing the vestibular or complementing its score.

In the 2010 ENEM, as Table 5.2 shows, 4.6 million candidates were registered, but only 70% of those actually participated. The exam consists of multiple-choice tests of language, mathematics, natural sciences, and social sciences, plus an essay. It lasts for 2 days, and is done simultaneously throughout the country. The student's scores are used to provide access to HE, and also to grant fellowships in a national program for lower income students attending private institutions (the ProUni program) and granting secondary school certificates for students who did not complete regular education. ENEM is not required for students entering state institutions as they have their own selection procedures, like the state universities of São Paulo. In 2010, there were 2,144,419 participants who managed to achieve 400 points out of 1000 in the ENEM exam, and they can be considered a significant part of the "qualified demand" for HE.

The profile of the selected students in ENEM (Table 5.2) has the following characteristics. In Brazil more women than men attend HE; there are also more of them participating in ENEM, 59.4% are female and 40.5% men. The participants are mostly young, with 65% of the candidates 24 years old or less. 50% of the candidates have a family income of 1–3 times the minimum wages, and 25%

Table 5.2 Participants selected in ENEM (2010). (Source: INEP/MEC 2011)

Total number registered for ENEM 2010	4,626,094
Those who took the exams (multiple choice and written essay) and were selected	3,271,011
Relation between those who were registered for the ENEM and those who took the exams	70%
Scored more than 400 points in the objective exam—"qualified demand"	2,144,419
Relation between the total of selected participants and those who scored more than 400 points	88%

Table 5.3 Number of places offered, candidates, and entrants to undergraduate courses by administrative category (2000–2011). (Source: INEP/MEC 2011)

		2000	2011
Places	Total	1,216,287	3,228,671
	Public	245,632	484,943
	Private	970,655	2,743,728
Candidates	Total	4,039,910	9,166,587
	Public	2,178,918	5,138,136
	Private	1,860,992	4,028,451
Candidates/places	Public	8.9	10.6
	Private	1.9	1.5
Entrants	Public	233,083	426,597
	Private	664,474	1,260,257
Occupation rate (Entrants/places)	Public	94.89 %	87.97 %
	Private	68.45 %	45.93 %

have a family income equivalent to the minimum wage. When asked about personal monthly income, 45.2 % answered that they did not have an income and 32.4 % said that they had only one minimum wage income. This data reveals the increasing participation of low-income youth in the attempt to gain access to HE (MEC/INEP/ENEM 2010).

Most of the candidates who participate in ENEM are from families with low cultural and schooling capital: 32 % of the candidates' fathers and 28 % of the mothers attended only the 1st–4th grade of elementary education. Only 7.9 % of the candidates' fathers and 9.9 % of the mothers have a diploma in HE. Both among the fathers and the mothers, over 70 % had only been able to take elementary or secondary school.

This data refers to all participants in the ENEM exam that can be considered a significant part of the "qualified demand" for HE. But there are no data on the candidates who actually participated in the selection process at the HEIs by income, gender, and race/ethnic group. It should also be highlighted that the number of candidates refers to the total number registered in a selection process, often at more than one HEI (Table 5.3).

A relevant aspect to be considered is the growth in the number of places and the candidates/places ratio. In 2000–2011, the number of places in the public sector grew 97.4 % while in the private sector growth was at 182.7 %. In the year 2000, the mean number of candidates per place was 3.3 (8.9 at public HEIs and 1.9 at private HEIs). In 2011, this ratio was 2.8 on average (10.6 at public HEIs and 1.5 at the private ones). Concerning the occupation rate in 2011, 87.9 % of all places offered by public HEIs were filled as against only 45.9 % of the places at the private HEIs (INEP/MEC 2011). Thus, many private places are left empty. It is true that the fact that places are remaining vacant may not be an immediate indication of a crisis in the institution affected, since a number of places generally function as a

strategic reserve in case of increased competition. However this shows the difficulty of access for a significant number of candidates and gives a reasonable idea of the need to find a more creative solution to the problem of funding for improved access to HE.

Figure 5.3 shows that the number of places in HE, which was growing steadily since 2000, has stabilized in the last few years, and is now close to the number of entrants in high school, which has remained steady. The figure also shows how the number of students finishing secondary education has diminished, and the big gap between the offer of vacancies and the number of students actually entering HE. Students coming from lower socioeconomic backgrounds, who enter public secondary schools, face multiple discrimination in an attempt to access HE. Due to the low quality of schooling received, many of them never get their degrees, and those who do, do not manage to enter public universities via the entrance examination due to fierce competition, while access to private universities is limited by their ability to pay fees. The low quality of the education offered to children and youths from low-income families also places them at a disadvantage in the labor market. Educational inequality reinforces social inequality, thus constraining social mobility (Dubet et al. 2012).

5.4 The Expansion of HE: Access and Inclusion

Brazil has undergone two waves of enrolment expansion. The first period of significant growth occurred from the mid-1960s to the beginning of the 1980s. Enrolments in 1960 consisted of just 93,000 students, 55.9 % of whom were in public institutions. In 1970, enrolment increased to 425,478 students. Of this total, 49 % were in the public sector. Already in 1975, the number of students was 1,072,548, about 62 % of them in the private sector. The increase in enrolments in undergraduate courses per administrative category from 1960 to 2011 can be seen in Fig. 5.4.

The 1980s became known as the “lost decade” marked by economic instability and growing inflation, with a negative impact also in the demand for private HE. The year 1985 marked the end of the military regime. In 1994, a stabilization plan was put in place that was able to eliminate hyperinflation and introduced a new currency, the Real. With economic stabilization, the economy started to grow again, and the socioeconomic conditions of the population started to improve. Access to basic education had been growing, and economic stability allowed for a second wave of expansion of private HE, which increased its relative weight. A major difference from the previous period was the growing demand for HE by members of the lower income sectors, with less purchasing power.

In the last 17 years, enrolments grew 283 %, from about 1.7 million students in 1995 to close to 7.3 million by 2013 (INEP/MEC 2013). There was a renewed growth of enrolments at federal public HEIs, but this did not significantly change the weight of the private sector in the system as a whole (Table 5.4).

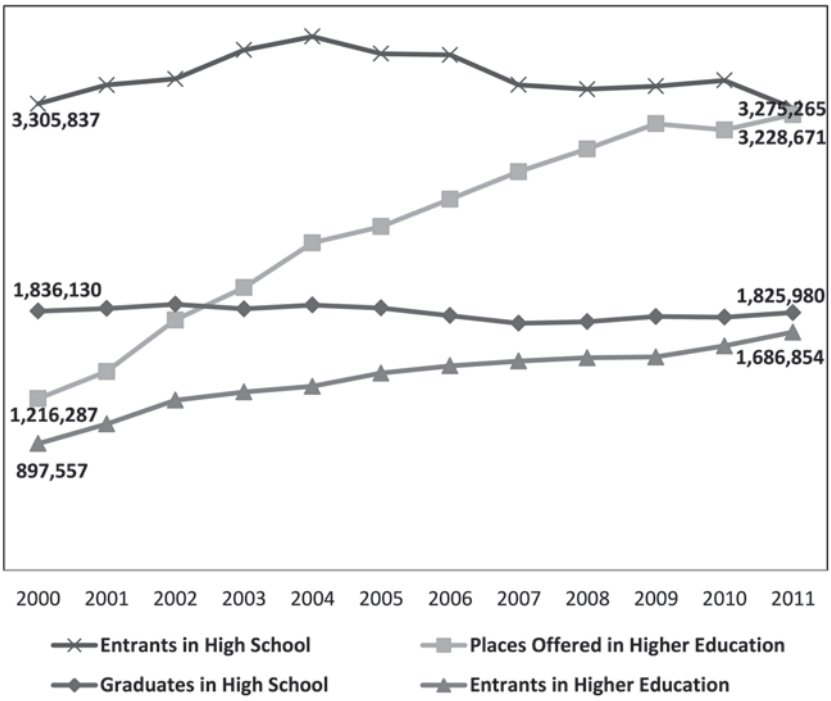

Fig. 5.3 Demand for higher education(HE; 2000–2011). (Source: INEP/MEC 2011)

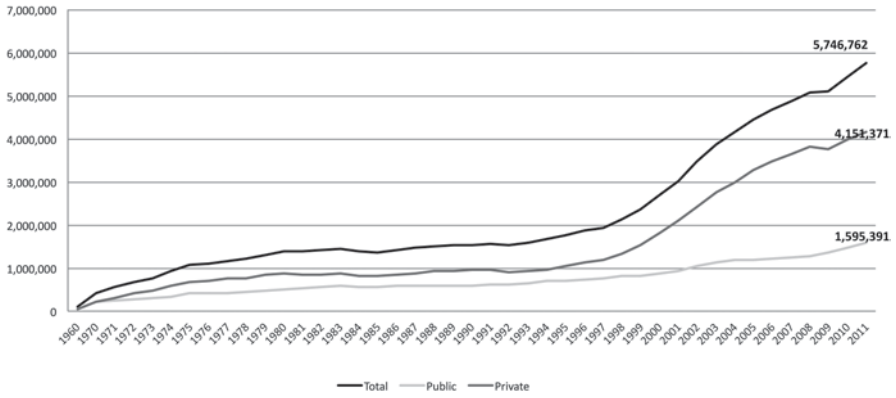

Fig. 5.4 Expansion of undergraduate programs (1960–2011). (Source: INEP/MEC 2011)

Out of the total enrollments in undergraduate studies in 2013 (84.2% contact and 15.8% distant) 75.0% were in the private sector. Considering academic levels, 67.5% worked for a BA degree, 18.8 for a teaching license and 13.6 for a short-term, vocational degree. The number of people who finished undergraduate courses jumped from 352 000 in 2001 to 982 thousand in 2013. The distribution of these

Table 5.4 Higher Education in Brazil - Basic Facts - 2013 (except graduate programs)

	Total	Public			Private
		Total	Federal	State/Municipal	
Institutions	2,391	301	106	195	2,090
Teaching Slots	3,69,864	1,57,801	1,01,376	56,425	2,12,063
Course Programs	30,920	9,595	5,730	3,865	21,325
Enrolment	72,71,488	17,85,036	11,28,341	6,56,695	54,86,452
Entrants	27,37,796	4,84,645	3,24,283	1,60,362	22,53,151
Graduates in 2013	9,82,024	2,04,097	1,13,033	91,064	7,77,927

Source: INEP/MEC 2013

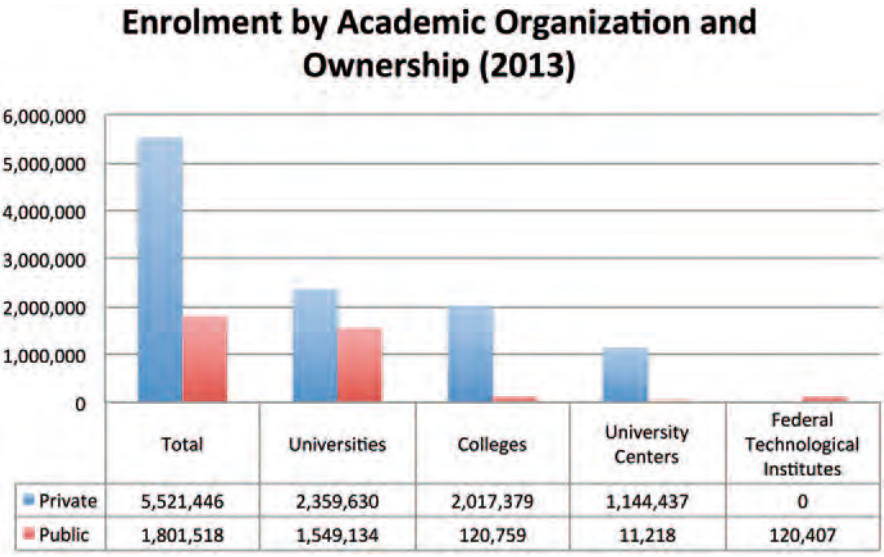

Fig. 5.5 Undergraduate enrolments by academic organization and ownership (2013) (2011). (Source: INEP/MEC 2013)

enrollments by type of institution is as follows: 53.4% at universities; 15.8% at university centers; 1.6% at technological institutes and 29.2% at colleges (INEP/MEC 2013; Fig. 5.5).

The total number of teaching slots in the Brazilian higher education in 2013 was 369,864 (the total number of teachers is smaller, since one person may work in more than one institution). In Federal universities, 57.7% have a PhD and 29.1% a Master's degree. At the private institutions, only 18.1% of the teachers have a PhD, and 47% a Master's degree 40%have a Master's degree. (INEP/MEC 2013).

It is worth highlighting the intense growth of enrollment in distance undergraduate and vocational courses in the last few years. Distance education, which almost did not exist before, started to grow in recent years, reaching about 15.8% of the

student body in 2013, (1,153,640) provided mostly by the private sector. 39.1% of the students in distance education are enroled in "licenciaturas" courses (teacher training), 31.3% in bachelor degree courses and 29.6% in vocational courses. By general area of study, students are concentrated in education (39%) and 43.7% in applied social sciences (social sciences, management and law) (43.%). In post-secondary vocational programs, enrollments reached a total of 995,746 students, a very significant grow in recent years, but still just 13.6% of total enrolment.

Graduate education, comprising MA and doctoral programs, have also being growing, although from a small basis. The number of Master's programs grew 246% from 1998 to 2011 and the PhD programs, 201% during the same period. Currently there are 3,045 Master and 1606 PhD Programs. In the Masters Program the number of students is 116,373 and in PhD programs 71,387. About 40,000 Masters' and 11,000 PhDs graduate every year (INEP/MEC 2011). In contrast to undergraduate studies, these courses take place mostly in public federal and state institutions

Summing up, these figures show how the expansion of higher education in Brazil has been limited by the grave situation of the secondary schools, as well as by the inability of public institutions to expand their offerings while maintaining and improving their standards; and also by the current funding arrangement, which provides free education for those who can access the well endowed public institutions and charge tuition for those constrained, by their previous educationa; background and the need to work, to attend private institutions.

Summing up, these figures show how the expansion of HE in Brazil has been limited by the grave situation of the secondary schools, as well as by the inability of public institutions to expand their offerings while maintaining and improving their standards; and also by the current funding arrangement, which provides free education for those who can access the well-endowed public institutions and charge tuition for those constrained, by their previous educational background and the need to work to attend private institutions.

5.4.1 Affirmative Policies

Recently a change began to occur, because of the emergence of a strong debate regarding the social inclusion of specific socioeconomic and ethnic groups. There are two outstanding initiatives aimed at fostering access to HE: the ProUni program and the policy of quotas or reserved places for students emanating from public schools and/or by racial/ethnic criteria targeting blacks/pardos/indigenous people. *ProUni (University for All Programs)* is an innovative project launched in 2005 by the federal government. Its purpose is to grant scholarships to low-income students and minorities enrolled at private institutions of HE that benefit from the program by enjoying tax exemptions. The program works by awarding full or partial (50%) scholarships for undergraduate courses. To be eligible for full scholarships, students must have a maximum family per capita income of 1.5 times the minimum wage (R$ 933.00, approximately US$ 466). Moreover, partial scholarships may be

awarded to students with a family per capita income of up to three times the minimum wage (R$ 1866.00, US$ 933), who have attended secondary school either in a public institution, or in a private one on full scholarship. Public school teachers wishing to study can also receive benefits from ProUni. Quotas for black and indigenous people were also implemented (ProUni-MEC 2010).

It should be highlighted that the scholarship only covers the monthly tuition fees of the course attended. When the scholarship is partial (50%), the student needs to pay the balance of the fee or they can combine the partial scholarship with a loan from the FIES educational credit program. ProUni applicants do not have to take the university entrance examinations; they are chosen by their scores in the National Exam of Secondary Education/ENEM and by their socioeconomic profile.

Between 2005 and 2010, 919,551 scholarships were allocated for students, of which 67% were full scholarships and 33% were partial (ProUni-MEC 2010). In 2011, there were 368,000 students with ProUni grants, 73% with full coverage. There is no significant difference between the number of male and female students. Just under half (47.6%) are white. The number of indigenous people who received a scholarship is still very small. Almost half the scholarship recipients chose for-profit HEIs and study in the evening (74%). In 2010, 1442 private HEIs are joining the ProUni program.

ProUni is largely regarded as a positive initiative that has contributed to the increase in the participation of lower income students in HE—even though the program has a limited margin of growth, due to the tax exemptions and the increase in the number of places.

Affirmative action policies (AP) can be instituted by state or local law, or decided by the universities themselves. Currently there are two types of affirmative policies: quotas (racial and/or social quotas), with reserved places for students from public schools and/or who self-declare themselves black and/or pardo; and the bonus model in which extra points are added to the entrance examination score to students coming from poor backgrounds, public schools, or ethnic minorities.

Up to 2010, 88 public federal and state HEIs had implemented affirmative policy actions in their selection processes(there is no precise information regarding the existence of affirmative policies in private HEIs). Most federal HEIs, adopted the quota system (racial and/or social); while public HEIs in the state of São Paulo adopt the modality of adding points to the entrance examination score.

Whereas AP was first introduced as a selective processes focused on racial issues, today they are mostly directed to social issues. The main challenge for institutions would be to find out how to ensure that quota students are able to perform well in the more demanding courses, as medicine and engineering, e.g., (Santos and Queiroz 2010).

In April 2012, the Federal Supreme Court approved the constitutionality of racial quotas at Brazilian public universities. According to the Court, affirmative policies do not violate the principle of equality, nor do they institutionalize racial discrimination, as stated by those who are against quotas. For the social movements advocating quotas, the decision was a victory. Among its critics, the decision ran against the constitutional principle of nondiscrimination based on race, religion, and similar

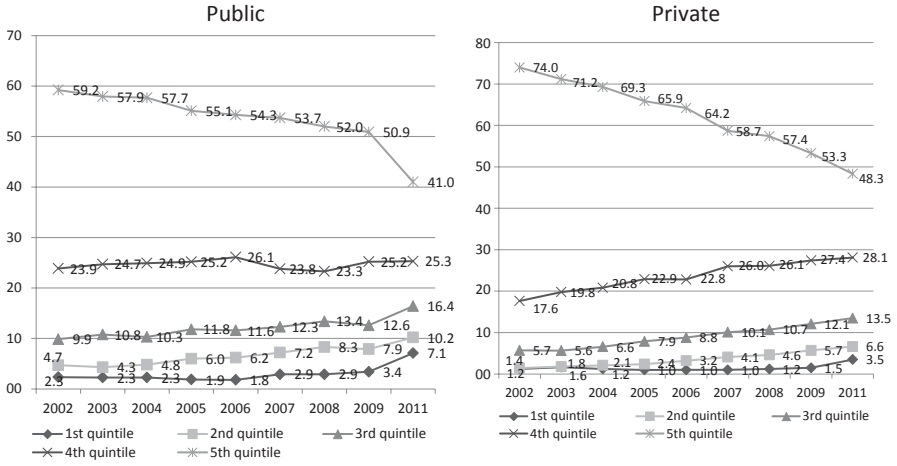

Fig. 5.6 Distribution of higher education (HE) students across the public and private sector by per capita family income in quintiles (2002–2011) public private. (Source: PNAD-IBGE 2011)

criteria. In August 2012, a new Quota Law (no 12. 711/2012) was sanctioned by the federal government. The law foresees that federal public universities and technological institutes reserve at least 50% of the places for students who did all of their high school education in the public system, with a proportional distribution of places among blacks, pardos, and indigenous people. The HEIs will have 4 years to progressively implement the percentage of reserved places established by law.

Looking at the data for the last decade (Fig. 5.6), one can see that the social inclusion policies have led to changes in the social composition of the student body.

When considering the time period since the first AP were established in 2001, and from 2005 onwards, after the ProUni program began, it is possible to visualize a slow but steady increase in the participation of students emanating from the lower social quintiles in HE, both in the public and the private sectors.

5.4.2 New Programs to Increase Access to Federal Public Institutions

In 2010, the Unified Selection System (Sistema de Seleção Unificada/Sisu) was established and managed by the Ministry of Education, in which public institutions of HE offer places in undergraduate courses to candidates participating in the National Secondary Education Examination (ENEM). The candidates make their online inscription among the vacancies offered by the HEIs involved with the program. The Sisu program selects automatically the top-ranked candidates in each course, according to their ENEM scores (MEC/SISU 2013). For 2013, the Sisu program supply reached 129,319 places at 101 public HEIs. Close to 2 million can-

didates compete for the vacancies. Nowadays, many universities exclusively use the Sisu program as their selection process.

To strengthen the federal sector, the government instituted in 2007, a Restructuring and Expansion Plan for Federal Universities (REUNI). The aim was to broaden access and improve retention in HE, by increasing the use of the physical structures and human resources that already exist at federal universities, and by adding more courses and hiring new staff. The program is financed through annual government grants currently consigned and administered by the Ministry of Education (REUNI-MEC 2007). Between 2006 and 2010, ten new federal universities were created covering all Brazilian regions. On the supply side about 78,000 new study places and more than thousand new undergraduate courses were established (Andifes 2010).

5.5 Supply in HE and the Market Demand for Qualified People

Recently a paper was published with the suggestive title "Young people study Humanities, the market demands Hard Sciences" (Menezes Filho 2012). This title is a good summary of how relations between social demand, market demand, and the economy have developed lately, and the response by HEIs to these external trends and dynamics.

Besides the problem of access and of filling places, another complex problem is the offer of courses in HE and the demand of the labor market. It should be underscored that in Brazil the professions are regulated by Professional Councils. In the case of law it is still necessary to take the exam of that Professional Order (Bar Association). But there is a vast field in the public and even in the private sector, in companies with managerial positions that can be carried out by any professional with a diploma.

Throughout the expansion of HE marked by the growing presence of private education, the main pattern has been to offer places with a heavy emphasis on courses that cost less to implement, namely, in applied social sciences, and humanities. These courses can be cataloged as "generic." With a diploma in this field one can work in different jobs, such as management and human resources. The lack of elementary and secondary schooling among young people finally consolidated this trend. The demand accommodated to the offer and supported it. Figure 5.7 shows the growth and concentration of students in undergraduate programs of education, comparing 2000 and 2011.

The largest percentage increase in this decade occurred in the field of engineering (217%), followed by health (163%). Nevertheless the higher concentration of enrolment remains in applied social sciences. Table 5.5 shows the distribution of students by fields of education in 2011, according to the levels of the International Standat Classification of Education (ISCED) (UNESCO 2013).

In ISCED 5, which correspondss to undergraduate courses, students are still concentrated in the field of applied social sciences (41.5%), followed by education

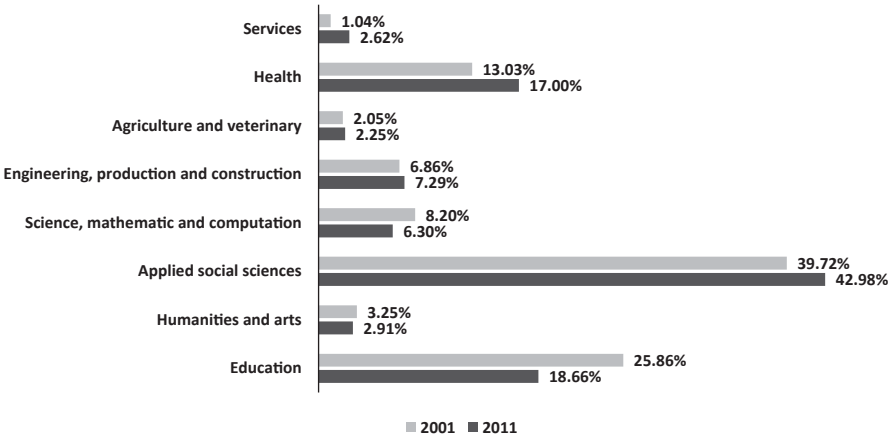

Fig. 5.7 Enrolments in undergraduate fields of education and growth during the period (2000–2011). (Source: INEP/MEC 2011)

Table 5.5 Total enrolment in undergraduate studies (ISCED 5) and graduate programs (ISCED 6) by fields of education (2011). (Source: INEP/MEC 2011)

	ISCED 5	ISCED 6
Education	1,354,918	12,793
Humanities and arts	154,915	19,223
Social sciences, business, and law	2,798,289	22,560
Science, mathematics, and computer science	423,372	36,004
Engineering, production and construction	759,873	33,357
Agriculture and veterinary sciences	155,616	19,516
Health and welfare	931,571	29,986
Social services	144,140	3,601
Interdisciplinary courses	0	10,720
Other courses	16,995	0
Total	6,739,689	187,760

(20%). In ISCED 6, which corresponds to graduate programs, an inversion takes place. The concentration of students is in science, mathematics, and computer science (19.2%) followed by engineering, production, and construction areas (17.8%; INEP/MEC 2011). The preferential choice for career courses, in the area of applied social science in undergraduate studies, appears as a polyvalent resource, favoring the perception that they can open many doors in the labor market, in the context of a services society, like Brazil. Already in graduate programs there is a concentration of students in fields like science, engineering, and health. One reason for this is that these fields were earlier structured as research and graduate programs and have always been a priority in governmental policies and public investments aiming at scientific and technological development of the country (Balbachevsky 2004; CAPES/MEC 2013a).

Indeed, government actions are committed to expanding the most modern economic sectors, able to increase the national potential for technological innovation to strengthen the overall competitiveness of the country. This has been accompanied by measures to stimulate the formation of human resources in science and technology that are considered strategic at this stage of development. Recently, in this sense, the government launched the Science Without Borders Program. This program aims to support 100,000 students, from undergraduate to doctoral, post-doctoral students, and researchers in the fields of science, engineering, and health, in training and qualification activities abroad. It also intends to stimulate the attraction of post-doctoral students and high-level researchers from overseas to strengthen HEIs and national research institutions in these same areas (CAPES/MEC 2013b).

Despite these efforts, data on labor market expansion and qualifications of the population show a strong adherence of human resources training by the education system to the demands of the economy. Data on the working population shows that in Brazil a great number of workers, about 41.5 million (45% of the workers) are active in service-related activities. The participation of this group in the working population grew from 43.1 to 44.9% from 2009 to 2011. Figure 5.8 shows the evolution of the number of people employed by economic sector in Brazil.

Trade and repairs, with approximately 16.5 million workers is the second largest group of activities. Compared to 2009, there has been a 1.9% growth. However, its proportion in the working population remained stable (17.8%). The number of workers in agricultural activities, in 2011, was estimated as 14.1 millions, which shows a reduction of approximately 1.1 million people compared to 2009, i.e., a 7.3% drop. This number represented 15.3% of total employment in 2011, indicating a reduction compared to 2009, when this proportion was estimated as 16.7%. Approximately 12.4 million workers (13%) were involved in industry-related activities, meaning an 8% drop compared to 2009. The participation of these workers in the employed population also followed the falling trajectory from 14.9% in 2009 to 13.5% in 2011. Construction was outstanding for growing most in percentage terms from 2009 to 2011. The increase was 13.6%, a total of 7.8 million workers and thus broadening its participation in the working population, which increased by 0.9% points. In 2011 it represented 8.4% of the working population (PNAD-IBGE 2011; Fig. 5.9).

According to the PNAD 2011 data, the percentage of workers who have not finished elementary education has diminished—31.8 to 25.5%. The percentage of workers who have at least finished HE increased from 11.3% in 2009 to 12.5% in 2011, even so, it is still a very low percentage.

In this context, two phenomena have required attention regarding the supply of graduate staff by HEIs. In the last decade, one can identify clearly a new trend in the private sector regarding the offer of courses: the fragmentation of typical careers of applied social sciences to meet a new type of demand. Since the beginning of the twenty-first century, Sampaio (2011) has observed that there has been rapid growth in the number of courses, through a phenomenon that she calls “career fragmentation,” i.e., the transformation of a skill and/or discipline into an independent career.

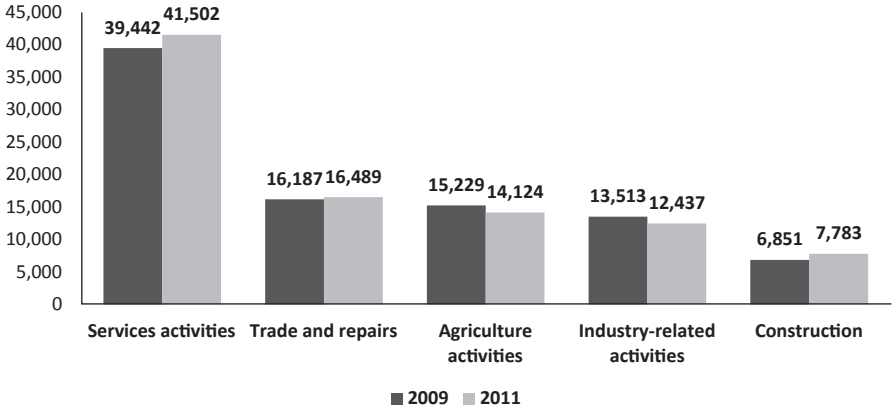

Fig. 5.8 People aged 15 or older employed by activity groups Brazil (2009/2011). (Source: PNAD-IBGE 2009, 2011)

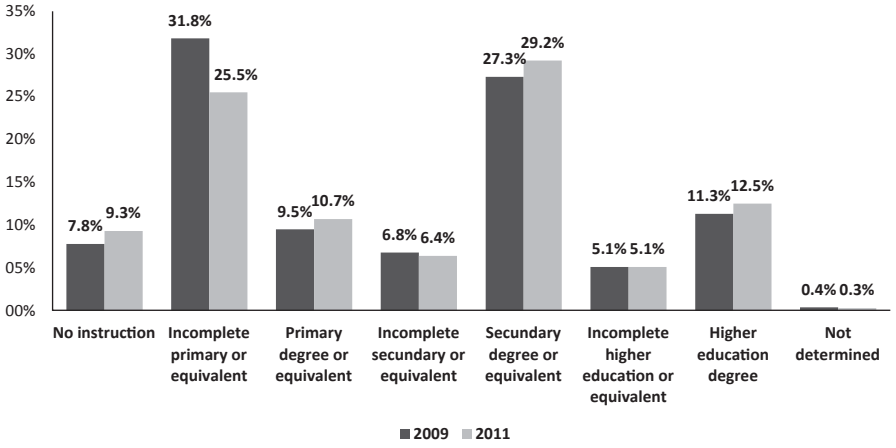

Fig. 5.9 Distribution of persons 15 years or older, employed by education level. Brazil (2009–2011). (Source: PNAD-IBGE 2009, 2011)

According to the author, the fragmentation of careers is a movement guided by and for the market, aiming to expand and diversify the clientele, responding to demands for HE and generating others.

It is different to the phenomenon of fragmentation in which new courses generally derive from consolidated and prestigious career courses linked to technological or scientific areas (Sampaio 2000), the *very new* careers offered by the private sector, come from enhancing "a knowing—how-to-do." They are connected to trade professions for which, traditionally, no HE was needed. Some examples: *chef de cuisine*, *somelier*, gastronomers, hair designer (barber and hairdresser), furniture designer (cabinet maker), pâtissier (confectioner/baker), fashion professionals (stylists, modistes, and dressmakers). These courses, generally, when they acquire the

status of HE, are glamorized, receive foreign names, and are associated with luxury consumption to create the fields in which they are applied (Sampaio 2011).

This strategy of the private sector helped to strengthen a unique feature of HE in Brazil in relation to the other BRICs (Brazil, Russia, India and China) and developed countries: enrolment the small percentage of students technological and engineering careers, despite the marked growth of enrolments between 2000 and 2011, as can be seen in the table above.

However, this reality has been changing after an intense debate about the lack of engineers in Brazil, especially in the media, in the last few years. People are beginning to apply more for engineering courses. In the private sector, in the state of São Paulo, the field of civil engineering has seen a 49.2% growth in enrolments, followed by production engineering with 26.5%. Enrolment in law courses grew 5.6% and in management it has fallen 0.1% (Semesp 2012). This increase in the number of candidates and places for engineering careers shows this reaction, both by the society and by the system of HE to labor market demand. In this sense, the main concern is identifying discrepancies between what students have learned in secondary school and what is actually expected of them at the HE level. There is a long way to go, with huge challenges (Gusso and Nascimento 2011).

Actually, although engineering career courses in Brazil grew, their graduates filled workplaces in the services sector rather than in the manufacturing industry and in companies with infrastructural projects. In Brazil the professions are regulated, but there is a wide field, as mentioned, in the public sector and even in the private sector that can be implemented by any professional with a diploma in HE. Gusso and Nascimento (2011) showed that six of every ten engineers are not working in engineering, e.g., 36% of the Itaú Bank trainees in 2011 had studied engineering.

The fact is that the new trend of change in the production structure and economic growth has led to a demand for more technical professional profiles, with a more solid education in sciences and mathematics. This demand for professionals with this profile has been pointed out in many articles and newspaper reports. Representatives of industry and government have recorded this new era in the economy and speak of a “scarcity” of highly skilled professionals (Menezes Filho, 2012; Nascimento et al 2010).

Some studies, however, have identified a more serious and widespread shortage of labor at the base of the pyramid and less in areas such as engineering, which is the subject of discussion. The problem emerges mainly regarding technical, mid-level occupations. In higher level careers, outbreaks of scarcity appear to be restricted to specific qualifications: of engineering (naval engineering), certain professions that have been most sought after in recent years but which graduate fewer students, such as geology and some medical specialities. Another focus of scarcity is the difficulty of attracting qualified professionals to some distant regions or even in large centers (Nascimento et al 2012).

There are other studies, however, showing further problems related to the labor force. According to the study performed by Menezes Filho, many analysts have emphasized that there is a “blackout of qualified (skilled) labor” in Brazil. However, based on the analysis of the variation of the mean salaries of people with HE,

he calls attention to the fact that, in a few specific careers, in which the number of graduates increased greatly, comparing 2000 and 2010, such as nursing, business administration, tourism, pharmacy, marketing and therapy, and rehabilitation, salaries have gone down. On the other hand, in some professions the salaries have risen significantly, since the percentage of graduates (2000–2010), as a proportion of the total, has dropped in areas such as medicine, architecture, engineering, and economics. In these professions demand is increasing faster than the offer. The percentage of graduates working in the typical areas of their training has increased in medicine and humanities, but has gone down in some fields of health, such as nursing, pharmaceutics, and chemistry.

Given the uncertainties inherent in the economy, the increased supply of graduates appears to be in line with demand in the labor market. Gusso and Nascimento (2011) stress that one cannot expect that the supply of skilled professionals anticipate the needs of the market, since the decisions of young people in the training area depend on signals from the market and the appreciation of salaries and careers to choose from.

The different positions in the debate, about some lag between market signals and adjustment between demand and supply of professionals suggest the need for further studies on the trends in the process of transformation of the economy and its real impact on the labor market and on HE.

5.6 Concluding Remarks

Brazilian HE has changed significantly in the last 15 years, with growth and improvements in terms of social inclusion. However, this growth is limited by the lack of quality of elementary and secondary education. People from lower socioeconomic backgrounds are beginning to seek HE but have difficulty accessing it, despite the affirmative policies and official programs to support social inclusion.

The government continues to maintain the exclusivity of public funding for public HEIs, i.e., ensuring full funding of studies. The interweaving of the government in the private segment occurs through the institution of philanthropy, by funding education credit programs or by direct or indirect subsidies in the form of tax waivers and debt negotiation.

However, the great challenges are to expand enrolment while democratizing access and differentiating the offer so as to ensure the fulfillment of the demands of the economy and of society, seeking the excellence of education offered and an appropriate formula to fund expansion. Yet the initiatives to expand access to HE are strongly tied to public investments through inclusion policies.

Thus a new formula for HE funding, including grants and loans system or other feasible forms of student subsidy, is required as a condition for maintaining significant growth rates of enrolment and ongoing social inclusion. The strategies of HEIs to respond to the pressures of the demand and the challenges of economic growth, suggest difficulty in understanding the expectations and trends. The dominant pat-

tern of response is still the offering of places in low cost careers, with polyvalent characteristics in the labor market. Social transformation and economic development are pressuring HE, creating specific demands, which are still not fully taken into account by existing institutions.

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Chapter 6
Supply and Demand Patterns in Russian Higher Education

Isak Froumin and Yaroslav Kouzminov

6.1 Introduction

The Soviet system of higher education was well developed even in today's terms. It provided free higher education to a significant part of the young generation. The Soviet government was the first in the world in applying positive discrimination to higher education enrolment to achieve greater social cohesion. The system produced highly qualified personnel for the national economy especially in such sectors as engineering, health care, and science. At the same time the higher education system was under tight ideological control and rigidly regulated. All universities operated within strict curriculum standards. The Soviet planning agency regulated supply and demand in higher education. Perestroika that started in the late 1980s changed the system dramatically.

The establishment of the Russian Federation in 1991 marked the emergence of a higher education system that in many ways differs from its predecessor. The process of its transformation reflects general patterns of social and economic transition typical of the post-Soviet societies. However, it has some specific features that deserve a thorough analysis. On the one hand, in the past 20 years, Russia has become one of the world leaders in higher education enrolment and on the other hand, it is placed only 50th in the country rankings compiled by Organization for Economic Cooperation and Development (OECD) regarding the country's higher education and training systems for the knowledge economy, lagging behind both developed and developing countries (see Nikolaev and Chugunov 2012).

The number of higher education institutions has doubled over the last 20 years and the number of students increased 2.5 times, reaching a total of 7 million in 2005. These figures are very impressive in comparison with the 1940–1991 period, when the growth of the number of universities was almost flat. This chapter shows

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_6

that this expansion was accompanied by significant qualitative changes in the supply and demand of higher education services. It starts from the general description of the higher education system.

We argue that this development has its roots in the history of Soviet higher education. The second section of the chapter discusses this legacy. The third section describes the main institutional changes in the higher education system and the changes in demand that have led to the "great expansion[1]" during the "Modern Russia" period since 1991. The fourth section focuses on the changes in the structure of the supply of the higher education services. The fifth section discusses the role of private higher education. In the sixth section, we consider the impact of increased supply on equal access to higher education.

In the last section, we present recent changes in national higher education policy. We argue that "hidden" changes in the supply and demand should be articulated in the national higher education policy by considering them through the lens of the differentiation of the universities and their ability to respond to labor market demands.

6.2 General Description of the System

6.2.1 Scale of the System

The Russian Federation inherited one of the largest higher education systems in the world from the Soviet Union. It was a part of huge tertiary education system that included higher education per se (university level education, both graduate (3-year doctoral program) and undergraduate (4–6-year specialist program opened for the secondary school graduates[2])), vocational colleges providing associate degrees (3–4-year program opened for graduates of secondary school graduates and those who completed nine grades in secondary schools), and vocational schools providing qualifications (1–2-year initial vocational education program opened for graduates of secondary school graduates and those who completed nine grades in secondary schools). The flows for students between these levels of tertiary education are shown in Fig. 6.1.

Figure 6.1 shows the main elements of the Russian system of education and flows of students moving between them. It also shows how many new students come to tertiary education and how many graduates go to the national and international labor markets and military service. It is seen that higher education was the biggest part of Russian educational system. In 2010 alone, 1.43 million people with different backgrounds entered universities: 0.58 million people were high school graduates, 0.01 and 0.17 million people finished vocational schools and colleges respectively; 0.57 million people came from labor market or military service.

[1] We thank Professor Martin Carnoy (Stanford University) for this expression.

[2] Russian secondary school has 11 grades.

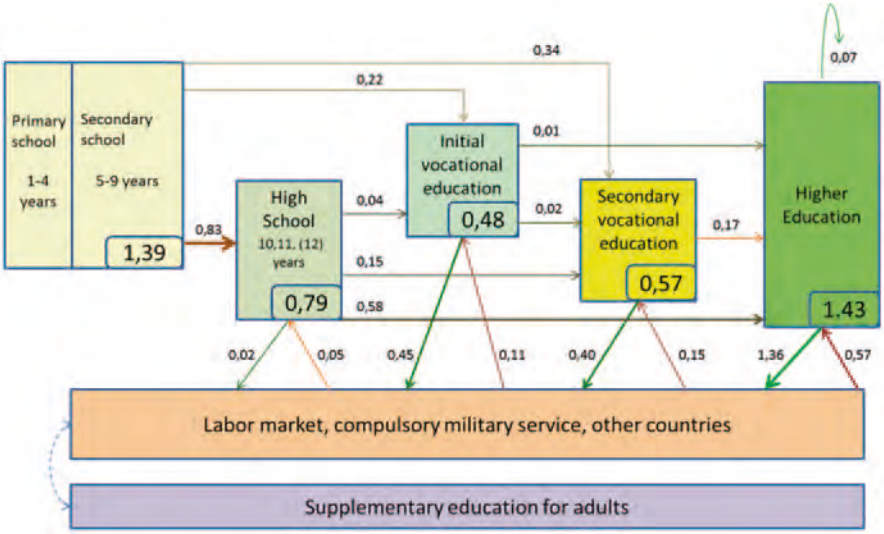

Fig. 6.1 Student flows between levels of tertiary education

In this chapter, we consider the system of higher education only. The interaction of higher education system with other subsystems of the tertiary education does not play critical role in the functioning of higher education institutions.

The number of higher education institutions has doubled from 514 universities in 1991 to 1115 in 2011. The private sector played a very significant role in the increase of the number of higher education institutions (Table 6.1), triggered by the shift to a market economy. The number of private higher education institutions increased by six times over the past 17 years and reached 462 in 2011. They try to compete with public institutions but, in many cases, fail in this purpose, and only attract students who fail in the entrance examinations for public universities.

Over the past decade, the budget (public) in higher education, both overall and per student largely increased. In 2003, the allocated funds were about US$ 2 billion whereas in 2010, funding overcame the mark of US$ 12 billion[3]. This money went to public institutions (only in 2011, a few private higher education institutions received public grants for their education programs)[4].

6.2.2 Enrolment in Higher Education

The number of students also has risen significantly. On the threshold of Soviet Union disintegration, the number of students was slightly less than 3 million but exceeded

[3] Nominal values.

[4] New education law allows private universities to compete for public funding with public institutions.

Table 6.1 The number of higher education institutions and student enrolment

Year	Higher education institutions	Student enrolment (thousands)
	Public and municipal higher education institutions	
1914	72	86.5
1917	150	149
1927	90	114.2
1940/1941	481	478.1
1950/1951	516	796.7
1960/1961	430	1496.7
1980/1981	494	3045.7
1990/1991	514	2824.5
1995/1996	569	2655.2
2000/2001	607	4270.8
2005/2006	655	5985.3
2006/2007	660	6133.1
2007/2008	658	6208.4
2008/2009	660	6214.8
2009/2010	662	6135.6
2010/2011	653	5848.7
2011/2012	634	5453.9
2012/2013	609	5143.8
	Private higher education institutions	
2000/2001	358	470.6
2005/2006	413	1079.3
2006/2007	430	1176.8
2007/2008	450	1252.9
2008/2009	474	1298.3
2009/2010	452	1283.3

7 million by 2010. That figure includes more than 1 million students in private universities. Today, access to higher education in Russia is seen as very open. Enrolment in higher education has risen dramatically. Eighty four percent of all school graduates wish to continue their education in universities and more than 50% of people in the age group 17–22 study in higher education institutions as shown in Fig. 6.2.

6.2.3 The Structure of the System

Today the higher education system in Russia is diversified. It includes education institutions of various legal forms and types. The overwhelming majority of public universities belong to the federal authorities (about 60% of them operate under the Ministry of Education and others under sectoral ministries like health and agricul-

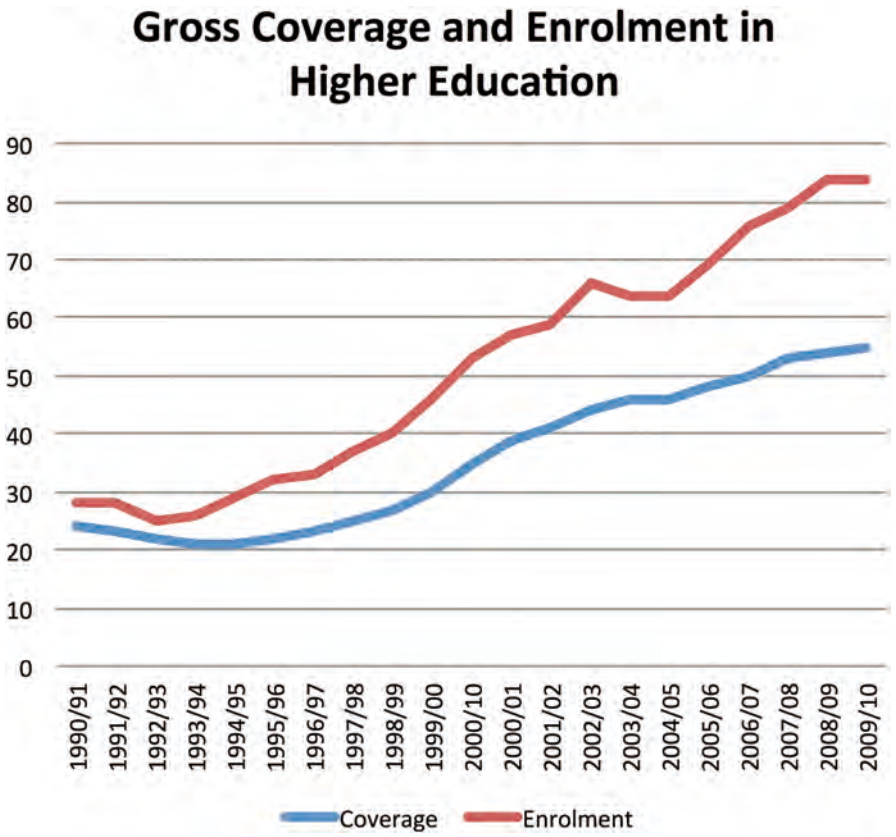

Fig. 6.2 Gross coverage and enrolment in higher education in the Russian Federation (2000–2010, percent). Figure shows ratio of students studying in higher education institutions to 17–22-year-olds; and ratio of entrants to higher education institutions to 17-year-olds. (Source: Nikolaev and Chugunov 2012)

ture). Fewer than 20 public universities are established by the regional authorities. Private universities exist in the form of nonprofit organizations. They have to get a license from the federal authorities to start operations. They also have to go through the accreditation process (also conducted by the federal body) if they want to issue government-approved diplomas.

Till 2009, all public universities had the same legal status. Recently, the government tried to institutionalize naturally emerging diversity. It established two new prestigious types of universities: national research universities (NRUs) and federal universities[5]. In the Soviet period, research activities were concentrated in the specialized research institutes. Now, the government is trying to move the research activities to NRUs, which are expected to be the main sources for scientific development

[5] Moscow and Saint Petersburg state universities by law have special status of the universities of special significance.

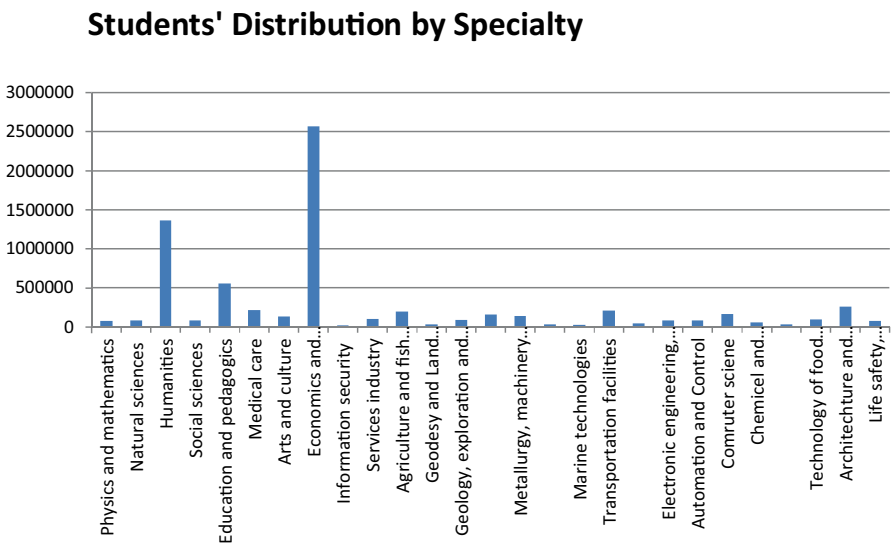

Fig. 6.3 Student distribution by specialty. (Source: NRU 2012)

in Russia. Federal universities are established in remote regions of the country to play leading role in the development of the innovation economy in the respective regions[6].

6.2.4 Educational Programs

In 2003, Russia signed the Bologna Declaration, which launched the process of transition from the Soviet degree structure to a modern degree structure in line with the Bologna Process model. In October 2007, a law was enacted that replaced the traditional 5-year[7] model of university education (degree of specialist) with a two-tiered approach: bachelor's degree followed by a 2-year master's degree. In 2010, the admission to the traditional 5-year program was stopped in the majority of universities. By 2014 almost all students in 5-years programs leave the universities. Today more than half of the students study economics and humanities (Fig. 6.3 and Table 6.2).

6.3 State Regulation of the Supply and Demand: The Legacy of Soviet Higher Education

Soviet higher education policy was based entirely on the idea of the planned industrial economy. Higher education was part of the resource allocation system that covered manpower resources as well as material and financial resources. According

[6] These types of universities are described in greater details in the Sect. 6.7.

[7] In some areas, 4 and 5.5 years.

Table 6.2 Distribution of students among different levels of tertiary education and among broad educational programs (based on OECD classification)

	Vocational	Professional	Advanced, research	
	ISCED 4	ISCED 5	ISCED 6	Total
Education	102,060	634,741	20,293	757,094
Humanities and arts	121,554	1,584,886	17,958	1,724,398
Social sciences, business, and law	552,742	823,392	95,604	3,471,738
Sciences, mathematics, and Computer sciences	109,404	612,599	86,726	808,729
Engineering, production, and construction	983,482	1,500,428	25,076	2,508,986
Agriculture and veterinary sciences	132,836	320,158	8400	461,394
Health and welfare	115,344	317,065	11,717	444,126
Social services	38,135	131,312	247	169,694
Total	2,155,558	7,924,581	266,021	10,346,160

to the Burton Clark's typology (Clark 1983), the Soviet higher education policy belongs to those types of policies where government has the main organizational role and the education market does not exist. At the same time, higher educational institutions have a low level of institutional autonomy and the system has a high degree of centralized management. We think that the Soviet system (and in general, higher education systems in socialist countries) was an extreme version of the government-controlled system and probably presented a special type of the system. We call such a system of higher education, "quasi-corporate" (Froumin et al. 2013) because the higher education institutions were parts of particular industries. Indeed, during the Soviet regime, the government was both—the main owner of universities and the main employer. The main role of government in the economic sphere was the input and output planning. In higher education, this would imply planning the number of students, specialties, and programs for each institution based on the needs of different industries. In other words, the development of the higher education system depended on an estimation of the national needs of the labor force (Shpakovskaya 2007). It is important to note that universities in Moscow and some capitals of the former Soviet republics were providers of the manpower for the national labor market whereas regional universities had the same function for the local labor markets.

The role of the higher education institutions as manpower suppliers for particular sectors of economy and even for particular enterprises is deeply rooted in the industrialization of the Soviet economy in the 1920s. In this period, the Soviet government relied mostly on the technological expertise developed in western countries and on a mass higher education model (Khanin 2008).

Each important development in the national economy as well as in social and political life was accompanied by a corresponding development in the higher education sector. For example, after the Second World War, the government set up "communist party schools" for training party apparatus and state machinery. Besides, the

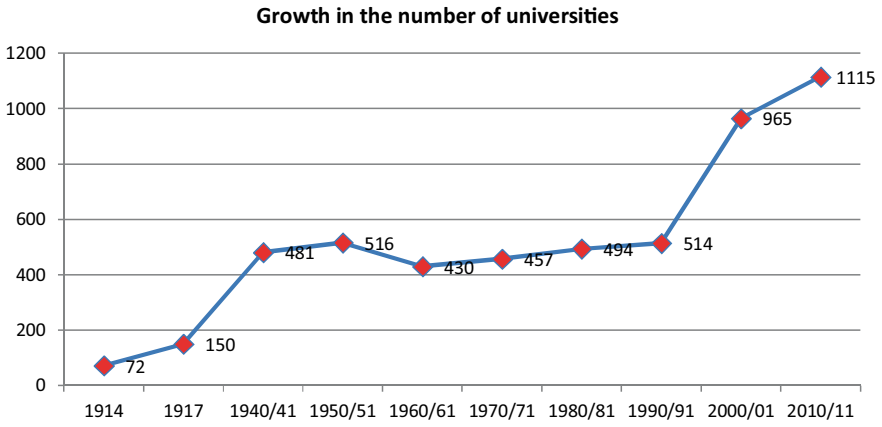

Fig. 6.4 Growth in the number of universities in Russia (1914–2011)

Academy of Social Sciences was established for training ideologists and social scientists. These institutions had the status of universities. Special institutions were set up for training specialists in diplomacy and foreign trade. Soviet nuclear production and space development programs led to the establishment of two elite universities: Moscow Institute of Physics and Technology and Moscow Engineering Physics Institute (Khanin 2008) and quite a few engineering universities and departments specialized in nuclear physics and space research.

However, the above postwar changes and those introduced during the Khrushchev era did not involve a significant change in the structure of the higher education system, which was formed mainly in the 1930s (Shpakovskaya 2007). Figure 6.4 illustrates an insignificant increase in the number of universities since the end of the 1940s till the collapse of the USSR.

We agree with the statement by Carnoy et al. (2012) that the Soviet totalitarian state considered the provision of higher education as an important factor of legitimization of the state. However, the most important factor that determined the supply of the higher education in the USSR was not students' and families' desire for personal development or social mobility through higher education but the requirements of different sectors of the Soviet economy. This demand focused mainly on the manpower for these sectors. The demand for research and development (R&D) for these sectors was divided between the higher education institutions and special R&D organizations (including academies of sciences).

The Soviet government invented a number of instruments to align supply and demand in the system. These instruments include: manpower planning and forecasting; state orders to each university to produce a certain number of graduates in different and very specialized areas (there were more than 400 specializations planned by the central planning authorities in 1971); mandatory job placement for each graduate with the requirement to spend at least 3 years in the assigned job; mandatory links between state-owned companies (there were no other companies) and universities that included on-the-job training and mandatory contracts for R&D. The system had a built-in mechanism to respond to the future needs of the

economy: the development plans for new industries included such special measures as the development of new occupational requirements, appropriate curriculum and teaching materials, and opening new programs and whole institutions.

As we consider the manpower production (and partially R&D) for different sectors of economy as the basis for analysis of the structure of the supply of the higher education, we suggest that the Soviet higher education system included the following types of higher education institutions:

- sectoral universities of national significance;
- sectoral universities of regional scale; and
- "traditional" universities aimed at training local and national elites.

The first type—*national sectoral (specialized) universities*—was a Soviet type of corporate higher education[8]. It included universities of aviation, railways, and mining. Each group of sectoral universities included a "central" sectoral university that played a role of a leader for the whole group. It produced cadres of professors for other sectoral universities; central sectoral universities had significant programs of R&D in the particular sector. Other sectoral universities usually were connected with particular enterprises within this sector in different regions of Russia[9]. It is important to mention that many such universities were subordinated to sectoral ministries rather than the Ministry of Education of the USSR.

The reason for the existence of the *second type* of Soviet higher education institutions was the need for training the personnel for specific sectors of the regional economic systems. These institutions were *regional sectoral universities*. The higher education institutions with such disciplines as education, culture and arts, medicine, engineering, agriculture, and finance were established in each region or in the group of neighboring regions (the central planning agency had special procedures to allocate different specialized universities among the regions). In some cases, these institutions were subordinated to particular sectoral ministries (e.g., agricultural higher education institutions to the Ministry of Agriculture, medical higher education institutions to the Ministry of Health Care, and teacher training (pedagogical) higher education institutions to the Ministry of School Education). Each sectoral group of the regional higher education institutions also included central or leading institutions in Moscow or in other capital cities. These leading institutions performed the functions of methodological support and knowledge management within the specific group (e.g., the First Moscow State Medical University or Russian Teachers' Training University in Leningrad). All universities in the regions of Soviet Russia were subordinated to the central authorities in Moscow.

The third type—*traditional universities*—performed two functions. They trained: (1) researchers that moved them to the R&D sector or to other universities as professors (especially in departments of basic sciences, social sciences, and

[8] Soviet sectoral ministries were in some sense, large state-owned companies.

[9] Soviets invented the model of "university-factory" where students combined training and getting practical experience from real work. They started from low-skilled jobs in the particular enterprise and moved to higher skilled positions at this factory or plant during 5 years of education. It was considered as full-time education of special sort.

humanities) and (2) local (and in some cases—national), managerial, and political elites (economics, history, law, journalism, etc.). As a rule, these universities did not have schools of engineering, arts, and medicine. This structure fits well with the structure of the Soviet labor market. A rigid regulatory framework for different types of institutes was developed centrally. The initiative from the bottom was not welcomed. However, the fact that the Soviet government used effective mechanisms of turning universities into resources of the national and regional planned economy cannot be denied. The state system provided the higher education with the resources adequate for the demand formulated by the state-owned and state-controlled economy. The problems of this system reflected general problems with a centrally planned economy: rigidity and lack of initiative and built-in feedback.

It is important to clarify that legally all universities had the same structure of programs: undergraduate and graduate. Almost all programs were planned for 5 years of implementation (with very few exceptions). There was a small group of universities that included research centers with separate financing. These universities had larger graduate programs than other universities. However, formally all diplomas had the same value. Students from sectoral universities could enter graduate programs and research careers in the respective sectors.

The relationships between universities and research institutions (including academies of sciences) were also formalized. The majority of leading researchers from the research institutes worked part time as professors in local universities (often there were heads of departments). Many research institutes had their own doctoral programs. They cooperate with the universities to get the applicants for these programs. So, both supply and demand in Soviet higher education came from the government.

At the same time, the government could not completely ignore demands from families (and the students). Students could choose a university and program to study. They could enter the chosen university through competitive exams managed by an individual university. One could imagine the system that extends the planning to the selection of the students to enter the universities. In such a “brave new” system, the government should test the appropriateness of school students to the particular job and place them into the respective universities and programs. To some degree, such an approach was tested in various forms in early Soviet times. In the last Soviet period, the government used different forms of positive and negative discrimination to regulate the students’ demand for higher education. Special places in universities were reserved for young people with working experience in a particular sector and for students from ethnic minority groups. They could get into the most prestigious universities with lower exam results within the special quota.

6.4 Social and Economic Transition and the Expansion of Higher Education over the Last 20 Years

The Russian higher education system was strongly affected by the social, cultural, and economic changes that have been taking place in the country since the beginning of the 1990s. The key changes and characteristics of this period relevant to

tertiary education as indicated in OECD Thematic Review of Tertiary Education (2007) were the following:

- movement to democracy and market economy;
- rejection of planned human resources policy related to the main economic sectors;
- decline or elimination of a number of key industries;
- elimination of the centralized distribution system; and
- dramatic weakening of centralized control.

Changes that happened in the Russian labor market as a result of the "perestroika" are also important. These changes were a swift shift from state control of wages, manpower resource allocation, and employment to a market system of wage setting, students' response to labor market opportunities through the choice of courses and programs, and freedom of employers to hire graduates based on market conditions (Carnoy et al. 2012). In the section below, we analyze how social and economic transformations affected the demand for higher education.

New sectors of the economy emerged with unprecedented speed—e.g., banks, insurance companies, and private retail. They required hundreds of thousands of managers, accountants, and lawyers trained for the new economy. At the same time, many traditional industries collapsed. The salaries of engineers and researchers (especially in natural and engineering sciences) decreased. This new demand of the labor market mirrored the changing preferences of families and students. They turned to business education and departments of management, economics, law, and humanities (The White Book of Russian Education 2000). The dramatic shift in the preferences of prospective students became one of the determining factors in the expansion of higher education.

However, we argue that strong demand for higher education from families and students themselves was not determined by the changes in the labor market structure only. This demand existed implicitly for a long time in the Soviet Union. The voices of families and students were not heard. Many educated and caring families could not send their kids to universities because of the high competition, tight limitations on the number of places, and the government discrimination instruments. The emergence of new stakeholders in consumers of higher education services was the most important factor in higher education expansion. The "quasi-corporate" system suddenly became an open market system. Another important driving force behind the male students' wish to enter a university was the avoidance of the Russian army draft. As soon as a male becomes a student, he gets a draft exemption.

As it happened with some other previously closed and heavily regulated areas of the Soviet life, the opening of the higher education sector to the demand of new stakeholders led to massive growth. The government did two things to open the system to new customers. In 1992 it permitted public institutions to enroll fee-paying students along with state-funded students and allowed the opening of private higher education institutions. It also added a number of state-funded places to the public universities, but the main expansion happened because of fee-paying students as is shown in Fig. 6.5.

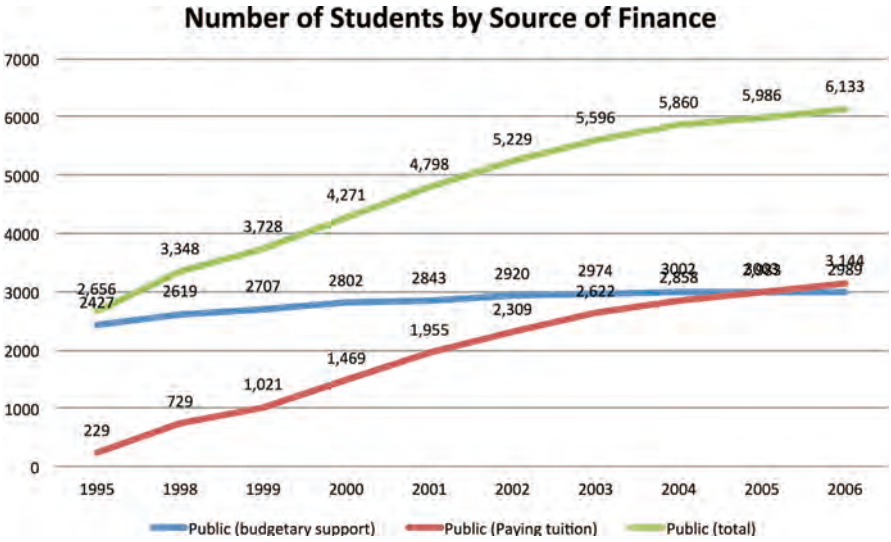

Fig. 6.5 Number of students by the source of finance. (Source: authors own calculations based on the state statistics)

This coexistence of tuition-paying and tuition-free places at the Russian public universities is a relatively unusual phenomenon. Different universities employ different strategies to resolve inevitable tensions associated with this arrangement. There are no studies of the impact of this coexistence. Anecdotal evidences and informal interviews with the university rectors show that all universities found ways to put together these two cohorts of students. Another question arises: where do the Russian public universities get the capacity to absorb all these students—where do they get professors, laboratories, learning materials, etc.? The answer is that they started to utilize the existing capacities more effectively. However, this is only a part of the answer. Two main trends behind the capacity increase were acceleration of part-time programs and opening of branches of universities in different cities and towns. The provision of part-time education increased so quickly that in 2000, the admission to universities exceeded the number of school graduates (Fig. 6.6).

This "excessive" supply reflected the growing demand by other audiences not just school leavers. This is why the supply included such options as shortened programs that provided a "second diploma" for those who completed higher education program before and part-time education for those who graduated from vocational schools or vocational colleges (with associate degrees). As a result, the share of part-time students in Russia was more than 50 % as of 2010 according to "Education at a Glance 2012" (Table 6.3).

University branches grew very quickly. Often they were opened in small towns with poor quality buildings, without any human capacity to teach. However, it did bring higher education (we do not mention the quality of education here) to the consumers. In 2002, there were more than 1300 branches of public universities in all regions of Russia. Most of the places in these branches were self-financed.

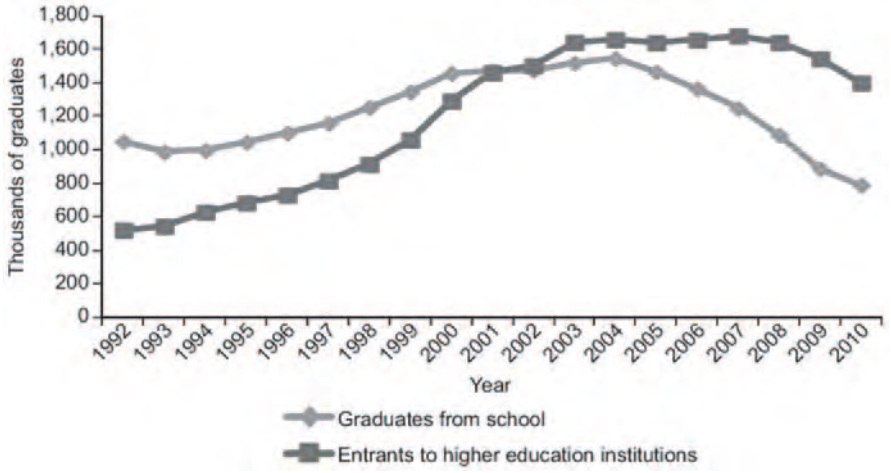

Fig. 6.6 School graduates and admissions to universities: 1998–2009 (thousands). (Source: Nikolaev and Chugunov 2012)

Table 6.3 Distribution of Students by Mode of Study

	Tertiary-type B education		Tertiary-type A and advanced research programmes	
	Full-time	**Part-time**	**Full-time**	**Part-time**
OECD countries				
Australia	47,3	52,7	70,8	29,2
Canada	76,0	24,0	82,1	17,9
Czech Republic	90,5	9,5	97,4	2,6
Estonia	89,7	10,3	86,8	13,2
Poland	67,8	32,2	45,2	54,8
Slovak Republic	78,0	22,0	64,4	35,6
Slovenia	53,9	46,1	75,0	25,0
United States	48,2	51,8	66,3	33,7
OECD average	71,4	28,6	79,6	20,4
Russian Federation	**67,7**	**32,3**	**48,9**	**51,1**

The second most important response to changing demand was the development of the private sector in Russian higher education. More than 450 private universities have been opened over the past 20 years. The private sector in higher education is of particular importance for the post-Soviet period being reviewed—discussed further in a separate section. As a result, the number of higher education institutions in Russia grew rapidly (see Table 6.1). A few new public universities were also established by the federal and regional governments to respond to the changing demand.

The growing supply in higher education gradually influenced the demand and supply of professional education on other levels: initial and vocational colleges

Table 6.4 Changes in number of institutions/students: initial vocational education and vocational colleges. (Source: Statistics of Russian Education 2013, Retrieved from http://stat.edu.ru/ (23.01.2013))

	Initial vocational education		Vocational colleges		
	Number of institutions	Number of students (thousands)	Number of institutions (public)	Number of students (thousands)	Part-time students (thousands)
1991	4321	1841	2605	2202	560
1995	4166	1689	2612	1923	457
1999	3911	1694	2576	2147	459
2000	3893	1679	2589	2309	519
2005	3392	1509	2688	2473	510
2006	3209	1413	2631	2389	483
2007	3180	1256	2566	2289	472
2008	2855	1115	2535	2136	459
2009	2658	1035	2564	2052	453
2010	2356	1007	2586	2027	445

Table 6.5 Share of students per levels of tertiary education system (percentages). (Source: Abankina 2012)

	Initial vocational education	Vocational colleges	Higher education (universities)
1993	51.3	26.4	22.3
1999	34.4	29.4	36.2
2002	29.1	28.2	42.7
2006	22.5	28.5	49
2009	21.4	24.1	54.5

(UNESCO levels 4 and 5b). From 1991 to 2010, the number of students in initial vocational programs dropped from 1.8 to 1 million whereas the number of students in vocational colleges remained mostly stable (as illustrated in Tables 6.4 and 6.5).

The enormous expansion did not just respond to the existing unsatisfied demand; the supply also fueled the demand back starting the cycle of mutual stimulation. Higher education had become a social norm for young people. Currently 85% of secondary school graduates (supported by their families) plan to enter higher education. They consider higher education not just a pathway to specific occupations but as a means to acquire general competencies and a social status.

Compared to the Soviet times, the government significantly reduced its role in regulating the access to higher education institutions. The affirmative action policies were mostly stopped. The introduction of the national, centrally administrated university entrance exam (the so-called Universal State Exam (USE)) was the major policy step to ensure nationwide competition for university places. However,

a number of universities (especially those that operate under the sectoral ministries) have a special quota for the students that "are sent" by particular state-owned companies to study at these universities with some guarantees of employment. However, the number of such students is very low compared with those who enter the universities through USE.

6.5 Changes in the Supply Structure of Higher Education

The data in the previous section suggest that in the past 20 years, Russia has achieved a very high degree of access to higher education. In the section below, we discuss how this expansion has changed the structure of the higher education system and how the system has responded to the structural changes in the economy and, specifically, in the labor market. These dramatic changes were accompanied by the deconstruction of the existing instruments of aligning supply and demand. The government abandoned the centralized mandatory graduates' placement system. This happened overnight. Tens of thousands of graduates found themselves in the labor market without any guidance, support, and recruitment infrastructure. The carefully built balance between supply and labor market demands was broken.

The situation in Moscow and Saint Petersburg is a good example of the mismatch that emerged. By 1991, 23 % of all public universities and more than 25 % of students were concentrated in Moscow and Leningrad (Saint Petersburg) with 28 % of teaching staff being located in those cities, i.e., nearly 32 % of the total number of teachers holding academic degrees worked in those cities (The White Book of Russian Education 2000). Before 1991, the majority of the university graduates in Moscow or Leningrad used to be sent to other regions through the mandatory job placement mechanism. They could not stay in Moscow and Leningrad legally. After the abolition of that mechanism, the majority of the university graduates of those cities decided to stay in the capital cities despite the fact that the labor market did not need such large numbers of aviation engineers or medical doctors.

Almost all the links between universities and industry previously enforced by the central planning agency disappeared. However, the government maintained one function—the allocation of budget-financed student places among different universities and educational programs within universities. Despite significant changes in the Russian economy and in the labor market, this allocation (that formerly presented the needs of different elements of the economy) did not change much. New needs of private business, families, and students themselves did not find an adequate response from the government in the form of allocations of state-funded places. The changes in the structure of the supply of the state-funded places were slow and insignificant. This fact confirms the path dependency theory (David 1985) as the universities did not react to the changing labor market. They continued to ask the government to finance the same narrow training of the specialists that they had done for many years. They were interested in maintaining the state of affairs

to avoid investment in such changes. Thus in their relationship with the state, the universities tried to maintain the traditional set and volume of educational programs paid by the state despite the real needs of the labor market.

Traditional employers (especially big state-owned companies) were reasonably happy with the traditional structure of the supply. Gradually, the voice of new players or stakeholders—private business in new industries—became louder. Employers in new emerging industries required not only general managerial and social skills but also strong technical skills e.g., information technologies skills. The universities had neither trained personnel nor developed curriculum to provide training for the emerging sectors. The Ministry of Education did not hear this voice and maintained a rigid approach to the federal education standards. This became a barrier to increasing universities' flexibility in responding to the changes in labor market demands.

As demonstrated by and Dobryakova and Froumin (2010), there are no real incentives for universities to abandon outdated programs, improve the quality of their educational provision, and introduce innovation. University administrators, professors, and even students are more or less satisfied with the current state of affairs. Russia maintains a very low level of unemployment and at least "some work" is guaranteed to the graduates. This allows students to ignore professional training and focus on developing social competencies. According to a recent survey of 890 employers in Russia, less than 10 percent of the employed found jobs in the industries fully corresponding to their specialization as stated in their diplomas. The research also indicated that 75 percent of university graduates in Russia have been taking jobs in the areas different from their fields of study and most of them have to receive some on-the-job training prior to cope with job responsibilities [Galkin, 2005].

At the same time, in their response to the popular demand for training in management and economics, marketing universities opened new schools and departments mainly on a fee-paying basis. The departments of economics, management, law, etc., started getting established almost in all universities including formerly highly specialized institutions. This led to significant changes in the structure of the supply of higher education as shown in Fig. 6.7.

This analysis demonstrates that universities responded quite effectively (at least in terms of quantitative expansion) to the demands of families and students for managerial, economic, and legal education. This was also a response to the demand of the emerging service sector of the Russian economy. The specific nature of this situation is that both the creation and the expansion of the service sector in the Russian economy and the higher education response took place almost simultaneously. The sector representatives did not have the capacity to articulate their demand and to formulate the requirements to the quality of training. The demand for quantity was so high that the universities could ignore the quality. They had almost no trained staff to teach students. They had no proper textbooks and teaching/learning materials. This is one of the reasons why this sector of Russian higher education is still regarded as a low-quality sector. So, on the one hand, public universities tried to keep the status quo in their "traditional" fields and to maintain the allocation of the state-funded places in these fields. They considered the state as an important

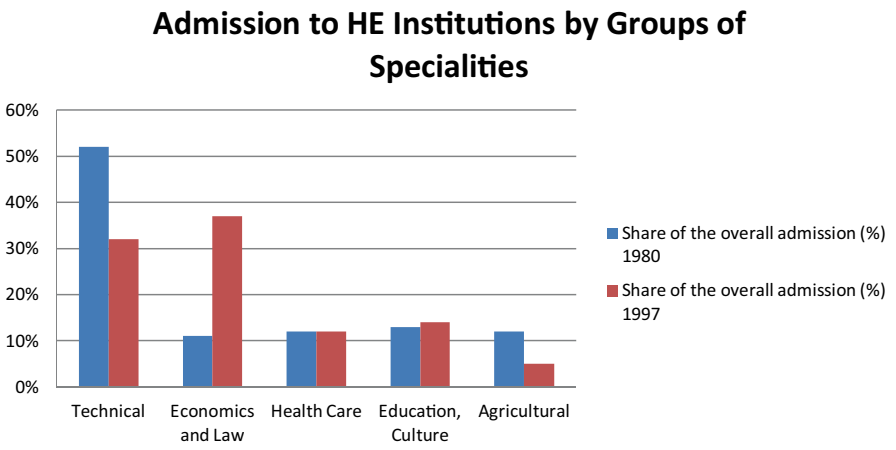

Fig. 6.7 Admission to higher education institutions by groups of specialties. (Source: The White Book of Russian Education 2000)

consumer. On the other hand, they found new market-type demand for economics and management training by prospective students and responded to this demand. So in both cases, they behaved rationally.

The expansion of education in "soft areas" such as management and business indicated the desire of the students to obtain flexible and broad education—not just new labor market opportunities. Almost all stakeholders complained about too narrow specializations and the vocational orientation of the higher education. The Ministry of Education responded slowly by cutting down the number of specializations from 1200 in 1997 to 900 in 2003. Radical change started with Russia joining the Bologna process in 2003. The majority of the 5-year specialized programs were merged into a broader 4-year baccalaureate programs. This led to the significant change in the structure of the supply of the higher education. It also contributed to saving resources by shortening the majority of programs by 1 year.[10] These changes in supply led to the change of the typology of the universities described in Sect. 6.2.

National sectoral (specialized) universities became more diverse. They opened new programs in economics and management. However, their progress or stagnation much depends on the situation in the "parent industry." In the case of the degradation of the sector with automotive production, textile industry and electronics being good examples, the labor market shrinks and becomes unattractive. Graduates will not find jobs according to their specialty. Even if the sector survives, the capacity of universities producing such specialists easily becomes excessive as it has happened to a network of universities that served the aviation industry. Thus, these universities enter unhealthy competition. By maintaining their sectoral identity, they face the risk of stagnation. They get fewer good students and less funding

[10] We have to admit that, gradually, the Bologna system has affected other sectors as well.

for research or fee-based specialized training. In the case of the progress of the sector (oil and gas industry and railways), the universities also retain their identity but develop new programs reflecting new challenges and opportunities in the sector. They develop R&D partnerships.

The second type of universities—*regional-sectoral universities*—went through dramatic changes. Their parent industries declined in most cases. They opened departments of management, economics, and psychology, for example. This made them direct competitors to each other and to "traditional" universities. Most of them, with the exception of medical universities, became outsiders in the national and regional higher education systems. They refused to cut enrolment and were faced with the intake of low-qualified students. Having the status of federally governed institutions, they have not established new relationship with the regional authorities and regional labor markets. Some exceptions rather confirm the general rule—those universities that do not provide special education do not have any real value in relation to the labor market. At the same time, they play an important role by giving general social skills to the students.

Finally, *traditional universities* mostly maintained their status of leading higher education institutions in their regions. They had an advantage of having some capacity in training economists, journalists, and lawyers. In most cases, they continue to train local elites. But the decline in research funding in the country dramatically affected almost all departments, particularly science departments. The best professors left the universities and often left the country. Due to the decline in funding, the research function in those universities has almost disappeared. They also stopped training specialists for the Academy of Sciences and for the sectoral research institutions.

Thus, currently Russia has a new structure of higher education. It is much more diverse than it used to be in the Soviet Union. The state has lost the instruments to maintain the traditional balance between the supply and demand and maintain the quality at a reasonable level. The state has not introduced new market-based instruments to ensure entrepreneurial behavior of the higher education institutions, their openness to the labor market demands, and to the expectations of the external stakeholders (OECD Thematic Review of Tertiary Education 2007). The current structure of supply does not match these demands and expectations.

6.6 The Development of the Private Higher Education Sector in the Last 20 Years

There used to be no private education in the Soviet Union. The education law of 1992 allowing the establishment of private higher education institutions was met with unexpected enthusiasm. Since then, a number of private universities have been providing education in socioeconomics and humanities. Private universities made attempts to be more open to potential candidates and their parents and respond to

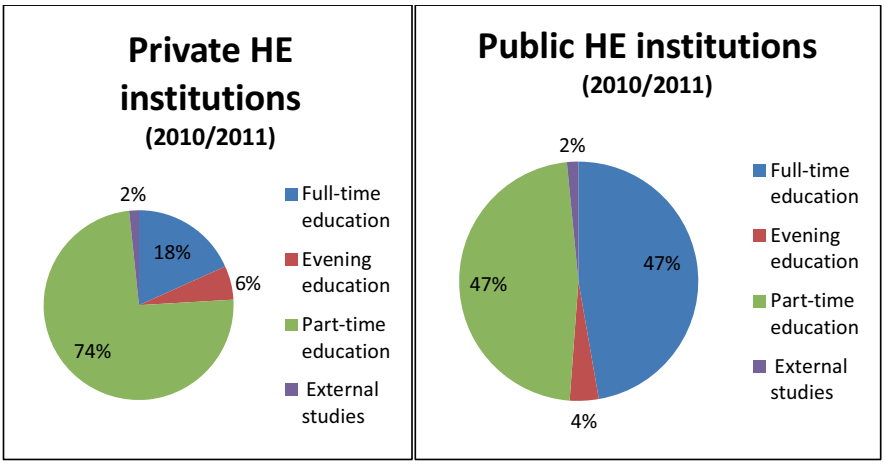

Fig. 6.8 The distribution of students by the form of training

the requests of the rapidly changing educational market. But in pursuit of meeting these needs, they face contradictory needs: some consumers were longing only for diplomas; other candidates were seeking skills that were in demand in the labor market; many parents wanted to keep their children[11] out of the labor market and give them general social skills and functional literacy. The majority of researchers argue that the "private sector initially failed to perform creatively in a competitive environment" (Gurov 2004). We do not agree with this statement. Indeed, there are almost no private universities in Russia that offer free education. So each private university has to raise funds from students and attract as many students as possible. At the same time, the objective view suggests that there are three main types of private universities based on existing demand. For those universities that "sell diplomas," the quality of education is out of their list of priorities. Other universities keep kids out of the streets and provide them with basic managerial skills. As the leader of one of such universities claimed, "primarily private universities were established as a sort of employment agency to prevent young people from becoming unemployed and committing crime" (Ilyinsky 2004). Finally, there is a group of private universities that provides decent training in such areas as law, management, and business. Figure 6.8 shows that the private universities are focused more on part-time education than the public universities.

During the last 20 years, private universities (with few exceptions) failed to become central players in the market for higher education. They are perceived by the population and by the state as marginalized group of universities for those who cannot get free tuition places in public universities. It means that if a school leaver fails to get a tuition-free place in a public university and, at the same time, cannot

[11] It is important to note that the school leaving age in Russia is less than in many countries—17 years.

afford to pay for his/her education because the tuition fee in public university is much higher than in private universities, he/she has an option of a private university.

The data collected by the Higher School of Economics (RIA News 2012) demonstrate that the average USE score to enter private universities in Moscow is only 55.1 points whereas in public universities, it is 69.5. Such a distribution is also typical for other regions in Russia. The majority of private universities enroll 2/3 of their candidates with an average score between 47 and 55 points. Only 1/3 of the candidates enrolled by state universities have scores under 45 points whereas 62 % of private universities accept candidates with a minimal score under 45 points. Current demographic trends suggest that the private universities are facing the growing challenge to obtain students. It pushes them to work more with nontraditional students and become institutions for life-long learning.

6.7 Access to Higher Education

The sharp drop in income levels and living standards after the collapse of the Soviet Union affected the accessibility of higher education for different population groups. Many parents were not financially sound to send their children to other cities to prepare for and pass the entrance examinations of the universities. Such a situation did not allow well-prepared school graduates from rural areas or far regions to enter the best universities. They had to choose higher education institution according to territorial proximity. Financial factors began to be assumed as definitive criteria for admission to universities, as claimed by Efendiev and Reshetnikova (2004). Residence and income level had a significant impact on access as many experts believe. This situation was perceived by the population as a serious injustice because, as we mentioned earlier, the Soviet system included a number of measures of positive discrimination (affirmative action) that equalized the access to higher education for different income groups despite their place of residence.

Corruption at the entry point to university was another serious problem that affected equal access to higher education. Corruption existed at the level of individual examiners as well as at the institutional level. Each higher education institution had its own entrance exams to be passed, which usually required additional training. Applicants wishing to get to specific universities could hardly expect successful enrolment without completing these very expensive preparatory courses. The corruption in university entrance exams processes was widespread.

The introduction of the USE in 2009 was an important step to get rid of corruption and improve the access to higher education. OECD experts claimed, “the development of a new form of enrolment - based on the Unified State Exam - is the most important and fundamentally new initiative in recent years aimed, on the one hand, at equalizing the territorial and economic differences and on the other hand, at eliminating institutional barriers that arise due to the gap between institutions of

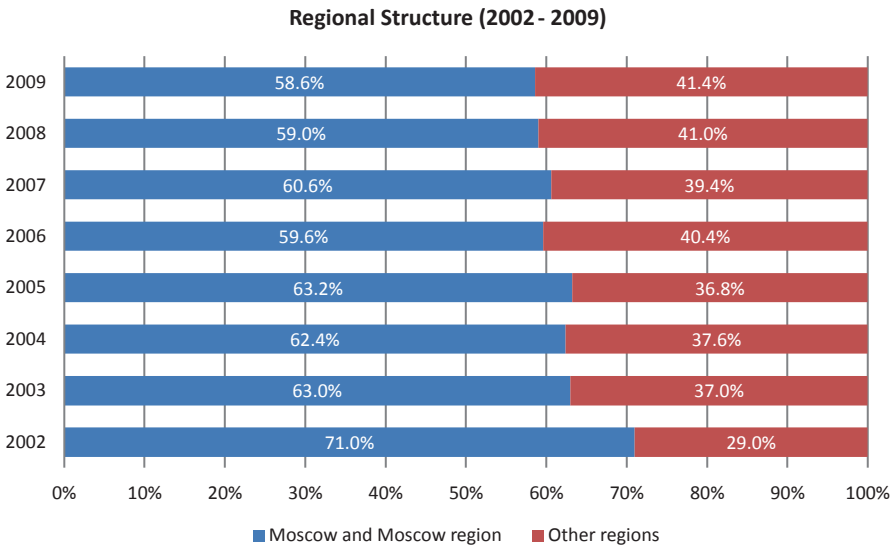

Fig. 6.9 Regional distribution of 1st year students at Higher School of Economics (HSE.) (Source: NRU 2009, http://ba.hse.ru/stat

secondary and higher education." (OECD Thematic Review of Tertiary Education 2007)**.**

The introduction of the USE almost stopped the corruption. It widened the choice of universities. Thus, the USE has increased the accessibility of education by reducing the transaction costs associated with preparation for entry. Also, conditions to enhance educational mobility of students were created. Some examples of the USE influence on access to higher education should be noted. The number of students of the Higher School of Economics from different regions of Russia increased steadily as a result of the USE (Fig. 6.9).

Currently, most of the best and brightest school graduates from the Russian regions use the USE to enter the best universities in the Moscow. It created new demand for places in the reputable universities and stimulated stronger competition among capital and regional universities for the best students. One cannot claim that the introduction of the USE solved the problem of access to high quality higher education. The cost of living in capital cities is still unbearable for many families. The state failed to introduce working schemes of financial assistance for the students from poor families. Difference in the level of preparation of school graduates to the USE is also an important factor that limits the opportunities of students that did not go to good schools. A number of studies confirm the fact that students from families from the two lower-income quintiles are represented disproportionally low in top Russian universities. This issue needs to be addressed.

6.8 New Higher Education Policy: From Access to Quality

The National Education Development program was approved by the Russian Government in December 2012. It marks a new stage in educational reform in Russia and reflects experiments that took place in Russian education in last 5 years. The quality of education is considered in this program as a priority for educational policy. In higher education, quality is interpreted as strong correspondence between the demands of the labor market and the supply of educational services[12]. The idea of quality also includes such aspects as international competitiveness that often is seen through the lens of international rankings. This section describes various reforms that are intended to lead to better quality higher education.

6.8.1 The Establishment of a Group of Leading Universities

The government recognized the need to articulate the differentiation of universities and give better opportunities to some universities to become leaders and beacons for other universities. Two groups of universities were established:

6.8.1.1 Federal Universities

The process of creating a network of "federal universities" in different regions by merging existing higher education institutions started in 2006. The main goal of establishing these universities is the development of strong higher education institutions that could become drivers for regional economic and social development through advanced R&D and the provision of world-class education for the students from remote regions. Federal universities had to comply with several important features described as follows:

- A wide range of innovative higher and continuing professional education programs, retraining and advanced programs based on the use of modern educational technologies and differentiation by target group and levels.
- A wide range of fundamental and applied interdisciplinary research including priorities for the development of science, technology, and engineering in Russia.
- Participation in regional, national, and international programs and projects to provide sustainable diversified revenue structure in consolidated budgets of the university.

As a result, nine federal universities were created all over the country, from Kaliningrad to the Far East over the past 7 years. Each of these universities received an additional development grant to improve the infrastructure for teaching and

[12] This interpretation of quality looks narrow. It is still a subject of professional discussions.

research. The total funding of these development grants exceeded 90 billion rubles (about 3 billion dollars). However, the impact of this project is doubtful. The selection of higher education institutions for the status of the federal university occurred without any contest. It was held according to geopolitical considerations and also under lobbying efforts undertaken by regional leaders. So the capacity of these universities was insufficient to achieve the stated goals. Moreover, the government did not realize the pitfalls of merging different institutions. Such a situation raises questions about the achievement of stated objectives: it was assumed that the federal universities would be among the top 300 best universities in the world by 2020.

6.8.1.2 National Research Universities

An open contest was held by the Ministry of Education and Science for granting the status of a NRU in 2008. The NRU status was assigned to 29 higher education institutions through two rounds of the competition (the second round took place in 2009). The integration of education and research is the main feature of these universities. NRU status is aimed at new knowledge generation and transfer; conducting fundamental and applied research. Obviously, these features affect the educational process—a significant proportion of students enrolled in graduate and postgraduate programs.

The universities that become the winners received additional funding (up to 1.5 billion rubles for 5 years), which could be spent on [Decree No. 550 2009]:

- purchase of educational and scientific equipment;
- professional development and retraining of academic and teaching staff;
- development of educational programs;
- development of information and communication technologies (ICT) resources; and
- improvement of the quality of education and research management.

The additional funding helped to improve the infrastructure of the universities and the professional development of teaching staff. Unfortunately, these formally prescribed lines of funding did not permit spending money on development of cutting-edge research by attracting the best foreign and domestic faculty. A very important fact is that the new status given to the universities was accompanied by a considerable increase in bureaucratic control. For example, NRUs were supposed to provide weekly reports (Fedukin and Froumin 2010).The idea of the selection and support of universities that are capable of becoming leaders and engines of education mostly had a positive response among the professional community. Other universities began to create development programs to promote research and publication activities following the leaders. The development of these leading research universities should respond to the demand of a national innovation system and the best graduates of the Russian school system that are interested in an academic career. Annual reviews of the outcomes of this project showed the increase in the research output of these universities, strengthening their prestige among the best school graduates.

6.8.1.3 Project 5/100

In creating the group of leading universities, the Russian Government paid special attention to the Russian higher education acceptance in the international arena, in particular, national universities places in international rankings (The Edict of the President of the Russian Federation 2012). The Ministry of Education identified several tasks to achieve the objective of ensuring that at least five Russian universities are ranked in the top 100 of one of the leading international rankings by 2020. These tasks are:

- creation of favorable conditions to link research and education;
- increasing the number of foreign students and postgraduates;
- attraction of foreign professors and the internationalization of all areas of education and research activities;
- implementation of international management practices and the involvement of foreign experts in the field of university management; and
- university brand promotion activities on the world stage.

The contest for the "international competitiveness" grants was planned for the end of 2013.

6.8.2 New Links Between Universities and Industry

In its attempts to build new mechanisms to link universities and industries, the Russian government moved from direct administrative pressure to market-type incentives. The mechanism was designed to encourage the use of production capacity of the enterprises of Russian higher education institutions for the development of high-tech industry and to stimulate innovation in the Russian economy [Decree No. 218 2010]. Implementation of the decree assumes the possibility of financing projects to the amount of 100 million rubles per year. In this case, an essential condition is a manufacturing enterprise investing its own funds in the project in the amount of not less than the full amount of the government subsidy. The project already has considerable positive results (Kommersant 2012): in 2012, 2488 new jobs were created, including jobs for young people—1484. Projecting for 2013–2017, about 9500 new jobs will be created. The number of young university scientists (experts), students, and postgraduates involved in the research activities of the project amounted to 4319, and among them, young scientists—1733; students—1868; and graduates—718. Another positive outcome of this project was the involvement of the employers in the modernization of the curriculum. It should lead to a better balance in the supply of higher education and high-tech industry demand.

6.8.3 Closing Down Low-Quality Higher Education Segment

There was a great resonance in expert and professional communities drawn by the higher education institutions' performance monitoring exercise. It was organized by the Ministry of Education and Science in the second half of 2012. Every public higher education institution and all branches provided data on their performance on 50 indicators. Further, *five* indicators were singled out and on the basis of data analysis, thresholds of effectiveness were established.

Universities were recognized as "having risk to be ineffective" if four or five indicators were below the threshold. Almost 106 of 502 higher education institutions and 450 of 930 branches got into this group. The result of the additional analysis carried out by government expert groups showed that 25 universities and 231 branches should be closed down and 50 universities should implement serious measures to improve quality. By the end of 2012, 21 universities and 156 branches were closed down or merged with other more successful universities. This measure was carried out to identify underperforming universities that provoked strong public response: some experts believed that drastic action is long overdue and purification of higher education system is essential for its future development. Other groups actively protested and accused the government of destroying a great Soviet legacy. This project indicates that Russian government officials are serious about radical measures to eliminate weak universities. Some estimates suggest that as much as 20 % of universities and 30 % of affiliates would be cut in the next 2–3 years.

6.9 Conclusions

The last 20 years have radically changed the relationship between supply and demand in the Russian higher education. There were two stages in this change. From 1991 to 2000, the subordination of higher education to the planned and regulated demand of the state controlled economy has been spontaneously transformed into a strange mixture of public provision of traditional education (that almost lost real demand) and a market-oriented supply of popular programs (in economics, management, etc.). New mechanisms to align the supply with demand of the different stakeholders were gradually developed and introduced during the last decade. It happened in the context of a rapid expansion of higher education in Russia and rapid demographic decline of the student-age population. This experience shows that Soviet-type approaches to regulate the supply directly from the center to align it with the demand of multiple stakeholders in a rapidly changing environment do not work. The state should ponder more autonomy to universities and incentives to be more open to different types of demand and to engage universities in healthy competition. At the same time, the state should provide incentives and facilitate the differentiation of universities in response to the diverse demands of the families and the labor market. Finally, another important role of the state in the transition period

should be to maintain quality assurance mechanisms by engaging universities in the dialogue with employers, students, and regional authorities.

Acknowledgements We express our gratitude to Oleg Leshukov and Mikhail Lisyutkin for useful discussions and their help with the data processing.

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Chapter 7
Higher Education, Social Demand, and Social Equity in India

Kishore M. Joshi

7.1 Introduction

It is widely recognized that higher education promotes social and economic development by enhancing the human and technical capabilities of society. Technical and institutional changes are key components of development, and higher education plays an important role in facilitating such changes. During more than six decades since independence, Indian higher education has undergone remarkable transformation from an elite to a mass system. Today, India possesses a very large and diverse higher education system with programmes in almost all areas of traditional and modern learning (Agarwal 2011; Powar 2011; Joshi and Ahir 2013).

In its size and diversity, India is the third largest higher education system in the world, after China and the USA. Before independence, access to higher education was very limited and elitist. However, there has been an appreciable growth in the number of universities and colleges[1] in India since independence from 25 to 700, respectively, in 1947 to 701 to 35,539 in 2013, respectively. Total enrolment increased from a meager 0.1 to 1923 million in 1947 and 2013, respectively. The number of teaching staff increased from 0.024 to 0.8 million in 1950 and 2011,

[1] Universities can either be established by an Act of Parliament or by the state legislatures. The universities are of the unitary type with one or multiple campuses or of the affiliating type. The concept of an affiliating university is unique to South Asia where a university affiliates colleges. These colleges conduct teaching and learning under the supervision of the university to which they are affiliated. The colleges do not award their own degrees, but the university to which the colleges are affiliated awards the degrees. Recently, a few selected colleges have been given autonomous status by the University Grants Commission (UGC) to conduct teaching and learning independently.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_7

respectively. The teaching staff[2] comprises 4% tutors, 19% professors, 23% readers, and 54% lecturers (UGC 2012). Because of this increase, the student–teacher ratio in India is approximately 24:1, which is much lower than in most developing countries.

The private rate of return to education including higher education in India has shown an appreciable increase over the years, although such studies differ in methodology and their outcomes (Duraisamy 2002; Dutta 2006; Madheswaran and Attewll 2007; Joshi 2007). The most recent measurement of the private rates of return to higher education is about 16% (Agrawal 2011). This relatively high private rate of return suggests that for an individual there is a substantial incentive to invest in higher education.

This chapter provides an overview on Indian higher education and attempts to examine social equity in the context of access, participation, and affirmative action. It also looks at issues of employment and unemployment as well as urbanization as important factors influencing social demand. The last section discusses the status of private higher education at present and its anticipated role in the future.

7.2 Enrolment, Financing, and Quality in Indian Higher Education

7.2.1 Enrolments

The higher education system became more mass-based and democratized after 2000 with more than 50% of enrolments coming from the lower socioeconomic strata, and women comprising more than 40% of total enrolment (Tilak 2004 2001). The female enrolment share in total higher education enrolment in 1950 was around 11%. In 1990, it grew up to 29%; in 2000, it was 39%; it reached 42% in 2011.

As Table 7.1 shows the growth in the number of institutions and enrolment has been impressive during the last decade. The annual growth rate in total student enrolment was around 11% and for universities, it was close to 15%. At the same time, the colleges grew at an annual growth rate of nearly 20%. Despite this huge growth, the gross enrolment ratio (GER) in higher education is only around 19% (MHRD 2012).

In terms of enrolment by the faculty of study, Table 7.2 shows that for undergraduates, the largest faculties are arts followed by science and engineering. A comparison of 2005 and 2011 data reveals that enrolment in professional programmes has increased while enrolment in "traditional" faculties has declined. For example, the share of the engineering faculty increased by 257%. Similarly, the share of the medical faculty also increased significantly (UGC 2012)

[2] Recently the title of lecturer and reader has been replaced by Assistant Professor and Associate Professor.

Table 7.1 Growth of higher education institutions and enrolment. (Source: UGC 2013)

Year	Universities	Colleges	Total	Enrolment (in millions)
1947–1948	20	496	516	0.2
1950–1951	28	578	602	0.2
1960–1961	45	1819	1864	0.6
1970–1971	93	3277	3370	2.0
1980–1981	123	4738	4861	2.8
1990–1991	184	5748	5932	4.4
2000–2001	266	11,146	11,412	8.8
2010–2011	612	32,010	32,622	16.9
2011–2012	659	33,023	33,682	18.5
2012–2013	701	35,539	36,240	23.3

Table 7.2 Enrolments by field of study (2012). (Source: MHRD 2012)

Level	Courses	Students
Ph.D./M.Phil		90,658
Postgraduate	Arts	1,018,331
	Science	459,830
	Commerce	202,151
	Engineering	202,699
	Medicine	45,072
	Agriculture/Allied	11,572
	Management	538,911
	Education/Teacher training	148,306
	Law	27,327
	Others	50,213
Total postgraduate		2,704,412
Postgraduate diploma		120,864
Undergraduate	Arts	7,078,570
	Science	2,604,580
	Commerce	2,755,285
	Engineering	3,846,851
	Medicine	561,075
	Agriculture/Allied	135,703
	Management	592,143
	Education/Teacher training	1,822,648
	Law	174,203
	Others	266,522
Total undergraduate		19,837,580
Grand total		22,753,514

7.2.2 Expenditure on Higher Education

Expenditure on higher education as a percentage of GDP has been around 1.20. The central government has partially (not substantial enough though to make changes) increased the share for higher education but most state governments have not been able to even maintain the past allocation to higher education as a proportion of gross state domestic product (GSDP) (UGC 2012). Expenditure on education during the last decade was less than 4% of GDP and for higher education, it has been about 1.25%. Similarly, public expenditure as a proportion of GDP on education also showed that there had not been a great change in a recent 3-year period (Figs. 7.1 and 7.2). Household expenditure on higher education, however, also increased significantly during the last decade reflecting increased demand and rising costs. However, income from the fees has been less than 10% in most of the public institutions. On the other hand, the demand for loans has simultaneously increased during the last 5 years, with the majority of loans for professional programmes going to middle-class families. Thus, the share of private sector financing and individual financing has been rising dramatically (Powar 2011).

7.2.3 Private Higher Education

Private higher education institutions are growing rapidly. The share of private institutions is currently about 59% with a similar share of the student population. In professional courses, the share of private institutions is about 79%. The share of student enrolment in private higher education was 32% in 2001 which increased

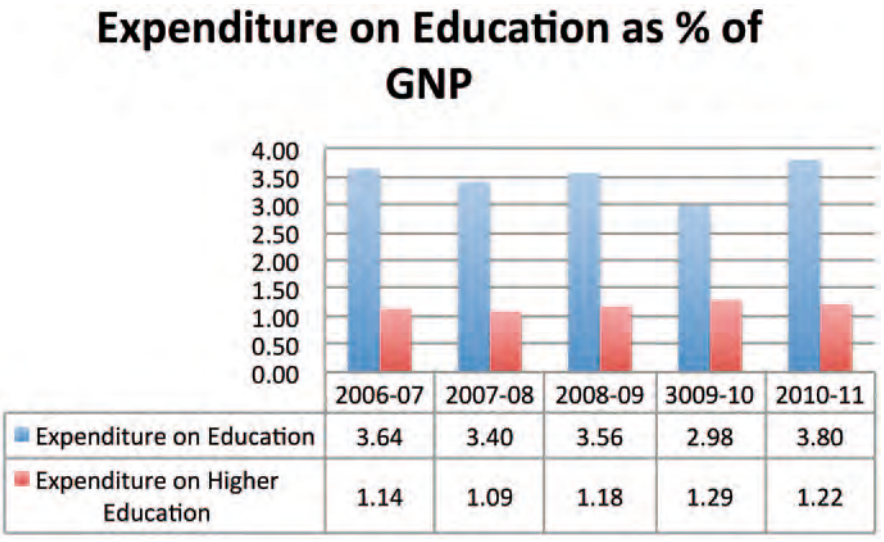

Fig. 7.1 Expenditure as percent of GDP. (Source: UGC (2013))

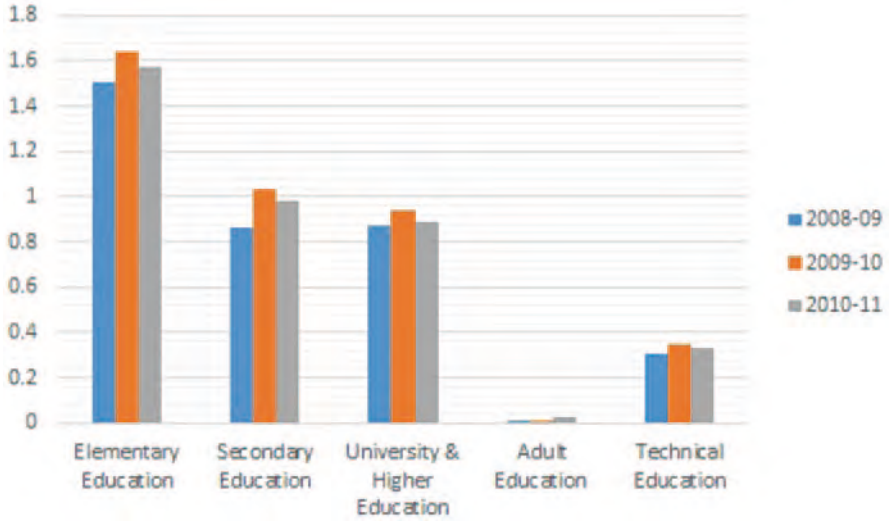

Fig. 7.2 Public expenditure as percent of GDP-sector wise. (Source: UGC 2013)

up to 54% in 2007 and 59% in 2012. Despite a rise in fees in the private sector, student enrolment is increasing (FICCI 2012). Fees in public institutions have been relatively low as well as stagnant. In some of the states, the tuition fee in private institutions is also regulated by government although the fees in private institutions are much higher. Many private institutions also levy other fees (other than tuition) and seek donations to enhance their income.

7.2.4 Quality

The quality of higher education in India varies considerably across the system and presents a huge systemic challenge. Accreditation is voluntary but many state governments have made it mandatory for all institutions. The National Assessment and Accreditation Council (NAAC) is the main agency responsible for quality assurance in India (Stella and Gnanam 2003). Although there are two other agencies, namely, the National Board of Accreditation (NBA) and ICAR Accreditation Board, the majority of the institutions fall under the ambit of NAAC for accreditation. Unfortunately, NAAC has been able to cover less than 40% of the institutions under its ambit. Currently, institutions are graded under four categories, viz., A, B, C, and D, denoting "very good," "good," "satisfactory," and "unsatisfactory" levels, respectively. Of the total accredited colleges, 10% have been graded as A, 66% as B, and 24% as C. Similarly, of the total accredited universities, 32% have been graded as A, 52% as B, and the rest as C.

The accreditation of NAAC has focused on institutional accreditation rather than programme evaluation. Accreditation has not been able to improve the quality drastically as it is not linked to the funding mechanism. Despite low accreditation,

government has not addressed the issues of low faculty number and poor infrastructure. Similarly, government has not provided any additional incentive for good performers. The international rankings of universities also reflect Indian higher education's dismal record. The representation of Indian institutions in the top 500 universities of the world is too low. Although scientific publications and the citation impact of papers emanating from India has increased (0.68 during 2006–2010) and the growth in absolute number has been appreciable, in comparison with other emerging economies such as Brazil and China and considering the size of Indian higher education, the number of qualitative publications is still unacceptably low. The number of noncited papers, which are not indexed in appropriate databases is still high and this must be reduced so that these publications get cited and recognized (DST 2012).

7.3 Higher Education Providers

Higher education is differentiated by ownership, financing, governance, and control. Figure 7.3 depicts the types of universities and colleges. The central universities are established by an Act of Parliament. The state universities are set up through

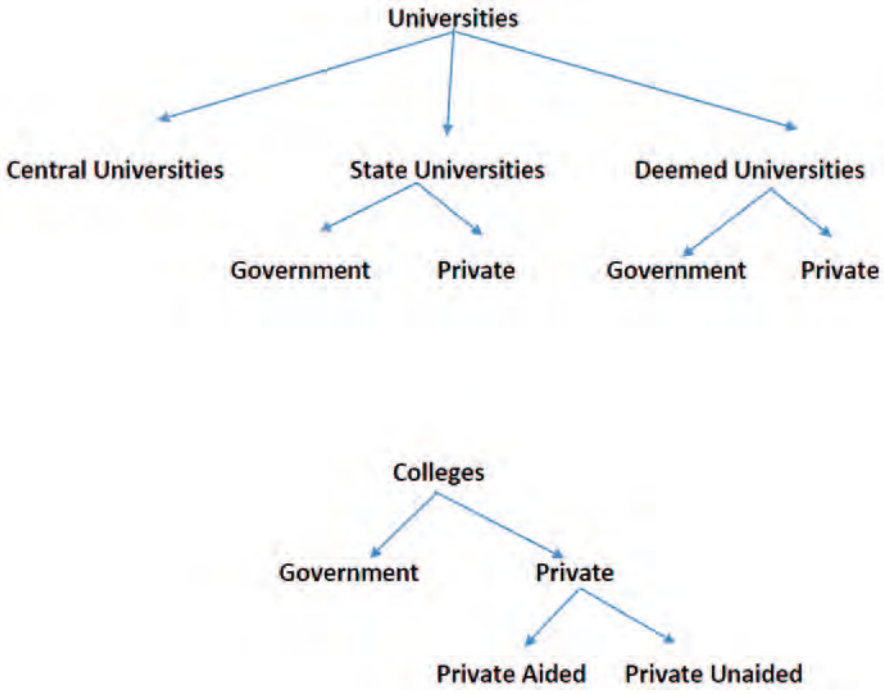

Fig. 7.3 Higher education institutions in India

Table 7.3 Number of institutions by type (2012–2013). (Source: UGC 2013)

	Institutions	Number
Universities	Central university	44
	State university	306
	Deemed university	130
	Private university	154
	Institutions of national importance	67
Colleges	Colleges (both aided and unaided)	35,539
	Total	36,240

state legislation. The private universities include both state private universities and "deemed" universities.

The state private universities[3] are set up through state legislation. A "deemed" university is set up by an executive order on the recommendation of the University Grants Commission (UGC). A deemed university is both private and centrally funded. Initially, the deemed universities were public, and institutes of national importance. But subsequently with political intervention, private providers have also been able to acquire deemed university status. Table 7.3 illustrates the number of colleges and universities by type. There are many colleges which are financed and owned by the central government. Similarly, many colleges are financed and owned by state governments. Though the state-aided colleges also known as grant-in-aid colleges have private ownership, they are given state financial support to meet recurring expenditure including salaries. In most of the states, these institutions receive maintenance grants for capital expenditure. Private unaided colleges do not receive any financial assistance and ownership is wholly in private hands.

The government institutions (universities and colleges—both central and state) follow the quota system in terms of government's affirmative action policy but this does not apply to private institutions. The government aided institutions subsidize almost all students through their low-fee structure. Tuition fees, on the other hand, are much higher in private institutions. Government institutions also offer scholarships to students from disadvantaged groups.

The majority of private institutions can be termed "teaching shops" because research is not a priority. Most research from India emanates from government universities and research institutions. The research output of central universities is much higher than the state universities. The declining research in the latter group is largely due to a lack of adequate resources and poor infrastructure.

[3] The state private universities do not receive funding from the government although they are given university status by the state (provincial) government. They are independent in deciding the fee structure for the various programmes and enjoy both academics, administrative and financial autonomy.

7.4 The Regulatory Framework

The Ministry of Human Resource Development (MHRD) is the apex body responsible for providing funding and access, and assuring equity, efficiency, and quality across the higher education sector. Both the governments at the center and in the states are collectively responsible for higher education as education under the Indian Constitution is a concurrent function. Higher education is going through a transitory phase characterized by rapid change. However, the changes are not uniform. Two contrasting trends are emerging, a rapidly expanding private sector at one end, and a public sector at the other in terminal decline. The regulatory system has failed to hold new private institutions to standards while erecting formidable barriers to competition and quality. The higher education sector is tightly controlled by the government and as a result, regulatory bodies are poor enforcement agencies. In effect, the UGC, professional councils, a few research councils and state governments are the main regulators of the higher education sector. In addition, there are almost 15 ministries/departments that establish, finance, or regulate higher education institutions (see Table 7.4).

The government has not empowered regulatory bodies with the powers mandated by the constitution. Thus, the regulatory bodies have failed to formulate an effective system at their own level and have not outlined apposite rules and regulations. The mechanisms of supervision and control over the institutions have been in vain. These bodies have been vulnerable owing to their lack of independence, functional and financial powers, leading to a failure in discharging their functions. The most important regulator, viz., the UGC is vested with the responsibility of coordination and provision of funds, and determination and maintenance of standards in higher education institutions. Unfortunately, the UGC does not have the means to control the quality of teaching and recruitment of faculty, ensure minimum infrastructure for all institutions, and engage in the monitoring and promotion of research. Table 7.4 illustrates the regulatory structure for higher education.

Table 7.4 Regulatory structure of Indian higher education

	Higher education university/college	Technical education engineering/ management	Professional education law/medical/dental/ nursing
Central regulators	MHRD/UGC	MHRD/AICTE	BCI/MCI/INC
Key regulators	UGC Act,1956 UGC private university regulations	AICTE Act,1987/ AICTE regulations/ approval handbook	Respective acts and regulations
State regulations	Department of higher education/state level committees	Department of technical education/state level committees	Respective state department/state level committee
Key regulations	Private university act/ rules and regulations	Notifications/ guidelines/orders	Notifications/ guidelines/orders
Accreditation agencies	National Assessment and Accreditation Council (NAAC)	National Board of Accreditation (NBA)	Respective regulatory bodies

The multiplicity of regulatory mechanisms has created many problems in the functioning of higher education at the national and state levels.

7.5 Social Equity in Access and Participation

Indian society is characterized by a high degree of structural inequalities, based on institutions of caste and ethnicity (Thorat and Mahamallik 2005). The scheduled castes (SCs)[4] and scheduled tribes (STs)[5] are among the most socially and educationally disadvantaged groups. SCs and STs have different histories of social and economic deprivation, and the underlying causes of their educational marginalization are also strikingly distinct (Patni and Dash 2002; Bob 2008; Sedwal and Kamat 2008).

Table 7.5 shows GER data drawn from two National Sample Surveys. It is evident that there are serious GER differences by caste, religion, and location (urban versus rural). The GER in both surveys for disadvantaged groups (SCs, ST, and OBCs[6]) is far lower than for other groups. The same is true for Muslims compared to non-Muslims, and for the rural population when compared to urban citizens.

Table 7.5 Gross enrolment rates (18–22 years) in Indian higher education. (Source: National Sample Survey (NSS)—61st and 64th rounds)

Category/location/religion	NSS 61st round (2004–2005)	NSS 64th round (2007–2008)
SC	8.72	11.54
ST	8.44	7.67
OBC	11.48	14.72
Others	22.52	26.64
Muslims	8.5	9.51
Non-Muslims	15.1	18.54
Rural	8.42	11.06
Urban	16.18	19.03

[4] The term scheduled caste (SC) is now used to refer to the communities listed in the government schedule as "outcastes." The notion of "outcastes" is premised upon the Hindu caste system, which divides society into the four broad categories of Brahmins (priests), Kshatriyas (warriors), Vaishyas (traders), and Shudras (menial workers) (Dirks 2001). Today, the SC population represents 16 % of the country's population and still struggles to achieve social equality. There remain geographic divisions within Indian cities and villages which exemplify the role that the caste system plays in today's society (Desai et al. 2010).

[5] Scheduled tribes (STs) in India are generally considered to be adivasis, meaning indigenous people or original inhabitants of the country. The adivasis or the tribals (STs) constitute the second-largest minority social group (the first being SC) in India (Maharatna 2005) and account for approximately 8.2 % (equivalent to 85 million people) of the total population. The total number of tribal communities recognized by the government as STs is 701, each with its distinct cultures, social practices, religions, dialects, and occupations (Ministry of Tribal Affairs, 2009).

[6] OBCs stand for *Other Backward Castes*. A community is classified as "OBC" if it qualifies as "backward" based on a complex set of social, economic, and educational criteria, as specified by the National Commission on Backward Classes (NCBC).

Table 7.6 Gross enrolment ratio (GER) in higher education—by state and gender. (Source: MHRD 2011)

Sr. No.		2009–2010			2004–2005		
	State	Male	Female	Total	Male	Female	Total
1.	Andhra Pradesh	21.2	12.3	16.9	14.57	8.55	11.52
2.	Assam	11.5	6.2	9.0	8.17	5.70	6.94
3.	Bihar	14.1	7.5	11.0	8.44	3.19	6.02
4.	Chhattisgarh	24.1	15.8	20.0	9.43	5.54	7.51
5.	Gujarat	18.3	13.2	15.9	11.88	9.29	10.67
6.	Himachal Pradesh	23.1	24.8	23.9	14.59	13.58	14.0
7.	Jammu and Kashmir	18.7	17.6	18.2	6.76	6.29	6.54
8.	Jharkhand	12.4	6.3	9.4	8.66	5.32	7.05
9.	Karnataka	19.8	16.3	18.1	12.72	0.36	11.58
10.	Kerala	12.0	14.2	13.1	8.15	9.96	9.08
11.	Madhya Pradesh	16.5	13.1	14.9	14.15	7.4	11.02
12.	Maharashtra	25.3	16.9	21.4	15.72	10.92	13.24
13.	Manipur	16.8	12.7	14.8	14.81	11.77	13.27
14.	Odisha	16.6	5.9	11.3	13.62	3.48	8.59
15.	Punjab	10.6	10.9	10.8	9.40	11.23	10.24
16.	Rajasthan	11.5	7.4	9.6	7.55	4.31	6.04
17.	Sikkim	26.6	22.8	24.8	10.88	8.15	9.61
18.	Tamil Nadu	20.7	17.2	19.0	13.03	9.95	11.47
19.	Tripura	13.2	9.4	11.4	7.19	5.14	6.16
20.	Uttar Pradesh	12.0	9.5	10.9	9.21	6.84	8.13
21.	Uttarakhand	27.5	45.2	36.0	13.22	12.70	12.97
	INDIA	17.1	12.7	15.0	11.58	8.17	9.97

Table 7.6 provides GER data by gender and state. The GER for the country as a whole was 15.0 in 2009/2010, up from 8.17 in 2004/2005. For males, the corresponding figures for 2009/2010 and 2004/2005 were 17.1 and 11.58, and for females, they were 12.7 and 8.17, respectively. Thus, while access for females had improved in the intervening period, there is still a significant difference between male and female enrolment in higher education. There are considerable differences by state as well. In 2009/2010, some states had a GER of 20.0 or more (e.g., Himachal Pradesh, Maharashtra, Sikkim, and Uttarakhand), while for others the GER was still in single digits (e.g., Assam, Bihar, Jharkhand, and Rajasthan). While the GER gender differential nationally was 4.4, in favor of males, in some states, this was much higher (e.g., Andhra Pradesh, Maharashtra, and Odisha). In five states, (Himachal Pradesh, Jammu and Kashmir, Kerala, Punjab, and Uttarakhand), the GER gender differential was quite small, or favored females.

Enrolment in higher education increased over the period 2004/2005–2009/2010. In 2009–2010, total enrolment in higher education was roughly 17.2 million (60 %

males and 40 % females, similar to the representation of males and females during 2004 to 2005) up from 9.97 m in 2004–2005. The GER of both ST and SC students increased exponentially during the period 2005/2005–2009/2010. For ST students, the GER growth rate was 16.2 % and for SC students it was 10.5 %.

7.5.1 Affirmative Action

Despite many common issues in the experience and outcomes of social exclusion for SC and ST groups and women, there are also some critical differences, which have led to somewhat different struggles for equal rights. The exclusion of an SC is linked to the caste ideology, but STs, on the other hand, are based on a different set of economic and cultural factors that have led to their isolation. The exclusion of women is based on both social and economic factors (Bhasin 2007). ST groups have traditionally lived in more remote areas of the country and in closer proximity to forests and natural resources (Joshi and Basu 2013). The remote and difficult geographical terrain inhabited by STs has isolated them from mainstream Indian society. They constitute the most disadvantaged group in India (Xaxa 2001).

What factors have played a role in enhancing access and participation of these disadvantaged groups? The most prominent policy for promoting access to higher education has been "reservations." The policy of reservation in higher education is based on the assertion that the participation of disadvantaged groups has been low, and reservation would enhance their participation. Thus, the central government has reserved 7.5 % of seats in higher education institutions for STs and 15 % for SCs. The percentage of reservation varies across the states in accordance with the population of these groups. Also once the SC/ST groups complete secondary education, their decision to enter higher education is not significantly affected by their economic conditions, as is the case of poor students in the general population (Sundaram 2006). This clearly implies that reservation is helping in improving enrolment, irrespective of economic status, once the threshold of school education is crossed (Basant and Sen 2010). Reservation policies at all levels of higher education both redistribute SC and ST students upward in the university quality hierarchy, and attract into universities significant numbers of students from these groups who would not otherwise have pursued higher education (Weisskopf 2004). Along with reservation, the government provision of scholarships, special hostels, meals, book loans, and other schemes exclusively for SC and ST students have encouraged the participation (Joshi 2010).

The question of beneficiary status within the SC and ST groups has been raised in the context of reservation. It has been observed that reservations favor urban and male students, and that they disproportionately benefit a small number of subcastes within the SC group and particular tribes within the ST group. The beneficiaries of reserved seats are increasingly second-generation students from the favored groups, whose families have benefited from positive discrimination to become middle to upper class (Kirpal and Gupta 1999; Patwardhan and Palshikar 1992). Reservations or quotas as methods for promoting affirmative action are not affirmative action *per se*. Affirmative action is open-ended and without any fixed number. All these

instruments aim at serving as a "corrective" for past governmental, social or individual bias against groups or minorities based upon caste, class, greed, or ethnicity.

Reservation for the OBCs has existed in many states for a long time. In four southern states, there has been some form of reservation since the preindependence period. The other states where reservation exists in varying degree are: Gujarat, Maharashtra, Bihar, Uttar Pradesh, Punjab, and Himachal Pradesh. In West Bengal, Orissa, Assam, and most of the North Eastern States, such reservations do not exist due to the nature of the historical evolution of the caste pattern.

The government has already implemented the policy of 27% reservation for OBCs in higher educational institutions under the central government. Besides direct financial assistance and scholarships, there are also many other schemes existing for SC, ST, and OBC students which also include lodging. Many of the states have made higher education free for females and many of the states have provided larger subsidies in comparison to males. The issue of gender discrimination in access is persisting. Although, the participation of women is not on par with men, during the last two decades there has been significant improvement.

7.6 Higher Education—Potential Demand

India has the largest target market for higher education in the world, with a population of 234 million in the age group of 15–24 years (Fig. 7.4).

The FICCI report (2011) observed that India is the fastest growing market for higher education as the youth population in the age group of 18–24 years is expected to increase by about 13% by 2020. In the same period, China's equivalent age group is expected to decline by 12% while the world average growth rate is expected to be 4%. If India is to meet its 30% GER target by 2020, about 40 million students would have to be enrolled in higher education. For this to happen, a large share of funding would have to come from the private sector (Fig. 7.5).

The number of students enrolled in classes 9–12, which is an indicator of the potential demand for higher education, has increased at an average growth rate of 6.9% between 2000 and 2010. Similarly, the dropout rate in schools has been reduced drastically during the same period. The implementation of the "Right to Education" (RTE) Act[7] will also result in increased enrolment as well as effective participation in school, leading to increased future demand in higher education.

[7] The Right of children to Free and Compulsory Education Act known as RTE Act came into force on April 1, 2010. Under this Act, the right to education has been accorded the same legal status as the right to life as provided by Article 21A of the Indian Constitution. Every child in the age group of 6–14 years will be provided 8 years of elementary education in an age appropriate classroom in the vicinity of his/her neighborhood. Any cost that prevents a child from accessing school will be borne by the state which shall have the responsibility of enrolling the child as well as ensuring attendance and completion of 8 years of schooling. All private schools shall also be required to enroll children from weaker sections and disadvantaged communities in their incoming class to the extent of 25% of their enrolment, by simple random selection.

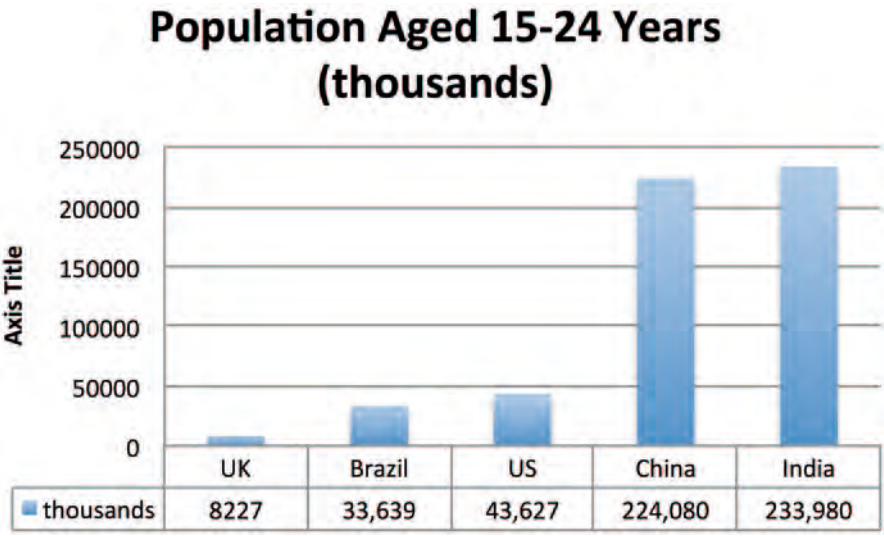

Fig. 7.4 Higher education market demand in selected countries. (Source: FICCI 2011)

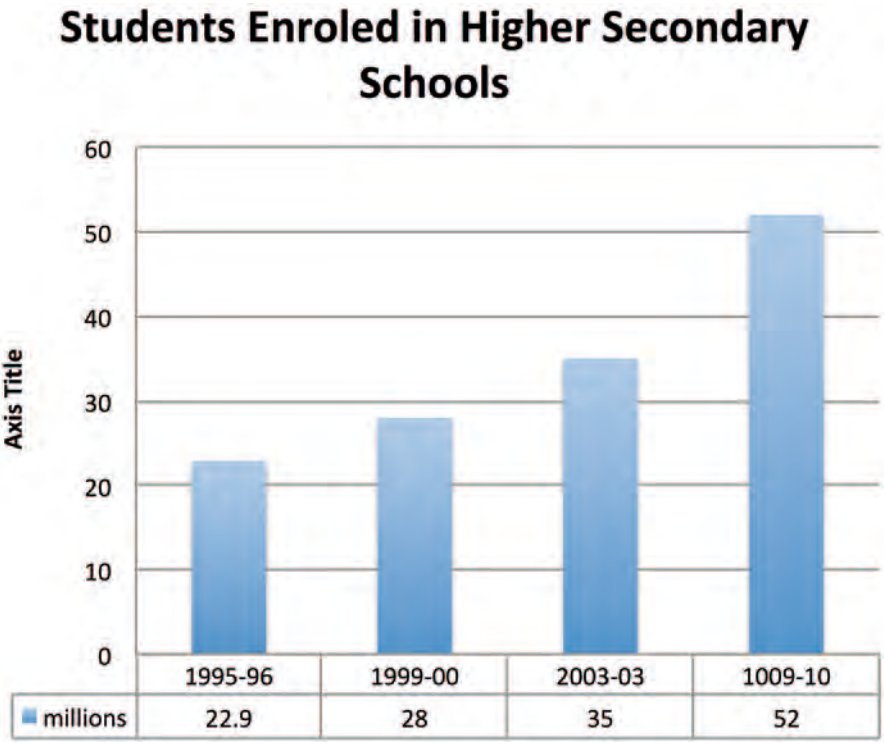

Fig. 7.5 Growing number of students enrolled in higher secondary school. (Source: FICCI 2011 and MHRD 2011)

India needs to train 500 million skilled laborers by 2022 to meet the needs of its economy, and also for attaining the status of worldwide sourcing hub. Recognizing this, the Government of India has mobilized private business to address the issue especially as this is likely to provide profitable business opportunities of more than $ 20 billion (Sardana 2013). Thus, private sector participation in higher education through partnerships is being encouraged to address the anticipated demand. To meet higher education demand, Indian students are also seeking admissions abroad. India provides the second-largest number of international students. Student flows from India have increased substantially since the beginning of last decade growing by over 256% (from 53,266 to 190,781 between 2000 and 2009; Mukherjee and Chanda 2012). In 2009, Indian students represented 6.2% of all international students in higher education.

There are many reasons that have motivated these students to go abroad for higher education, the foremost being the relatively small number of in-country institutions offering quality education. Excessive competition for these few seats and the desire to have quality education motivates the students to pursue their education abroad. Besides this, students going abroad know that they will obtain internationally recognized degrees, which would also endow them with opportunities in the international labor market. In addition, the increase in the size of the middle class has influenced the growth in the numbers of students going abroad (Mukherjee and Chanda 2012).

7.7 Employment, Unemployment, and Education

The increase in the share of the youth population due to the so-called demographic dividend can be one of the sources of future economic growth in India. The proportion of people in the age-group 15–24 years has increased over time (Dev and Venkatanarayana 2011). This demographic dividend is expected to increase the working age group and reduce the dependence ratio (Chandrasekhar et al. 2006). However, recent studies have shown that the poor employability of the workforce due to inadequate or in appropriate educational attainment and skills may affect the anticipated advantages of the demographic dividend.

In India, the employment and unemployment situation is examined through labor force participation rates (LFPRs),[8] the worker population ratio (WPR),[9] and the unemployment rate (UR).[10] The "Employment and Unemployment Survey" (2012) shows that the LFPR in India is about 55.6% which is relatively low in the international context. There are rural–urban and male–female differences in LFPRs. The LFPR is higher in the rural areas when compared to urban and higher among the male population because of agriculture and its allied activities when compared to

[8] Labor force participation rate (LFPR) is defined as the number of persons in the labor force per 1000 persons.

[9] Worker population ratio (WPR) defined as the number of persons employed per 1000 persons.

[10] Unemployment rate (UR) is defined as the number of persons unemployed per 1000 persons in the labor force (which includes both the employed and unemployed).

Table 7.7 Educational unemployment rate in India. (Source: MOLE (2012))

Level	Urban	Rural	All
Illiterate	1.3	1.1	1.2
Primary	2.1	1.6	1.7
Secondary	4.4	5.8	5.4
Higher secondary	7.3	7.8	7.3
Graduate	8.2	11.0	9.4
Postgraduate	7.7	13.9	10.0
All	5.1	3.5	3.8

females. The LFPR is the highest in the STs category at 59.7%, while among the SCs it is 55.9%, and 53.3% for the other backward classes group. In the case of the general category, the LFPR is lowest with 48.5%. The increase in the school attendance rate for the general category (except the socially disadvantaged groups–OBC, SC, and ST) is reflected in a corresponding decline in their LFPR (Rangarajan et al 2011).

Other important parameters of the labor force are the WPR and UR (NSSO 2010; Choudhry 2011; Himanshu 2011; Kannan and Raveendran 2012). The WPR for the country is found to be 50.8%,—this implies nearly 51% of the population of age 15 years and above is employed.

Based on the survey results (2012), the Indian UR is estimated at 3.8%. In the case of males, the UR is estimated at 2.9% whereas for the females the UR is 6.9%. In the rural areas, the UR was found to be 3.4% compared to 5% in the urban areas. All three socially disadvantaged groups (ST, SC, and OBC) have higher LFPRs and WPRs compared to the general category of citizens. Also, the UR of these three social groups is lower than the general category. The survey also showed that unemployment increases with the education level to 10% at the postgraduate level. It is found that the majority of the persons are employed in the primary sector. Table 7.7 shows the UR by level of education. In both urban and rural areas, unemployment increases by education level, reflecting a serious problem of "educated unemployed."

Unemployment among postgraduates is largely among those in the social sciences and languages. They represent more than half of the total postgraduate unemployment. The low-fee structure, in public education and distance education institutions, encourages students to pursue Master degree in these subjects even in absence of future job opportunities. It is argued also that most of the young unemployed have rather poor qualifications in terms of their performance in the examinations and have little aptitude or the capacity for the type of work to which they aspire. The disparity in employment among the different social groups and gender is also visible (Hirway and Jose 2011). Employability, however, is a more serious problem and is a major challenge to the entire educational system and the content of the curricula as well as the emphasis on theory as distinguished from practical applied training. The efforts made by the Indian state and policy makers in this area need to be reviewed carefully, but it is widely believed that these efforts have been inadequate.

7.8 Urbanization

In the postindependence period in India, urbanization has taken place at a rapid pace, due to population growth as well as a heavy inflow of rural migrants to urban areas (Ganguly 2009; Ledent 1982). With the rise in urbanization, the demand for higher education also increased simultaneously. The gap between the urban and rural demand for higher education has also increased. The percentage of the urban population in India which was only 17% of the total population in 1951 is expected to jump to around 42.5% of the total population by 2025 (Datt and Mahajan 2012). The chief causes of the heavy influx of rural migrants in urban areas due are either to the "push" forces operating in the rural areas in the form of high rates of disguised unemployment, poverty, low wages, small size of land holdings, lack of infrastructure development, or the "pull" forces working in urban areas in the form of jobs in the formal economic sector, better higher education facilities, better medical services, entertainment, high wages, the less arduous nature of work, expanding infrastructure facilities, civic amenities, and facilities (Clarke 1966; Bogue 1962; Davis 1951; Mitra 1968; Sen Gupta 1968; Zachariah 1964). The growth of higher education institutions has been either in or around the urban areas. Census 2011 shows that 64% of the universities are in rural areas and 36% are in urban areas, whereas 52% of the colleges are in rural areas and 48% are in urban areas. The majority of the private institutions is in and around urban locations and this is consistent with what one would expect and has been experienced in other developing economies. The "ability to pay'" principle has been the major reason for this characteristic.

According to the 2011 Census,[11] the urban population grew to 377 million at a growth rate of 2.76% per annum during 2001–2011. The level of urbanization in the country as a whole increased from 27.7% in 2001 to 31.1% in 2011, respectively. The Indian economy grew at about 6% per annum during the 1990s and at about 8% during the first decade of the 2000s (Ahluwalia 2011). This clearly reflects the power of economic growth in bringing about faster urbanization during 2001–2011.

Table 7.8 shows the trends in urbanization. The urban population at the beginning of twentieth century was only 25.85 million constituting 10.84% of India's population in 1901, which increased to 285.35 million comprising 27.78% of total population in 2001 (Singh 2006) with natural growth contributing about 60% and rest through migration and expansion of cities (Sivaramakrishnan et al. 2005). India's urban population is expected to reach 550 million or 42% of the total population by 2030 (Roberts and Kanaley 2006). With this anticipated population growth it is also expected that the demand for higher education would grow much faster. The private

[11] The definition of urban area includes: (a) all places with a municipality, corporation, cantonment board or notified town area committee, etc. This is known as Statutory Town, (b) all other places having a minimum population of 5000, at least 75% of the male main working population engaged in nonagricultural pursuits, and a density of population of at least 400 persons per sq. km. This is known as Census Town.

Table 7.8 Trends in Urbanization in India. (Source: Bhagat 2011)

Census year	Urban population (in millions)	Percentage urban	Annual exponential urban growth rate (%)
1961	78.94	17.97	–
1971	109.11	19.91	3.23
1981	159.46	23.34	3.79
1991	217.18	25.72	3.09
2001	286.12	27.86	2.75
2011	377.10	31.16	2.76

institutions in particular are offering programmes in new areas of learning and areas that provide better job opportunities in the urban setting. It is also expected that the flow of migration for higher education from rural areas to urban areas will increase with urbanization as more institutions with better quality and numbers are likely to be established in the urban setting or in the urban periphery.

7.9 Private Higher Education

Indian higher education has a long history of private institutions with heterogeneous characteristics in terms of location, nature of ownership and objectives, with the majority of these institutions subsequently getting attached to state. The preindependence period, between 1892 and 1947, has been termed the "Golden Age of Indian Philanthropy" (Sundar 2000). The funding sources have been important in the growth of Indian higher education in its initial stages of development. With growth, the scenario has changed. Reliance on the state for resources has almost doubled, i.e., from 49% in the beginning of fifth decade to about 84% at the beginning of the last decade of the twentieth century. On the other hand, the contribution of nonstate funding resources has declined drastically. Along with this, the demand for higher education has increased substantially with improvement in school education and anticipated labor market opportunities.

The 1990s saw major developments in the history of contemporary higher education. The decade was one of the turmoil, with an important development being the sustained efforts toward privatization of higher education. The structural adjustment policies, which envisaged macroeconomic stabilization and adjustment, led to a reduction in public expenditures and the introduction of cost recovery measures, accompanied by policy measures toward the "direct privatization of higher education" (Tilak 2001). The new economic reforms and the policy of the government is currently encouraging augmentation of resources, and exacerbating cost recovery on a larger scale. The fears expressed by many economists and educationists that with privatization, the justification for government funding would diminish,

are probably premature. The public sector system, which has been built over a long period of time, will not collapse. The role of the government in funding shall remain. There has already been large-scale investment by the government, so the fear that private investment alone in higher education would be socially suboptimal is not substantiated in the case of India. Although many committees (UGC 1997, 2002) and reports (Srivatava and Sen 1997; Ambani and Birla 2001; NKC 2009) have called for cost recovery, reforms, and private initiatives, the road to privatization is still imprecise.

On the other side, the interventions by the Supreme Court from time to time and its contradictory judgments have only added to the prevailing confusion (Gupta 2004). Although many private institutions have been established, the floor toward privatization still remains indecisive in terms of the policy framework, in spite of the interest of the government to shift a larger share of the burden of higher education to the private sector. No precise policy seems to have been implemented to encourage, regulate, and monitor private higher education system.

In the light of uncontrolled expansion and limited resources, government has proposed different models of public–private partnerships in higher education. Currently, the private higher education providers consist of private aided colleges, private unaided colleges, state private universities, and private deemed universities. Private institutions are usually established and operated under the provisions of charitable societies or trusts. There are genuine not-for-profit private institutions, many even funded by the government (private aided institutions) or supported by charitable and religious trusts. A large number of private institutions run self-financing programmes meeting all of their expenses from tuition revenue and other fees. In contrast to these not-for-profit institutions, a significant number of private institutions are run as business enterprises, many among them owned by affluent families (Fig. 7.6).

The share of private unaided institutions in terms of all institutions has increased from 42.6% in 2001 to 63.9% in 2012, respectively. Similarly, student enrolment in private unaided institutions as a proportion of total enrolment in all institutions increased from 32.9% in 2001 to 58.9% in 2012, respectively. The number of private institutions increased at a rate of 10.3% per annum between 2007 and 2012. Enrolment in private institutions during the same period shows an average annual growth rate of 11.3%. During this period, the state's private universities grew at an annual rate 38.36%. Thus, the growth of private institutions and subsequently enrolment in these institutions grew dramatically during the period 2001–2011. However, with growth, the issue of quality remains unaddressed in the majority of institutions. A second feature of the growth story is that private unaided institutions have grown more in terms of professional programmes. The share of the private sector in engineering, pharmacy, physiotherapy, and hotel management has surpassed 90%. Except for medicine, which requires a huge investment and is closely controlled by the Medical Council of India (MCI), the share of the private sector in all other professional courses is more than 50%. The growing demand for higher education and the inability of government to finance higher education will provide more space for private higher education in the coming years (Fig. 7.7).

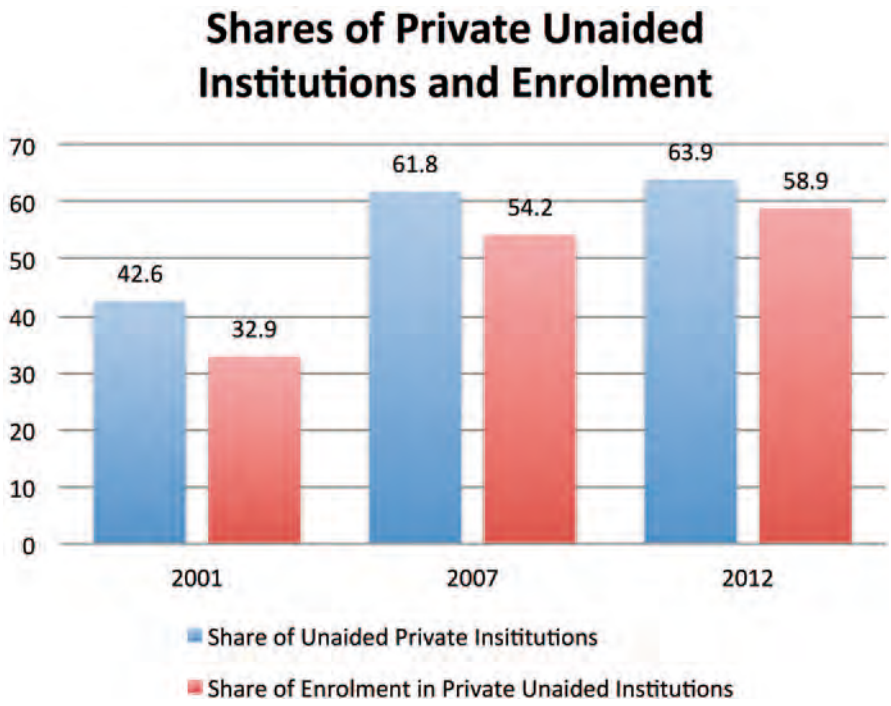

Fig. 7.6 Share of private unaided institutions in the total institutions and student enrolment in private unaided institutions as a proportion of total enrolment (%)

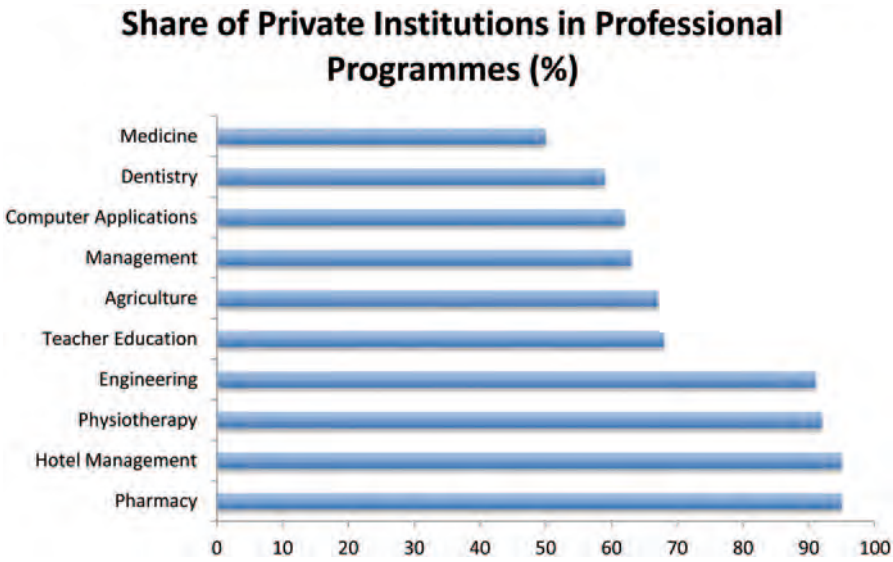

Fig. 7.7 Share of public and private institutions—professional programmes

7.10 Distance Education in Higher Education

Distance education has emerged as a cost-effective source for enhancing educational qualifications in India. Because of the low supply compared to the demand for higher education seats in full-time programmes, the role of distance education has increased over time. This mode of delivery has also received an impetus from those employed and wishing to enhance their educational qualifications while in work (AIU 2010; Denman 2009). About 4.2 million students were enrolled in various distance education programmes during 2012 (FICCI 2012). These students access multiple modes of delivery such as online, study centers, and correspondence. The enrolment of females has also increased under this mode of delivery along with the general increase in enrolment.

The Distance Education Council (DEC) is the regulatory body which recognizes distance education programmes in India. There were 74 distance education institutes in 2000 increasing to 197 in 2012. Similarly, enrolment in distance education was 1.38 million in 2000 growing to 4.2 million in 2012. About 22 % of the total higher education enrolment is in distance education. The enrolment figures show that about 17 % are enrolled in the Indira Gandhi National Open University, 26 % in State Open Universities, and 57 % in other institutes (FICCI 2012). Private institutes account for about 21 %. It is clear that distance education will increase much more in the coming decades and the periphery of courses offered will be enlarged (Powar 2003).

7.11 Conclusion

Indian higher education has grown exponentially during the past decade in terms of both institutions and enrolments. Despite this growth, the issue of deteriorating quality and social inequity in access is still persisting. An insight into prospective higher education demand stresses an explicit focus on the supply parameters that influence the higher education from the perspectives of various stakeholders. These supply parameters include not only sources and quantity but also quality and access. With the increase in the number of students who complete higher secondary schooling, the transition rate from secondary to higher education in absolute terms is also increasing. The demand from disadvantaged groups will rise dramatically through their increased participation along with women. The social and economic change along with various government measures have been the chief factors in the growth of their participation during the last 5 years and will continue in the coming years. The pressure resulting from urbanization and migration too would create a social demand for higher education. The projected GER of about 22 % by the end of 2020 will need a huge investment, in which the share of the private sector will be high. Because of growing private demand and in absence of sufficient resources, the role of the private sector has to be recognized by the government in its policy through appropriate regulatory frameworks. The increase in supply, in the context of social demand, will be effective in delivering the dividends for a knowledge economy if the quality parameters are well designed and addressed considering the labor market demand.

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Chapter 8
Demands and Responses in Chinese Higher Education

Yuzhuo Cai and Fengqiao Yan

8.1 Introduction

Since China launched its open door and economic reform policy in 1978, there has been high and sustained economic growth over the last 30 years or so. The enhanced economic situation has provided a solid basis for the development of higher education in terms of both government financing and private investment in the sector. Meanwhile, the improvement in higher education has contributed to economic growth through knowledge production, human resource provision, and promoted social mobility. Although higher education and socioeconomic reforms as two dynamic forces affect the development of each other, this study focuses on the responses of Chinese higher education to the demands arising from social and economic transformation in China mainly during the first decade of the twenty-first century.

The existing academic literature on Chinese higher education reforms (published in English) has often shed light on the responses of Chinese higher education to pressing demands from the society, though implicitly and with a narrow focus. Among them, the common themes are concerned with equity and quality challenges in the massification of higher education (Zha 2009, 2011; Cai and Kivistö 2011; Kai and Ertl 2010), restructuring of higher education (Wan 2008; Cai 2007; Nyeu 2006), emergence of private higher education (Zha 2006; Cao 2007; Li and Morgan 2008; Cai and Yan 2011), employment of university graduates (Bai 2006), changing governance models in higher education (Cai 2010; Ka-Ho Mok 2005; Yang et al. 2007), building world class universities (Deema et al. 2008), the changes of higher education in the information society (Cai and Guo 2006), knowledge economy (Wang and

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_8

Zhou 2009) and innovation systems (Wang and Zhou 2008; Wu 2007), the emerging quality assurance issues (Liu and Rosa 2008), and the internationalisation of higher education (Yang 2002; Wang 2008; Cai 2004).

However, the authors have not systematically explored the demand for Chinese higher education especially in the recent decade. Neither have they discussed corresponding responses in higher education from a holistic perspective. This chapter is thus an effort to fill the gap, and the central research question is: how has Chinese higher education responded to the demand arising from the social and economic transformation in the last 10 years?

The analysis about the relationship between demand and responses is made through a rational approach with a special focus on the government's intentions. Such an approach is relevant for the study of China, as basically most of social changes as well as higher education reforms are initiated and even being steered by the government. Therefore, an analysis from a policy perspective is important for understanding the demand and responses in Chinese higher education.

Meanwhile, we acknowledge that our study in following such approach has limits, as the interactions between demands and responses are more complicated than we have described. The analysis of responses of Chinese higher education also needs to consider institutional/cultural factors, such as the Chinese political system, culture, and traditions. This is also a research gap to be filled, though it is not addressed in this study.

8.2 Transformation of Chinese Higher Education and the Current Higher Education System

Before moving on to the discussions on demands and responses in Chinese higher education, it is necessary to briefly review the transformation of Chinese higher education in the last three decades as well as the characteristics of the current higher education system.

8.2.1 Economic Reforms and Structural Changes in Higher Education

To understand socioeconomic transformation in China in the last decades, one must be aware of the economic reform and open-door policy launched in 1978. Since then, China has gradually entered into a socialist market economy or "state capitalism" (Li et al. 2012) and became integrated into the global economy. While the political system has not changed much, the transformation in the economic system is fundamental. According to Tisdell (2009, p. 272), "China's economy has changed from an economy in which market forces played virtually no role in organising economic activity to one in which these forces play a major role".

Once the economic reforms were started, the government realised that the traditional model of higher education developed in a centrally planned system was inappropriate with the government allocating resources, directly controlling institutions, assigning jobs for graduates, and even deciding enrolment numbers as well as curricula. Hence, the Chinese government started to review its education system and called for resolute steps to reform the higher education system.

The reform in higher education was signalled by the "Decision on Reforming the Education System" issued by the Central Committee of the Chinese Communist Party (CCCCP) in 1985. However, major reforms did not start until the launch of the "Outline for Education Reform and Development in China" issued by the CCCCP and the State Council in 1993. Basically, two reform strategies are used: "to introduce market forces to liberate education, create impetus for change, and encourage competition for improvement", and "to use legislation to regulate new social relationships, practices and behaviour arising from the first strategy" (Law 2002, p. 579).

Generally speaking, the policies developed after 1993 have basically formed the agenda of Chinese higher education reforms until the end of 1990s. The reforms in the 1990s and 2000s were remarkable in that there was a dramatic expansion of the scale of higher education, progress in faculty development, decentralisation of administration, diversification of financing, privatisation of education provision, development of competitive universities, and internationalisation (Wang and Liu 2009). Meanwhile, the reforms were associated with problems and dilemmas, such as weak capability for cultivating top-notch innovative personnel, gaps between the skills provided by universities and the demands of industrial development, unstable and inadequate conditions for the sustainable development of higher education, and the pressures for graduate employment (Cai et al. 2011). These problems particularly hampered China's efforts at making the transition from a labour-intensive economy to a knowledge-based economy driven by innovation and international competitiveness. Realising the aforementioned problems and challenges, the State Council promulgated the "Outline of China's National Plan for Medium and Long-Term Education Reform and Development (2010–2020)" in July 2010 that led to a new round of reforms.

8.2.2 The Current Chinese Higher Education System

Most higher education systems in the world follow either the British-American or the European patterns. Although the reforms in Chinese higher education since the 1980s, especially the 1990s, witness a transition from the Soviet model towards American patterns (Yang 2000), it cannot be simply claimed that the Chinese higher education system follows the American model. Rather, the shaping of the current Chinese higher education system is a result of various Western influences (Cai 2012; Hayhoe 1999).

8.2.2.1 Degree Structure

Higher education is accessible through *gaokao*, which is the National Higher Education Entrance Examination. It is usually taken by students in their last year of high school, although there has been no age restriction since 2001. The Chinese higher education is a unitary system in which all institutions provide equivalent degrees. Higher education at the undergraduate level includes 2- and 3-year associate degree (*dazhuan* in Chinese) programmes and 4-year bachelor degree programmes. Students with an associate degree need to have 2 additional years of continuing (adult) education in order to receive a Bachelor diploma. There are junior colleges, including higher vocational colleges, which only offer associate degrees. However, associate degree programmes are also available at universities, which mainly provide 4-year bachelor degree programmes. Master's and doctoral degrees are offered by both universities and research institutes. The latter are affiliated with the Chinese Academy of Sciences and Chinese Academy of Social Sciences. Master's degree study normally takes 2 or 3 years, and doctoral degree study normally takes 3–4 years.

The 2–3 years, short-cycle, vocationally oriented higher education programmes, leading to associate degrees, can be compared to the community colleges in the USA. However, in China there is no American-style liberal education at the undergraduate level. Students start with a specific major in associate or bachelor degree programmes, and with the degrees they are able to enter the labour market in the professions concerned. However, some institutions are now trying to broaden the scope of major choice for students.

8.2.2.2 Types of Higher Education Institutions

By the end of 2010, there were 2358 regular higher education institutions, excluding adult higher education institutions (Chinese Ministry of Education 2011). The higher education system in China is vertically divided into four layers, namely research institutions, research and teaching institutions, teaching institutions, and application-oriented institutions (Cheng 2004, p. 207–208). Research universities are typically "Project 985" universities. Project 985 is a national effort to create world-class universities launched in 1998. Currently there are 39 Project 985 universities, which are also part of "Project 211", the Chinese government's endeavour initiated in 1993 to strengthen about 100 higher education institutions as a national priority for the twenty-first century. Currently, there are 112 Project 211 institutions. The 985 universities are in the top layer of Chinese higher education, the remaining 73 project 211 institutions are oriented towards both research and teaching, constituting the second layer. In the third layer, there are around 600 (mainly regional) higher education institutions. They mostly engage in teaching activities but also perform research to some extent. The rest of over 1000 higher education institutions (often tertiary vocational colleges) are in the bottom layer, providing mainly

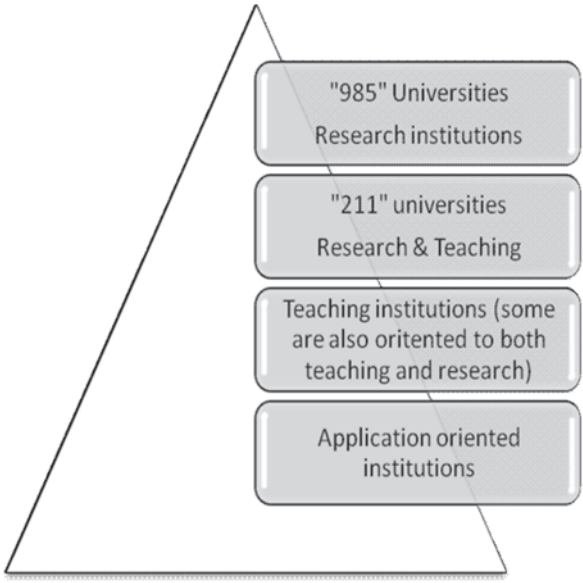

Fig. 8.1 Pyramid of Chinese higher education institutions

2–3-year undergraduate (associate degree) programmes. The four layers of Chinese regular higher education institutions can be described in a pyramid (Fig. 8.1).

Higher education institutions in China can be public or private. Most private institutions are in the bottom layer and only a very few in the third layer as teaching oriented institutions, and none of them are in the top two layers. There are three major types of private higher education (Cai and Yan 2011). The first are established by private actors only and can grant associate or bachelor degrees. The second are the independent colleges, offering bachelor degree programmes. An independent college is sponsored by private investors but is affiliated to a host public university. Its governing body is composed of people from both the public and private sides according to their contributions or negotiated capital shares. It is run as self-financing entity and usually contributes a significant share of its revenue to the public mother university. The third type, owned by private actors, cannot grant degrees or diplomas, and their main activity is to prepare the students for national self-study examinations. Table 8.1 shows the number of institutions and enrolment in the various types of private institution, in comparison with the much larger public sector.

8.2.2.3 Financing

Reforms since the 1990s saw a shift of financial responsibilities from state to non-state sectors, by charging tuition fees and encouraging universities to generate revenues. In the last decade, while government funding on higher education roughly accounted for half of higher education funding, there is a visible increase in university “own” revenue (Table 8.2).

Table 8.1 Numbers and enrolments of private and public regular higher education institutions in China in 2010. (Source: Department of development & Planning of the Chinese Ministry of Education (2011))

Type of institution	Number of institutions	Enrolment of postgraduate students	Enrolment of bachelor degree students	Enrolment of associate degree students	Enrolment of self-study programme students
Type 1	353 (48 bachelor awarding)	NA	420,110	1,743,558	187,342
Type 2	323	0	2,389,774	213,403	18,736
Type 3	836	0	0	0	921,841
Public higher education institutions	1682	1,538,416	9,846,248	7,704,836	NA
Total	3194	1,538,416	12,656,132	9,661,797	1,127,919

8.3 Social and Economic Changes and Demand for Higher Education in the Last Decade

8.3.1 Improvement of Economic Condition and Increasing Demands for Higher Education

China has enjoyed high and sustained gross domestic product (GDP) growth since the economic reform started in 1978. Fortunately, China has managed to keep the economy growing even after the Asian financial crisis in 1997 and the global economic recession in 2008. In the last decade, the GDP almost quadrupled from 10,966 billion yuan in 2001 to 40,120 billion yuan in 2010 (National Bureau of Statistics of China 2011). In 2010, China surpassed Japan and became the world's second largest economy after the USA. According to the International Monetary Fund's (IMF's) forecast, China's GDP will exceed the USA's in 2016 (Song 2011).

Alongside GDP growth, the economic situation of the population has also largely improved (Table 8.3), though it is still not comparable to Western standards. Tuition fees were introduced in public higher education in 1997, but thanks to the increased household income created by economic growth, the number of students continued to grow. In 1998, there were 3.2 million students attending the national higher education entrance examination (or *gaokao* in Chinese), while in 2010 the number increased to 9.57 million. The increasing demand creates a space for the private sector to grow and make up the gap in public provision.

This study focuses on higher education, but it should be noted that the changes in higher education are closely linked to developments in secondary education. The number of graduates from high schools increased significantly in the 1990s and early 2000s due both to the improvement of the economic situation and the growth of the cohort population. In 1998, there were only 2,517,845 high school

Table 8.2 Composition of funding in regular higher education institutions: 2001–2010 (10,000 yuan, %). (Source: National Bureau of Statistics of China (2011))

Year	Govt. funding	Private investment (in private higher education sector)	Endowment	Educational revenue (including tuition fees and other commercial incomes)	Others	Total
2001	6,328,003.5 54.24%	181,992.7 1.56%	172,774.7 1.48%	2,824,417.1 24.21%	2,158,573.8 18.50%	11,665,761.8 100.00%
2002	7,521,463 50.55%	331,363 2.23%	278,253 1.87%	3,906,526 26.26%	2,840,985 19.09%	14,878,590 100.00%
2003	8,405,779 47.91%	603,015 3.44%	256,375 1.46%	5,057,307 28.83%	3,220,992 18.36%	17,543,468 100.00%
2004	9,697,909 45.54%	1,121,982 5.27%	215,440 1.01%	6,476,921 30.41%	3,785,362 17.77%	21,297,613 100.00%
2005	10,908,368.7 42.77%	1,801,315.4 7.06%	210,796.3 0.83%	7,919,249.3 31.05%	4,662,641.1 18.28%	25,502,370.8 100.00%
2006	12,595,712 42.86%	2,327,498 7.92%	193,315 0.66%	12,239,465 41.65%	2,032,778 6.92%	29,388,769 100.00%
2007	15,983,187 43.98%	318,788 0.88%	271,809 0.75%	16,987,027 46.74%	2,781,040 7.65%	36,341,851 100.00%
2008	20,035,116 47.59%	301,687 0.72%	286,343 0.68%	18,644,142 44.28%	2,835,082 6.73%	42,102,369 100.00%
2009	22,645,083 48.75%	330,962 0.71%	261,761 0.56%	20,188,915 43.46%	3,023,369 6.51%	46,450,089 100.00%
2010	29,018,026 52.78%	269,647 0.49%	296,357 0.54%	22,165,552 40.32%	3,229,068 5.87%	54,978,649 100.00%

Table 8.3 Incomes and expenditures of citizens. (Source: National Bureau of Statistics of China (2011))

Year Income and expenditures (yuan)	1990	2000	2009	2010
Urban per capita disposable income	1510	6280	17175	19,109
Rural per capita net income	686	2253	5153	5919
Urban residents' per capita consumption expenditure	1279	4998	12,265	13,471
Rural residents' per capita consumption expenditure	585	1670	3993	4382
The balance of resident's deposits (per capita)	623	5076	19,541	22,619

graduates; in 2010 the number increased to 7,944,335 (Department of Development & Planning of the Chinese Ministry of Education 1999, 2011). This expansion of secondary education created a strong demand in the population for more opportunities to assess higher education.

While more and more students are able to attend *gaokao* and have a better chance to pass the exam, the competition for "good" universities is strong. Among more than 2000 higher education institutions, only the 112 "Project 211" and especially the 39 "Project 985" universities are considered as being of high quality or prestige. A recent study reveals that the admission rate for all higher education institutions through *gaokao* is 72.91 %, but the rate is only 5.89 % for "Project 211" universities (Pan 2012).

In the last decade, a growing number of Chinese students chose to study abroad either because they could not enter the Chinese higher education institutions or could not enter the more prestigious institutions. Compared to getting into prestigious universities such as Tsinghua or Peking University through gaokao, there are more chances to enter a first class foreign university (Wang 2011), and so this path is followed by many students that can afford it.

The growing demand for higher education, in terms of both quantity and quality, requires serious investment. The government has been investing more, particularly in the top national universities, but the investment per student in regional universities is falling. Thus, while the governmental grant per student in national universities increased from 8697 yuan in 1998 to 12,483 yuan in 2006, among regional universities the value decreased from 6498 to 4751 yuan in the same period (Wang 2012).

8.3.2 Changes of Economic Structure and Demands for Higher Education

Economic growth in China has been strongly associated with an increase in the industrial and service sectors, and a reduction of the relative importance of the agricultural sector, both in terms of its contribution to GDP and in employment.

There are also structural changes within the industry and service sectors. While China has maintained very rapid economic growth over the last three decades, the low-wage and labour-intensive manufacturing as the main driver of economic growth has been challenged by emerging competitors in Southeast Asia as well as by China's domestic environmental degradation. To ensure sustainable progress in the future, China has recently shifted its economic priority from labour-intensive to capital-intensive and technology-intensive production (OECD 2007). Since the turn of the new century, China has been boosting investment in science and technology, and taking steps towards building a high-performing innovation system and knowledge economy. A strong goal is to turn China into an innovative country by 2020 (State Council 2006).

This creates two pressures on higher education, to increase its quality and to link higher education more strongly to economic development. First, to become a knowledge economy, China needs to further improve the quality of its human resources. As former President Hu Jintao stated at the 17th National Congress of the Communist Party of China in 2007, China needs to switch from a country

Table 8.4 Share of population in rural and urban areas between 1980 and 2010 (%). (Source: National Bureau of Statistics of China (2011))

	1980	1985	1990	1995	2000	2005	2010
Urban	19.4	23.7	26.4	29.0	36.2	43.0	50.0
Rural	80.6	76.3	73.6	71.0	63.8	57.0	50.0

with a large population into a great country with strong human resources. The "Report on Chinese Talented People" (Chinese Ministry of Personnel 2005) estimated that China had a gap of 20 million talented people during the period of 2006–2010.This requires universities not only to improve the quality of their education, but also to adjust their programme to respond more closely to the needs of the economy.

These two goals, however, are not necessarily the same. In modern economies, in addition to teaching and research, universities are expected to be more engaged with society, particularly the industrial sector, developing practical knowledge, applications, and services and even becoming economic actors in their own right (this is often called the "third mission" of universities; Etzkowitz 2008). This demand also exists in China, where universities are expected to improve quality in both teaching and research, and to be innovative and effective in transferring their knowledge to the industry and directly support national and regional economic development (Wang and Zhou 2008). However, it has been observed that in practice, there is lack of trust and motivation between universities and industry to develop an effective and reciprocal cooperation relationship (Kroll and Liefner 2008; Wang 2011). The main motivation for the universities is to improve their vertical status by becoming more research-oriented, and, because of this, they tend to become alike and academic, instead of trying to respond to the multiple and differentiated demands of the economy, in spite of the fact that, in reality, only a small number of institutions can ever expect to be selected into "Project 211" and "Project 985".

8.3.3 Urbanisation and Social Disparity

According to Tang (1997, p. 3) "(C)entral to the various explanations of urbanisation is the recognition of a penetrative role of the Chinese State" (Tang 1997). Since 1978, China has employed various ways to urbanise itself, including the implementation of the rural household responsibility system (an agriculture production system, which allowed households to contract land, machinery and other facilities from collective organisations), establishment of town and village enterprises, construction of small towns in rural areas, and mobility of workforce from rural areas to urban areas and so forth (Wu et al. 2008). As mentioned early, the agriculture sector has dramatically decreased in the last three decades. Meanwhile, more and more people move from rural areas to live in cities. The percentage of the rural population was 80 % in 1980, reducing to 50 % in 2010 (Table 8.4).

The process of urbanisation has been associated with growing social disparity. At the beginning of the reform epoch over 30 years ago, Deng Xiaoping advocated a policy guideline "to let some people to be rich first". The purpose of the new policy was to stimulate individual productivity and in turn to achieve national economic growth. This policy turned the previous static and egalitarian society into a dynamic and stratified distributive system, with growing disparities between rural and urban areas, different regions, and between low- and high-income groups.

According to the statement by the Director of China Statistics Bureau in a press release on 18 January 2013, the Gini coefficient has stayed at a relatively high level of between 0.47 and 0.49 during the last decade, indicating that China has a big gap between the rich and the poor (Xinhua 2013). In the 2011 "Annual Report on Urban Development of China" (Pan et al. 2012), it has been reported that the ratio of urban disposable income to rural residents' net income reached 3.13, which was among the highest in the world. There is a very big GDP/capita differential between regions. In 2011, the GDP/capita of Tianjin, Shanghai, and Beijing was more than US$ 13,000, while the figures are around US$ 3,000 in Guizhou, Yuanan, and Gansu, from the west or southwest provinces (National Bureau of Statistics of China 2012).

According to the law, all citizens are supposed to have equal opportunities to access higher education. However, the economic disparities have aggravated the equity problem in higher education. First, partially due to differences in economic development, the higher education institutions are not evenly distributed among municipal cities and provinces. Each province sets its own admission cut-off scores mainly based on the capacity of higher education institutions in the region, leading to unequal opportunity for higher education of the cohort age group across provinces. In 2005, the highest higher education gross enrolment ratio was 57% in Shanghai, and the lowest only 10% in Guizhou province. In the meantime, the highest admission rate through *gaokao* was 85.7% in Hainan province, and the lowest 48.9% in Gansu province (Planning Department of Chinse Ministry of Education 2007). Secondly, students from poorer families and regions have unequal access to good quality secondary education, leading to different chances of gaining access to most prestigious institutions and more valued careers (Ma 2011; Feng 2011).

8.4 Responses of Higher Education Institutions

The aforementioned demands for higher education arising from the social and economic transformation become the primary driver for Chinese higher education reforms since the late 1990s. Both national policies and institutional actions in the last decade reflect the responses of higher education to this demand.

Table 8.5 The development of regular higher education in China between 1998 and 2010. (Source: Statistics communiqué of national education development 1998–2010)

Year	Number of regular higher education institutions	Average student number/institution	New intake of undergraduate students (1000)	New intake growth rate over the previous year (%)
1998	1022	3335	1083	8.32
1999	1071	3815	1548	42.91
2000	1041	5289	2006	29.54
2001	1225	5870	2682	33.73
2002	1396	6471	3037	13.22
2003	1552	7143	3821	25.81
2004	1731	7704	4473	17.05
2005	1792	7666	5044	12.77
2006	1867	8148	5460	8.24
2007	1908	8571	5659	3.64
2008	2263	8931	6076	7.38
2009	2305	9086	6394	5.24
2010	2358	9298	6617	3.48

8.4.1 Massification of Chinese Higher Education

After the Chinese government announced the massification of higher education as a policy goal in 1998, enrolment in higher education increased significantly. The expansion of student enrolment was accompanied by growth in the number of higher education institutions as well as of their size. Table 8.5 shows the changes in the scale of the regular higher education institutions in China between 1998 and 2010.

The main objectives of massification in higher education policy are to meet demands arising from a rapidly growing economy, to alleviate the problem of urban unemployment, and to promote the development and utilisation of China's human resources (Wu and Zheng 2008). It is also a measure to stimulate economic growth after the impact of the 1997 Asian economic crisis (Project team of Peking University 2001; Kang 2000; Zha 2009; Li 2001).

The massification policy has indeed achieved its goals in terms of enrolment ratios (Fig. 8.2). In 2010, the rate reached 26.5 % and the objective is to increase the rate to 40 % by 2020 (State Council 2010). However, the rapid growth of enrolment has generated a number of problems, particularly a decline in education quality, inequality of access to higher education, and high unemployment rate of graduates (Cai 2011). Although along with the economic development and social changes, there is a growing demand for a higher level of education, the responses in higher education have not been a natural adaptation but are being accelerated by the government's intention. This has caused most of these problems, especially the ones related to unemployment.

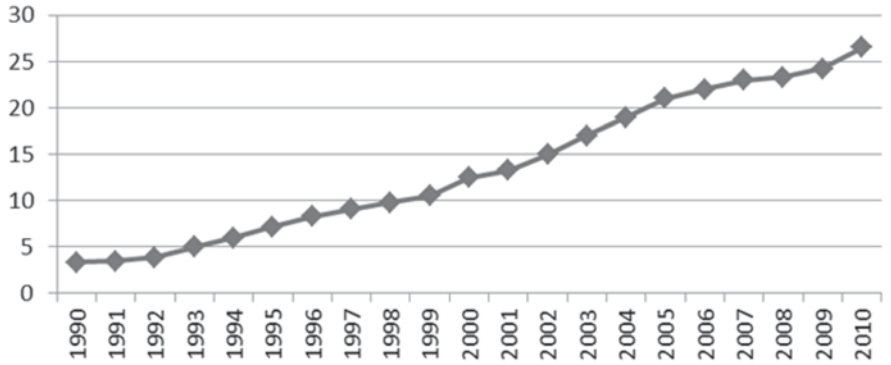

Fig. 8.2 1990–2010 Chinese higher education gross enrolment rates. (Source: Wang and Liu (2009), Statistics communiqué of national education development 2008, 2009, 2010)

8.4.2 Development of Private Higher Education and Diversification of Funding Sources

Along with the process of massification comes the growth in the private higher education sector. Recognising the fact that the state alone cannot meet growing educational needs, the Chinese government has deliberately devolved responsibilities to other nonstate sectors to engage in educational provision and development. The 1993 "Outline" indicated a renewed effort to encourage "people in all walks of life" to run schools and invited international cooperation toward that same end. The 1995 Education Law, the 1997 "Regulations on the Social Forces Running Educational Establishments", and the 2002 "Law for Promoting Private Education", put the governance of private higher education on a more solid legal footing. In 2010, of 2358 higher education institution, 674 were private, and for 22,317,929 students, 4,766,845 were in the private sector (Department of Development & Planning of the Chinese Ministry of Education 2011). To support the further development of private higher education as stated in the "National Plan for Medium and Long-term Education Reform and Development (2010–2020)", the government is taking concrete measures to change the previous policies that hamper the development of private education.

In addition to the growth of private higher education institutions, the 1990s reform further transferred financial responsibility to individuals and families, with the introduction of a "fee-paying principle" (Mok 2005, p. 228). Since 1997, all university students had to pay tuition fees. In response to the financial constraints aggravated by dramatic enrolment expansion since 1999, universities have been encouraged to engage in business and market-like activities to generate more income. Today, there are three major funding sources for Chinese higher education institutions: government funds, tuition fees paid by students, and commercial income from university owned companies and entities, with government sources covering about half of the total costs for the country as a whole (see Table 8.2).

8.4.3 Building First-Class Universities

Another important objective of Chinese higher education reforms is to increase China's competitiveness in the global marketplace. However, top Chinese universities were not good enough by international standards up to the mid-1990s. To improve the prestige and quality of Chinese higher education, The Chinese government successively launched "Project 211" in 1995 and "Project 985" in 1998 by focusing its financing resources on developing a few top Chinese universities. These universities also strive to provide top human resources and research bases for the development of the knowledge based economy in China.

"Project 211" is the Chinese government's endeavour initiated in the 1993 Outline with an aim to strengthen about 100 higher education institutions and a number of key disciplinary areas in terms of teaching, research and administration as national priorities for the twenty-first century, with strong financial support. The project has been implemented since 1995. These institutions are expected to become the basis for training high-level professionals and solving major problems confronting the country's economic and social development. Many of them indeed play a key and exemplary role in responding to regional and sectional development needs.

For instance, since 1994, the Shanghai Municipal Government has signed agreements with the Ministries of Education, Health, Finance, and the former Textile Association for the joint jurisdiction of eight national universities. From 1998 to 2000, the leadership of another 11 national universities were transferred to Shanghai municipality. Therefore, the Shanghai Municipal Government could place these top research universities into regional development plans and provide funding for them; in return, the universities would gear to the regional needs in their education and research.

Currently there are 112 universities in Project 211. Although these universities make up only around 6% of China's regular higher education institutions, they are responsible for training four-fifths of doctoral students, two-thirds of graduate students, and one half of international students. They account for 85% of the country's key subjects, 96% of national key laboratories and 70% of scientific research funding (Zhao and Zhu 2010).

"Project 985" is a national project for founding world-class universities for the twenty-first century, launched after the former President Jiang Zemin's speech on May 4, 1998, who declared that "China must have a number of first-rate universities of international advanced level". In the initial stage, only Peking University and Tsinghua University received the Project 985 status. It was announced by the Ministry of Education (MOE) in 1998 that the two universities would each receive 1.8 billion RMB (about US$ 290 million) within 3 years (1999–2001) from the central government as special development funds in addition to the normal government financial allocation. During 1999–2006, 37 additional universities were listed as Project 985 institutions through a mode of cofinancing between the central government and regional governments.

8.4.4 Quality Assurance

While the reforms of the late 1990s and the early 2000s mainly emphasised research rather than teaching quality, the "Action Plan for Invigorating Education 2003–2007", promulgated by the MOE with the approval of the State Council, shifted the focus towards teaching and teaching quality as well as quality assurance systems. The Action Plan stipulates a framework for developing quality assurance in Chinese higher education (Li 2010).

Following the Action Plan, the first round of nationwide undergraduate education evaluation was carried out during 2003–2008. According to a national survey of more than 4000 respondents from higher education institutions and regional educational administration departments, the most successful results of the evaluation at the institutional level are (Li 2014):

- It helped the institutions to clarify their orientations and characteristics (87% respondents agreed);
- It established the central status of undergraduate education and enhanced the concept of quality (87%);
- It improved management standards and quality control system of undergraduate teaching in higher education institutions (83%);
- It increased the institutions' quality requirement on teaching and bachelor degree theses (81%);
- It improved the teaching condition and optimised the structure of teaching resources (72%).

8.4.5 Strengthening the Role of Universities in Economic Development and Innovation

As a response to human resources needs arising from the growth of the technology industries, many vocational colleges have been established, and around half of higher education students are admitted by this type of college. To promote links between higher education and the world of work, almost all higher education institutions have established offices to guide student employment (Hao et al. 2011). Meanwhile, in many universities there are internal reforms on teaching with an aim to cultivate application oriented or innovation oriented talent (Jiang 2011).

To support the national strategy to establish an innovative country, profound cooperation between Chinese enterprises and universities has taken place since the end of the 1990s. In addition to carrying out basic research, universities are playing an increasingly important role in solving significant science and technology issues in the national economy and in technology transfer (Cai and Liu 2014). The universities' capacity in research and development has been largely improved as well (Wang 2011).

In 2011, Tsinghua University celebrated its 100th anniversary. President Hu Jintao made a remark on university innovation. Followed the event, the MOE initiated

a new project named 2011 Project. It aims to achieve innovation by collaborating efforts among universities, research institutes, industries, and governments. This policy will change from previous institution-based investment to program-based and institution-focused investment.

8.4.6 Internationalisation of Higher Education

In China, the internationalisation of higher education is an inevitable result of China's integration into the global economy as well as an essential measure to improve its higher education system. The practices in the last decade signify an integration of Chinese higher education with the international community, as part of the governmental strategies for building "world class" Chinese universities and strengthening the competitiveness of Chinese higher education. The concrete activities can be observed in the following major aspects, namely student mobility, international dimensions in teaching and research, and joint education provision.

8.4.6.1 Student Mobility

Although China has been pouring huge investments into building schools and universities, it cannot keep up with the surging demand from its youth for higher education. The number of students pursuing study abroad has dramatically increased in the last three decades. During the period 1978–2011, a total number of 2.25 million Chinese students and scholars had studied in 110 countries and regions all over the world, covering almost all disciplines (Chinese Ministry of Education 2012). Currently students from China represent the largest international student group in the world (OECD 2009), and they are going to continue to increase their domination of the international student market in the near future (Maslen 2007).

8.4.6.2 Internationalisation of Teaching and Research

Since the late 1990s, the focus of internationalisation in China has changed from promoting student mobility to enhancing an international dimension in teaching and research. One significant progress in this regard is curriculum reform (Huang 2007): an increasing number of original English-language textbooks have been either directly used in Chinese universities or translated into Chinese language versions; more and more courses are taught in English or bilingually (Chinese and English). In addition, the internationalisation of the teaching profession has been strengthened (Wang 2008). An increasing percentage of Chinese teachers have learning or teaching experience abroad and international experts in a variety of fields are invited to teach in China higher education institutions.

Another significant development is concerned with international research cooperation. The Chinese government encourages Chinese universities and research institutes to develop joint research projects with foreign partners by obtaining support from various sources. The Chinese government has also signed an increasing number of bilateral agreements with different countries/regions. For instance, the Science & Technology Agreement between the EU and China in 1998 provides a legal basis for future cooperation on science and technology between the two sides. As a result, the EU has opened its research and technology development Framework Programme to China, which allows the participation of Chinese institutions. In turn China opened its National High Technology Research and Development Programme (863 programme) and the National Key Basic Research Programme (973 programme) to EU researchers and institutions.

8.4.6.3 International Cooperative Education Provision

One of the most important characteristics of the internationalisation of Chinese higher education in the twenty-first century is the development in Sino–foreign cooperation in running schools. According to the Regulations on Chinese–Foreign Cooperation in Running Schools issued by the State Council in 2003, the term Chinese–foreign cooperation in running schools (CFCRS) is explicitly defined as: "the activities of the cooperation between foreign educational institutions and Chinese educational institutions in establishing educational institutions within the territory of China to provide education service mainly to Chinese citizens" (Article 2). In practice, foreign institutions must partner with Chinese institutions in establish joint education provision in China. By 2007, the approved Chinese and foreign cooperative degree programmes numbered 200 (Lin 2011).

However, since 2006, the MOE had in practice suspended the approval of CFCRS due mainly to quality concerns. Several China-foreign cooperation programmes were discontinued due to poor management, dysfunction, and/or poor quality. The new reform Outline 2010–2020 signals that the Sino–foreign cooperation in running schools will be encouraged and expanded. The government expects that through importing international educational ideas, curricula and teaching staff, more talent with international skills and perspectives will be cultivated in China to meet the needs of economic development. Having more foreign education in China is also considered by the government as a way to prevent a brain drain. However, the government will raise the threshold, meaning that only those prestigious and high-quality foreign partners can be granted permission to enter China (Cai 2011).

8.5 Conclusion

The analysis has treated the socioeconomic changes/demands for higher education and responses in higher education separately. We took such an approach because it is hard to find a one-to-one relationship between the changes/demands and responses.

Table 8.6 Summary of demands and responses in Chinese higher education

Demands for higher education	Major challenges	Reforms as responses to the demands
Students' demand for quantity	There is an increasing demand for higher education Many students pursue higher education abroad	Introduction of private higher education Expansion of higher education enrolment
Students' demand for quality	Students compete for good universities (high quality of education) but the available places are limited	Quality assurance Internationalisation
Society's demands for further investment in higher education	Governmental financial constraints	Tuition fee policy University-run enterprises Privatisation of higher education
Labour market's demands for high quality human resources and innovative talents	Higher quality and innovation talents are in short supply	Building first class universities Expansion of postgraduate education Internationalisation (joint education)
Labour market's demands for different types of human resources	The phenomenon of academic drift	Differentiation between academic education (mainly MOE's responsibility) and professional/vocational education (local responsibility)
Economic development needs for close cooperation between university and industry (due to emerging knowledge-based economy)	University and industry lack trust and motivation for cooperation	University-run enterprises University science and technology park "Project 2011"
Society's demands for equity in access to higher education	Inequity in access to higher education between people whose household registration in different regions Inequity to access to higher education between social groups Imbalance in affordability between poor and rich families	Student loans Green gate (first enrol student and then seek economic solutions) Special admission policies

Even a single piece of higher education policy is often composed of a set of mixed measures responding to several requirements. Nevertheless, we tried to establish a more logical (linear) structure to help readers easily understand the policies that are mainly dealing with the various kinds of challenges and demands as shown in Table 8.6.

This paper has highlighted the growing importance of social and economic factors in higher education in China, implying that the development in higher education is a matter of reconcile the interests of different stakeholders in the society. The new nature of the pact between higher education and society has made the policy processes and governance in higher education increasingly complicated. Regardless

of the remarkable achievement of the Chinese higher education reforms, there still remain challenges in dealing with the relations between state, university and industry, between education as public and private good, between autonomy and accountability, between efficiency and equity, between higher education expansion and labour market needs, and between quantity and quality.

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Chapter 9
Supply and Demand in South Africa

Kirti Menon

9.1 Introduction

The advent of democracy in 1994 and the promulgation of the Constitution of the Republic of South Africa (Act 108 of 1996) signaled the end of restricted access to higher education on legal grounds. However, it will be seen that the apartheid state's policies, institutional arrangements, and unequal distribution of education resources continue to impact on the achievement of widening access to higher education. In 1994, as a party in waiting for elections, the African National Congress (ANC) issued a comprehensive policy framework for education and training (ANC 1994). This framework addresses the enormity of the apartheid legacy of education and provides a coherent policy statement albeit with contradictory tensions in terms of some of the proposed goals. With reference to the apartheid legacy, this framework states that the:

> Fragmented, unequal and undemocratic nature of the education and training system has had profound effects on the development of the economy and society. It has resulted in the destruction, distortion or neglect of the human potential of our country, with devastating consequences for social and economic development. (ANC 1994, p. 2)

The policy framework accordingly advocated the pursuit of equity and access as being of paramount importance, and signaled quite clearly that the adverse effects of apartheid in the realm of education need to be addressed. The analysis undertaken in this chapter demonstrates that the enormity of the task at hand, the resources required to redress past inequities, and the deeply entrenched nature of the racially-divided educational system were grossly underestimated by the architects of the new policy framework (and vision) for the sector, including the critically important higher education subsector.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_9

9.2 Historical Perspective

In order to understand the impact of the apartheid legacy, it is important to set out how, over the years, higher education has evolved along racial lines, leading to unequal power relationships that were translated into society and the national economy (Wolpe 1991). The history of higher education institutions demonstrates the underpinning of race and ethnicity in the establishment of universities. There is a clear distinction in terms of the student population being served, based on location as well as language of instruction. Reddy (2004) sketches the history of the establishment of universities in the early part of the twentieth century revealing, starkly, the lack of institutional access for Africans, Indians, and those of mixed race origin (referred to as "Coloured").

The frontrunners in higher education evolved from former colleges. The University of Cape Town evolved from the South African College (SACS) in 1918. Rhodes University was established in 1920 and the Victoria College was converted to Stellenbosch University in 1918. This was followed by the School of Mines in Johannesburg, which, in 1922, became the University of the Witwatersrand. This was followed by the autonomy granted to colleges previously affiliated to the University of South Africa, which later became the Universities of Natal, Pretoria, Potchefstroom, and Free State. Established in 1916, the University of Fort Hare provided a form of access to higher education for Africans, Coloreds, and Indians.

Complementing the policy of racial segregation, the government embarked on the establishment of universities based on racial, and in some cases, narrowly-defined ethnic lines. Spanning all levels and spheres of the education and training system, the Bantu Education Act of 1953 delineated the educational opportunities for African people and limited participation by establishing a black education department housed in the Department of Native Affairs. By restricting access to "white" higher education institutions, the Extension of University Education Act (No 45) of 1959 enabled government to set up either universities or technikons (higher education institutions providing technical education) for different race groups. The promulgation of this Act aimed at ensuring that the higher education sector was drawn on racial grounds with barriers to access for black students wanting to study at historically white universities or technikons.

In the pre-1994 period, universities and technikons were governed, funded and administered by various departments depending on the "purpose" of the higher education institution. "Purpose," in this instance, refers specifically to the race group the institution was expected to cater for, which in turn defined its legal and governance arrangements with racially defined departments of education. Table 9.1 provides a description of the nature of the divisions, the different types of institutions and the governance arrangements. These governance arrangements translated further into differential funding arrangements and disjointed contributions to society in terms of human resource development. Further differentiation can be seen in terms of the distinctions between universities and technikons.

Table 9.1 Divisions, types of institutions and the governance arrangements of universities and technikons, pre 1994. (Source: CHE 2004, p. 40)

Authority	Universities	Technikons	Total
House of Assembly (whites)	*English*: University of Cape Town, University of Natal, Rhodes University, University of the Witwatersrand *Afrikaans*: University of the Orange Free State, University of Port Elizabeth, University of Pretoria, Potchefstroom University, Rand Afrikaans University, University of Stellenbosch *Distance*: University of South Africa	Cape Technikon, Technikon of the Orange Free State, Natal Technikon, Port Elizabeth Technikon, Pretoria Technikon, Vaal Triangle Technikon, Technikon Witwatersrand *Distance*: Technikon of South Africa	19
House of Representatives (for coloureds)	University of the Western Cape	Peninsula Technikon	2
House of Delegates (for Indians)	University of Durban-Westville	M L Sultan Technikon	2
Department of Education and Training (for Africans)	University of the North, University of Zululand, Medical University of South Africa, Vista University	Mangosotho Technikon, Technikon Northern Transvaal	6
Republic of Transkei	University of Transkei	Eastern Cape Technikon	2
Republic of Bophuthatswana	University of Boputhatswana	Setlogelo Technikon	2
Republic of Venda	University of Venda	–	1
Republic of Ciskei	University of Fort Hare	Border Technikon (Ciskei)	2
Total	21	15	36

9.3 Impact of Policy to Remove Barriers to Access

A focal event in the history of South African higher education has been the transition from the apartheid government to democracy (Cooper and Subotzky 2001; Kraak and Young 2001). The inheritance of 21 public universities and 15 technikons based on race and geographic location (Table 9.1) was brought under the jurisdiction of the new national Department of Education (DoE). This was the moment to realize the ideals of the Freedom Charter of 1955 which signaled the defining feature of the struggle against apartheid in the refrain "the doors of learning and culture shall be opened." This transition has necessitated a major overhaul of policies that perpetuated exclusion on the basis of race, gender, and class in higher education resulting in skewed patterns of enrolments and graduates. The issue of access to higher education has dominated the discourse in policy analysis and underpinned several policy reform initiatives.

However, a charting of the history of higher education for the period after 1997 confirms that beyond agreement on the goals and principles espoused in various policy texts, institutions and various role players assumed a counter-position to the state partially attributable to the emergence of the size and shape debate (see below). The *Council for Higher Education Report: Towards a New Higher Education Landscape* (2000) advances a case for equity and access issues to remain at the forefront of higher education, pointing out that "the extent to which equity and access are actively promoted or frustrated will determine the nature and extent of social and class stratification and have a direct bearing on the nature of South Africa's democracy, labor market, and social stability." This statement bears out the palpable tensions emerging through the policy development processes and raises the specter of the extent to which there may have been deviations from the aspirational goals referred to in the White Paper 3 (Department of Education, 1997) and the role of education in transforming both society and the labor market. The link between the stratified labor market and education is based on the inequitable educational opportunities of the apartheid era which resulted in low numbers of the disadvantaged population groups in "skilled" positions. Education progression in the system for these groups would result in concomitant increases in "black" professionals and a reduction in "unskilled labor".

The review of policy documentation emerging from the 1994–2001 period stresses the importance of a higher education system planned, governed, and funded as a "single, coordinated system" (NCHE 1996; Department of Education 1997). The emphasis on "single" symbolized a deliberate break with the multiple structures and excessive duplication of apartheid. The White Paper set out the principles and values that would inform the system to be developed though it realistically opted for planned growth with emphasis on access and success. The envisaged state intervention was to be in the form of planning, both at the national and institutional levels, funding that would be linked to the goals of the system that would be identified in a national plan and finally, accountability from institutions. The reality was that fiscal constraints could not support the "massification" as envisaged in the National Commission on Higher Education (NCHE) documents, which thus explains the reference to "limited real growth in public expenditure" (Department of Education 1997, pp. 2.27). The logical consequence was then for institutions to mobilize additional private resources as the targeted redistribution of funds that would necessitate reliance on other streams of income. The White Paper states:

> The key instruments in the planning process will be the development of overall national and institutional 'three-year' rolling plans, indicative plans which facilitate the setting of objective and implementation targets that can be adjusted, updated and revised annually. A participatory, multi-year planning process will avoid the inherent defects of the old top-down central budgeting system. This is in line with the government's budget development process as reflected in the Medium-Term Expenditure Framework. A three-year planning cycle, with data, resource estimates, targets and plans annually updated, enables the planning of growth and change in higher education to be more flexible and responsive to social and economic needs, including market signals (while avoiding the rigidity of old-style 'manpower planning'), permits adjustments to be made on the basis of actual performance, and introduces greater predictability and hence stability into the budget process. (1997: 2.9)

The National Plan for higher education (NPHE) (2001) followed after a period of extensive consultation and a hiatus of 4 years. Thus, following White Paper 3 in 1997 and the enactment of the Higher Education Act 101 of 1997, the next significant policy document emerging from the DoE was the NPHE. In terms of actual policy work, the period between 1997 and 2001 could be perceived as a "policy gap" but was also a period of intense debate on pivotal issues such as the size and shape of the system, responsiveness of higher education to the economy and society, and the transformation agenda. The goals stated in the National Plan resonated with the earlier stated goals in the White Paper but were underpinned by strong planning language. It also gave the Minister of Education the right to allocate funding based on institutional plans and targets, and introduced the concept of incentive funding.

The NPHE provided a detailed plan for the higher education system. Goals, performance indicators, and outcomes were clearly stated. It provided the rudiments of the framework and set out the planning instruments to be used by the government to achieve the targets. It could be argued that the restructuring of the higher education system, which commenced at roughly the same time as the release of the NPHE, deflected some of the momentum that could have been gained. As institutions affected by the restructuring merged or were incorporated, institutional energies were diverted from focused attention on the NPHE. The development of new planning frameworks experienced both development delays at state level and implementation delays at institutional level. Institutions untouched by mergers or incorporations continued with business as usual. It could be argued that the NPHE provided a framework and set out government's course of action for a period of time and explicitly stated the goals of the higher education system. This in itself was to be interpreted by institutions, which in turn would determine the course of institutional planning processes. However, the other side of the coin was that the effect of the NPHE was experienced differently by different institutions, depending on whether they were merging, merged, or are soon to be incorporated. This "transforming" process for higher education institutions then required all impacted institutions to have an inward focus as opposed to positioning and gearing to meet the challenges and targets set by the state. In December 2002, the Ministry of Education published its proposals, which were subsequently approved by the cabinet, for the transformation and restructuring of the country's higher education institutional landscape. The legislature in turn passed a law mandating the mergers and incorporations of the Public Higher Education institutions resulting in the consolidation of universities and technikons into 11 traditional universities, 6 "comprehensive" universities, and 6 Universities of Technology. In addition, two National Institutes of Higher Learning in Mpumalanga and Northern Cape were established. In 2012, the intention to create two new universities in these provinces (DHET: Green Paper 2012, p. 37) was announced. Jansen (2002) pointed out that there were several problems with the mergers: first, they reduced access in a significant way for rural students; second, the shift in the nature and character of the institutions would mean that they attracted middle class students largely; and third, there was a significant reduction in the number and types of institutions that would be

available to students. This was an argument that gained significant currency, as the burden of restructuring shifted to institutions affected by the restructuring, detracting from pursuit of institutional aspirations of widening access and diversifying qualification and programme offerings (CHE 2002, p. 6). An early ANC document on education and training indicated that:

> The present funding formula for higher education will be reviewed and restructured in terms of the need to expand the system, redress institutional inequalities, and increase the intake of disadvantaged students. (ANC 1994, p. 115)

Bunting (1994, p. 239) analyses this funding formula reference in the ANC document and concludes that the envisaged usage of funding to effect transformation of the higher education sector could best be characterized as a "soft" form of leverage. He argues that in order for the funding formula to actively steer the system it would need both incentives and disincentives. The gap between 1994 and the implementation of the new funding framework in 2004 signified a decade of the status quo being maintained and opportunities being lost. Policy analysts (for example Badat and Wolpe 1994) argue that the policy frameworks envisaged would encounter difficulty in pursuing both equity in terms of access and the developmental role of producing human resource skills and knowledge relevant to society.

It has been pointed out by some analysts that the scale of restructuring diminished opportunities for access by the youth and the unintended consequence was the increased costs of studying brought about partially by the geographical access issues (Stumpf 2009, p. 7). The point being made here was that with closing of colleges, neglecting Further Education and Training (FET) colleges, and restructuring higher education, centers of teaching were consolidated and concentrated in specific geographical areas, thus limiting access to students as well as increasing the cost of education for those who lived far from centers of teaching and learning.

Overall, despite post-1994 policies that have targeted access barriers to higher education, analysts still point to the lack of sufficient enabling conditions and problems with the policy frameworks that have not succeeded in widening access to higher education in a meaningful way (Barnes 2006; Jansen 2001).

The section below explores, in detail, the "lack of sufficient enabling conditions and problems with the policy frameworks."

9.4 Lack of Enabling Conditions and Problems with Policy Frameworks

9.4.1 The Broader Socioeconomic Context: Lack of Enabling Conditions

With respect to the existing inequality of access to higher education, it is pertinent to look at measures of inequality to demonstrate the challenges faced by the

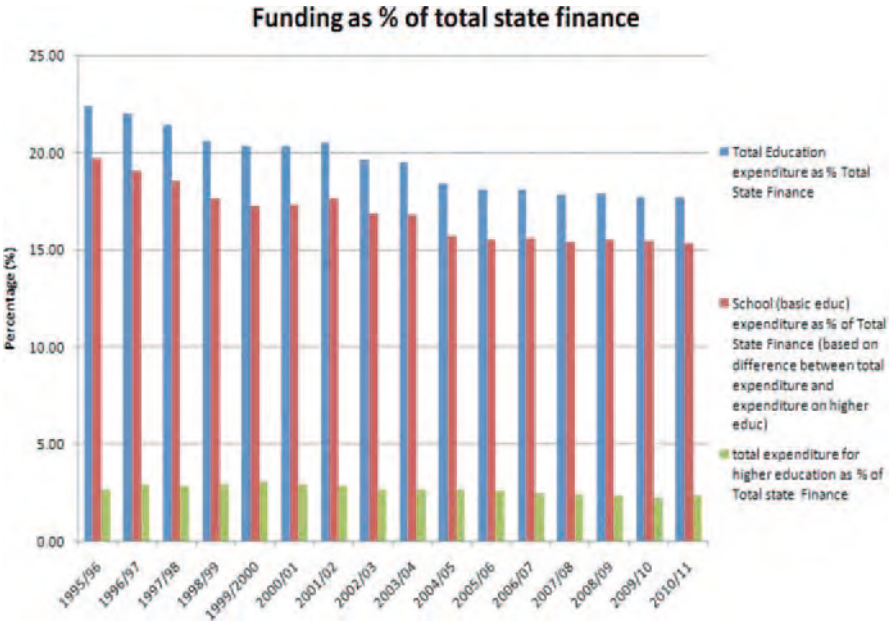


Fig. 9.1 Expenditure on schools and universities and as a percentage of total state finance. (Source: Department of Higher Education and Training 2012)

government in attempting to bridge the gap. The Gini coefficient[1] is one such measure which is used to analyse levels of inequality. However, debate on the Gini coefficient for South Africa (Pillay 2006; Bhorat and Cassim 2004) demonstrates that inequality has deepened post-1994, and it is a reality that for income; it stood at 0.7 in 2011. What it does confirm are the assertions made by the ruling party, the ANC (ANC 2004) that the "second economy" (i.e., the undeveloped segment of South Africa's dual economy) is linked to "unfreedoms"[2] imposed by the apartheid government and that a developmental state will have to intervene actively, simultaneously focusing on the strengthening of the first economy. This assertion endorses the view that social inequality persists despite policy measures and improvements on a number of indicators.

Figure 9.1 illustrates the levels of funding from the state to higher education institutions. As a percentage of the overall state budget, there has been no significant increase and neither has there been any increase as a percentage of GDP. As a percentage of GDP, state funding of higher education has actually declined from

[1] The Gini coefficient or index measures inequality, e.g., in the distribution of wealth. A coefficient of one indicates 'perfect inequality' –i.e. all wealth is owned by one person in a country, while a coefficient of 0 reflects perfectly equal distribution. All countries are between 0 and 1.

[2] Sen (1999) argues that the process of development should remove 'unfreedoms' like political freedoms, economic facilities, social opportunities, transparency guarantees and protective security. This would then require a broadening of our view of development going beyond income per capita and GDP growth.

a high of 0.82% in 1996 to a low of 0.69% in 2010/2011 with a marginal increase to 0.73% in the 2012/2013 financial year. As a percentage of the government budget, from 3.08% in 1999/2000, it has consistently declined, reaching 2.47% in 2010/2011. Badat (2010) makes the point that a significant expansion of resources is needed to achieve the country's redress and equity targets.

As a developing country, it is clear that under-resourcing of higher education will lead to the decay of the universities and further decline in the quality of education as well as shifting the burden of higher education financing to students through increases in fees. Increased investments in higher education by the state confirm the commitment to education as a public good and are a translation of rhetoric into practice (Docampo 2007, pp. 1–3). The National Student Financial Aid Scheme (NSFAS) ministerial review (2010, p. 83) brings closely into focus the need for state funding of higher education noting that "the inequities of our institutional landscape have a direct bearing on the dependency of institutions on state funding as opposed to other income streams."

It has been extensively documented that one of the consequences of the funding formula was that it produced behavioral patterns among higher education institutions that were not always in line with the national goals and expected outcomes (Ministry of Education 2001). What this referred to is the reward for headcount enrolments that spurred some institutions to engage in partnerships with private institutions to increase enrolments or expand into distance education provision. This pattern and analysis of the new funding framework indicates that for funding to produce the desired outcomes, the instruments would have to be well calibrated and synchronized with planning processes within institutions.

Continuing with the analysis of funding allocations, Table 9.2 produces surprising results when funding allocations are linked to student numbers and a rough calculation was made based on the value of funds corrected for inflation. The figures range from R 18,019 in 1995/1996 to approximately R 21,399 in 2010/2011. The calculation is relatively crude as it works on the limited premise that the primary function of universities is enrolment of students. Thus, the costing estimates per student neglect for instance, the funding of infrastructure and research.

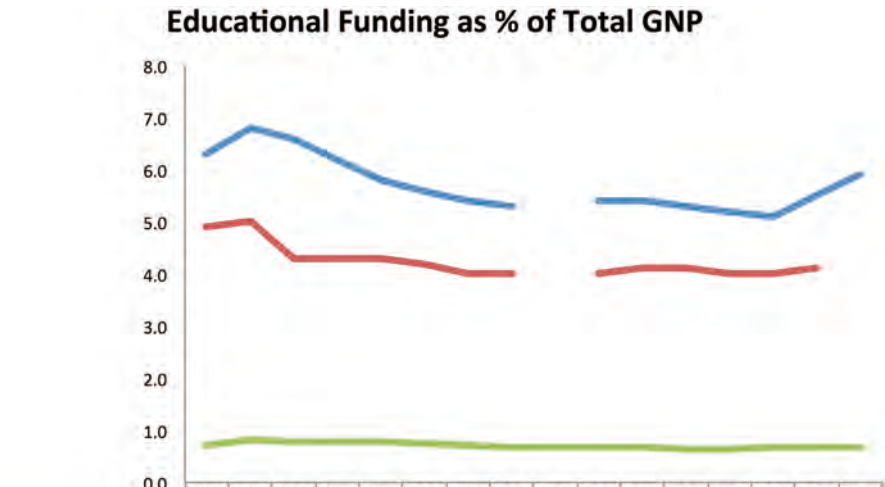
It makes sense to assume that you need a threshold level of investment before increased enrolment can be triggered. Table 9.2 poses an important conundrum as to why the low level of investment produced a corresponding growth in enrolment, albeit at a lesser multiple than anticipated. At the same time, the same period is characterized by low graduation rates, increased tuition fees, several institutions experiencing a financial crisis and mounting student debt. The graduation rate may not correlate with the investment as there may be multiple causes ranging from underpreparedness, personal choices, and others. As a measure of effectiveness the cost of production of graduates increased which lends credence to the government's concern and monitoring of resources by institutions. Thus, resources could be managed efficiently but not applied effectively to manage the access–success goal. This obviously requires interventions at the education system level in terms of strengthening the school systems and reconceptualization of FET colleges as feeders into the higher education system. It is clear that financial allocation could

Table 9.2 HEMIS Data for 1994–2011. (Source: DHET)

Year	Rm nominal	Students	Inflation	Index	Rm corrected for inflation	R per student corrected for inflation
1995/1996	4.073	557383	0.086	2.466027	10.044	18.019
1996/1997	5.207	574771	0.073	2.298255	11.967	20.821
1997/1998	5.431	569814	0.086	2.116256	11.494	20.172
1998/1999	6.003	559309	0.068	1.981514	11.895	21.267
1999/2000	6.610	553800	0.051	1.88536	12.462	22.503
2000/2001	7.072	556667	0.054	1.788767	12.650	22.725
2001/2002	7.532	604939	0.058	1.690706	12.734	21.051
2002/2003	8.019	643248	0.091	1.549685	12.427	19.319
2003/2004	8.926	684470	0.058	1.46473	13.074	19.101
2004/2005	9.879	744444	0.014	1.444507	14.270	19.169
2005/2006	10.780	753036	0.0341	1.396874	15.058	19.997
2006/2007	11.755	741380	0.0461	1.335316	15.697	21.172
2007/2008	13.057	760889	0.0721	1.245514	16.263	21.373
2008/2009	15.120	799491	0.115	1.117053	16.890	21.126
2009/2010	16.742	837779	0.071	1.043	17.462	20.843
2010/2011	19.108	892936	0.043	1	19.108	21.399

explain increased enrolments but that once the threshold is reached there is no visible evidence of improvement in graduation rates. Noting that the responsibility for teaching and learning rests with institutions, it is necessary to identify causes for the dismal graduation rates. In studies on access and success (CHE 2010; DHET 2009) it is palpably clear that graduation rates are problematic and can be tied in to race. This phenomenon points once again to the shortcomings of the schooling system and the under preparedness of students entering higher education. The decline in expenditure for education is a cause for concern as the primary and secondary, and FET subsectors provide a valuable inflow into higher education. Reduction in funding in related sectors will longitudinally impact on higher education. This is demonstrated by the data in Fig. 9.2 which signals quite clearly that there has not been any decline in overall spending in education as a whole as well as funds into the schooling system and higher education.

Having ascertained that state funding for higher education has not kept pace with increased enrolments, it is clear that this downward trend is not confined to the higher education sector but to the education system as a whole. The structural deficits in the education system primarily as a result of apartheid required serious investments for education to be accessible and to address the inherent inequalities of the system. Figure 9.2 illustrates this decline in education expenditure. Reduction in funding in related (education) sectors will impact on higher education. It is evident from the table that overall state spending on education as a sector has been on a downward spiral from 1995 to 2011 with corresponding declines in school and university spending.



	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-00	2010-11
Total education	6.3	6.8	6.6	6.2	5.8	5.6	5.4	5.3		5.4	5.4	5.3	5.2	5.1	5.5	5.9
Schools	4.9	5.0	4.3	4.3	4.3	4.2	4.0	4.0		4.0	4.1	4.1	4.0	4.0	4.1	
Higher Education	0.72	0.82	0.78	0.79	0.79	0.74	0.72	0.67	0.68	0.68	0.67	0.64	0.63	0.66	0.69	0.69

Fig. 9.2 Educational funding as percentage of GDP (1995–2010)

The financial allocations of the DoE/Department of Higher Education for the period 1994–2011 demonstrate the dilemmas faced by the DoE. The department had a number of options for analyzing these trends, some of which are described below:

I. Maintain the status quo and funding levels of all higher education institutions
II. Minimize the negative impacts on reduced funding
III. Diversion of funds to targeted areas identified by postdemocratic policy documents could detract from normal functioning of institutions
IV. Restructuruction of higher education would be completed by 2005 and the new funding formula could logically be introduced in the face of the new institutional arrangements
V. Pressure on institutions to rely on student fees and private funds in the face of diminished state funding
VI. Equitable distribution of funds to institutions despite inequities of the past persisting
VII. Expand the sector in terms of access and provide adequate maintenance of the existing infrastructure and institutional capital growth plans (Menon 2014).

Access to higher education in South Africa as the transition from apartheid to democracy unfolded, is one of the objectives and goals of higher education policies, structures, and systems. Questions have been raised as to the extent to which higher education planning has succeeded in relation to the goal of access. Policies formulated to address social exclusion in terms of access to higher education have

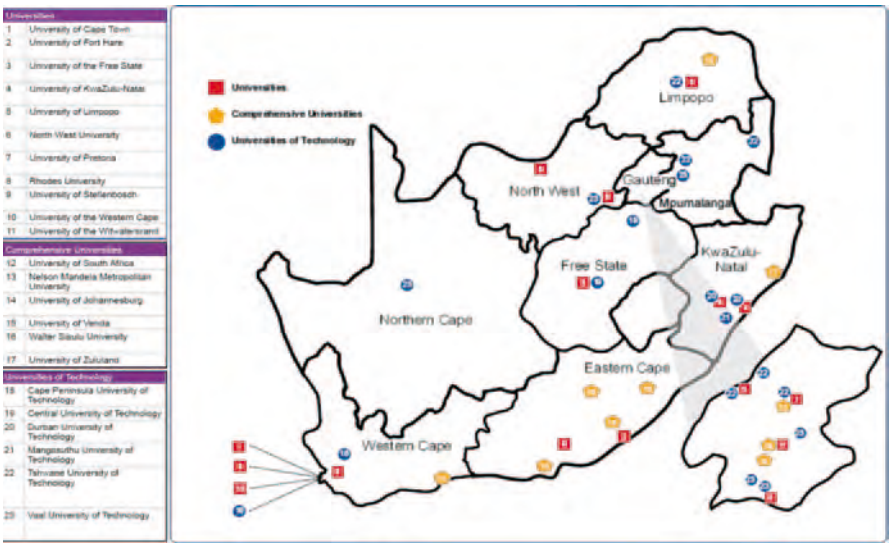


Fig. 9.3 Names and types of institutions by province. (Source: CHE, Higher Education Monitor, 2009 p. 6)

to work in concert with other developments and it is clear that greater coherence in education policy is required.

9.4.2 Supply: Size and Shape

Figure. 9.3 provides an overview in terms of the geographical location of higher education institutions delineated by the type of institution. In the South African context with the merger process that commenced in 2000, 36 institutions were merged, incorporated or absorbed forming 23 universities with different focal areas which further described the kind of programmes and qualifications that could be offered and the level (Fig. 9.3). The purpose of this section is to provide an overview of what has popularly been termed the "shape and size" of the higher education sector (Department of Education 1997, pp. 2–7). The shape and size of the higher education system linked to the geo-political imagination of apartheid planners signaled a policy priority that required urgent remediation to address issues of exclusion. As seen in section 2, the Extension of University Education Act (1959) enabled government to set up either universities or technikons for different race groups. In the pre-1994 period, universities and technikons were governed, funded, and administered by various departments depending on the "purpose" of the higher education institution. "Purpose" in this instance refers specifically to the race group the institution was expected to cater for, which in turn defined its legal and governance arrangements with racially defined departments of education.

The size and shape of the higher education system posed significant challenges to the state in 1994 and debates on the appropriate configuration of the higher education system for South Africa ensued. In the period 1999–2002, intense debate on mergers, incorporations, and closures of higher education institutions dominated. By 2002, the then Minister introduced legislation altering the size and shape of higher education, by reducing the number of institutions from 36 to 23, which was to be carried out over a 3-year period from 2002–2005. In providing advice to the Minister of Education, the Council on Higher Education (CHE), established in 1999 as an independent statutory advisory body to the Minister, stated:

> The higher education system still does not function in the co-ordinated way envisaged by the White Paper. Neither the existing planning instruments nor the institutions have produced meaningful co-ordination or collaboration. Many of the features of apartheid fragmentation continue within the system and between institutions. (CHE 2000, p. 17)

The review of policy documentation emerging from the period 1994–2001 stressed the importance of a higher education system planned, governed, and funded as a "single, coordinated system" (Council for Higher Education 1996; Department of Education 1997). The emphasis on "single" symbolized a deliberate break with the multiple structures and excessive duplication of apartheid. The White Paper set out the principles and values that would inform the system to be developed though it realistically opted for planned growth with emphasis on access and success. The envisaged state intervention was to be in the form of planning, both at the national and institutional levels, funding that would be linked to the goals of the system that would be identified in a national plan and finally, accountability from institutions. The reality was that fiscal constraints could not support the "massification" as envisaged in the National Council for Higher Education documents, which thus explains the reference to "limited real growth in public expenditure" (Department of Education 1997, p. 2.27). The logical consequence was then for institutions to mobilize additional private resources as the targeted redistribution of funds would necessitate reliance on other streams of income. The White Paper states:

> The key instruments in the planning process will be the development of overall national and institutional 'three-year' rolling plans, indicative plans which facilitate the setting of objective and implementation targets that can be adjusted, updated and revised annually. A participatory, multi-year planning process will avoid the inherent defects of the old top-down central budgeting system. This is in line with the government's budget development process as reflected in the Medium-Term Expenditure Framework. A three-year planning cycle, with data, resource estimates, targets and plans annually updated, enables the planning of growth and change in higher education to be more flexible and responsive to social and economic needs, including market signals (while avoiding the rigidity of old-style 'manpower planning'), permits adjustments to be made on the basis of actual performance, and introduces greater predictability and hence stability into the budget process (Ibid. p. 2–9).

Participation rates especially by sector, race, and gender are an important determinant of progress in the sector. Unlike Australia that is able to work out participation for lower income groups, South African data does not make provision for this useful category at the present time. In 1990, the headcount enrolment was 396,000 and in 1993, 473,000 (DHET 2012). Between the years, 1994 and 2010 the actual numbers

increased by 397,580 headcount enrolments. The years 1997–1999 and 2005 show negative growth for no obvious reasons. The overall annual increase between 1994 and 2010 is 3.75%. It could be argued that many students registered with private providers but more importantly, there is evidence that suggests that the affordability of higher education was posing a serious threat to access (Fiske and Ladd 2005, pp. 212–3).

When it comes to inflow into the higher education system an Human Sciences Research Council (HSRC) study, "Elusive Equity" points to the improvements in percentage pass rates but a decline in actual candidates appearing for the senior certificate for the period 1994–2001 referring to South Africa's inadequacy to perform in education on the "powerful shadow of South Africa's past" (Fiske and Ladd 2005, p. 199). By 2010, it was clear that an achievement of a participation rate of 20% was not likely to be achieved. Unlike radical transformations of higher education in countries like Brazil, Malaysia, and China which saw trebling of numbers in the same timeframe, the South African system was on a course of increasing numbers erratically by 20,000–50,000 per year. Figure 9.4 shows returning students as well as first-time entering students. By 2011, 59% of the enrolment was in contact education and 41% in distance education. A more depressing account would involve discussion of the dismal success rates and graduation rates with students occupying places instead of flowing through the system. For example according to the DoE cohort study undertaken in 2000, only 30% of the intake of 2000 had graduated from a 3 year degree (CHE 2007, p. 12).

Participation rates in higher education in the apartheid era were skewed and not in line with the population demographics of the country (Figs. 9.4 and 9.5). This pattern derives from policies that excluded participation based on race and limited

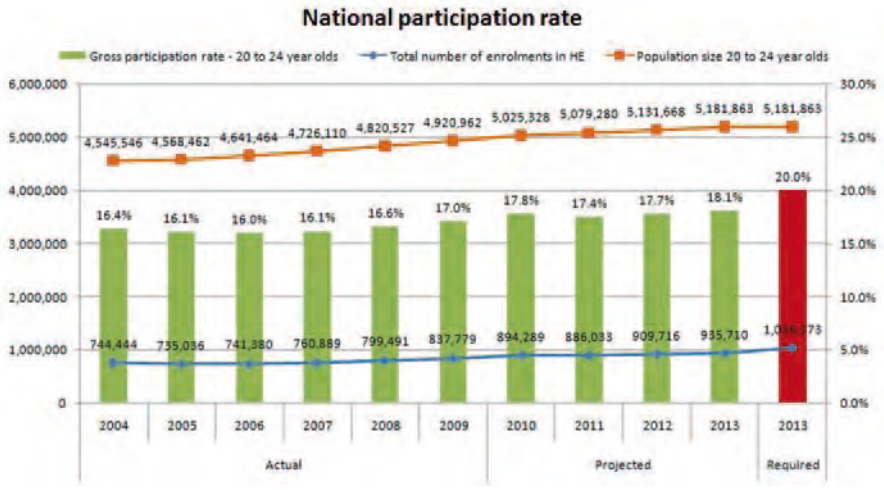


Fig. 9.4 National participation rates actual, projected and required. (Source: Department Higher Education and Training (2012))

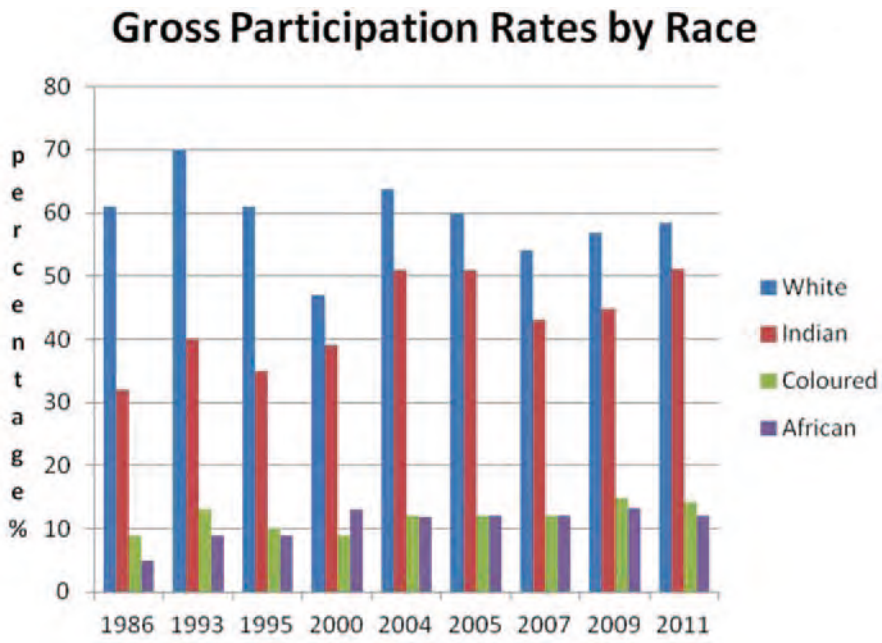


Fig. 9.5 Gross participation rates by race. (Source: Bunting 1994 and HEMIS 2012)

access because of major variances in curricula were offered in schools which again ensured that subjects like science and mathematics were taught at different levels depending once again on race. This deliberate intervention created a mammoth chasm in terms of epistemological access, i.e., the goods which the university distributes (Morrow 1993). The Report of the NCHE (1996, p. 91) argued that increase in participation rates would be required in the African population, and that South Africa would need increasing numbers of highly skilled workers. The NCHE pegged participation rates of the 20–24 year old age cohort in 1995 as 21% and optimistically predicted that this would increase to 30% over a 10 year period. Thus, by 2005 there would be 1.5 million students enrolled from the 800,000 in 1995 (National Commission for Higher Education 1996, p. 99). Figure 9.4 shows however, that the NCHE predictions and calculations were misplaced, as gross participation rates did not increase between 2004 and 2012, and movement year on year had been marginal. In 2012, it was anticipated that the participation rate would reach 17.7%. The pace of higher education growth in relation to growth in population for the age group 18–24 is not synchronized at all. It is clear that massive investment in higher education would be required to sustain growth though it is not evident that the inflow from the school system would provide the required outputs.

Various analysts have pointed out that the enrolment trends were markedly skewed especially in the period 2004–2012, with African students shifting to historically advantaged institutions and into distance education with program choices in the fields of education and the humanities (Bunting 2002; Subotzky 2003;

CHE 2004). This complicates the problem in that, gross participation rates have not shifted dramatically and the shift that has taken place is contrary to targets of the NPHE (Fig. 9.5). Participation rates by race as defined and categorised in SA as White, Coloured, Indian and African (Fig. 9.5) demonstrate that, there has been a decline in white participation and that despite incentives for improvements in access, corresponding increases in participation rates for Africans. It could be argued that the structural damages will require years of unraveling including radical changes to the schooling system and improvements in the training of teachers. The relationship between economic development of a country and participation rates is advanced by researchers in higher education. This argument is advanced by policy analysts in South Africa who bemoan the fact that as per World Bank statistics our participation rates are on par with low-income countries. Policy initiatives like the NPHE advocate that by 2011 or 2016 South Africa's target higher education participation rate should be 20%. This would leave the country in the same level as low-income countries despite investments in higher education and more than 20 years post-apartheid.

Figure. 9.6 displays the gross enrolment ratio (GER) which is calculated as a percentage of the number of headcount students enrolled in public higher education, regardless of age, expressed as a percentage of the population, in the age group 20–24. The graph demonstrates the trend in terms of female enrolment in higher education, showing a modest increase (on average, a 6% annual increase) though there is a corresponding decrease in male participation. It has been argued that though there is an increase in female enrolments "the clustering is at the level of lower qualifications and in fields that are traditionally associated with females" (CHE 2001, p. 28). The male participation rate has declined significantly from 55% in 1994 of total enrolments to 43% in 2010.

Figure 9.7 represents headcount enrolment by race from 1994 to 2010. African headcount enrolment shows almost a trebling of the numbers, with a decline of 43 643 in White students between 1994 and 2010. In 1994, Blacks (African, Coloured and Indian) represented 55 percent of the total number of students enrolled or 273 516 of the headcount. In 2010, Blacks represented 80 percent of the total number of students enrolled or 706 451 of the headcount (Fig. 5.5). Given that the size of the

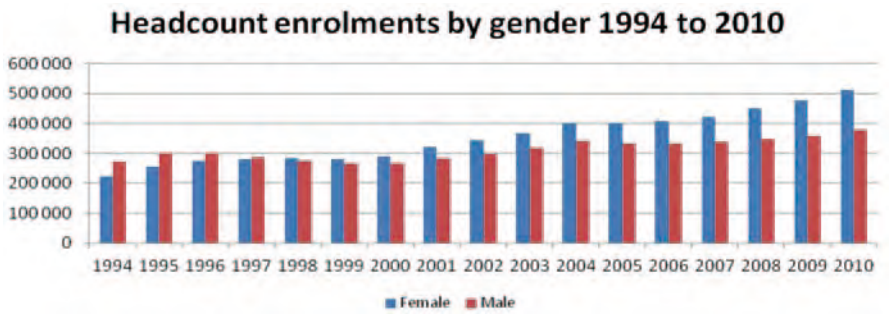


Fig. 9.6 Gross enrolment ratios by gender. (Source: CHE 2009)

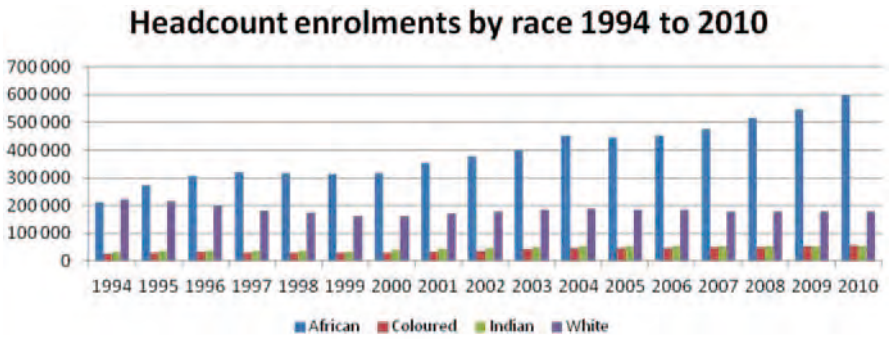


Fig. 9.7 Headcount enrolments by race. (Source: HEMIS 2012)

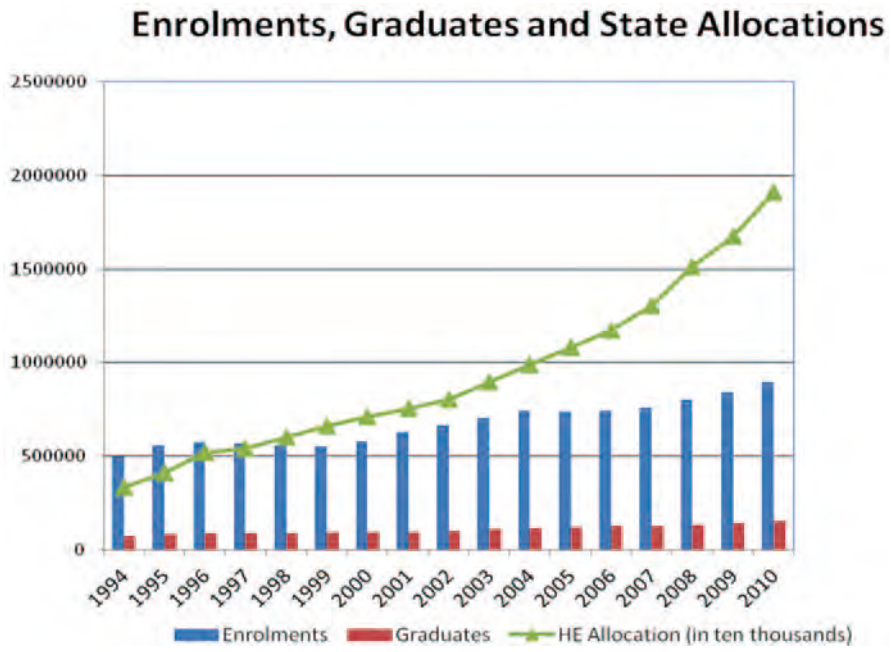


Fig. 9.8 Enrolments, graduates, and state allocations between 1994 and 2010. (Source: HEMIS 2012)

sector may be inadequate for the demand for some form of post-secondary education, the growth represents significant improvement.

Headcount enrolments as displayed in Fig. 9.8 demonstrate that between 1994 and 2010 there has been a 200 % growth for African students. Despite the growth, the participation rate of African student was 12 % in 2011.

Figure 9.8 indicates that the growth in enrolments has not resulted in a parallel growth in graduates for the 16-year period. Access clearly has not translated into

success. Given that the goal for increase in graduates is related quite closely to the country's vision for economic growth, the number of graduates produced is still dismally low. The National Planning Commission (2012) acknowledges this as a problem but fails to identify any serious interventions that could solve the situation either in the short or long term. This holds true for the Green Paper on post-school education and training (2011) where the diagnosis of the problems in higher education are sound though no compelling solutions or a concerted deliberate pathway are identified for progress beyond the quagmire of the current system. This signals that despite growth in funding allocations as demonstrated in Fig. 9.8, which had an average annual growth of 12% for the period, the system has expanded in terms of headcount enrolments but the required production of graduates has not occurred.

9.5 Conclusion

The 16-year period under review has thrown up challenges in the form of both addressing the legacy of apartheid and inequitable distribution of resources as well as priming the higher education sector for the challenges of the twenty-first century. This dual purpose has seen policy shifts, adjustments, compromises, and active steering on the part of the state. Thus, transformation of the broad sector by the eradication of historically imposed institutional identities as well as pursuing the goal of widening access to higher education has made attainment of the goals particularly difficult to evaluate. First, as much as government has urged the shift from elitist participation in higher education to massification, there are fiscal restraints. Second, the restructuring of higher education and the size and shape issues created new challenges for both institutions and the government. Third, it has been difficult for the government to ensure, in current funding allocations, equitable distribution of resources across institutions, given the past history of inequitable distribution. Despite the plea from historically black universities for some form of redress funding, this has not been happening. A tracing of the policy trajectory for the period demonstrates that, policy rhetoric and ideal positions adopted in early policy documents was impossible to implement with the immediacy required. Fourth, the challenges of the knowledge society and globalization are factors that are layered among the myriad challenges of South African society. A fifth issue for consideration is that, inequalities of society have created deeply entrenched barriers for access to higher education. A policy approach that is limited by focusing on only higher education will not work unless it is "joined up" with other policy interventions across other departments in the government. This requirement for coherence in policymaking resonates with the belief that exclusion issues in education can only be addressed if the macro socioeconomic conditions are tackled. A sixth issue for consideration is that, access has been interpreted differently at the institutional level and the policy discourse is often at variance with practice on the ground. Lastly, state steering can dislodge institutions from achieving outcomes if not coordinated, synchronized, and implemented at critical junctures.

It is clear that recent government calls for closer alignment between the labor market and a deeper understanding of the skills set required for the economy are a step in the right direction (Green Paper 2012). The vestiges of apartheid still remain as graduate unemployment is a worrying trend with between 255,000 (Statistics South Africa 2009) and 600,000 (Sharp 2011) unemployed graduates. This calls for stronger engagement between employers and the higher education sector in order for nuanced understandings of the skills required and the kind of graduate required for the economy. Of course, it must be countered that the slow growth of the South African economy over the past 5 years coupled with retrenchments in specific sectors has contributed to the high unemployment among higher education graduates. The challenge is for the higher education sector to focus on growth in the fields of science, engineering, and technology and for strategic partnerships to be formed with employers to create opportunities such as work experience, internships, and job placement. The complexity of the supply and demand issues in South Africa are tainted by the legacy of discrimination, racially skewed policies, and disparate education systems based on race. It is unimaginable that the higher education system could correct itself in just 19 years. Despite major incentives put in place for Black Economic Empowerment and what is often referred to as "targeting equity" programs in the workplace, the economy still displays patterns of disadvantage on the basis of race and gender. Supply and demand issues that bedevil South Africa are similar to international trends in terms of rising costs of higher education and declining investments in the sector. It still remains a unique conundrum based primarily on the complex task of undoing decades of unequal education and social exclusion policies and practices.

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Part III
The Role of Stakeholders

Chapter 10
The Role of Internal and External Stakeholders in Brazilian Higher Education

Elizabeth Balbachevsky

10.1 Introduction

A distinctive feature of Brazilian higher education today is its differentiation, and Brazil is perhaps an extreme case, both in terms of institutional settings and ownership. Among its more than 2300 institutions, there are examples of almost anything: from small, family-owned, isolated professional schools to huge research universities with annual budgets of more than $ 2 billion, and private for-profit conglomerates with more than a million students. As one would expect, this institutional maze gives rise to extremely diverse types of organizations. While in general, public universities are better endowed and more institutionalized, there are clear and significant differences even among institutions belonging to this sector: universities with a stronger commitment to graduate education tend to have a more active research profile, and are more susceptible to values and expectations linked to disciplinary cultures. Public universities committed to undergraduate education are more susceptible to the agenda supported by unions (both academic and staff unions). Federal institutions (and most state owned institutions) are more vulnerable to pressures coming from governmental bodies than the powerful São Paulo state universities.

Within the private sector, market forces and governmental regulations are the main drivers for growth, differentiation, and institutional development. As a rule, private institutions are confined to a mass education market where low tuition is the main differential. In this segment, the most common and traditional format is the small, isolated professional school offering a few undergraduate programs in the same professional track. Nevertheless, in the last 10 years, this segment experienced a strong process of consolidation that led to the creation of a number of large, for-profit institutions. These new institutions are able to offer dozens of different undergraduate programs in a diverse array of fields, and to explore new

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_10

market niches such as lifelong learning and taught master programs. The education they provide tends to be standardized and cheap, as a commodity sold in a competitive, low-cost market. However, because of their scale, they also have resources for different responses targeting specific demands for undergraduate and vocational education. Some of them have university or quasi-university status (being recognized as "university centers" by the Brazilian authorities), which gives them relative autonomy vis-à-vis the bureaucratic controls imposed by government. Another relevant segment in the private sector is the one composed of a small number of elite private institutions. Targeting students coming from high- and middle-class groups, they tend to be innovative both in teaching and in exploring their staff's competences to offer professional masters and other graduate programs, as well as consulting services for companies, government agencies, and private clients. These institutions operate in a more differentiated market where quality and prestige, not price, is the main driver. Data for this chapter come from official documents and studies produced by different stakeholders available on the Internet and from articles published in Brazil's main newspapers and magazines. These documents were analyzed in order to produce an accurate picture of the ongoing national debate regarding higher education policies.

10.2 Conceptual Framework

Stakeholder analysis is a tool developed mostly by scholars in management and administration fields. It aims to evaluate how individuals, groups, and organizations that have an interest in a given sector or institution will react to specific projects or policies (Brugha and Varvasovszky 2000a, b; Crosby 1992). As noted by Weible (2007), the main shortcomings of the stakeholder analysis are its narrow focus, which tends to make its results quickly outdated, and the lack of a sound theoretical basis for understanding the nature of the links holding together different stakeholders when it comes to supporting or opposing a policy or program. To overcome these limitations, we will combine the stakeholder framework with the theoretical construct known as Advocacy Coalitions Framework (ACF), proposed by Sabatier and collaborators (Sabatier 1988; Sabatier and Jenkins-Smith 1999; Weible et al. 2009).

The most relevant contribution of the ACF to the stakeholder analysis relates to understanding the nature and patterns of coalitions that organize different stakeholders inside a policy system. This framework supposes that the main stakeholders tend to be specialized in one policy system and that they tend to seek alliances with other stakeholders who hold similar beliefs (beliefs from the first and second tier). Stakeholders in the same coalition tend to engage in "nontrivial degrees of coordination" (Weible et al. 2009, p. 99), in order to promote policy venues favoring their preferred institutional design for the system and policy alternatives. ACF also supposes that stakeholders' options are bounded by cognitive constraints that organize both their perception of what is at stake and what are the gains and losses

associated with each policy alternative. It is the strength and long-lasting nature of these beliefs that explain the relative stability of the coalitions between different stakeholders, which in turn explain the long-lasting nature of the political dynamics that characterize a given policy system.

The three main premises of this framework are the following. First, any policy area with a substantive scope is conceptualized as a "policy system," where the focus is the interaction between actors from different institutions with interests (stakes) in it. Second, the public policies (goals, programs, and instruments) produced by a policy system express implicit "policy theories" about the nature of the problem that is (or should be) addressed by the policy system. In this sense, they incorporate causal relationships related to the way a given policy, program, or instrument will operate and how it will change the reality toward a more desirable state. Third, the political beliefs supported by different stakeholders express different "policy theories" and contain values that can be ordered into a three-tiered hierarchical order. In the first tier, there are the normative dimensions that articulate the general values and attitudes guiding actors' views on the policy process as a whole (e.g., beliefs regarding the role of the state versus markets, in regulating the provision of public goods, liberalism, nationalism, and so on). The second tier is the core policy belief or "logic" (Maassen and Stensaker 2011) that span across the entire policy subsystem. Examples are the desirability (or not) of institutional diversity in higher education, the relative importance of assuring equal representation for all internal stakeholders in the university's decision-making process, and so on. Finally, the lower tier comprehends instrumental beliefs linked to the operation of the policy: the supposed consequences of different policy designs, such as the adoption of different models for university autonomy or the use of quotas for expanding access. According to this framework, most changes in the beliefs that inform decisions inside a policy subsystem (and thus, policy learning) occur in the last tier, and thus have only minor impact over the core beliefs sustained by each advocacy coalition.

In the next sections, we will use this conceptual framework to analyze the policy dynamics in Brazilian higher education and the role of various stakeholder groups in it. We will start by describing the social and political environment resulting from the country's recent experience with the democratization process[1] and the effects of the economic reforms since the late 1980s. Afterward, we will analyze the profile of the main stakeholders, and reconstruct the patterns of alliances that characterize the country's higher education policy.

[1] From 1964 until 1984 Brazil experienced an authoritarian regime where the military were the main rulers. The democratization process started in 1974 and lasted 10 years. The election of a civil president, in 1984 is usually taken as the end of the military dictatorship in Brazil. The enactment of a new Constitution (the "Citizen Constitution," as it is known in Brazil), in 1988, is another milestone in the process of the country's democratization process. For an overview, see Lamounier et al. (1985).

10.3 Core Issues in Brazilian Higher Education Policy

In the last decade of the twentieth century, Brazilian society was reshaped by the combined forces of two long-lasting macropolitical and economic processes. The first is the democratization process and the second is the long-lasting economic crisis that hit the country in the 1980s and the economic reforms that helped to overcome it. Recounting the history of the process of democratization is beyond the scope of this chapter, nonetheless it is worth pointing out two key features with major impacts on the country's higher education sector. First, there is the relevant role played by some of the key actors within the public universities in the struggle for democratization. As noted by Schwartzman (1993), political activism in Latin American universities is an ingrained tradition, dating back to the early decades of the twentieth century. At the end of the twentieth century, the fight for democracy in Brazil mobilized all organized sectors in the country, with a special place for leaders of student movements and some of the most prestigious academics. Fighting for democracy unified all the political forces within public universities. One of the legacies of this experience is the great visibility and strong legitimacy of public universities have vis-à-vis other political actors.

The so-called "democratic pact" that provided legitimacy to the new political regime also encompassed a strong demand for equity and social inclusiveness. For most Brazilians, the struggle for democracy was also a fight for a brighter future. Thus, the issue of social inclusiveness has strong legitimacy in Brazil, being present across all policy systems (including higher education). As a result, it faces no resistance, i.e., it is deeply institutionalized (Olsen 2010).

The second process pertains to the long-lasting effects of the economic, financial, and fiscal crisis that hit Brazil in the 1980s. A major root of the crisis was the exhaustion of the growth strategies based on import substitution policies (Bacha 1986). In the second half of the twentieth century, the country's policies related to higher education and science and technology can be traced to this import substitution heritage (Schwartzman et al. 1995). At that time, the primary goal of the science policy was to develop scientific capability in all fields. From the point of view of educational policies, this goal led to a "trickle-down" perspective where all efforts were concentrated in training the elite of scientists and engineers. This, in turn, led to policies that concentrated resources and quality control at the top of the educational pyramid, while paying little attention to the lower levels. Thus, it comes as no surprise that in the 1970s, the efforts for building a strong and well-organized system of graduate education inside the public universities were concomitant with the neglect of basic education (Castro 1986), a situation that persists to this day.

The so-called "lost decade" of the 1980s, when the economic crisis deeply hit the country, had a strong impact over the country's science and higher education landscapes. When the crisis finally ended the in mid-1990s, the agencies in charge of science and higher education were disorganized, depleted of their best human resources, and disconnected from the core policy decision bodies. For

the public universities, the 1980s were years of penury, when academic salaries and resources for maintaining the conditions for teaching and research were drastically reduced.

The harsh times provided a lasting lesson to those in charge of the science and technology agencies: in order to ensure access to the funds required for their operation, it was not enough to trust in the prestige of science. Support for science should be connected to the central policies related to economic development. In order to fulfill this role, science should be steered to address the relevant problems perceived as central in the country's quest for economic development. At the end of 1990s, the science and technology agencies (S&T agencies) evolved to become *corporate actors* (Braun 1998), with an identity and a policy agenda of their own, not necessarily the same as those of the scientific community.

These developments set the framework for the reforms in the S&T policies that took place by the end of the 1990s. These reforms had a strong impact over public research universities, where graduate education and research are more established[2]. Their main features were the adoption of instruments for steering research toward economic and societal relevance, imposing a more competitive environment for research support, and reinforcing the instruments for evaluation. The reforms enlarged the space for autonomous decision-making by the agencies' specialized bureaucracies, amplified competition, and put a premium on team networking and the publishing profile of researchers. In the reformed arena for science policy, new players have also gained leverage: the public universities' authorities, senior management, and regional interests. In fact, the 1990s saw many initiatives from regional and, subsequently, some local authorities. In the 2000's, many states launched or strengthened their own regional research foundations and established new administrative branches in charge of local S&T policies. In the same period, the Ministry of Education, in charge of the federal universities and for overseeing the private sector, experienced a strong process of professionalization, developing new capabilities for institutional and program evaluation.

10.4 Stakeholders in Brazilian Higher Education

This section describes the profile and role of the main stakeholders, internal and external to the higher education system, and explores some of the core issues behind their mobilization and influence.

[2] By law, all public universities, public or private, governments have the same status and are supposed to be research universities. Nevertheless, only in a small number of them is research fully institutionalized. In Brazil, commitment to research is linked to the growth of graduate education, especially doctoral programs. Thus, universities with a high commitment to graduate education (usually with more than 30% of enrolment at this level) also have a high commitment to research (Balbachevsky 2013).

10.4.1 Internal Stakeholders: The Academic Profession

The most conspicuous internal stakeholder in any higher education system is the academic profession (Clark 1987; Enders 2001). In Brazil, the academic profession is as diverse and stratified as the higher education institutions which they inhabit. Data collected in national surveys of the academic profession have consistently provided indications of the presence of at least four different professional profiles within Brazilian higher education institutions, as succinctly described below (Schwartzman and Balbachevsky 1997, 2014; Schwartzman and Balbachevsky 1993).

10.4.1.1 Professional Oligarchy

The first type of stakeholder is the traditional professor as was earlier understood in Brazil since early nineteenth century, when the first professional schools were established[3]. Typically, they are distinguished lawyers or medical doctors who also teach, thus preparing the next generation of professionals in their fields. For them, the more relevant issue is the autonomy of their school vis-à-vis the university's central authorities. The ideal governance mode (Olsen 2007) for them is a university as a "confederation of schools and faculties," where each subunit could have as much independent decision-making capacity as possible. Until 1968, Brazilian universities were organized as a kind of federation of professional faculties (of Law, Medicine, Engineering, Dentistry and others). A Faculty of Philosophy, Sciences and Letters was added in the 1930s, to prepare teachers for secondary education and also as place for undertaking research. The university reform of 1968, inspired by the North American model (Jencks and Riesman 2002), introduced academic departments and research institutes, but the traditional professional faculties kept their identity. In the late 1970s, it was inside some of these professional schools and faculties that the most relevant institutional innovation across the public sector, the so-called "Foundations" came to the fore. The latter is a not-for-profit private institution, founded by academics from one school. From a legal point of view, foundations are independent and private, yet in practice, they are identified with the school and hold relevant links with the faculty's decision-making structures. As such, they function as an operational arm, and are in charge of services such as consultancy, contract research, continuing education, and professional postgraduate education (including the Master of Business Administration, MBA). They benefit from the prestige associated with the school and, in exchange, they provide a source of third-stream resources (Clark 1998). This enables the school to update its infrastructure, expand and qualify its staff, and supplement academic salaries—critical assets when it comes to attracting competent academics. Sustaining a high degree of internal autonomy is also

[3] The first type of higher institution known in Brazil was the isolated professional school, a nonuniversity institution offering instruction and certifying for a small number of professional degrees, such as law, medicine, dentistry, or engineering. The first institution of this kind was founded in Rio de Janeiro, in 1808; the first university in Brazil was founded only in 1934, more than 100 years later.

relevant for protecting the Foundations against other interests inside the university. The strongest channels of influence over this professional oligarchy are the regional and federal professional boards. These boards are legally in charge of certifying the professionals, and thus they have a strong influence over the curricula. This role is especially relevant in the case of the most powerful professional boards representing the traditional professional groups such as the Federal and Regional Councils of Medicine, Engineering, and the Brazilian Lawyers Association.

10.4.1.2 Scientific Community

This stakeholder group encompasses those with a profile that closely resembles the one the classical literature identifies as the scientific scholar (Ben-David 1971; Polanyi 1962). They have good academic credentials and have access to a full-time contract, which enables permanent involvement with research activities. Although most of them have teaching responsibilities at the undergraduate level, they tend to focus their academic commitment at the graduate level, a crucial asset when it comes to competing for financial support from major federal or regional agencies. In their role as researchers, they sustain strong domestic networks with their peers, and some have strong links with the international community. Most academics with this profile are employed at public universities[4].

For most members of the scientific community, their daily institutional experience revolves around their department, research center, or laboratory where they concentrate their research activity. For them, autonomy is also a relevant issue. In their view, only strong, autonomous research units are capable of resisting the interference coming from the more or less politicized environment surrounding the university. Their dependence on external support, combined with their experience with designing and implementing projects to sustain their research, reinforces a strong entrepreneurial ethos (Etzkowitz and Webster 1998). These academics are proud of their institutions, but are more or less oblivious of the occasional attempts coming from senior administrators to control or evaluate their performance. Their major concern is the ranking achieved by their graduate program in the nationwide peer evaluations organized by the Ministry of Education. The constraints that are more conspicuous to them are the controls and demands posed by the agencies responsible for allocating research funds. Nonetheless, it is worth noting the active role members of the scientific community play in the decision-making process inside these agencies, both at the regional and federal levels, mostly through peer review committees and also as consultants (policy advisers). Since the end of 1970s, the scientific community has also been a major actor in defining the policies for graduate education and has played a key role when it comes to the evaluation of graduate programs.

[4] Public universities may be federal-owned or state-owned. While their legal status is the same, there is a de facto strong differentiation among them. The most usual type is the "regional-oriented university," which may be federal- or state-owned. These universities are strongly committed to undergraduate teaching. They usually have more than 90% of enrolment at this level, and most academics tend to confine their responsibilities at this level. In "research-oriented universities" (both federal- and state-owned), graduate education, and in particular doctoral education, is a major endeavor shared by almost all academics.

10.4.1.3 Unionized Lecturers

This stakeholder group refers to academics that hold stable and full-time contracts at public universities, but do not meet the standards of professional achievements usually attributed to a scientific scholar. The majority neither possess a doctoral degree nor are actively involved with research activities. Their responsibilities tend to be circumscribed to teaching activities at the undergraduate level. Because of the lack of academic credentials and limited performance as scholars, they face difficulties in accessing external funds to support research. Unionized lecturers are also almost entirely disconnected from their national and international peer communities. Hence, their professional identity is neither defined by their professional degree, as is the case of the professional oligarchy, nor by their individual achievements as independent scholars such as the members of the scientific community. Instead, their identity is locally rooted, based on their institutional affiliation and the small group of colleagues with whom they share daily experiences. In a sense, academics belonging to this group tend to sustain a "semiprofessional identity" (Etzioni 1969) since they tend to emphasize intrinsic rewards such as personal satisfaction (of being a good teacher) as opposed to extrinsic ones such as peer recognition or professional status. This fact explains why this group so fiercely opposes any attempt to introduce intrainstitutional differentiation based on merit and/or prestige. For them, the only acceptable grounds for differentiation are those produced by externalities, in principle accessible to everyone, like seniority. The strength of this subculture inside public universities sheds light on the roots and centrality of the egalitarian ethos across Brazilian academe, which is sustained by the academic unions. The latter tend to recruit their supporters among academics with this profile.

Unions are not only opposed to any kind of evaluation and merit-based career decision but also are fiercely against any differentiation among public institutions. As such, they oppose the development of entrepreneurial activities inside the public universities; the growth of the private foundations linked to university institutes and faculties; the influx of any source of third-stream money (Clark 1998); or any other development that could entail differentiation and autonomous institutional development. Academic unions are strong not only at the level of the university's structures, but, given the centralized way careers and salaries are defined in the federal sector (and in most state level sectors), they also sustain stable communication channels with authorities both at the federal and regional levels, as well as good access to the general media.

10.4.1.4 Private Sector Academics

This group consists of academics teaching at private institutions. They cannot count on job stability and spend long hours in the classroom in order to earn a living. In the past, these professionals had no further education aside from the bachelor level and were almost entirely ignorant of the traditional academic norms and cultures (Merton 1968; Clark 1983). The new regulatory demands regarding academic

credentials[5] of the teaching staff of all higher education institutions induced major changes in the profile of these professionals. Since the late 1990s, the proportion of academics with acceptable academic credentials working in the private sector has been increasing, introducing new dynamics and tensions across this subsector of higher education. Some private institutions have taken advantage of the new opportunities targeting a new market niche composed of students from wealthier families. These dynamics supported the rise of an elite-oriented private subsector, where competition is mostly based on quality rather than on the level of tuition fees being charged.

Nevertheless, the bulk of the private sector is still confined to a kind of commodity-like market for mass undergraduate education (see Neves in this book). In the last decade, the growth of very large for-profit universities reinforced trends toward commodification. Inside these institutions, all courses are framed in the same way, and contents are standardized in handouts distributed to all students attending similar courses. For the academics working in these universities, the most relevant issue is to improve contractual conditions and to expand their classroom autonomy.

In short, academics in the private, for-profit sector are weak stakeholders. In the few elite-oriented institutions, they may have stronger roles inside the institutions, but that is all. Because they work in for-profit institutions, they have no access to public funds for research, and thus are more or less permanently excluded from the dynamics surrounding science (Gibbons et al. 1994). In the mass-oriented institutions, lecturers are almost powerless. While some of these institutions may value a good teacher and support some of his/her professional needs, as a whole, academic staff are treated as a commodity, to be hired in times of growth and dismissed in difficult times.

10.4.2 Other Internal Stakeholders

10.4.2.1 Student Movements and Unions

Until early 1990s, the organized student movements and unions were strong players, not only in the subsystem of higher education but also in the major political arena. Since then, these movements narrowed their agenda to the internal life of the universities and lost influence and visibility in society[6]. They are articulated around a highly politicized agenda, centered on maintaining the public institutions free of tuition, and support a radical understanding of the democratic governance for

[5] Since 1996 the new Brazilian Education Law (Lei de Diretrizes e Bases da Educação) requires that all universities (both public and private) should have at least one-third of their academic staff holding at least a master's degree. Since then, the academic credentials of the academic staff have become a major item in all evaluations carried out by the Ministry of Education both at the level of the institution as a whole, and also at the level of the bachelor programs.

[6] The huge manifestations against inflation and political corruption that mobilized more than 1 million participants in the streets in Brazil, in June 2013, were initiated by the student movement. This was the first time since the mid-1990s that these movements were engaged in an agenda disconnected from the university's internal affairs.

universities, based in elections for selecting the central authorities organized under the rule of "one person, one vote."[7] They also push for expanding the amount of public resources for education in general, and, in particular, for public universities.

Even if less relevant than in the past, student movements still control some relevant resources. In alliance with academic and employees' unions, students often play a decisive role in the results of the internal elections that select university rectors in almost all public universities[8]. They also have good access to the media and, most of all, they have "troops" that are easily mobilized for the fight and ready for radical actions that can magnify conflicts inside the universities, and in the general political agenda. Therefore, it comes as no surprise that all actors within the system tend to be wary of the reactions by this particular stakeholder.

10.4.2.2 Employee Unions

In the 1970s and 1980s, most public universities witnessed the growth of employee unions, organized to represent the interests of nonacademic staff. Most of these unions focus on internal affairs relevant for their audience, related to contractual and work conditions, careers, and salaries. They also sustain a more general, system-level agenda, which revolves around preventing tuition fees in public universities, sustaining democratic governance within universities, expanding the status of public servants to all university staff, including those performing contract work, and resisting any kind of performance-related evaluation and career decision.

While employees' unions are weaker than other internal stakeholders and have fewer opportunities for mobilizing their constituencies (except when it comes to salary issues), they are good allies of both the academic unions and student unions, easily adding their forces to any struggle inside the university. They also play a relevant role in universities' internal politics, particularly during electoral years.

10.4.2.3 Central Administration

In all public universities, the top hierarchy of the central administration is recruited among the academics and tends to share the views supported by them. Inside research universities, the authorities come from the scientific community and tend to put great relevance in issues related to research and graduate performance. In regional-oriented institutions, where graduate education is a minor endeavor, the university's central administration tends to put emphasis on expanding undergraduate

[7] While many academics in the public sector tend to support self governance for public universities, they tend to favor weighting arrangements that could accrue more strength to the academic staff and also rules that would prevent academics without a Ph.D. reaching the rectorship, which is also opposed by the most radical student unions.

[8] The rule for weighing the votes of the different segments vary from one institution to another, but in almost all, the university's rector is elected by the vote of all internal constituencies: students, academics, and employees.

enrolment as a way to assure more resources from the government. Inside the latter, the university's leadership tends to be more dependent on the internal constituencies, especially the academic and employee unions, and support the egalitarian agenda referred to above. Nevertheless, regardless of the specific profile, the leadership of all public universities faces an equal set of demands and impositions coming from the Ministry of Education, the research agencies of the Ministry of Innovation, Science, and Technology, and the National Council of Education.

Federal universities are highly dependent on the resources provided by the federal government. Salaries (for both academics and nonacademic staff) are controlled by the Ministry of Planning, while most of the resources for current expenses come from the Ministry of Education. Resources for investment in buildings and equipment must be negotiated directly with the Ministry of Education. Hence, it comes as no surprise that the latter has strong leverage in influencing the decisions inside federal universities. In recent years, the federal government has increasingly used this power to introduce relevant changes across all federal universities. In 2002, the federal government created a program providing additional support for universities willing to increase the ratio of students per academic staff, and introduce evening programs catering for nontraditional students, and quotas for poor students and minority groups (blacks and indigenous). In 2009, the Ministry proposed to unify the entrance requirements at the undergraduate level, through a nationwide exam organized by the Ministry of Education. While adherence to these programmes is optional, the decision of not accepting their terms implies giving up access to almost all extra money needed for improving the university's infrastructure. It comes as no surprise that all these programs encountered wide acceptance among the federal universities.

In the private sector, the managerial structures of institutions are torn between two major forces: the demands coming from the market, and the impositions of public authorities. Private higher education in Brazil is under strict control of the Ministry of Education and the National Council of Education. While private universities have more autonomy when compared to other private nonuniversity institutions, they still depend on the Ministry for accrediting the degrees they confer, for maintaining their university status, and even for remaining in operation. At the same time, private higher education institutions also operate in a market where they must compete for students willing to pay tuition fees. As such, they need to consider the needs of current and would-be students, and search for alternatives to increase their share in a highly competitive market. Many of the recent developments in private higher education result from the responses by entrepreneurial private institutions to the new labor market demands for specialized training (Sampaio 2011).

10.4.3 External Stakeholders

The most relevant and well-articulated issue coming from the Brazilian society as a whole, especially from its more organized sectors, relates to access to higher education. Education has always been regarded as the main factor for social mobility.

As alluded to earlier, the demand for expanding access to higher education has its historical roots in the "social pact" that supported the fight for democracy in the 1970s and 1980s, which is still relevant in today's policy arena. Increasing access poses a particular challenge for public universities. The standard description of the differences between the public and private sectors in Brazil are as follows: public universities are free from tuition, but to be admitted, students have to pass very competitive entrance examinations. Private institutions charge tuition fees, but admission is easy. Given the fact that students from higher socioeconomic backgrounds attend private and more endowed upper secondary schools, they tend to enter public universities, and thus do not pay for a high-quality education. Students coming from poor families, whose educational backgrounds limit their ability to compete, enroll in the private sector and pay for an education of poor quality.

This description is not fully accurate, since low-income students can enter public universities in less competitive careers, and high-income students may choose to go to some of the existing high quality private institutions. Still, the images associated with the description given above are strongly rooted in the public imagination. They contribute to weakening the stand of public universities in the policy arena. In particular, they damage the legitimacy of the option of limiting the growth at the undergraduate level in order to strength the commitment to research and graduate (including doctoral) education. For the majority of the external stakeholders, the best measure of the social relevance of a public university is their intake at the undergraduate level, with special attention to the proportion of students from low socioeconomic and poor educational backgrounds. From this perspective, public universities are always on the defensive. When facing pressures coming from the politicians and the local authorities, they seldom have the strength to deny demands for opening new campuses, expanding programs, and increasing enrolment at the undergraduate level.

The issues of access and inclusion (i.e., equity) are particularly relevant for a small yet highly organized and belligerent actor, the nongovernmental organizations and grassroot movements fighting for racial equality. Given its colonial experience with African slavery, Brazilian society has always been marked by a strong correlation between race and social standing. While the country never experienced racial segregation as a policy or even as a strong cultural trait, a degree of ethnic prejudice has always been present in the country's cultural and social institutions. This situation creates particular challenges related to social mobility and esteem for African descendants. Over the years, racial issues have led to the emergence of a number of grassroots movements that strongly support an active policy for the inclusion of racial minorities in the form of the adoption of quotas at public universities.

In the public arena, and especially among politicians, racial quotas have mingled with the demand for social inclusiveness, thus creating pressures for the adoption of policy measures assuring privileged access to public universities for the children of low income families, and, in particular, those that are both poor and belong to a politically relevant minority. Addressing these pressures, in 2012, the House of Representatives and the Senate passed a law imposing a 50% quota (entry places at the undergraduate level) at federal universities for students from low-income

families and minority groups. The proposal faced no relevant opposition and was enacted by the Executive in record time. The government also implemented other initiatives in order to face the popular demand for access into higher education. In 2002, it launched the program "University for All," swaping fiscal benefits for tuition exemption for low-income and minority students in the private sector.

Another relevant external stakeholder are the members of the judiciary, in particular the members of the public prosecution and the courts. Members of the judiciary were highly active in the democratization process, and had a relevant role in the fight for the civil rights and liberties at that time. This past experience reinforced the proactive profile of the judiciary in many sectors of Brazilian public policy, mostly imposing interpretations of the law that forces an expansion in the coverage of policies and programs. This role is reinforced by the fact that that new democratic Constitution of 1988 includes detailed provisions for public higher education, and universities in general, either public or private (Ranieri 2013). The main issue that mobilizes the judiciary is preserving the character of public goods of the main products from public university activities. Thus, the judiciary tends to impose strong restrictions for the activity of the Foundations linked to the professional schools, views with suspicion all contracted activities, either in research or in teaching, imposes severe restrictions over the access and use of public funds, and strongly regulates the formal accountability of research funds both for the university as a whole and for the research teams.

The main concern from the business sector is to increase the number of professionals with higher education qualifications, assuring that their training fits with the needs of the labor market and improving the quality of general education. The lack of quality of education, both at basic and higher educational levels, is frequently mentioned as one of the major handicaps for Brazilian industry when faced with the new demands posed by a dynamic global environment. In spite of this, the industry can be considered as a rather weak stakeholder in Brazilian higher education. For example, it has not advanced clear demands regarding tighter collaboration with academia in the form of internships and/or technology transfers.

The Ministries of Education and of Science, Technology, and Innovation have a special agenda related to improving the country's performance in the many indicators that are internationally recognized. This issue is central in the agencies' struggle to increase their bargaining power vis-à-vis other sectors in the federal government. For this purpose, they have tended to concentrate resources in some major initiatives and to favor research carried out in networks linking consolidated research groups with emerging ones. Overall, these changes have led to the consolidation of some leading research institutions and have created a fierce competitive environment for research and graduate programs.

Finally, state and local authorities are also relevant stakeholders in science and higher education. Since the 1940s, regional elites, in particular those from the poorer states, have been actively involved in higher education policy making; pressing for new federal universities to be established in their territories, for channeling support to the federal universities placed in their regions, and in assuring that a percentage of the national resources for science and technology are invested in these regions.

Richer states are major players in the Brazilian higher education policy arena, with their own higher education and research institutions. The federal arrangement allows state governments to organize their own higher education and science systems in parallel with the Federal system and the private sector. Almost all the 26 states of the Brazilian Federation have their own network of universities and research foundations, in charge of supporting science and technology research relevant for the region. State universities are the sole responsibility of the state level government and are not subject to the Ministry of Education's regulations or evaluation. While the poorer states are more dependent on federal aid, and thus, their state universities tend to abide by the general regulations created by the federal government, this is not the case of the richer states. In the more developed regions, state-owned universities are highly autonomous. The more striking cases are the three state universities in the state of São Paulo[9]. Since 1987, these universities enjoy ample and unrestricted autonomy. From that year on, they have had guaranteed access to close to 10% of the state's main revenue, a tax applied to all commercial or service transactions occurred within the state. The autonomy then granted to the São Paulo state universities resulted from a long and aggressive strike that united the academic staff and employees' unions from the three universities, as well as the student movements. Thus, in this respect, autonomy was not an instrument of higher education policy, but almost an abdication of such a policy framework. At the end, the absence of external interference was beneficial to these rather privileged set of institutions. The state universities of São Paulo are renowned for their strong commitment to graduate education and research. The relative strength of their scientific communities has supported their rapid development and has ensured the responsible use of public funds.

The large list of stakeholders presented above is a clear indication of the complexity of policy dynamics in Brazilian higher education. Nevertheless, convergence can be observed, as these stakeholders combine forces in the struggle for shaping domestic higher education according to their deeply-institutionalized values and strategic interests.

10.5 The Main Advocacy Coalitions Present in the Brazilian Higher Education Policy System

Some of the convergent dynamics relate to intense massification of access to higher education (Trow and Burrage 2010) on the one hand, and the increasing relevance of higher education as a policy tool or instrument for enhancing social mobility and/or as an engine for promoting local/regional and national development (Cloete et al. 2011; Pinheiro et al. 2012) on the other hand. Accordingly, the system faces strong pressures for opening up the policy-making process (Gornitzka 1999) to

[9] The three universities are the University of São Paulo (USP), The State University of Campinas (UNICAMP), and The State University Julio de Mesquita (UNESP).

other stakeholders. In spite of the added complexity created by the entrance of new players in the field, a careful examination of the main cleavages and the patterns of alliances in the area points to the presence of *three* main advocacy coalitions.

First, the *utilitarian coalition*, which brings together the perspectives from the private higher education providers, a relevant part of the business interests that are mobilized for the debate around the policies of higher education, the regional authorities, and the professional oligarchies. The core value unifying the participants of this coalition is the conception of higher education as a *private good*[10]. Decisions about higher education policies ought to be informed mainly by the needs of the labor market, to address the demands for employability. Market needs should also inform the research agenda of the different fields of knowledge. This utilitarian perspective of higher education supports the use of the market mechanism as the best way to steer higher education institutions and supports differentiation of institutions and formats of learning as the best way to respond to different demands posed by the labor market (Teixeira et.al. 2006). In spite of these points of convergence, members of these coalition also diverge in relevant issues: the more relevant point of divergence regards the best format for university governance: while the private providers tend to favor a more hierarchical, service-oriented mode of governance, and the professional oligarchies tend to favor a more traditional format, where the perspectives of the academic oligarchy should prevail (Olsen 2007).

Second, the *egalitarian coalition* is composed of the unions in the public sector, the student movement, most of the top bureaucracy of the Ministry of Education, a relevant part of the central authorities at teaching-oriented public universities, the grassroot movements, some political actors in particular those placed on the left of the political spectrum, and the members of the judiciary. This powerful coalition sustains the perspective of higher education as a *public good*[11], and sees the university primarily as an instrument for addressing social inequalities. This coalition also favors the institutional mode of governance based on the representative principle (Olsen 2007). Accordingly, the university's main authorities should be chosen through internal elections with the participation of the academics, students and the nonacademic staff. For them, the ideal system of higher education should be one composed only of tuition-free public universities, organized under the same model, and supported exclusively by public funds. Unions also maintain that all public universities should be manned by a staff (academic and nonacademic) sharing a similar career structure in which seniority, not merit, should be the main criterion for promotion. For the members of this coalition, entrepreneurship and the private

[10] In conceiving higher education as a private good, a stakeholder tends to emphasize the private gains students and users have from higher education. This perspective also reinforces the "rival" quality of higher education services, meaning that granting access to it to someone means, necessarily denying it to others because of the very nature of this service that cannot be consumed by everyone at the same time (Mora and Vila 2003).

[11] In conceiving higher education as a public good a stakeholder focus on the social consequences of higher education, mainly its effects for the country's development and more cultural gains of having a better educated population, in particular for citizenship (Gumport 2000; Slaughter and Rhoades 2004).

providers of higher education are evils that should be eradicated, or, at least strongly restrained. One relevant issue for this coalition is to curb all entrepreneurial initiatives inside the public universities. For the unions, this issue is tactical, since it is related to preserving equal incomes for everyone, so the fight for better salaries has the same relevance for everyone. For the external stakeholders in this coalition, this issue is strongly linked with the core value of the public good nature of the university. The access to second- and third-stream sources (Clark 1998, p. 6) means that at least part of the university's facilities and products are being privatized. Furthermore, it also creates alternatives for institutional diversification, which constitutes another sin that should be eradicated.

Finally, the third and last coalition articulates the values and perspectives of the so-called *academic entrepreneurs* (Etzkowitz 2001; Jain et al. 2009), which encompass the perspectives held by the scientific community but also those of a relevant part of the senior bureaucracy from the agencies in charge of funding science and graduate education, as well as some of the central authorities at public research-intensive universities. For the members of this coalition, the university is conceived mainly as the place for supporting science. Forming the next generation of scientists and contributing to society with their knowledge are the main objectives of higher learning, and merit is the best way to organize hierarchies within and across institutions. Higher education is also thought to be a public good, but now it is because of the social relevance of its knowledge content and the central role it should play in the country's path to development (Gibbons et al. 1994). For the members of this coalition the public support for the university and for the science should be justified on the basis of their contribution to the country's quest for socioeconomic and democratic development.

For a member of this coalition, all higher education should be composed of public universities only, and differences among institutions should be based on merit. Hierarchies inside the universities and among them, as long as they express differences in achievements in science, are welcome. Nevertheless, some measures for preventing regional inequities are needed. The last issue is a core value in the views sustained by the agencies' senior bureaucracy, but secondary for the science leaders.

The ideal way to organize the university is to understand the values sustained by the members of this coalition, with the ideal type described by Polnanyi in his seminal work on "The Republic of Science" (Polanyi 1962):

> So long as each scientist keeps making the best contribution of which he is capable, and on which no one could improve (except by abandoning the problem of his own choice and thus causing an overall loss to the advancement of science), we may affirm that the pursuit of science by independent self-coordinated initiatives assures the most efficient possible organisation of scientific progress (Polanyi 1962, p. 3).

The strong individualism present in this perspective, shared by the above coalition, supports the autonomy of the university and, inside the university, the autonomy and independence of the different units that should work as "independent self-coordinated" bodies in the advancement of science. Entrepreneurialism is another strong value within this coalition, but it is not understood as measures to explore opportunities of gain in the external market or in a way to assure access to a third

stream of resources (Clark 1998, p. 7). Entrepreneurship tends to be understood and valued when related to the initiatives taken by a research leader in order to support and expand her/his team. As such, it is perceived as a personal attribute, but not an institutional one.

10.6 The Interplay Between the Main Advocacy Coalitions in Shaping the Policy Dynamics in Brazilian Higher Education System

One way to understand the dynamics of higher education policies in Brazil is to observe the pattern of alliances and conflicts that articulates the three coalitions around the main issues present in the policy agenda. First, one can observe the strength of the alliance that supports policies for access to higher education. This is a central issue for at least two of the three coalitions active inside the policy system: the *utilitarian* and the *egalitarian* coalitions. It is not as relevant for the *entrepreneurs*, but it is not perceived as a threat for them.

A relevant norm that counts with strong support is the notion of higher education as a public good, e.g., through opposition to private higher education and to charging tuition fees at the public universities. This normative posture is rooted in the core values of two of the three coalitions, the egalitarian and the academic entrepreneurs. In fact, this is a strong consensus in Brazilian higher education policy. The public good nature of higher education is written in the country's Constitution. This assumption creates a strong veto over any initiative related to charging tuition in the public sector and even casts doubt over the legitimacy of the very existence of the private sector. The litigious relationship between the private sector and government, described by Castro in this volume, has its roots in this core value shared by two main coalitions, and strongly ingrained in the Brazilian governmental bureaucracies.

A similar pattern can be identified supporting the internal representative system (de Boer and Stensaker 2007) as the mode of university's governance, or a "democratic governance," as it is known in Brazil. This norm is also supported by two of the three coalitions: the *egalitarians* and the *academic entrepreneurs*. For the former, democratic governance is the most relevant tool for preserving the political leverage of the unions in the university's internal affairs, and also in the policy system as a whole. The support of democratic governance among the academic entrepreneurs is more problematic. Since the early 1990s, some experience with democratic governance provides good examples of the dangers this arrangement may offer to the research endeavor inside the university. In many cases, the representative system has allowed for the victory of candidates supported by alliances between academic and employee unions articulated around a populist agenda. This kind of alliance tends to undermine the merit-based rules that, from the point of view of the academic entrepreneurs, should govern access to the institution's

resources. This governance mode can even lead to a victory of radical members from the egalitarian coalition that threatens the researcher's autonomy regarding her/his research agenda, especially if it includes contracted research and/or proprietary rights over knowledge.

For the high bureaucracy in the science agencies, democratic governance is the main source of uncertainty of the universities' support for research and entrepreneurship. Democratic governance also creates obstacles in the way the university responds to external stakeholders, because it tends to close the institution's governance, making it responsible only to the internal constituencies. Finally, it undermines the position of the more entrepreneurial sub-units, usually perceived as a threat to the egalitarian rules that should prevail inside the university.

In spite of all these stumbling blocks, democratic governance is strongly supported by almost all members of the academic entrepreneurial coalition. Even if some particular situations are to be deplored in private, the public defense of democratic governance is always voiced by the leaders inside this coalition.

This pattern of response cannot be understood without taking into account the emergence of a normative value that sanctifies the representative system as the only acceptable alternative for university governance "in a democracy"[12]. Due to the country's past experience with authoritarianism and the lessons learned in the democratization process, democratic governance has been converted into a policy taboo (Tannenwald 1999) in Brazilian higher education policy. Its desirability is never contested and all stakeholders tend to assume that this is the only way a university is supposed to be governed. One major effect of this norm is to delegitimize any debate on different alternatives for university governance. The hierarchical mode, usually found in the private sector, is only tolerated. In fact, some exigencies posed by the regulatory bodies in the government to the private institutions can be interpreted as efforts to introduce some of the democratic ethos inside these institutions.

In such an environment, preserving the autonomy of the sub-units inside the university is viewed as a vital issue for the academic entrepreneurs and for the academic oligarchy. It is opposed by members of the egalitarian coalition and it is not equally relevant for other constituencies within the utilitarian coalition, hence the support for this principle cannot count on unrestricted support in the Brazilian debate on higher education.

One final issue that has received increasing attention relates to the role of higher education as a tool or instrument for enhancing the country's innovative capabilities and global competitiveness (Lester and Sotarauta 2007). This perspective brings together the idea of the university as an entrepreneurial entity and the social and economic relevance of the knowledge produced by science (Clark 1998; Gibbons et al.1994). The issue is strongly supported by members of the *utilitarian*

[12] As an example, at the beginning of April, this year, the Brazilian Senate started to appreciate a project that imposes "democratic" elections for rectors in all public universities. The main argument presented by the project's supporters is that this is the best rule for university's governance "in a democratic country" (see http://www.estadao.com.br/noticias/vidae,comissao-do-senado-aprova-eleicao-direta-para-reitor-de-universidade-publica,1016216,0.htm).

coalition, but count only partial support from entrepreneurial scientists. For the last coalition, this notion is conditional to the principle that the initiatives have to come from the research community, and not from outside, as a demands posed by the market or the society. This pattern of support creates a very peculiar way of understanding innovation. In this view, the core innovation activity is the work done by the scientists. Science should provide the best solutions for the problems faced by society and, because of its disinterested nature (Merton 1968), science and scientists are the best judges regarding the relevant needs facing society. Thus, in order to be relevant (and innovative), science should pay attention to the problems ("grand challenges") facing society and the search for adequate solutions, which should then be passed to the enterprises (preferably a public enterprise, but private is acceptable, as long as it is a national enterprise) responsible for their transformation into products and services. In other words, the main instrument for innovation policy should be to provide support for research programs in areas deemed by the scientists as strategic for the country (Stokes 1997).

10.7 Conclusion

This chapter provides a picture of the main stakeholders present in the Brazilian higher education system, listing relevant information regarding the main issues, values, and resources that are mobilized by each stakeholder for shaping higher education policy. Brazilian higher education is a well-known case of extreme differentiation. Because of this, the number of stakeholders relevant in the policy arena is very large. In order to understand the patterns of alliances between these different stakeholders, the chapter uses the framework developed by the *advocacy coalitions* approach. With the help of this theoretical tool, it is possible to map the main controversies and also the more relevant convergences that organize the debate around the future of higher education in Brazil.

The analysis presented here provides relevant clues for understanding the source of the main dilemmas faced by Brazilian higher education, as also depicted in other chapters in this volume. The main constraints faced by Brazil for building up a new *social pact* capable of enhancing the university's legitimate position in the political and social order are posed by the values and expectations held by different internal and external stakeholders.

Acknowledgment The author would like to thank the financial support given by FAPESP and CNPq, under the project PRONEX 11/50771-8, and to Diogo Barbosa Maciel, Juliana Pagliarelli dos Reis, Lilian Sendreti Rodrigues Macedo, and Pedro Diogo Silva for the extensive work they have done collecting and analyzing documents produced by different stakeholders. The four are undergraduate students assisting the University of São Paulo's Center for Public Policy Research. Juliana dos Reis and Diogo Maciel have benefited from research training scholarships provided by the University's vice-provost for research. Lilian Macedo received a research training scholarship from the Brazilian Federal agency for Science Support, CNPq, and Pedro Silva was a research assistant in our main project.

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Chapter 11
Russian System of Higher Education and Its Stakeholders: Ten Years on the Way to Congruence

Evgeny Knyazev and Natalya Drantusova

11.1 Introduction

The university[1], being an institution with almost 1000 years of history, is characterized by a certain organizational inertia and conservatism. At the same time, remaining an open system, it is sensitive to changes occurring around it and has to adapt to them, changing its behavior and the organization of its work. In the context of this permanent process of interaction between the university's internal and external environments, the importance of the factors associated with the existence of the university's major interest groups or stakeholders increases. The university's dynamics of change begin to be seen as part of the larger transformation of the relationships among society's key institutions (Olsen 2007). As Jongbloed et al. (2008) have stated, "(I)n order to secure their place in the modern knowledge-based economy, universities everywhere are being forced to carefully reconsider their role and their relations with various constituencies, stakeholders, or communities."

Globalization strengthens interrelations among processes, phenomena, systems, and interest groups, as well as their mutual influence. In this context, the emergence of new stakeholders, such as business, for example, is inevitable. At the same time, in the context of the rapidly changing socioeconomic situation and increasing competition

[1] The term "university" refers to all types of higher education institutions.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_11

among different generations and the spread of knowledge, the interests and expectations of traditional stakeholders are also changing. In the last decade, the state and students have significantly changed their attitude to the composition and quality of the university's product portfolio and its ability to effectively expand it while maintaining high standards of quality. The competitive environment and the high cost of public resources are changing society's overall attitude to the goals and results of university work. The university's ability (or inability) to effectively respond to new challenges affects the external perception of the university and its assessment by stakeholders.

Significant changes are also taking place in the Russian system of higher education. As in other national contexts, higher education in Russia has become part of the neoliberal agenda. In the modern history of Russian higher education, changes in the attitude of the state to higher education institutions consist of the gradual transition from the funding of state universities to payment for educational services and works ordered by the state. The increasing complexity of the social and economic structure of Russian society also contributes to the emergence of new interest groups, such as employers, social movements, and political organizations. Partly it is the result of the global processes of competition, technological development, and changes in the global political system. Partly it is the result of the government taking responsibility for economic, social, and systemic decisions at the national level. But, one way or another, changes have affected the country, its system of higher education, its universities, as well as the nature and scope of the social contract between higher education and its external environment, comprising different stakeholders.

11.2 Stakeholders' Theory and the Changing Social Contract

Considering the social contract as the basis of interaction between higher education and its external environment, Trow (1996) noted its three key features: market, trust and accountability. Thus, the main range of issues of the social contract can be outlined as follows:

- Who can provide services in the sphere of higher education and what kinds of services?
- What obligations can different bodies assume in terms of the provision of resource support to the university and what models of allocation are used?
- Who evaluates the quality of higher education and how is it done?
- To whom are universities accountable for the use of allocated resources?

We consider below the external environment as a set of stakeholders whose expectations in respect of the aforementioned aspects of the social contract and the associated actions, mechanisms, and patterns of interaction affected the systemic and institutional dynamics of the Russian higher education system in the period from 2000 to 2012.

Stakeholder theory is chosen as a framework for the analysis of the development of the social contract because it emphasizes the importance of the external environ-

ment and its impact on the dynamics of change in the higher education system and universities, along with the concept of new institutionalism (DiMaggio and Powell 1983) and the resource dependence theory (Pfeffer and Salancik 1978). In stakeholder theory, organizational changes are characterized by the organization's ability to establish and maintain relations with its stakeholders (Freeman 1984). We would like to emphasize that we consider stakeholders as contributors of resources of particular types that the university needs to preserve and develop its competitive advantages. The interaction between the university and its stakeholders rotates around resource exchange: the university provides its products and services and the stakeholders provide resources. There can be different types of resources: economic, financial, logistical, intellectual, information, and reputation resources. The nature of the resource exchange is the achievement and implementation of agreements and the mutual satisfaction of interests and expectations. The involvement of stakeholders in the resource exchange gives them authority that enables them to participate in decision making and influencing the university's work. Changes in the composition of the stakeholders and the dynamics of their interests in the resource exchange, force the organization to change its behavior, adjust the trajectory of its development, join new strategic partnerships, and leave alliances that are no longer important. Thus, stakeholders have a decisive influence on the formation of the university's particular position in the academic area and the model of behavior that the university chooses.

The composition of stakeholders in higher education is diverse. Jongbloed et al. (2008) present 12 various stakeholder categories of a higher education institution and examples of specific groups that exert pressure on a higher education institution's actions, behavior, and policies. Examples include the government, the Ministry of Education, students, parents, private and public higher education providers, and industry and professional associations (Jongbloed et al. 2008).

The integration of the interests of various stakeholders into a single whole (something that makes higher education a system) is conducted through a broad spectrum of ways in which the actions of groups interact. Benneworth and Jongbloed (2010) noted that university–stakeholder relations must be considered in the totality of the networks of relations and connections in the higher education system, and not just bilaterally. The triangle of coordination introduced by Clark helps to abstract away from the variety of stakeholders in modern higher education and the ways in which they interact and mark out three groups using different mechanisms of coordination, i.e., influencing or participating in making key decisions: the state authority, the market, and the academic oligarchy (Clark 1983).

Using different mechanisms of coordination, such as legislation, the model of funds allocation, the frame of accountability, the establishment of priorities, the development of demand and supply in the market for educational and research services, changes in the conditions for student choice, competition, the professional assessment of decisions, and initiatives to expand and promote different networks, stakeholder groups initiate and determine the framework within which universities set the path of their institutional development.

Based on this approach, we will consider the interaction between the Russian higher education and its stakeholders in three main spheres: state authority–market; market–academic oligarchy; and state authority–academic oligarchy. In the first sphere,

we will focus on the state's regulatory and supervisory functions in the higher education market. In the second sphere, we will consider universities' entrepreneurship and their behavior in the market, which is based on commercializing research. In the third sphere, we will consider higher education policy, funding models, new forms of accountability, and the professional community's participation in decision making.

11.3 The Role of the State in the Higher Education Market

Experts note that at the beginning of the 2000s, Russian higher education was developing in line with the global trend of mass higher education, in which the main function was the socialization and not professionalization of the youth (Shishkin et al. 2004; Maleva 2007): the cohort of secondary school leavers who could go to college increased from 47% in 2000 to 73.5% in 2010 (Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012a).

The public's strong demand for higher education of a socializing nature, the weakening of the state control, and the greater autonomy of universities were the drivers of the rapid horizontal expansion of the higher education system and changes in its structure. The quantitative growth of the system, which began in the 1990s (in those years the number of universities increased by 83%, the number of students increased by 44%, and the number of the teaching staff increased by 36%), continued into the next decade. Table 11.1 shows the main indicators of the higher education system in 2000–2010. The quantitative growth of the system as a whole

Table 11.1 Main indicators of the higher education system. (Source: Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012a)

	2000/2001	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Number of universities, total	965	1068	1090	1108	1134	1114	1115
State universities	607	655	660	658	660	662	653
Nonstate universities	358	413	430	450	474	452	462
Enrolment, total	*4,741,400*	*7,064,600*	*7,309,800*	*7,461,300*	*7,513,100*	*7,418,800*	*7,049,800*
Enrolment, state universities	*4,270,800*	*5,985,300*	*6,133,100*	*6,208,400*	*6,214,800*	*6,135,600*	*5,848,700*
Enrolment, nonstate universities	*470,600*	*1,079,300*	*1,176,800*	*1,252,900*	*1,298,300*	*1,283,300*	*1,201,100*

was promoted by the growth of private sector higher education, which is also part of the trend observed in the majority of countries, in particular those of Central and Eastern Europe (Slantcheva and Levy 2007).

The system of paid higher education expanded: the proportion of students who pay for their education at public and private universities increased from 41% in 2000 to 63% in 2010/2011. Paid education has become one of the main types of university entrepreneurship, today accounting for a third of the universities' total income.

The Russian higher education system of this period was characterized by another global trend—the growing number of students receiving a degree in social sciences, business, and law (Frank and Gebler 2006; Rabossi 2011). In 2010, the number of students who completed their higher education in these fields amounted to 56.3% (the highest figure among Organisation for Economic Cooperation and Development (OECD) countries) of the total number of graduates, while the proportion of graduates in engineering fields reached only 14.7%, and natural sciences and information technology (IT) accounted for only 4.8% (Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012a).

The mechanisms of market regulation that determined the dynamics of the higher education system at the beginning of the 2000s were based on the expectations and individual needs of young people seeking to receive low-cost education in popular majors. After 2008 these mechanisms began to gradually weaken. An important role was played by changes in the demographic situation, the decline in family income caused by the economic crisis (in 2010 the amount of receipts of the higher education system dropped by 9.8% against 2009), the higher education market began to shrink (Abankina et al. 2012)—along with the population's dissatisfaction with the quality of higher education.

Russian researchers emphasize that the inertia of higher education makes it impossible to rely on the efficiency of its market regulation; the role of the state in the adjustment of demand and the provision of affordable higher education, while maintaining its quality, becomes obvious (Auzan and Bobyleva 2011). The main tools that the state used to regulate the higher education market in that period included: determining the quality framework for higher education providers; regulating demand at the entrance to the system; determining the number of state-funded places at universities and the patterns of their allocation among universities; and regulating tuition fees.

11.3.1 Quality Framework for Higher Education Providers

In compliance with the Russian legislation, higher education is the responsibility of the state. Therefore, the activities of all public universities are regulated and supervised by the state through licensing, attestation, and accreditation. The purpose of these procedures is to ensure the compliance of the contents of the university's programs and the results of training with the national curriculum.

Private universities can grant any degrees without official recognition. But if they want to grant a state-recognized degree or diploma they must undergo the state-mandated procedures of attestation and accreditation. It should be noted that even under these circumstances, private universities retain a certain degree of independence from this stakeholder because after the issuance of the license the state has little leverage to expand the scope of their accountability. For example, the participation of private universities in various monitoring surveys initiated and conducted by the Ministry of Education and Science is voluntary (for public universities participation is compulsory). In 2011, 44 private universities out of 428 participated in the survey of the quality of new entrants, and in 2012 only 15.6% of all private universities participated in the monitoring of university performance.

11.3.2 Regulating Demand

Regulating demand at the entrance to the system is connected with the introduction of the unified state exam (hereinafter, USE). This exam assesses the level of knowledge of secondary school leavers in different subjects in accordance with the secondary school curriculum, which is determined by the national curriculum (it is largely based on the US test SAT). The USE was initiated by the World Bank in 2001, when it funded the pilot USE project in 16 regions of Russia (for more information on the World Bank's role in changing Russia's educational policy see (Gounko and Smale 2006). Since 2009, the USE has been the main tool of selection of new entrants for all universities. Today it is mandatory nationwide. When introducing the USE the state explained that these exams are the most effective and reliable means of selecting qualified school leavers and that the USE would give young people from provinces more chances to be admitted to leading universities, most of which are located in Moscow and St. Petersburg.

Researchers who studied the results of entrance tests for undergraduate programs in 13 countries could not find evidence that the introduction of tests increased the efficiency of the selection of new entrants (Edwards et al. 2012). There is evidence that the introduction of the USE has increased the affordability of higher education for students from low-income families. However, this is due primarily to the fact that new entrants are now allowed to send the results of the USE to more than one university (Andrushchak and Natkhov 2012). The systemic effects have yet to be analyzed, so it is too early to talk about achieving the goals that were set when introducing the USE.

At the same time, many stakeholders, mainly students and their families, as well as universities, are involved in the discussion of the negative effects of the introduction of the USE. The dissatisfaction of students and their parents is explained by the fact that they have to spend considerable time and money to prepare for the exam. The burgeoning private market for training for the tests is one of the effects of the introduction of national entrance tests in many countries (Edwards et al. 2012; Andrushchak and Natkhov 2012).

Universities are dissatisfied with the restriction of their freedom to select entrants. Before the introduction of the USE, they set their own entrance requirements, while today only a limited number of universities have the right to do so, and even then, only for a limited number of fields of study and in addition to the use of the USE results. The list of these universities is compiled annually by the government. In 2013, in addition to Russia's two major universities, Moscow State University and St. Petersburg State University, this list included seven universities (specializing mainly in languages). Another grievance is related to the inclusion of the average USE score of students admitted to the first year in the list of criteria by which the university's overall efficiency is assessed. It is assumed that this criterion helps to identify universities that attract the most gifted students, which indicates the quality and reputation of the university. It is clear, however, that the overall decline in the level of training of secondary school leavers, as evidenced by the results of the USE, is beyond influence of universities. It is notable that one of the most powerful arguments in support of the introduction of the USE was the desire to fight corruption that had become synonymous with the term "entrance exams."

The number of student places funded from the federal budget is allocated among state universities on a competitive basis. This takes into account the university's ability to provide quality academic services. However, this is only an official statement. In practice, the process of allocation of state-funded places is very opaque, is full of contradictions, and lends itself to strong administrative influence.

We have already mentioned that Russian higher education has the highest number of graduates in social sciences, business, and law among all OECD countries. In order to restore balance in the structure of higher education degrees, since 2004 the state has regulated the number of state-funded places in universities in these fields of study: over the last few years their number has decreased by 30 %. At the same time, over the last 5 years, the number of state-funded places in engineering has increased by 9 % (Abankina et al. 2012).

In 2013, a new model for the allocation of state-funded places was introduced, which aims to remove social sciences from the list of majors of engineering universities; to better regulate the allocation of state-funded places by levels of education (for example, to increase the number of state-funded places for graduate programs); and to take into account the needs of regional labor markets. First of all, this measure affected engineering universities, which in the 2000s, following the public's demand for social sciences, greatly expanded the offer of academic programs in this sphere. Of course, the first reaction of engineering universities was negative. However, as partial compensation, the state offered them increased tuition fees for students majoring in engineering.

11.3.3 Regulating Tuition Fees

In 2012, the state changed the enrolment-based formula of funding and established a new standard for calculating the cost of tuition of state-funded students in public

universities. The standard was determined based on the median of public universities' actual costs of training one state-funded student in 2012. Beginning from 2013, all public universities will receive from the federal budget a fixed amount of money, 60,200 rubles, adjusted for the areas of teaching, for the training of one student, regardless of previous actual costs. In 2012 the cost of training of one student in different public universities ranged from 40,000 to 182,000 rubles. Thus, there was an automatic increase in the cost of training funded by the state in universities in which these figures had been lower than the established standard (this is almost half of all universities). Here, the term "standard" means the minimum cost of training of one student. Universities can invest additional funds in training students as they see fit, using their extrabudgetary resources and income-generating activities.

With all the positive effects of this measure, universities also faced an unexpected restriction of their market behavior. The state linked the raising of the standards for training state-funded students with the requirement to raise tuition for fee-paying students, citing the responsibility of universities to ensure the equal quality of provided services and, as a consequence, the same costs for state-funded and paid places. Thus, universities were forced to determine the tuition cost, which did not always correspond to public demand. Considering the decline in families' expenses on higher education, it became a real problem.

The state program "(T)he Development of Education" for the period 2013–2020, developed by the Ministry of Education and Science and adopted in 2012, preserves the regulatory function of the state and also extends its influence on the behavior of other stakeholders. For example, it introduces the USE passing grade for new entrants claiming state-funded places, cuts the number of state-funded places in universities and differentiates universities on the basis of determining the level of programs which they can offer to students.

11.3.4 USE Passing Grade and the Reduction in the Number of State-Funded Places

Over the last decade the number of secondary school leavers has declined from 1,457,800 to 789,300, while the number of state-funded places in universities has remained almost unchanged: in 2000 it amounted to 586,800 places and in 2010 to 519,000 places (Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012a). Thus, higher education has become accessible to practically everyone regardless of their academic competence. While most stakeholders support the idea of preserving the accessibility of higher education, the government has expressed its intention to restrict access to higher education by introducing a threshold of minimum test results which allows new entrants to qualify for state-funded places in universities and cutting the number of these places.

The society and universities themselves are raising their voice against it. Their argument is: higher education performs a socializing function which today has no alternative. In our view, universities have taken up an unconstructive, populist

position that significantly weakens their role and their ability to influence decision-making in this area. Despite the alarming increase in the number of students who are poorly prepared for training in traditional university programs, universities prefer to criticize the level of secondary school education and are in no rush to change their portfolio of programs offered or diversify the range of allowable educational trajectories that would take into account the capabilities, expectations, and needs of such students. This means that universities are not prepared to justify their right to retain the diverse student body and support it with their internal decisions. Thus, universities' unpreparedness for more rigid selection has less to do with the interests of students as their stakeholders and more to do with the internal interests of the institution: the preservation of the student body, the faculty, and the income. According to Russian experts, for a significant number of higher education institutions the consequence of this situation is an implicit "disengagement agreement" (Dobryakova and Froumin 2012) with students: "We pretend that we are teaching you, and you pretend that you are learning."

11.3.5 Differentiation Among Universities

The state has taken measures aimed at differentiating among higher education providers based on the levels of programs that they will be allowed to offer. Today, any Russian university (public or private) can apply for the opening of a master's program if it has the bachelor degree program in the relevant field of study and obtain a license for its implementation. The same is the case with programs for Ph.D. students. The new approach of the state concentrates on the training of master's and Ph.D. students in a limited number of leading universities. Accordingly, students as stakeholders face new challenges when choosing a place of training. Obviously, the granting of the privilege of opening graduate and postgraduate programs will lead to a significant reformatting of the work of most universities, to changes in their status and the patterns of their interaction with all stakeholders. Universities still do not recognize this threat because the criteria for selecting universities have not yet been announced.

It is clear that the regulatory role of the state as reflected in the aforementioned mechanisms affects competition between public and private universities in the higher education market. After the emergence of the private sector in higher education in 1992, public and private higher education institutions were linked, to a certain extent, by partnership relations. Private universities used public university premises and the teaching staff, and public universities considered private universities as a source of additional income for their teachers (Suspitsin 2005). However, for both sectors the main source of income was the same, namely, taxpayers' money. Therefore, the demographic and economic trends of the first decade of the twenty-first century have led to the shrinkage of the market and increased competition. During this period, the state created favorable nonmarket terms of budget funding for public universities and retained the number of state-funded places. This weakened qualitative competition in the market (Abankina et al. 2012).

11.4 Market Behavior of Higher Education Institutions: Commercialization of Research

The reduction of state funding energizes universities' nonbudget activities and forces universities to act as market entrepreneurs (Olsen 2007). International practice shows that one of the main areas for university entrepreneurship is the commercialization of research (Shattock 2009). To be successful in this area, a university must be able to demonstrate high-level scientific achievements that stakeholders would be interested in.

Historically (in Soviet times), in the Russian education system, the research and development (R&D) sector was developed independently of higher education. Except for a small number of universities with a strong research base, the overwhelming proportion of research was carried out by the institutes of the Russian Academy of Sciences (RAS). The traditional forms of interaction between universities and the institutes of the Academy of Sciences were limited in scope. These included staff mobility, joint research projects, scientific laboratories at universities, and conversely, university departments at scientific institutions.

In these forms of interaction, universities focused on teaching, and the RAS institutes focused on research. The main difficulty in their interaction is the fact that these two groups of organizations are supervised by different departments of the government. Higher education institutions are supervised by the Ministry of Education and Science, while academic institutions are within the RAS system. This makes it difficult to manage and finance joint projects. Experts also note that the main motivation for the RAS institutes in their cooperation with universities is the selection of the best students and their subsequent employment in the RAS system (Dezhina and Graham 2009), which makes cooperation rather limited.

In this situation it was obvious that without the support of its main stakeholder, the state, universities would hardly be able to play a significant role in the R&D market. In the second half of the 2000s, when the motives of the state policy in the sphere of research began to be determined by the worldwide trend to strengthen the role of research universities as the key element of national research systems, the situation changed. The advantages of universities as places of integration of teaching and research were becoming more obvious (Salmi 2009). The Russian state began to show a strong interest in the development of universities' research potential.

Among the largest projects initiated by the Russian government in this period was the creation of a group of research universities and the adoption of the federal target program "Research and Teaching Staff for Innovative Russia" for 2009–2013. The goals set in these initiatives included reaching global scientific leadership in selected priority areas of development and creating a new quality of university education in the scientific environment.

It is interesting to note that state's efforts to support an implementation of R&D projects at universities have not led to significant changes in or redistribution of roles between universities and the RAS institutes in this area. Despite the decreasing number of research institutes in the 2000–2010 period and the growing number of universities conducting R&D, the share of the latter in the research sector

has not changed. In 2010 the share of research institutes equaled 52.7% (in 2000: 53.1%), the share of universities equaled 14.8% (in 2000: 14.3%). Also, there was a simultaneous increase in their share of R&D expenditure: for RAS institutes: from 24.4% in 2000 to 31% in 2010, for universities: from 4.5 to 8.4% over the same period (Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012b).

However, today there is a certain wariness in the relations between universities and the RAS. New customers have appeared in the academic job market. These are universities receiving additional state resources for their development. They have begun to seek out and attract employees who can ensure high-level research performance, first of all, employees of the RAS. Universities have enhanced their presence in the technology platforms, which the state sees as a mechanism for determining research priorities. They are also able to significantly upgrade their research infrastructure. Periodically, the Ministry of Education and Science and universities initiated discussions about the ineffectiveness of the organization of science as a system of academic institutes, putting forward proposals to merge academic institutes and universities. The RAS has its own arguments: namely, its scientific performance, old academic traditions, and the numerous and sufficiently independent expert community. All this explains why there is certain distance between universities and the academic institutes.

In the first decade of the twenty-first century the state had another motive for developing university research potential that is linked to the involvement of business in the financing of R&D. The practice of most developed countries shows that universities are often regarded by companies as quite attractive partners for the implementation of R&D projects, and university–industry links are regarded as a key element of the national innovation system (Maassen and Stensaker 2011; Mora et al. 2010). The experience of these countries shows that the intensity and scale of the development of various horizontal links between universities and industry is largely determined by the position and participation of the state, which forms the triple helix of university–industry–government relations (Leydesdorff and Etzkowitz 1998).

An important mechanism for encouraging interaction between universities and industry in the research area was the initiation of programs under which state funds were allocated to businesses on the condition that they involve Russian universities in the implementation of research projects and cofinance these projects. In particular, we can mention the Government Decree No. 218 (2010) aimed at supporting the development of cooperation between Russian universities and organizations implementing complex projects to create high-tech manufacturing facilities and the order of the Russian Federation (RF) President (2011) to involve universities in the development of programs of innovative development of Russia's largest state-owned corporations.

It is still difficult to talk about the systemic effects of these initiatives. In 2010, the share of universities in the amount of R&D carried out in Russia grew to 8.4% (from 7.1% in 2009). A number of experts link the growth of this figure with the implementation of the initiatives (Russian Association of Managers 2011). But in our opinion, there is not enough statistical evidence of changes in the behavior of universities and industry or growth of their mutual interest, which was the main goal of the state.

The practice of the implementation of joint projects within the framework of the programs initiated by the government has revealed many barriers to interaction. It was difficult for universities to demonstrate their readiness; their transparency and predictability as a partner in the implementation of R&D projects; their ability to be integrated into ongoing processes; and their understanding of the needs and objectives of the business partner and its technologies, deadlines, and results.

Many businesses were under pressure from the federal and regional authorities coercing them to participate in and cofinance joint projects involving universities. Therefore, their goal was to minimize the risks and costs of incorporating universities into their technological processes. To achieve this goal, businesses searched for ways to influence the ways universities managed their research and tried to participate in decision-making on the priorities of the university's activities and controlling the resource allocation. At present, these possibilities are limited by university fears and their unwillingness to broadly involve companies in their internal management processes, which, in their opinion, may lead to the loss of control over their activities. The state is not taking any further measures to create appropriate conditions for businesses to control the resources they contribute, relying on the entrepreneurial behavior of universities in the resolution of emerging contradictions.

The creation of appropriate conditions for the development of universities' entrepreneurial behavior in the research area has quite a long and controversial history. In 2006, the government adopted the Federal Law "On Autonomous Institutions" (Federal Law No. 74). It helped to implement a new organizational form that ensures greater autonomy and transparency of university activities. Despite the fact that the status of an autonomous institution provides more freedom with respect to spending money earned by a university, universities reacted to this initiative rather warily and began to predict the hidden risks of increased autonomy and the accountability associated with it.

One of the most serious causes for doubt was the fear of loss of the property that is under the university's management. Today the state (the founder) has the right to exempt the university's property which is used either inefficiently or inappropriately. However, this practice is not widespread. The transformation of universities into autonomous institutions and the selection of particularly valuable property bring to the fore new risks, thus exposing the contradictions of the current situation (Klyachko 2009). Tensions rose when the Presidential Decree of May 7, 2012, launched the monitoring of the effectiveness of university activities and the development of measures of rehabilitation for inefficient institutions that had "lost touch" with the labor market.

It should be noted that the state is consistently trying to create conditions encouraging the involvement of universities' intellectual capital in economic activities. Public universities have the right to be founders of commercial companies whose business is the practical implementation of the results of intellectual work, the exclusive rights to which belong to these universities. In this case, the right to use intellectual property is the university's contribution to the charter capital of commercial companies.

Universities can also involve other persons as founders of a business entity if the share of the university is more than 25% of the charter capital or more than one-third of the charter capital of a limited liability company. These universities manage their stakes in the charter capital of business entities as participants in accordance with the Russian Federation civil legislation. Heads of universities execute the rights of members of business entities on behalf of universities.

Between 2009 and 2012, more than 400 small innovation enterprises were set up. It appeared to be necessary to enhance universities' possibilities of creating such enterprises and managing them. But this form of university entrepreneurship is still largely guided by the old (Soviet) motivation: universities continue to rely on the government's "top-to-bottom" leverage, not the economic motivation from the bottom, giving greater importance to quantitative rather than qualitative results and paying relatively little attention to profitability as a criterion of success (Dezhina and Graham 2009). Thus, this kind of work is still far from being considered a well-established and important economic phenomenon, and the role of universities is too insignificant to be taken into account by other players in the R&D market.

11.5 New Aspects of the Higher Education Policy Agenda

The dynamics of public expenditure on education shows that between 2001 and 2010, higher education in Russia received increased attention of the government: public expenditure on higher education as a percentage of the gross domestic product (GDP) rose from 0.3% in 2000 to 0.8% in 2011. In 2010, the volume of budget financing of higher education amounted to 302 billion rubles, the volume of non-budgetary financing reached 257 billion rubles (Institut statisticheskikh issledovanii i ekonomiki znanii GU-VShE 2012a).

The authors' analysis of the federal targeted programs of the development of education for 2001–2005 and 2006–2010, and the priority national project "Education" shows that in that period the expectations of the state were based on the fact that universities would be able to provide high quality education, meeting changing public demands and the future development of Russian society and the economy. The two main problems that have to be solved to achieve this goal are the unacceptable quality of higher education and the impact of the discrepancy between the results achieved by universities and the goals of the country's economic development.

The problem of poor quality in higher education is one of the most actively discussed aspects of Russia's higher education. According to the Public Opinion Foundation, in 2012, only 12% of respondents thought that the quality of Russian higher education was good. Surveys of employers show that two-third of them are not satisfied with the quality of university graduates (Ministry of Education and Science of Russian Federation 2010). The state regards the absence of Russian universities in international rankings as direct evidence of their lack of competitiveness in the international market.

The problem of discrepancy between universities' activities and the needs of the economy has its objective and subjective reasons. The objective reasons are related to the noninvolvement of employers and business in determining the content of higher education programs and their unpreparedness to forecast their need for skilled employees. The subjective reasons lie in the blurred boundaries of departmental responsibilities with regard to forecasting the needs of the economy in professional personnel.

"The Law on Education," adopted in 2012, defines higher education as a type of education aimed at acquiring competences needed to conduct *professional* activities in a certain area and/or work in a particular profession or occupation.

In the Soviet Union, there was traditionally a close link between universities and the labor market. In fact, all universities were to some extent sectoral or industry-specific. They received support from employers; their students did practical training on assigned enterprises and were then employed by enterprises. In the 1990s, universities were no longer concerned about their connections with the labor market. Training employees for industries receded into the background against the backdrop of the feverish demand for higher education in social sciences majors. However, the stabilization of the economy and the development of industries in the 2000s made the issues of interaction between employers and universities preparing personnel for them important again.

Experience shows that interaction between employers is not systematic and is largely determined by situational factors. In the extractive sectors of the economy as well as in trade and services, the position of employers in relation to higher education is already known. In some cases one can observe the joint work of business entities and universities on the content and the process of training. In the absence of resources, whole sectors of the economy (for example, consumer goods manufacturing, machine building) are unable to influence the training of personnel both in terms of setting goals for universities and in terms of determining the real demand for graduates and opportunities for their employment.

The government shows its willingness to share with employers some of its authority to coordinate the higher education system, attracting them to the sphere of higher education and trying to interest them in cooperating with universities. Examples of such initiatives include a new procedure for the formation of federal state educational standards based on professional standards, attempts to create a system of public accreditation, and centers of certification of competences. The RF President gave governmental agencies, the associations of employers (including the Russian Union of Industrialists and Entrepreneurs), and state corporations the task of preparing and adopting about 800 professional standards within a short time.

The procedure for the preparation of federal state educational standards was initiated by the Ministry of Education and Science long before professional standards had been developed in most industries. This did not allow employers to influence the content of the training of skilled personnel. Therefore, today's generation of educational standards in most cases is rather a reflection of the possibilities and ambitions of the higher education system than the real needs of the economy (Ministry of Education and Science of Russian Federation 2010). The lack of professional

standards also hinders the creation of a system of public accreditation of higher education programs.

Considering the aforementioned problems, the main mechanisms of state coordination in higher education are the following: (1) the identification and support, on a competitive basis, of leading universities, in the growth areas of the new quality of education, and (2) the optimization of the network of universities, the identification, and subsequent reorganization of the universities that do not meet the needs of the economy.

The first mechanism was designed in line with the global trend toward the selection of "centers of excellence" (Salmi 2009). This implies the selection of leading universities within the higher education system and changing the approach to the allocation of resources in their favor.

As part of the first mechanism, 39 universities were given the status of "national,", "federal," and "national research" universities. This group of universities receives targeted financial support from the state in the framework of additional funding of university development programs: beginning from 2010, 30 billion rubles each year. Also, based on the results of various contests, these universities accumulate up to 60% of the funds allocated for the development of research activities of the whole system of higher education.

It should be noted that the status of "national research universities" was awarded on a competitive basis. Federal universities were established by the RF President. Other forms of status were determined by the state. This caused a mixed reaction from other universities to the selection of this group and the redistribution of resources in its favor. Most of the questions are related to the apparent heterogeneity of the group of leading universities: it included recognized leaders as well as universities that had never occupied the top ranks of Russian ratings and had never demonstrated outstanding scientific achievement.

For example, if the total number of publications during 10 years (2001–2011) in the Web of Science is used as the indicator of a university's research potential, this group includes universities with more than 4000 publications as well as those with fewer than 100 publications. Also controversial are the results of these universities' work. For example, the formation of the network of federal universities was started in 2006. It was assumed that these universities would be capable of carrying out educational and research projects for large regions (the Urals, South Russia, the Far East, Siberia, and North Caucasus). However, their activities never went beyond their provinces.

In the framework of the second mechanism (i.e., restructuring), during the last 5 years, more than 100 university branches have been closed; 63 universities have been reorganized through various procedures, including their merger with stronger institutions. This process continues today, primarily affecting universities that were created in Soviet times for the solution of particular problems of the state and that found themselves in a difficult position after the change of the national economic model. A number of Russian experts believe that the pooling of universities' resources in the course of integration will improve the quality of education, and the expansion of the range of educational programs will give a consolidated university a more stable position in the higher education market (Abankina et al. 2012).

However, there are other opinions. The state plays a key role in this process. But its decisions on reorganization are not based on a solid project basis and professional expertise. This increases the risks of inefficiency and unattainability of the expected systemic effects. As far as the reaction of universities involved in reorganization is concerned, it should be noted that their opinion is ignored and has no effect on such decisions. Moreover, there were cases of open discontent with such decisions.

To identify universities that do not meet the challenges facing the system and in order to strengthen their accountability, in 2012 the Ministry of Education and Science initiated the monitoring of university performance. The monitoring was based on five criteria: the USE average score of the students enrolled in state-funded places; the volume of R&D expenditure per faculty member; the proportion of foreign students; the university's income from all sources per faculty member; and the total area of classrooms and laboratories per student. Since the publication of the lists of universities that were classified as ineffective based on the results of the monitoring, heated debate over the initiative has not ceased.

Can this monitoring assess all the effects that higher education has on its environment and society as a whole? Can this list of criteria be used to identify universities that do not meet the goals of the market economy? Should all universities be evaluated on the basis of the same set of indicators that do not always take into account their special features? Why were universities that have a valid accreditation (which means they are recognized by the state as meeting the requirements for the provision of services in the field of higher education) found to be ineffective? Why were only leading universities involved in discussing the criteria and not the whole professional community? The absence of clear answers to these questions and the lack of information caused distrust on the part of universities to the goals of this initiative, to its implementation, and to its results. Under pressure from universities and public criticism, the Ministry of Education and Science promised to revise the list of the criteria and involve a wider range of experts in its discussion.

The two main vectors of higher educational policy discussed above show that the state develops its relations with universities on the basis of vertical differentiation, selecting the groups of best universities and "outsiders." This is typical of many systems that have joined the race to create top-level universities (van Vaught 2009; Salmi 2009). The analysis of the documents reflecting the state's educational policy (in particular, the state program "The Development of Education" for the period 2013–2020) shows that the state has clearly formulated its position with respect to these groups of universities.

The state expects the first group of universities to turn into high-level (ideally, globally top-level) universities. Today this group of universities, which now have the status of "leading universities," is composed of only 39 institutions (less than 4% of the total number of universities with slightly more than 10% of the total enrolment in higher education in 2011). Adopted in 2012, the program of development of this group of universities (known as a set of measures aimed at implementing the order of the RF President to ensure, by 2020, the presence of at least 5 Russian universities in the list of top 100 universities in leading international ratings) shows that the state's

attention and support will be even more concentrated, and even within this small group not all universities will be the focus of the state's attention.

Based on the results of the monitoring of the effectiveness of higher education institutions conducted in 2012, the group of the "outsiders" has included 136 universities (about 20 % of the total number of higher education institutions). The fate of these universities is also predetermined by the state. They will be reorganized or liquidated. A corresponding decision, in accordance with the plans of the Ministry of Education and Science, will be taken in 2013.

For most of the universities that are in the middle of the spectrum and form the basis of the higher education system, relations with the state continue to be, to put it mildly, unclear. The state expects universities to be proactive and find their place in the system. There is a strict framework within which universities are allowed to maneuver. According to the state program "The Development of Education" for the period 2013–2020, the future institutional landscape of the Russian higher education should consist of: (a) leading research universities (40–60 institutions), which must act as the engines of innovation economy; (b) supportive universities of regional economic systems; and (c) universities providing extensive training for bachelor's degrees. However, if we take into account other stakeholders' expectations and their impact on the system, we will see that the institutional landscape of the Russian higher education should be more diverse.

11.6 Institutional Differentiation as the Basis for the Renewal of the Social Contract

All universities are organizations that use similar resources, attract similar groups of clients, produce similar products and services, and operate in the framework of a unified state educational policy. However, universities respond differently to changing circumstances because of specific institutional characteristics and the adoption of particular management decisions (Olsen 2007). The different approaches of universities to identifying stakeholders, classifying them according to their relative importance and establishing working relations with stakeholders (Jongbloed et al. 2008) determine different models of university organization. In the wide gamut of relations between universities and stakeholders, one can and should see a certain order and consistency associated with the importance of various stakeholders for the university, the volume of resources that the stakeholders can offer, as well as the requirements and procedures for access to these resources.

Today, in Russian higher education, the state is the undisputed resource leader. The resources allocated by the government, however large, are of course, limited. The range of universities that have access to these resources is also limited. The state gives priority to research universities that are capable of being internationally competitive. Development in the paradigm of global research competitiveness should be viewed as the formation within the higher education system of the group of research universities. For the rest of the universities, resource expectations shift

toward other stakeholders who can articulate other (different from the claim to global leadership in research) expectations and interests. These interests can include the staffing and scientific support of large-scale geopolitical and territorial projects of social and economic development, maintaining a high qualitative level of research and education in particular fields of science, and finally, contributing to the development of strategic sectors of the economy. A university implementing its mission in this dominant paradigm can be called a "systems integrator." Here, by "systems" we mean what we described above, that is, social and economic complexes of large territories, science, and economic sectors.

But even in this model of development there may not be sufficient place for all universities. This model is also affected by resource constraints. Therefore, we can consider as the third mechanism of differentiation the ability of a university to offer and implement a universal mission at the regional level. The goals of socioeconomic development of regions and the needs of regional labor markets for skilled employees offer a challenge to the system of higher education and prerequisites for resource sharing between regional stakeholders and the higher education system. The ability of a university to offer services needed for regional socioeconomic development creates a new sphere for the university's activities, which involves regional authorities, regional businesses, students, and their parents. It can be argued that the composition and quality of the aforementioned services require the involvement of the university in research (mostly, applied research). This university can be seen as a kind of "regional integrator," which plays a central role in the consolidation of the intellectual capital for the purpose of achieving the goals of the socioeconomic development of the region.

The formation of another model of university organization and development is related to the university's rejection of the obligatory nature of research work and its focus on undergraduate programs. As a result, a localized educational mission of the university is formed that suggests closer ties with the local community and local labor market, which become the university's main stakeholders. The sphere of the university's activities narrows. A university with this model of organization and development can be figuratively described as a "local personnel designer."

Thus, multiple modes of interaction between universities, the variety of stakeholders and their hierarchy is a prerequisite for the formation of different models of development and organization of university work. Different combinations of these models will determine a more differentiated institutional landscape of the Russian higher education in the future. (Knyazev and Drantusova 2013).

11.7 Conclusions

The expectations of the three main groups of stakeholders involved in the coordination of Russia's higher education—the state, the market, and the academic oligarchy—determine the range of services to be provided by higher education and requirements for their quality. Stakeholders associate the latter with the expansion of their participation in decision-making, control over the use of allocated resources,

and greater accountability of higher education. Together, this forms the basis of interaction of higher education with its external environment or the social contract.

For *the state* the most important driving force for its participation in coordination is its responsibility for higher education declared in the Law on Education. One of the priorities of the state policy of developing higher education in Russia is maintaining the balance between ensuring its accessibility and preserving its quality and regulating supply and demand. This dilemma is present in almost all of the RF government's policy documents on higher education.

We have already noted that the main reason for changing the state's attitude toward universities in the period under review is the processes caused by the neoliberal reform associated with the budgeting sector. This change is seen in the transition from the state's funding of universities to paying for services that the state orders. The state aims to develop a system of relations with other stakeholders in which those who profit from the purchase of universities' services and products must pay for them. Of course, the prerequisite is to preserve the predictability and controllability of the higher education system as well as its transparency and accountability. Despite the fact that the state, as a major stakeholder, tries to shift the responsibility for higher education from itself to the beneficiaries of university services, it retains the right to determine the scope of university activities and control them. But, of course, the lack of the ability to control universities does not encourage other stakeholders' commitment.

The interests of *the market* are well characterized by students' ability to choose between different (public and private) providers of higher education meeting a wide range of demands. The second side of market expectations is associated, as in other countries, with well-developed higher education systems, with a permanent increase in the importance of innovation products. Of course, market forces are interested in the potential benefits of interaction with the higher education system while minimizing their costs and ensuring efficiency in the use of resources. However, as our analysis shows, the impact of market mechanisms of coordination on higher education is limited by the state through the introduction of artificial protective barriers or preferences for certain groups of players.

The *academic oligarchy* today is preoccupied with diversifying the sources of funding, understanding that this will entail accountability to the increasing number of stakeholders. But despite the widening autonomy and the opportunities associated with it, the oligarchy seeks to preserve the state as the main customer for its services, as it associates with the state, less risk to the stability of its position. Changes in the behavior of this stakeholder are explained by the absence of necessity for professional expertise shown by other stakeholders, especially the state. As a result, the oligarchy is detached from making key decisions and has less impact on the coordination of higher education. This leads to the fact that most universities are in a situation of uncertainty when the rules of the game may suddenly change at any time. Institutional confusion, in turn, generates disappointment, criticism, and sometimes an atmosphere of crisis (Olsen 2007), and undermines trust in the higher education system, which is the key aspect of the social contract between higher education and its wider environment.

In his comparative study of higher education systems, Clark applied the triangle of coordination to the then Soviet higher education system and counted Russia as one of the countries in which the state is the main of the three drivers of the systemic and institutional dynamics of higher education (Clark 1983). It can be argued that Clark's opinion is still relevant, which emphasizes the importance of this stakeholder's decisions for higher education at the present stage.

In our view, the state's current position with respect to higher education, which suggests a simplified vertical differentiation among universities, cannot be the basis for a new social contract. Each university, due to its unique features, has a different combination of relations with its external environment and attaches different degrees of importance to each of the different types of connections, which determines the unique nature of the university's social contract with its environment. Therefore, social contracts are as diverse as universities themselves are, and they are in a constant process of change (Trow 1996). This is confirmed by the current state of Russia's higher education where, in our opinion, there are at least four different models of university development and organization. This means we should talk about the horizontally differentiated system of higher education and a variety of social contracts. This approach can create a qualitatively different basis for better understanding as well as reconciling the interests of higher education and its stakeholders.

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Chapter 12
Cost Sharing in China's Higher Education: Analyses of Major Stakeholders

Rui Yang

12.1 Introduction

China has its distinctive traditions of higher learning. By the end of the eighteenth century, China had perfected one of the world's most durable political systems during the 2000 years of its imperial history and had developed a unique civilization that had deeply influenced the culture of its neighboring countries. Over such a long historical process, there was no institution in Chinese tradition that could be called a university (Yang 2011). The nineteenth century saw the diffusion of the European model of the university throughout much of the world, under conditions of imperialism and colonialism. Since the late nineteenth century, reforms of traditional higher learning institutions were started, and different strands of China's own evolving traditions linked up with various foreign influences (Hayhoe 1996). From 1949, when the Chinese Communist Party came into power, the university continued to go through and struggle with a process of adaptation and indigenization. From 1952, the Chinese higher education system simulated the Soviet model. The past decades have witnessed impressive quantitative and qualitative growth of China's higher education system. Chinese higher education has gradually re-entered into the international community modeled especially on the Anglo-American system.

The altered mode of higher education governance has never been more evident. Since the mid-1990s particularly, China's higher education system has been undergoing many changes. While these reforms have generated additional resources for Chinese higher education institutions, they have changed the landscape of China's higher education dramatically. One such change has been the newly created stakeholders. China's profound social transformations including higher education

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_12

necessarily produce winners and losers.[1] A major focus of China's higher education has thus been attempting to strike a balance between governments (central and local), private sectors, people within higher education institutions, and parents and students as customers, as well as professional associations and organizations. However, claiming that the government unremittingly serves the people, analyses of China's higher education policy by mainstream researchers tend to daringly and even misleadingly take it for granted that consensus always exists between various social groups with competing interests. Very rarely have any studies investigated tensions among these main stakeholders (see for example, Yuan 2001, 2002; Zhang 2002). This chapter attempts to address such a gap in the literature. By doing so, it aims to contribute substantially to a better understanding of China's contemporary higher education policy and its future directions.

While cost sharing is increasingly practiced, the actual sharing among stakeholders varies greatly across national boundaries. With the changed relationships among the society, the market, and universities, stakeholders have penetrated China's traditional monopolistic relationships between the state and public higher education institutions, with the role of external actors becoming far more important during the last few decades in influencing internal affairs of individual higher education institutions. As the proportion of governmental sources for higher education in relation to GDP, especially at the central level, shrinks year by year, the share of students and their families have been increasing significantly. In line with the developmental paths/models in China's various historical periods there have been changes of university governance modes, which have led to changed relationships among stakeholders with different winners and losers created each time. Due to limited space, this chapter focuses only on the three most significant stakeholders in Chinese higher education: governments, students and their families, and the business community (enterprises).

12.2 Stakeholders and Cost Sharing in Higher Education

Stakeholders are generally individuals or entities who stand to gain or lose from the success or failure of a system or an organization (Gross and Godwin 2005). Almost exclusively from a business perspective, the stakeholder theory focuses on the need to pay attention to those who affect or are affected by products or services. Stakeholder analysis creates a framework within which businesses identify, evaluate, and then incorporate these interests into their decision-making processes. Well-structured consideration of expanded interests leads to better planning, new and creative

[1] For instance, the percentage of students in higher education from workers and peasant families increased from 20.5 % in 1952 to 55.28 % in 1958, and reached 71.2 % in 1976 (Ma and Gao 1998). As reported by Chen and Le (2012), students from rural background at Peking University were over 30 % in 1972, remained between 15 and 20 % in the 1980s, and only occupied slightly over 10 % during the 1990s. It is widely acknowledged that China's contemporary higher education contributes to social and educational inequalities (Zhao 2005).

initiatives, and improved resource allocation—all of which promote organizational success and curb failure.

In higher education, stakeholders are individuals or groups involving government, employers, students, academic and administrative staff, institutional managers, prospective students and their parents, and taxpayers who believe that higher education institutions and polices are accountable to them and therefore behave accordingly (Jongbloed et al. 2008). A stakeholder depends on the basis of what is at "stake" and "what counts" (Mitchell et al. 1997, p. 856). While Maassen (2000) suggests stakeholders in higher education mean specific groups of external actors with a direct or indirect interest in higher education, Campbell and Rozsnyai (2002) define them as students, society, and government participating in or benefiting from the provision of higher education.

Cost sharing in higher education refers to a shift in the burden of higher education costs from being borne exclusively or predominantly by government, or taxpayers, to being shared with parents and students. According to Johnstone (1986, 1993, 2002, 2003), three strikingly different causes in their underlying economic, political, and ideological assumptions are behind this shift. The first is the sheer need for "other than governmental revenue," which stems from the dramatic increase in most countries in both the public and private demand for higher education. The second rationale for tuition and other forms of cost sharing, based less on need or expediency than on principle (however ideologically contested), is the notion of equity: the view that those who benefit should at least share in the costs. A third rationale for cost sharing in higher education is the neoliberal economic notion that tuition brings to higher education, some of the virtues of the market, including the presumption of greater efficiency (the payment of some tuition will make students and families more discerning consumers and the universities more cost-conscious providers) and producer responsiveness (the need to supplement public revenue with tuition, gifts, and grants will make universities more responsive to individual and societal needs.[2]).

It is important to note that all of the three are contested, and not all policy makers, observers, or stakeholders share the notion that increased cost sharing is correct, necessary, or even "good expediency." A major plank in the critical opposition to higher educational cost sharing and marketization is the assertion that taxes can be raised, both substantially and progressively if there is just the political will and leadership (Johnstone 2003). Opponents of cost sharing assert doing so would obviate the need for tuition and other forms of cost sharing and avoid the danger of losing enrolments, particularly among the poor, and risking failure in possibly ineffective and expensive financial aid and loan schemes (Colclough and Manor 1991; Buchert and King 1995). As governments increasingly did not or could not provide sufficient revenue for higher education, the tenets of neoliberal economics seemed to be ascendant in most countries at the close of the twentieth century. Many development

[2] A variation on this theme is that students alleged to be taking more years and/or more courses than are necessary or even useful merely or largely because the courses and sometimes even the living expenses are free of charge.

experts from international organizations, including the World Bank, recommend the supplementation of higher educational revenues by nongovernmental sources—primarily students and family—as one important solution to increasingly underfunded and overcrowded universities especially in less economically developed societies (Johnstone 1993; Woodhall 1992; World Bank 1994; Ziderman and Albrecht 1995).

The beginning of tuition and various sorts of fees are now seen in various countries including Russia (Bain 2001), Vietnam, and India (Asian Development Bank 2012). China is no exception. Since 1978, building up close links between higher education and the market has been a prominent orientation in reforms, together with decentralization in finance and management, and great efforts made to introduce market-based mechanisms. The 1980s saw a turning point in government-university relationships in China. The transformation under the open-door policy from a planned economy (a model imported from the former Soviet Union) to a market economy has led to profound changes in the way China's higher education is governed. With the phasing out of the planned economy and the changing role of the state (Gornitzka and Maassen 2000), the government became increasingly reluctant to continue to subsidize students. China's higher education was free until the late 1980s. In 1989, for the first time, a tuition fee of 200 RMB was charged (Zhang 1998). By the early 2000s, tuition fees became widespread in Chinese higher education as a direct result of reduced government funding and the policies of marketization. For example, tuition fees increased from around 1000 RMB in 1998 to 5000–5500 RMB in 2005 in the region of Beijing (Yan 2006). The proportion of investment from the central government has steadily decreased. The market has stepped into university-government relations, and the central government has become a "market manager" taking the shape of a "trinity" (Dong 2003). The role of the government is shifting from state control to state supervision (Kickert 1995). Within such a scenario, cost sharing has taken a new shape.

12.3 The Social Policy Context of Cost Sharing in Higher Education

The impact of globalization on higher education policies varies across nation-states in terms of their particular economic, political, and cultural contexts (OECD 2009). Higher education policy as a kind of social action needs to be observed within a certain social and historical environment as well as how university reforms are framed within political deliberations, programs, and practices. The transformation of one mode of governance to another is often implemented in an ever-changing and complex historical process. It is therefore necessary to trace current practices to their social and historical roots in order to grasp the essence of paradigm shifts in China's higher education policy during the past decades and to foster a better understanding of the roles of the stakeholders in the higher education arena.

During the previous 63 years of China's so-called socialist construction, its higher education policy had experienced dramatic paradigm shifts in line with the

nation's transformation from a planned to a market economy. When the communist republic was founded in 1949, its new democratic education policy was in principle for the masses, representing the fundamental values of education equity. The Chinese government held tight control over higher education. During this period, higher education was treated as a public good. The paramount principle of education policy was political in nature and effect (Ngok 2007), directly linked with and based on the ideology held by the then Chinese communist party.

As a party that rode to power on a platform of egalitarianism, the communists were ideologically and politically committed to the notion of breaking what had been, throughout Chinese history, the elite classes' monopoly on culture, education, and opportunity (Plafker 2001). Education for the broad masses was the basis for China's policy-making. Differential treatment in terms of access, graduate job allocation, overseas training opportunities, and professional promotions were all based on family class status. Limits were set to stop those from the exploiting and nonlaboring class family background from receiving higher education and upward social mobility. Although the policy was officially terminated in the late 1970s, its legacy—different educational rights for different people—has lasted much longer.

Parallel with the expansion of working people's educational rights, professionals were badly needed for economic development and national defense. China's actual policy was to opt for elite education. National investment concentrated on higher education, whose recipients enjoyed tuition fee waiving, living stipends, and free medical care. The distribution of higher education institutions and the disciplinary structure were heavily imbalanced with particular emphases on major capital cities and science and technology subjects, linking directly to heavy industry and national defense. A number of institutions were selected by the government to invest focally and designated as key-point institutions. There was strict selection at every level within the system to secure the best quality students. The monopoly of educational resources by and the limited financial capacity of the central government determined the unfortunate combination of stress on higher education and weak rural education.

Since 1978, economic construction turned out to be the paramount policy goal of the Chinese government. Seeing education as the essential tool for modernization, its contribution to economic growth was prioritized in the educational policy agenda. "Education serves the economy" became a new principle of policy-making. The role of education in improving the nation's economic competitiveness in regional and global markets was a primary concern. Education became "an organic component and key content of the plans for economic and social development" (Rosen 1997, p. 259). Accordingly, the perception of education as a consumption item spread widely in the higher education sector and more broadly in the Chinese society, paving the way for the government to relinquish its once monopolistic responsibility for higher education. Priority in higher education policy has been shifted from equity to efficiency during the 1990s. Within this process, new winners and losers have been created, often with the former far outnumbered by the latter. The expansion of education beyond compulsory levels in China has aggravated inequality of higher education access especially for those in rural areas (Hannum and Xie 1998). China's higher education has once again become an institution of social stratification.

The transition from a centralized planned system to a market-oriented economy has significant implications for China's education policy. Chinese schools and universities, which once relied entirely on government funding and whose management was highly centralized by the state, have now been pushed by the government to change their governance paradigm to adopt a doctrine of monetarism characterized by freedom and markets replacing Keynesianism. Revitalizing the engagement in education of nonstate sectors, including the market, the community, the third sector, and civil society have all been promoted by the government (Meyer and Boyd 2001). Western concepts are frequently cited to legitimize China's strategy to adopt decentralization to make use of market forces in the educational arena. China attempts to encourage more nongovernmental factors (termed as "social forces" in China, such as religious groups, business, and foundations) to provide educational services. Meanwhile, due to social and financial benefits, the initiatives and enthusiasm of universities and local governments have been enhanced, and the scale of higher education has expanded rapidly within a relatively short period of time. By utilizing both market-based and regulatory interventions, China tries to get the right mix of state, market, and civil society. The government has been driven mainly by pragmatic considerations to make use of market forces and new initiatives from the nonstate sectors to mobilize more educational resources.

Such reforms have had a pronounced effect on the equity of educational expenditures. China's paltry educational spending (in proportion to its GDP) is distributed unevenly especially between rural and urban areas. Inequalities in educational opportunities are epitomized in the gap between enrolment and admission rates at various stages of schooling. The gap widens at higher levels of education (Yang 2006). On average the difference in educational opportunities between urban and rural areas was 5.8 times nationwide, with 8.8 and 3.4 times respectively in national and provincial universities. The disparities became more striking from 1994 to 1997 (Yang 2008). Similar to the situation in many other countries, there is an inverted pyramid shape of the disparities among different social strata in Chinese higher education: the more prestigious the institutions are, the lower the percentage of rural students. The chances for peasants to send their children even to mediocre Chinese higher education institutions in comparison to workers, civil servants, businesspeople, and professionals were remarkably lower. This becomes much more the case for the opportunities to send their children to national first-tier institutions. Rural children are 5.6 times less likely to be able to access higher education than their urban counterparts (Zhang and Liu 2005).

12.4 Major Stakeholders in Higher Education

12.4.1 The Government

With the implementation of a market economy, the Chinese government increasingly legitimizes its policy to withdraw from much of its previous financial commitments to higher education. Accordingly, the proportion of higher education funds

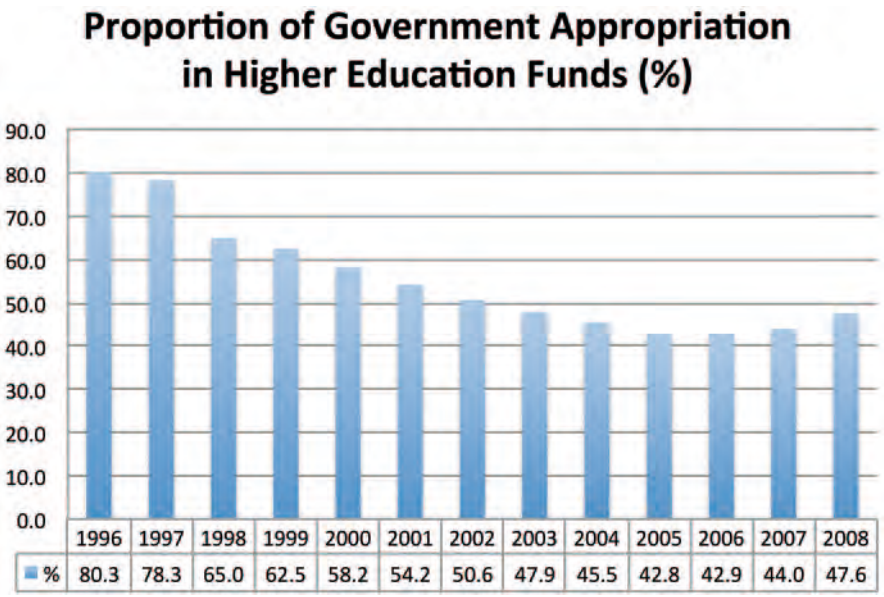

Fig. 12.1 Proportion of government appropriation in higher education funds (percentage). (Source: Dong and Wan 2012)

from government appropriations has been decreasing significantly and continuously while the proportion of tuition and fees has been increasing remarkably. By 2002, for instance, higher education funding from government only accounted slightly more than half, while 26.3% was tuition and fees. As shown in Fig. 12.1, the past one and a half decades have witnessed the proportion of government appropriation for higher education declining gradually to less than 50%, and the contribution of tuition and fees accounting to total higher education funding has increased substantially, reaching a peak of 33.7% in 2008.

During the past one and a half decades, China moved dramatically to mass higher education (Yang 2004). In 1978, China had 583 regular higher education institutions with an enrolment of 2.28 million students at all levels. These numbers changed to 2263 and 26.97 million respectively in 2008. China's gross higher education enrolment rate was 3.4 in 1990, 15% in 2002, and 23.2 in 2008. The numbers in higher education are now the highest in the world. This was achieved under circumstances of a continuing shortage of governmental commitment toward financing higher education. China's per student fiscal expenditure on higher education was 9567 RMB in 1996, dropping to 7436 RMB in 2008 (Wang and Jiang 2011). There has been a severe shortage of government funding in most of China's regular higher education institutions.[3] China's higher education budget only increased mildly during the 5

[3] It is important to point out that the Chinese government has selected a handful of institutions to invest focally. Typical examples are national initiatives such as Projects 211 and 985. The first is a constructive project of nearly 100 universities and disciplines in the twenty first century conducted by the government of China aiming at cultivating high-level talents for national economic

years from 2003 to 2007. At the same time, China's percentage of education expenditure to GDP has been notoriously low, even compared to the average of developing countries, with an average of 3% during 1998–2007 (Zhu and Zuo 2011). Therefore, simply from an economic perspective, one can conclude that the system has been efficient. However, as argued by Snodderly (2013), higher education is without doubt critical to nation building. The modern economy is closely linked to higher education, especially as it becomes more knowledge based. Higher education plays a significant role in building and maintaining a stable society and its good governance. Due to its unique educational and intellectual functions, it is also fundamental to carrying forward a country's cultural heritage and achieving scientific innovation. Such externalities are crucial for a nation (Marginson 2007; UNECSO 1998).

12.4.2 Students and Their Families

It is fair to acknowledge that students are the most direct beneficiaries of high education (Woodhall 2007). According to decades of research by Psacharopoulos (1973, 1985, 1994), the rate of returns to investment in higher education at the individual level are very high. This explains at least partially why the demand for higher education in China has remained so huge despite the relatively high tuition and fees. Since the implementation of the higher education cost sharing policy at the end of the 1980s, tuition and fees charged by China's higher education institutions grew 35 times, from 200 RMB in the 1989–1990 academic year to 7000 RMB in 2009. During the same period, average rural per capita net income increased 8.18 times from 630–5153 RMB, and urban per capita disposable income increased 12.38 times from 1387 to 17,174 RMB (Cui 2012).

As shown in Fig. 12.2, the percentage of higher education funding shared by students and their families increased substantially with an average of 24.4% from 1996 to 2003. In 2005, urban per capita disposable income reached 10,493 RMB and rural per capita net income was only 3254.9 RMB (Liu et al. 2009), while the average tuition fee was between 4000 and 6000 RMB per academic year and some popular programs charged over 10,000 RMB. By mid-2005, a rural couple's annual income was not enough to pay one college student's tuition fees (Teng and Zhang 2005).

Recent studies have repeatedly shown that tuition fees charged by China's higher education institutions have already been beyond the means of significant numbers of lower income families (see for example, Chung and Lu 2003). They affect rural families particularly severely, leading directly to the continuing decline of the proportion of rural students in higher education from around 30% in the 1980s to 19.2% by 2004, even though the then rural population accounted for 58.2% of China's total population (Wu 2004).

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and social development strategies starting from the mid-1990s. The second is another constructive project, to some extent based on the first, for founding world-class universities in the twenty first century by the Chinese government of China, reflecting a conscious strategy to concentrate resources on a handful of institutions with the greatest potential for success in the international academic marketplace. For those chosen ones, funding is a very different story. This policy has understandably caused much resentment among most institutions.

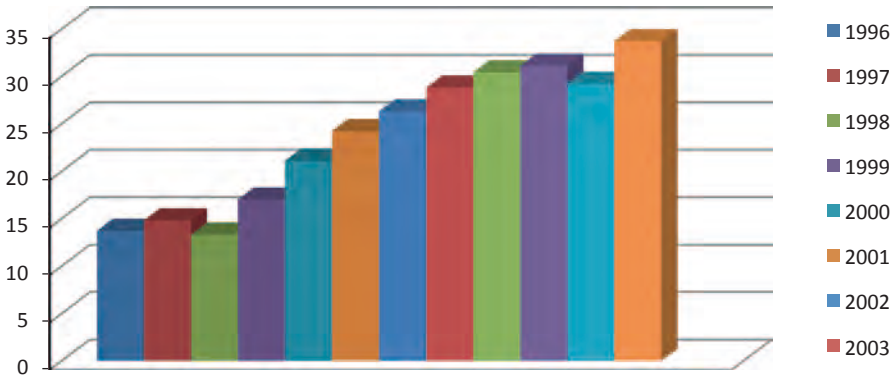

Fig. 12.2 Proportion of tuition and fees in higher education funds (percentage). (Source: Dong and Wan 2012)

Even for those already admitted in higher education, a major issue is what programs they are in. Students from low-income families have to consider tuition and fees as a significant factor in their choice of institutions and programs. They tend to choose agriculture, teacher education, forestry, and geology in less highly ranked higher institutions, while their counterparts from more wealthy, middle-class families tend to choose higher ranked institutions and are more likely to study foreign languages, arts, economics, law, and medical sciences (Chung and Lu 2003). As a result, students from low-income families are highly likely to be in lower paying jobs, and thus their rate of return from higher education would be lower (Dong and Wan 2012).

In order to help low-income families, the Chinese government has offered a variety of financial assistance programmes including loans (since 2001) and scholarships (since 2002). Such financial assistance often takes the forms of waivers of tuition and fees, fellowships, and scholarships for over 30 % of needy students (Chung and Lu 2003). As I have argued elsewhere (Li and Yang 2014), such programs are in great demand. However, scholarships are rare in number and thin in amount. They go to best academic performers only who tend to come from higher social classes and/or income groups. Similarly, both the number and amount of student loans are far from sufficient. For instance in 2008, enrolment in China's regular higher education institutions totaled 20.103 million. Among them, 4.74 million (23.57 %) were from low-income families. Only 670,000 were able to receive loans (Cui 2012).

Overall, China's higher education remains unfortunately in a "high-charging and low subsidizing" mode, with some signs of slow transition to a "higher-charging and higher-financial support" mode (Dong and Wan 2012). It is important to point out here that both governments and institutions have been trying to improve financial assistance. Yet, only government in wealthier regions can provide more resources and only well-resourced higher education institutions (which are usually found in more economically developed areas) have the means to finance such aid often via donations and research income. In both cases, students from low-income families are significantly disadvantaged (Li and Yang 2014).

Cost sharing is a double-edged sword. On the one hand, it has been facilitating China's move toward massification of higher education (Gibbons 1998), something well acclaimed with pushes from below and pulls from above. As a process, massification is historically significant in providing increasing number of students with access to education at an unprecedented level. On the other hand, cost sharing in higher education has substantially increased the financial burden of students and their families.

12.4.3 The Business Community (Enterprises)

As the ultimate beneficiary of a sound higher education system, society at large is expected to directly contribute to cost sharing strategies in higher education. This usually includes for-profit enterprises, higher education institutions themselves, and individual and organizational philanthropy and donations (Wang 2004). Among them, enterprises are a major yet underutilized force (Dong 2007). In the period 2001–2009, while the overall (absolute) value of society's contribution to higher education funding has increased, its share has dropped by 5% (Jin 2012). China's enterprises, which are a major beneficiary of higher education investment, have enjoyed a "free ride" for a long time throughout the reform era.

Although for-profit in nature, it is to the benefit of the business community (enterprises) to support an effective higher education system at least from a human capital perspective. Business productivity and competitiveness rely more and more on human resources and innovations as knowledge exchange increases between higher education institutions and enterprises, evidenced particularly by successful scientific parks across national boundaries (Dong 2007).

In the planned system, stakeholders in China's higher education included only government and students (and their families). Entirely financed and controlled by government, higher education produced professionals whose type and number were tightly projected by the government. Higher education institutions did not shoulder much responsibility for the fitness of their graduates for social and economic demands. Higher education was thus government business, with few linkages to industry, which in turn, had minimum interest in the operation of higher education. Such situation has long gone with decades of higher education reform (Yi and Yao 2007).

In marked contrast to students and their parents, the business community as a major beneficiary of higher education has only contributed to higher education indirectly via their business tax payments, rather than based on the graduates they have taken as employees. The business community has therefore only fulfilled its responsibility as tax payers. The unique interests they have benefited from higher education as a rare resource have been largely for free. A direct consequence of this has been the high consumption of university graduates by the business community. Business is often treated together with government as one stakeholder. This does not pave the way for a clear definition of the industry's responsibility for higher education. In terms of intake, higher education is not an entirely public good. On the other hand, higher education consumption is neither entirely privately based

on competition and exclusion, nor completely publicly based on noncompetitive, nonexclusive basis. Its costs should therefore be shared by various stakeholders.

China's higher education institutions were seen for a long time as an arm of the government. This has led to a very different role for the business world especially those for-profit enterprises, in the governance and operation of higher education institutions. Industry enjoyed free higher education services in the planned system. Today, both business and higher education institutions are separating themselves from the government. Simply fulfilling the role as taxpayers only reflects the business community's relations with the public. It does not show the unique benefits it receives through higher education especially in a knowledge economy.

Furthermore, China's current taxation policies help to create businesses that are the biggest beneficiary of higher education. China has low, even zero tax rates for certain businesses aimed at attracting foreign direct investment. The proportion of China's tax income to GDP has long been relatively low and even decreasing, weakening government's financial capacity to fund higher education. This has been a major reason for the increase of higher education costs by students and their families. Therefore, some Chinese researchers propose that industry should be treated as an independent stakeholder in cost sharing of higher education (see, for example, Dong 2007). There have also calls for the government to collect a tax or a subcharge that is placed upon graduates they recruit from higher education institutions (c.f., Yang and Gao 2009; Jin 2012), as, e.g., practiced in India (Tu 2010).

12.5 Conclusions

In terms of how costs have been shared in higher education since the communist Chinese government came into power more than 6 decades ago, two distinctive periods can be discerned. The first is the pre-reform period from the 1950s to the 1980s with full governmental funding. The second has been a transition to cost sharing between government, students and their families, and the general society. These periods or policy waves are based on strikingly different political ideologies and in markedly contrasting social and policy contexts. While the pre-reform period was ideological and failed to satisfy the Chinese people with its achievement in higher education equality, China's current cost sharing policy in higher education does not contribute to social and educational equality either. Indeed, between economic efficiency and social justice, they have not even identified the latter as a policy priority.

Theoretically speaking, contemporary China's higher education policy has demonstrated clear external (often Western) influence. Individuals are increasingly constituted as free social subjects who conduct their own economic activities for the benefit of themselves and as individuals who are also responsible for their own behaviors. However, such influence is not characterized by the predominance of Western powers. Traditional Chinese discourses and cultures have not been completely superseded by Western ones (Cheng and Xu 2011). Rather, in present-day China,

these two sets of discourses are intertwined. There is “no clear divide between the so-called Chinese and Western traditions” (Liu 2011, p. 599). Instead, the reality is usually interactions between the two. Western values and discourses are inevitably reinterpreted and adapted when they are introduced into the Chinese context (Cheng and Xu 2011). At the same time, indigenous Chinese traditions undergo transformation and reinvention when interacting with Western cultures (Tan 2011). Rejecting a binary conception of the West and China, this chapter has revealed the complexity of higher education policy in current China, which is the result of multiple forces that underpin the governing model of China’s higher education.

In China today, one-party rule is increasingly achieved through recourse to a rule of law and associated conceptions of citizenship, as well as through governmental interventions that seek to govern certain subjects from a distance, by relying on their individual choices, aspirations, or capacities (Jeffreys and Sigley 2009). Following the transition from a state-planned system to a socialist market economy, Chinese governance approaches have undergone considerable changes to form a hybrid socialist–neoliberal form of government that has emerged in contemporary China since the reform and opening-up policy in 1978 (Gornitzka and Maassen 2000). Authoritarian styles of government create docile laborers, while neoliberal styles of government constitute active and entrepreneurial citizens. In this way, both kinds of subjectivities are objects of the social market economy. Chinese forms of administration experienced profound changes. Direct government intervention was mixed with market mechanisms (Sigley 2006).

As pointed out by Gross and Godwin (2005), thinking expansively about stakeholders is easier said than done. The majority of Chinese university academics still prefers the old-fashioned ivory tower conception of higher education and would even rebel at the notion of the administration interfering with what goes on in their classrooms. Current heated debates over financial benefits from higher education should not be the reason for any neglect of the social aspect of higher education benefits at both individual and societal levels. Once the social dimension has been taken into consideration, it is truly difficult to judge who wins and who loses, especially within a relatively short period. It is however in the benefit of every member of a society to have a highly effective higher education system. China’s experience shows that changes in modes of governance create new winners and losers. Furthermore, today’s winners could also turn into tomorrow’s winners. The complexities of China’s case show that the theoretical basis of cost sharing policy imported mainly from the West is, over-simplified, short-sighted, and goes against the unique sociocultural realities of the country.

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Chapter 13
The Role of Stakeholders in the Transformation of the South African Higher Education System

Peliwe Lolwana

13.1 Introduction

The current government inherited a deeply divided higher education (HE) system internally, isolated internationally and far from being coherent and coordinated (Council on Higher Education 2004). The past legacy provided a stimulus for the energy that manifested itself before and after the onset of a democratic order in the country. So the sector has not only been wrestling with the shadows of apartheid, but its isolation from international developments meant that some of the institutions could not be assessed on whether or not they would meet the 'modernity' test when compared to institutions elsewhere. Whilst the literature shows that there is no single concept of what a 'modern' university is, there is a trend that has been consistently travelled by universities in many parts of the world (Trow 2007; Amaral et al. 2012; Garrod and Macfarlane 2009). This trend starts with the movement of HE institutions (HEIs) as elite institutions to a massified system and later to a system of universal access. In many countries this comes about due to the high demand of HE, especially by nontraditional students.

In the apartheid era (1948–1994), the South African HE sector could be classified as an elite form of HE as it remained small, accessible by mainly white students and hierarchical with a guild of professors being the most important role players. In 1996 for example the South African HE participation rates were as follows: Africans: 9 %; coloured: 10 %; Indians: 35 %; and whites: 61 % (Bunting and Cloete 2007). Further, HEIs could be classified as 'progressive' and 'nonprogressive' institutions. The progressives were those institutions that claimed a distance from the apartheid regime and were openly distasteful of the apartheid policies in HE, whilst

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_13

the nonprogressives were those institutions perceived to be supportive of apartheid policies. When the apartheid system was overthrown, there was a palpable energy in the sector for the reconstruction of HE. For a while both the new government and the stakeholders in the institutions worked together in this reconstruction. It was a very optimistic phase indeed. It was also at this stage that there was clarification both of who the stakeholders were inside the HE institutions and their roles.

The chapter seeks to explore the various roles played by HE stakeholders during the different phases in the transformation of HE in South Africa since the onset of the new democracy. These stakeholders can be divided into internal and external stakeholders as their role and impact on the system is different. The internal stakeholders include: the student councils; Institutional Forums (IFs), the councils which govern the institutions; the senates, which are the highest academic bodies in the institution; labour unions, for academics and workers; and the executive management. The strategic interests and roles of these stakeholders within the same institution vary. External stakeholders generally have regulating and financing roles to institutions, and these would include government, quality councils, industry, and civil and political groups. The role of both internal and external stakeholders can be the source of potential conflict in institutions.

In examining the role played by stakeholders in South African HE, the approach used here is that of a chronological account, starting with the apartheid era. After all it is Collingwood (1946) who said 'all knowledge is historical knowledge […] We study history in order to see more clearly the situation in which we are called upon to act' (p. 41). In this case then, the history of South African HE is very instructive to the current state of affairs. The first period analysed here is *predemocracy* including the colonial and apartheid eras. The next period is the one that I describe as the *reconstruction* era as it is during this period that all facets of South Africa were being reconstructed. This period was to be followed by a number of changes in the socioeconomic environment that, in turn, influenced the HE system.

In this chapter, I examine the role of HE stakeholders through the use of theoretical frameworks by scholars such as Gornitzika (1999) on organisational change in HE; Trow (2007) on the massification of HE; and Olsen (2005) on the institutional dynamics of European universities. I am, therefore, mindful that changes in South African HE are not unique as the system changes follow the trends proposed by other scholars of HE, and the tools provided by Gornitzka's (1999), Trow's (2007) and Olsen's (2005), writings will help us locate the role of stakeholders and the changes that ensued in South Africa, within the context of an evolving HE system.

13.2 A Brief Theoretical Backdrop

Gornitzka (1999) introduces us to the concept of resource dependency that impacts on HEIs when called upon to take action in response to governmental policies, for example, looking at internal versus external stakeholders. He further provides a framework for examining the internal dynamics in an institution, caused mainly

by the distribution of power, institutional values, identities and traditions. How institutions react also depends on the prevailing model of the state, reflecting the roles of both the state and that of HE.

On the other hand, Trow (2007) provides us with a blueprint on how HE systems have been evolving from elite to mass to universal systems. Whilst he traces the history of HE in the USA and Europe, he observes a global trend that has seen HEIs move from elite to massified and to universal access institutions. He points out that this growth trend is characterised by the democratisation of modern life, marked by the weakening of the elite hierarchies, values and prerogatives. Olsen (2005) classifies HEIs into four categories defined by their vision, namely the university as a meritocratic community of scholars; the university as an instrument for national political agendas; and the university as a service enterprise embedded in competitive markets. As I interrogate the role of stakeholders in South African HE, it is the university as a representative democracy that is of interest in this chapter.

13.3 The Historical Context for the Transformation of HE in South Africa: Late 1800s to Early 1990s

According to Subotzky (2003), South African HE was initially shaped by its colonial past and the underlying conflict between British and Afrikaner nationalism. Sobotzky provides an account of how the first universities, which were fashioned on the British colonial model, appeared in the late nineteenth century, in the form of the University of the Cape of Good Hope (COGH). This English-speaking university development did not sit well with the Afrikaans community, which was at the same time establishing its own republics within the country. They sought to establish links with Dutch universities in order to establish Afrikaans-speaking universities. After a number of failed attempts, the first university college of Stellenbosch, fostered by strong Afrikaner nationalism, finally took off after the First World War. These two institutions (COGH and Stellenbosch) set the country off in a trajectory of either English or Afrikaans-speaking institutions of HE, catering almost exclusively to the white population.

When the Nationalist Party, which was Afrikaner-dominated, came into power in 1948, another version of a dual social structure was introduced in HE. Institutions were now established for each race and ethnic group. The first of these institutions was the University of Fort Hare, which was established in 1915 for black[1] Africans. As apartheid progressed and introduced different forms of white domination on the African population, the institutional development of HE was also replicated to match the new developments. For example, when the apartheid regime established ‘independent homelands’ inside the country for the different ethnic groups, universities for these homelands were also established.

[1] The ‘black’ racial definition in South Africa refers to coloured, Indians and Africans.

The last phase of the grand plan of apartheid was to introduce an HE system for technical and vocational training of technicians who were going to work as an intermediate layer between artisans and engineers in the fast industrialising economy of the country that was benefiting from the mineral resource boom of the 1950s to the 1970s. Again in this type of institution, whilst being developed along racial lines, there were also distinct language and ethnic characteristics in each of these institutions. Although on the surface these institutions appeared to have a common culture fostered by the university administration, Reddy (2004) is of the opinion that below the surface, different institutional identities could still be observed along race, language and ethnic lines.

The objective of the apartheid rulers in the creation of the various HE institutions was to ensure and maintain a rigid social order and occupational structure where blacks were being prepared for a subordinate and geographically isolated role in society (Reddy 2004; Subotzky 2003). This can be confirmed by examining the geographical location of black institutions (which were subsequently termed 'bush' universities), the disparities in funding which favoured the white universities, and the course offerings available in the different institutions. Therefore, 'under apartheid, functional differentiation meant disadvantage and inequality.' (Subotzky 2002, p. 549).

Both the advantaged and disadvantaged institutions had distinct roles in producing and maintaining the divided social order and inequality inside the institutions and for society, but they were all still elite institutions. The historically disadvantaged institutions in particular operated under harsh conditions, preventing them from operating effectively as HE institutions. These institutions were overseen by an administrative leadership imposed by the apartheid government to ensure the success of its policies. So, by the end of apartheid, the HE landscape that was to be inherited by the new government was a highly variegated one with diverse institutional profiles and culture shaped by historical, political and structural conditions around their establishment. It was clear that there was no single system of HE, but the many systems that prevailed, with the white population enjoying a huge advantage in both HE and employment opportunities. Considering Gornitzka's (1999) four models of state control of HE, one could safely conclude that for the white institutions the state adopted degrees of 'institutional state models', with some unwritten conversations of state noninterference. On the other hand, for black institutions, the 'sovereign rationality-bounded model' prevailed, where tight control and strong emphasis on their accountability to political authorities was the custom.

The inherited inequalities in the HE system set the transformation agenda for the new government. It was easy to understand that this variegated and highly unequal HE system was undesirable going forward. A National Commission for Higher Education (NCHE) was the first body to be appointed by the new government to deliberate on the future direction of HE in the country. The Commission decided on the following central features to 'guide and direct the process of transformation':

- Increased participation in the system by a diverse range of constituencies
- Increased cooperation and more partnership between HE and other social actors and institutions

- Greater responsiveness to a wide range of social and economic needs (NCHE 1996, pp. 47–49)

These guiding principles set an expectation for the different stakeholders to participate in shaping the future HE system.

13.4 The Reconstruction of Stakeholders in the HE System: Early 1990s to Early 2000s

Moja and Cloete (1996) characterised the HE system inherited by the new government in 1994 as a 'state interference' model. All the different variegates of the system were in one way or another experiencing some state interference. Historically advantaged institutions had some form of autonomy, but were dictated to on what they could and could not teach, whilst historically disadvantaged institutions experienced the full force of the 'apartheid vision' regarding separate development. The discussions that prevailed within and outside the HE system were about the model(s) that the new South African HE system was going to take. Moja and Cloete (1996) observe that this debate can be traced to the three seemingly incompatible positions that Africa has had always about the role of HE in the continent. One position is that of the autonomy of the HE institutions with no interference from the state. The second position is that of a HE system whose purpose is to service the socioeconomic development needs of society. The third position is that of making the goal of HE highly participative by a large segment of the population as a basis for restructuring social relations or redress. In the South African context, the participative model won the day as issues of equity and redress were prominent at the time and moving towards Olsen's (2005) representative democracy. Therefore, the main stakeholders that were going to steer the reconstruction of HE from the ravages of the apartheid were composed of the state, the Council on Higher Education and a restructured institutional governance system.

The reconstruction of HE in South Africa must also be understood within the overarching socioeconomic framework that was developed during the period 1994–1999. The Reconstruction and Development Programme (RDP) was seen as the blueprint for steering the country away from apartheid. It was a product of wide consultation and debate by a range of stakeholders including civil society. Two years after the establishment of the new government, the Growth Employment and Redistribution (GEAR) programme was introduced as a 'substitute' for the RDP programme. GEAR introduced significant shifts in the economic policies as well as state–civil society relations (Weeks 1999). First, unlike the RDP programme that was a result of participation by a very wide range of stakeholders, GEAR was crafted by a small group of international consultants and the emerging government technocrats. Secondly, GEAR also changed the policy content and emphasised efficiency and effectiveness in government and public institutions. This process signalled a very important shift for HE on the priorities of the new government. The

adoption, in 1996, of the GEAR policy to replace the RDP changed the direction of the country in many ways, and HE was visibly redirected. Unlike the RDP, GEAR put a cap on spending and this meant that no significant amount of new funding would be available for the education sector. Trow (2007) has also observed the same trend in the massification of European HE system where the growth of student numbers takes place often without a parallel increase in state support.

Jansen (2001, 2002) describes the period that followed immediately after the new government took over as that of 'policy symbolism'. Here he contends that the broad consensus that was derived through the initial policies was that of symbolism about where the new government stands on matters that were concerning the nation in all educational spheres. In fact Jansen (2001, p. 50) goes as far as to argue that, 'politicians do not always invent policy in order to change practice.' It is political symbolism and often represents a search for legitimacy[2]. Pinheiro et al. (2012) also acknowledge that compliance with stakeholder demands and expectations is essential for leveraging external legitimacy.

The first example of a new policy that started the move away from the policies created by broad consensus was the 'size and shape' policy proposal that sought to undo the geopolitical imagination of the apartheid era. The significance of this policy is that for the first time, the Minister of Education relied on his new statutory body that had advisory powers, the CHE, to develop proposals about reforming South African HE, thus abandoning the usual consultative processes. The consultative process followed later on. Secondly, this was a policy that was beginning to speak about issues of efficiency that the government as a whole was concerned about, and not only redress issues. However, the representative democracy that was emerging inside institutions was concerned primarily about redress and equity issues. Thirdly, the government was beginning to centralise the function of policy development, and the role of stakeholders in this process was put into question. Fourthly, it was clear that the actions that would emanate from the policies of the 'size and shape' policy were posing a serious threat to the previously disadvantaged institutions and more so, the transformation agenda towards massification and representative democracy.

In the midst of all these changes, it is important to take note of the fault lines that began to appear with respect to the stakeholder roles inside the institutions themselves. The new HE policy required that IFs be established in HE institutions (Department of Education 2007). The IFs are uniquely South African, and were established to ensure the participation of civil society in HE transformation (Griffin 2012). Griffin further notes the various and contradicting findings on the IFs' roles and effectiveness. On the one hand, those who found them to be ineffective attributed this to the prevailing confusion about their accountability. On the other hand, there were groups that had a view that IFs were wielding an appropriate influence in certain instances. This was happening at a time when councils and senates in institutions were being successfully democratised. So, the much anticipated role of IFs as outlined in policy declarations of the HE system was being rendered redundant, and

[2] Jansen's contention, therefore, is that the reconstruction policies developed were not necessarily meant for implementation, but to legitimise the new government.

their role was put into question as other parts of the institutions transformed. Griffin (2012) is of the opinion that IFs were increasingly becoming redundant because the councils themselves had already diversified their membership as part of the internal democratisation process. The role of the councils has not only been changing but has been gaining internal prominence as the highest decision making authority in HEIs.

In this instance, whilst the IFs were weakening, managerialism was strengthening. In other words, there is evidence that professional management and output-based performance began to emerge as institutions were struggling to respond to external demands resulting from policy shifts in both the whole education system as well as in the macroeconomic policies (Muller et al. 2004). This would out-rule, if not marginalise, a cooperative system of governance based on democratic principles of decision-making. The change experienced during this period can best be described in terms of the resource dependency theory espoused by Gornitzka (1999). Accordingly, dynamics in a resource-dependent relationship are not simple and can be characterised by an active and volatile response from the resource owner and the resource dependant. When South African HEIs were faced with the reduction in the number of institutions through the size and shape policy, internal stakeholders were forced to suspend the agenda of the further development of a representative democracy and fight for the survival of their institutions. This temporarily disrupted the momentum inside the institutions in pushing the agenda for access and equity. Some would say that this weakened the various internal stakeholder groupings (Griffiths 2012) and also paved the way to a new form of leadership in HEIs which was not co-operative.

13.5 Managerialism and Disengagement: Early 2000s to Present

At the onset of the new democracy there was an unwritten pact between government, institutions and society that transformation was to be taken forward in a context of a cooperative and participative governance system. As the government pushed for growth and efficiency in its macroeconomy policy[3], the rhetoric of stakeholder participation in the transformation project was increasingly taken over by managerial power in the institutions, and was beginning to mimic private business management practices (Muller et al. 2004). However, in the historical past of these institutions one could trace the ‘path dependency’ in the role that they would play in response to the changes that were demanded by the shape and size policy. For example, it is reported that the Afrikaans-speaking institutions, which had a history of highly centralised and autocratic management practices, responded favourably and quickly to the new managerial tendencies and got on with the business of transformation in a shorter period of time. This is often contrasted with the English-speaking

[3] For example, the GEAR policy.

institutions which had strong collegial traditions and university management was characterised by more participative decision-making processes. The latter institutions, with a few exceptions, found it more difficult to usher in radical changes from the centre (Kulati 2000; Pinheiro 2012).

On the other hand, the immediate results in the historically disadvantaged institutions for the black majority were mixed. Some had developed emotional attachments to these institutions and viewed them as institutions of black pride in the future, whilst some continued to be reluctant to foster a geopolitical plan imagined by apartheid planners. But, it was clear that, irrespective of sentiments displayed in this group of institutions, the bottom line was that they constituted a very low base in terms of all kinds of resources to respond to a changing environment (Muller et al. 2004).

In the universities themselves, the rise of managerialism was also met with contestation by other internal stakeholders such as academics, students and unions, irrespective of the history of the institutions. Trow (2000) also notes the effects of changes fostered on HEIs have on academics in particular:

> It is not a matter of administrators seizing power from academics, rather the size and complexity of universities, the variety of specialised problems that confront them, and above all the speed of change, together increase the necessity for central administration to act decisively and rapidly. (p. 3)

The role of internal transformation was now delegated to the vice chancellors and the senior executive managers. The new internal organs such as the IFs, councils and senates would often feel excluded. Although it cannot be said that the extent of this problem was universal and felt to the same degree by all institutions, it became clear that who the vice chancellor was made a considerable difference to the direction that the university would take as this was the individual who was seen to be steering the ship, rather than the collective. This confirms Gornitzka's (1999) postulation about the importance of leadership and how internal power distributed in HEIs is the important factor in determining how an institution will respond to change in the face of governmental pressure.

The institutions with a history of centralised administration, mainly Afrikaans-speaking universities, reformed quickly to meet the new requirements. The academically strong universities, mainly the English-speaking ones, relied on their academic strength and continued 'business as usual', and the weaker institutions that were predominantly serving black students were unable to regroup quickly and respond to the requirements of transformation and innovation that were looming (Kulati 2000; Muller et al. 2004).

13.6 Effects of Earlier Policies on the Role of Stakeholders: Mid 2000s to the Present

NCHE proposals were intended to move the system from an elite to a mass-based system, in the same vein as articulated by Trow (2007), and increased participation was a logical goal that had to be attended to with urgency. It was clear that if the matter of fewer students, mainly white students, who participated in HE was not addressed, the HE system not only was not sustainable but also would not be able to play a meaningful role in the new South African society. The role of stakeholders in galvanising around this objective was made easier because increasing participation and success in schools was already taking place, and thus the qualifying numbers of students were on the increase already (2003 to the present). But institutional stakeholders, especially students, were much better organised to put pressure on institutions regarding admissions, exclusions and throughputs, especially in previously advantaged institutions. The government expanded the National Student Financial Aid Scheme (NSFAS) to support students who qualify to study in HE but are financially disadvantaged. For example the NSFAS grew from R2, 2 million in 1991 to R3, 12 billion in 2009 and to R5, 8 billion in 2013/2014, and assisted 1.4 million students over the 22-year period (National Student Financial Aid Scheme of South Africa 2013). The expectations created by the new policy environment, the demands made by students and the financial support made available by government contributed greatly in changing the racial composition of institutions that historically had been the preserve of white students. Participation rates also increased over a period of time as shown below (Fig. 13.1).

The racial composition of students in universities has also changed significantly. For example, Fig. 13.2 illustrates the shifts in participation from 1986 to 2004 in South African universities (Figs. 13.2 and 13.3).

There has been a further 12% growth in the university enrolments from 837,779 in 2009 to 9,382,000 in 2011, confirming an HE system that is massifying (Department of Higher Education and Training 2013), and also confirming some of the characteristics described by Trow (2000) of a massifying HE system, namely the diversity of the forms of students with respect to social class, age and ethnicity. However, the South African HE system still does not have the other important characteristics identified by Trow for a massifying to a universalising system such as a diversity of forms of HE beyond universities, a large proportion of older part-time employed students, a substantial component of vocational/professional education, and credit accumulation and transfer. Although there is growth in numbers, the nature of the HE system is still elitist, with the majority of students representing a younger cohort (18–24), and all institutions aspiring to be research-intensive. This poses limitations for any further radical growth in the system.

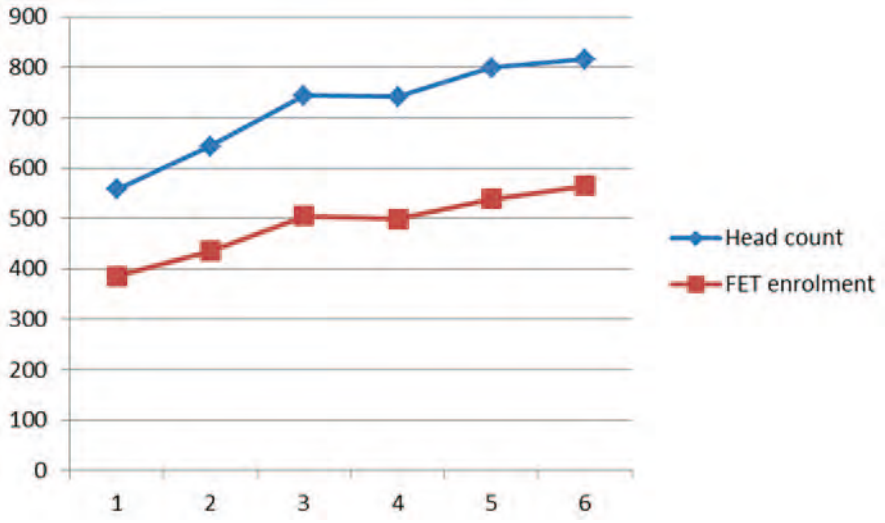
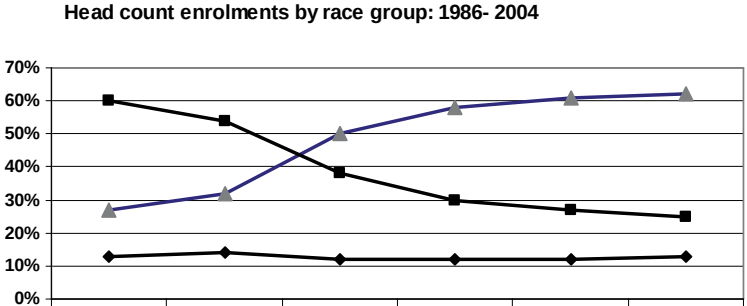


Fig. 13.1 Higher education enrolment rates in South Africa (2000–2008). (Source: Bunting et al. 2008)

Key:

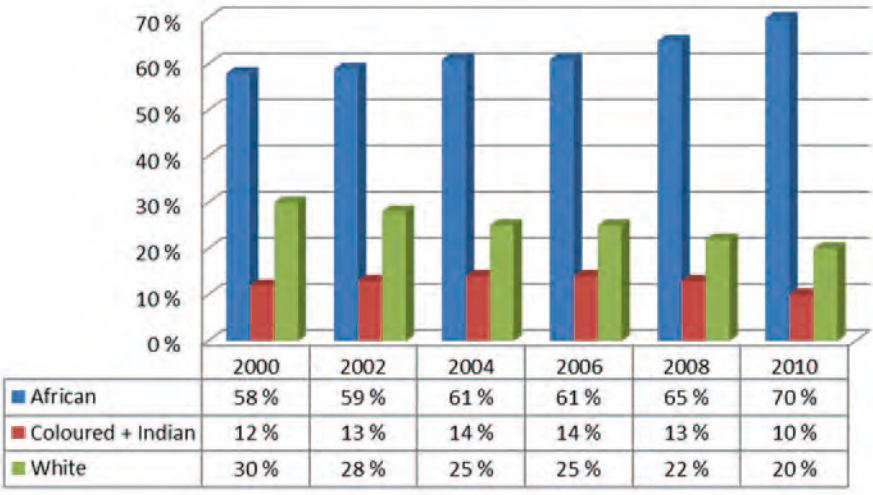
1	2000	Actual
2	2002	Actual
3	2004	Actual
4	2006	Actual
5	2008	Actual
6	2010	Approved target

Source: Bunting et.al. (2008)



	1986	1990	1994	1998	2002	2005
African	27%	32%	50%	58%	61%	62%
Coloured & Indian	13%	14%	12%	12%	12%	13%
White	60%	54%	38%	30%	27%	25%

Fig. 13.2 Race classification of head count in South African higher education (1986–2004). (Source: Bunting and Cloete 2007)



	2000	2002	2004	2006	2008	2010
African	58 %	59 %	61 %	61 %	65 %	70 %
Coloured + Indian	12 %	13 %	14 %	14 %	13 %	10 %
White	30 %	28 %	25 %	25 %	22 %	20 %

Fig. 13.3 Race classification of head count in South African higher education (2000–2010). (Source: Bunting et al. 2008)

13.7 The Role of Stakeholders in the Further Expansion of the System

Nineteen years after the democratic government took over, policy drivers from the state point strongly to the need to accelerate the massification of HE. The Green Paper for Post-School Education and Training, which was published in April 2012 for comments, is now being translated into government policy. The Green Paper emphasises the need to expand the postschool system within a diversified and differentiated system:

> The post-school system aims to contribute appreciably to overcoming the structural challenges facing our society. One of the greatest of these is the large number of young people who appear to face a bleak future if major changes are not introduced…. One of the first challenges for the post-school system is therefore to expand access to education and training over the next twenty years…. By 2030, South Africa ought to have a post-school system that provides a range of accessible alternatives for young people. (Department of Higher Education and Training 2012, pp. 4–5)

Although the expanded system includes non-HE institutions, there is an explicit expectation that the HE system will also expand significantly.

> The aim is to raise the participation rate in universities to 23% by 2030 from the current 16%. This expansion will be relatively modest as attention goes towards increasing throughputs as well as towards a large expansion of alternative study opportunities through the college system and other post-school opportunities. (Department of Higher Education and Training 2012, p. 37)

Clearly, the government expects a growth of a differentiated system which promotes diversification. According to van Vught (2008), such a system would improve

access for students with different educational backgrounds; enable social mobility; meet the needs of the labour market; meet the needs of various interest groups; permit the combination of the elite and mass HE; and increase the effectiveness of institutions. This would be a perfect solution to the needs and expectations of the South African society of its HE system.

Although further growth is inevitable, there is a new role for the stakeholders to push the HEIs further on the growth trajectory. The question is: which stakeholders will they be and what role will the current internal and external stakeholders play in this new capacity. Gornitzka (1999) suggests two theoretical perspectives to be used in understanding changes in organisations, namely *resource dependency and neoinstitutional perspectives.* Resource dependency speaks about the choices institutions make when faced with a need to change, which are influenced by the vital resources controlled by the external stakeholder. In the instance of changing the shape and size of the entire South African HE system, we saw how the internal stakeholders came together to fight for the survival of their own institutions because the pressure of resource dependency was high. On the other hand, the neoinstitutional perspective emphasises the value of institutional norms and environments.

> Well-developed institutions with stable values, interests, perceptions and resources exhibit inertia or friction when faced with efforts to reform. (Gornitzka 1999, pp. 9–10)

At the present moment, the HEIs can be described as responding to this new pressure to massify by adopting the various behaviours identified by Maassen (2000) on how institutions deal with this external pressure to expand. Some institutions can be said to be acquiescing; some avoiding the pressure; whilst some can be said to be in defiance as they stick to their positions of being research-intensive and elite HE systems. The problem at the moment is not just about increasing access of African students to the HE system; it is about a small and elite system.

> How can South Africa have a system where the majority of the students are African, but whites and Indians have participation rates of more than 50 %. The problem is that within a relatively small elite system, almost all students can be African, and participation rate will still be under 20 %. The only way to increase significantly the access of Africans to higher education is to increase participation in post-school colleges and possibly the stimulation, rather than restriction, of private higher education. (Bunting and Cloete 2007, p. 31).

In the face of expectations for the massification of the HE system, the HEIs have seemingly retreated to a neoinstitutional perspective, where the expectation to expand is externalised to the nonuniversity type of institutions with very little involvement from the universities. Resource limitations, values and purpose of universities are often cited as reasons why massification would not work, thus shielding the core functions from the pressures of change (Maassen et al. 2012).

What the South African HEIs are called upon to do in the twenty-first century could be considered to be foreign to the norms and environment of a HE system that is elite. Internal stakeholders are not likely to drive the process of massification, and it is going to be the government as an external stakeholder which will have to steer the HE sector towards increased massification and eventually to universalisation of HE in South Africa. After all, government is still a resource owner and HEIs

are still resource-dependent. But current institutions are limited in their capacity to expand, and institutional diversification might be the policy needed at this point to expand the system. Civil society outside of HEIs might have to step in. Industry has traditionally played a limited role as a stakeholder in the South African HE system (Kruss 2006). In order to increase the vocational and professional content of HEIs, there is a need for this stakeholder to step up and play a meaningful role in shaping the HE system towards a service enterprise model, closer to the needs of the labour market as described by Olsen (2005).

All this points to the fact that the representative democracy is limited as the only tool to propel the South African HE system to further growth. All organisational visions proposed by Olsen (2005) for an HE system are now needed and should all feature in the HE system. These organisational visions are described by Olsen as being: the university as a community of scholars; as an instrument for national agendas; as a representative democracy; and as a service enterprise embedded in competitive markets. When all these organising ideas are incorporated in the South African HE system, the system will expand, the nature of stakeholders will expand and so their role will also expand.

13.8 Concluding Remarks

In this chapter, I have described the context of policy developments in the HE system and located the role of the different stakeholders in this process. First, there was a government that had to change track soon after its installation with respect to the stated values that were prescribed right at the onset of the new democratic order. The participatory and cooperative governance trend that was emerging impacted strongly on a number of transformation projects, including the transformation of HE. In other words, there was a deep conviction that the transformation of HE requires joint collaboration and participation in the realm of governance. The participatory or corporate-pluralistic model (Gornitzka 1999) referred to at the onset somewhat mirrored the developmental trajectory of the country as a whole, where different groups were called upon to give input in the reconstruction of a new society. So, the expectation of an active role of stakeholders in HE was not unrealistic.

However, it became evident that HE is clearly part of a larger social system and, as a result, is directly affected by changing external circumstances in the macroeconomic sphere. When the government suddenly emphasised efficiency and effectiveness instead of equity and redress, HEIs were forced to change track midway, and managerialism crept in. Managerialism is not something that is done through stakeholder participation. Trow (2000) has also observed that academic committees, although desirable for the legitimacy of the decisions taken, are often not the most appropriate structures for making speedy decisions. Institutions adopted new forms of managing and responding to new demands. This change resulted in some ‘disengagement’ by some of the institutional stakeholders and their role was put into question. As the state developed its capacity to govern, and a stronger

steering of the system emerged, the state–HE relationship also changed. The institutions began to be the critics of the state and the latter was not shy to intervene directly in the affairs of institutions that were poorly performing.

South African HE has now entered a different stage in its development. The need to massify the HE system is still a national question, no doubt, but the rules of engagement have changed; with HE following the worldwide trend of wanting to become a 'modern' system (Amaral et al. 2012; Garrod and MacFarlane 2009). Issues that have come to the fore almost a decade after the first transformation efforts include differentiation and responsiveness. The question to be asked is whether the stakeholders defined during the reconstruction phase are the right stakeholders to address these issues. They probably are not. Then, we have to ask if the managerialism that was evident in the second phase of the transformation project is the best model to use in dealing with these new issues. Again the answer must be in the negative. I would argue that there is a need for existing stakeholders to take a stronger role when it comes to tackling the challenge of differentiation in order to meet the equity and expansion goals. These new players include academia, industry and civil society, whose role in stakeholder participation has been subsumed under the political rubric of institutions. This new challenge is neither political nor managerial, but it goes to the core of HE. van Vught (2008) has provided us with a convincing argument that problems faced by South African society with respect to its HE system will best be met by a diverse and differentiated system.

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Part IV
Government Policy

Chapter 14
Higher Education Policies in Brazil: A Case of Failure in Market Regulation

Maria H. de Magalhães Castro

14.1 Introduction

Higher education policies in Brazil have been primarily concerned with expanding participation and controlling a huge private sector. As seen in previous chapters, private higher education constitutes a very significant component of Brazilian higher education. In 2011, 89 % of the 2365 higher education institutions were private and 73.6 % of the students were in private institutions. Most of these institutions are for profit and increasingly controlled by large business groups. In 2011, the size of the ten largest providers ranged from 50,000 to 450,000 students. In 2013 two large providers merged and now enroll about 1 million students[1], probably the largest private, for profit teaching institution in the world.

Nonetheless, the leading position in terms of national and international prominence belongs to the full-fledged graduate education and research segments concentrated in a few universities, mostly public, which graduate more than 10,000 PhDs a year. According to Carnegie Foundation criteria, 23 Brazilian universities (1 % of the total) qualify as research universities, offering 15 or more doctoral programs and graduating a minimum of 50 doctors per year (Sécca and Leal 2009).

The expansion of higher education has been a shared goal for both the government and the private sector since the 1970s. However, net coverage is still below 15 % of the 18–24–year-old age group, while the target set in 2000 was to attain a 30 % participation rate by 2010. Three factors account for most of this difficulty: the poor quality of primary and secondary education, which limits the stock of qualified candidates for higher education; the high cost of public universities, which are free

[1] In tertiary and lower level schools.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_14

for students but limited by budgetary constraints; and income concentration, which hinders the demand for private higher education.

Besides expansion, higher education policies have been consistently driven to keep the private sector under strict control. But they have failed in this realm. Since the 1996 Education Law, such control has been sought through a variety of quality assurance mechanisms whose implementation led to the deterioration of the private institutions' relationships with the federal government and to a process of merging and acquisitions that led to the high concentration of the private sector today.

This chapter deals, thus, with a case of failure in regulating a relatively small higher education system, one which is embedded in a still undereducated and unequal society. The first section presents the current regulatory framework and the two subsequent sections deal with the post-1996 developments by contrasting the different orientations that shaped the higher education sector with regard to expansion and market regulation, which also entails quality assurance policies. Section 2 deals with the 1995–2003 period under President Fernando Henrique Cardoso, which witnessed major efforts to couple expansion with the establishment of a quality-driven environment. Section 3 deals with the current Worker's Party administrations and its continuous efforts to tighten the control over the private sector as well as to expand access, including, to the public sector and to students from lower socioeconomic groups.

14.2 The Legal Framework: A Complex World of Public and Private, National and State, Autonomous, and Nonautonomous Institutions

Brazil is a federation of 27 states. Higher education can be provided by the federal and state governments, and also by private providers, for profit or not for profit. Higher Education institutions can be organized as *universities* and *university centers*, *independent faculties*, or *associations of faculties*. Most institutions provide professional degree programs, which are legally equivalent regardless of the type of institution, or of the teaching system (in person, or distance education). There is no undergraduate, college-type education, and postsecondary, vocational education is very limited. More recently, the federal government created a network of Federal Institutes that combine existing and new higher education, postsecondary vocational, and secondary vocational and regular courses and degrees.

By law, all public institutions are free from tuition and private institutions are forbidden to receive public money. Therefore, they charge full prices. Access is provided through selection procedures established by each institution and, increasingly, in public institutions, according to the results of a national exam for secondary education promoted by the federal government, called Exame Nacional do Ensino Medio (ENEM).

Education policies at the national level are managed by the Ministry of Education and the National Council of Education, which establish general guidelines and

Table 14.1 Enrolment in Brazil by type of institution and jurisdiction (2010).(Source: Ministry of Education)

	Total	Universities (1)	University centers (2)	Colleges	Federal institutes
Total Brazil	5,449,120	2,809,974	741,631	1,828,943	68,572
Private (a)	3,987,424	1,537,003	727,465	1,722,956	–
Public	1,461,696	1,272,971	14,166	105,987	68,572
Federal (b)	833,934	763,891	–	1471	68,572
State (c)	524,698	471,269	1199	52,230	–
Municipal (d)	103,064	37,811	12,967	52,286	–
Federal jurisdiction (a + b)	4,821,358	88.48 %	–	–	–
State jurisdiction (c + d)	627,762	11.52 %	–	–	–
Autonomous higher education institutions (1 + 2)	3,551,605	65.18 %	–	–	–

The University Centers were created in 1997 as non-research universities. They are autonomous institutions and provide undergraduate and graduate education (masters programs).

oversee the federal and private institutions. Most states have their own public universities that are under the state governments and state councils of education, which also oversee a few municipal institutions. There is some overlap of attributions and conflicting interpretations of the authority of federal and state governments over the universities, which are considered autonomous by the Brazilian constitution. Also, most municipal institutions are being reclassified as "private" because they charge tuition and are pressed to migrate from the state systems to the federal jurisdiction. Table 14.1 shows the distribution of federal and state jurisdictions as well as of autonomous institutions—which encompass the universities and, since 1997, the "university centers." "Autonomy" refers to the entitlement to create or close down courses, branches, or campuses, as well as to determine the number of students to be admitted.

The federal government has nominal authority over 89 % of the institutions, but this authority is limited by the autonomy granted by legislation to universities and university centers. It also has to deal with a large variety stakeholders that are active in barring or promoting legislation and specific policies. Thus, the Education Commissions in both Houses of Congress have been able to bar legislation and have had variable leverage over the initiation and negotiation of laws. Lobbies of the private sector, the unions, professional councils and corporations in the scientific community, among others, have postponed and altered the main bills since 1996. The professional corporations in law and medicine have attained legal participation in policy making over the creation and reaccreditation of programs in these areas. And, since federal universities were established by law, are autonomous and part of the civil service, they are mostly immune to eventual sanctions regarding their performance. The legal landscape today was settled by two landmark legislations: the 1968 University Reform and the 1996 Education Law.

14.2.1 The 1968 University Reform's Paradigm of a Public Research University (Ideal) System

Until 1968, Brazilian higher education institutions, universities and others, consisted of sets of schools or faculties providing professional degrees along the traditions of Continental Europe. The University Reform Act introduced several features of American higher education, including the credit system, the departmental structure, graduate schools, and research. It also established full-time (and tenured) employment for professors in public universities, with salaries paid by the national and state governments, and research grants, laboratory materials, equipment, and infrastructure granted by science and technology (S&T) agencies (federal and state). In 1985 the federal S&T agencies were brought together under a Ministry of Science and Technology, which added "Innovation" to its name in recent years. This created a parallel channel of investments and policies targeted to the scientific community whose vast majority worked, and still does, in the research universities. More importantly, it stressed the values of competitive, merit-based funding systems, including a regular peer review evaluation system of graduate programs conducted by the Coordination for the Improvement of Higher Education Personnel (CAPES) an agency linked to the Ministry of Education (MEC), since the mid-1970s.

The assumption of the 1968 legislation was that all higher education institutions, public and private, would abide by this new format, with a strong emphasis on research. In practice, only public institutions, and a few among them, benefited from these resources. These universities are the main basis of the achievements of the Brazilian S&T in fields such as deep sea drilling, aircraft, agricultural research, and biotechnology, in partnership with public and private companies such as Petrobrás, Embrapa, and Embraer.

The 1968 University Reform represented a strategic choice with important consequences, namely:

- It assured the country a small but very relevant group of world class research universities. Almost all private institutions, as well as most of public institutions outside Brazil's more developed Southeast-South region, never received research funding resources, and did not have the conditions to compete for them.
- It heightened significantly both the *costs* of the public sector (with full-time professors, research and graduate schools, and scholarships for graduate studies abroad), and *competitiveness* for access to these higher education institutions (free of charge and with the best quality). Such dynamics created significant *equity issues* because only the best-prepared and well-off applicants were admitted to them.
- It left to the private sector the role of absorbing the remaining demand for higher education. These institutions had to compete for low-income students and invested mostly in low cost evening courses in the social professions.
- It established a two-tier regulatory environment by depriving the private sector from access to the array of programs that were crucial for the development of a research and graduate school system.

- Finally, the Reform caused a cleavage inside the research university institutions between the scientific community's competitive and merit-based ethos and the Ministry of Education's bureaucracy and the "lower clergy" of teaching staff with little or no participation in graduate and research work.

The complexities of these consequences were not fully acknowledged because the university research institutions became the idealized standard for all higher education institutions. Almost 30 years later, the 1996 Law embraced the research-university "paradigm" as the standard used to assess all institutions and courses, creating tensions that are still far from being solved. This tension affects the public institutions that cannot develop graduate education and research, and, much more strongly, the private sector, which is often considered a temporary, unavoidable evil, guilty of bringing market interests and concerns to the field of education—an intriguing feature considering the long lasting presence of private higher education in the country. The 1996 Education Law was built upon the 1968 Reform and was released by the Cardoso government, as presented below.

14.3 The 1995–2002 Years: Private Growth and Quality Control

Cardoso's government tried to improve quality *and* push expansion by creating a quality-driven environment while, at the same time, reducing the bureaucratic controls that kept the private sector from developing.

14.3.1 The Construction of a Quality-Driven Environment

By releasing the new Education Law in 1996, this government instituted periodical reaccreditation of all institutions and undergraduate programs every 5 years. Besides, it linked expanded autonomy for private institutions to new requirements: they had to qualify as universities and, for that, they had to provide graduate education and develop scientific research within the standards set by CAPES, and to establish a career path for its academic staff. Besides, at least a third of the teaching staff needed to hold a master's degree (or higher) and at least a third had to be in full time contracts.

Other key initiatives enacted to promote quality were the creation in 1996 of "Provão" exam: a compulsory national examination designed for each undergraduate program, to be to be taken by all students in the last year of study in every institution giving that program (Schwartzman 2010). A few months later, a sizeable bonus began to be granted to professors of the public federal sector according to their undergraduate teaching loads. The "Provão" exam was strongly opposed at the beginning, but in a few years it became a powerful instrument to promote teaching quality because it influenced the market: private programs with higher scores used them as publicity to attract students (Durham 2005, p. 227)

A third important quality assurance mechanism was the peer review committees set up by the Ministry of Education and sent to the higher education institutions for different purposes: to accredit or reaccredit institutions and undergraduate programs, as well as to authorize and, after the three first years of functioning, to recognize new undergraduate programs. The assumption was that these committees would interact with the academic staff in the institutions to help them improve the quality of their programs. However, an unfortunate combination of excessive formalism, on the one hand, and occurrences of corruption, on the other hand, aborted this experience of interaction between professors from the public and private sectors. These visits became mostly a rigid bureaucratic inspection procedure of questionable value.

Finally, the provision of more and better public information on higher education completed the policies to create a quality-driven environment. Rankings of Provão's scores began to be published in newspapers, the many higher education databases were integrated, and the annual census was updated to an online and audited platform. Assistance to help the higher education institutions to use the information produced was also provided. Regional meetings with the chairpersons in charge of the programs evaluated by the Provão were held for each career, every year.

Behind these accomplishments was the stability of this administration's team at the Ministry of Education. Since its creation in 1931, only 3 out of 56 ministers of education stayed in office for a full term. Cardoso had the same minister for the whole 8 years (two terms) period and a very steady technical team with him. Under this administration, the National Institute for Educational Studies and Research (INEP) became the "development agency" for education congregating expertise in data collection, statistics, and an array of evaluation instruments, methods, and logistics.

14.3.2 Pushing Expansion

The new standards imposed on universities proved to be too high and costly for most private institutions, neutralizing the incentive it was supposed to create for expansion. In 1997 this threshold was lowered by the creation of "university centers" (Centros Universitários) that were released from research requirements but expected to excel in teaching. Furthermore, a "professional" master's degree format was introduced as an alternative to the academic graduate programs, which could only be conducted by PhD holders. These programs could work with part-time lecturers, thus reducing the costs for private institutions. These new MA programs were placed under CAPES jurisdiction, unlike the MBAs and other *lato sensu* postgraduate programs, which remained unregulated.

Also in 1997, a new law was released allowing private higher education institutions to declare themselves "for-profit." Since then, nonprofit institutions, eligible for tax breaks, had to prove their philanthropic nature and new kinds of entrepreneurs were attracted to the for-profit sector. With expanded academic autonomy and legal permission to seek profits, the Brazilian private higher education sector boomed.

Table 14.2 Gross revenues of selected companies and sectors (2002, in R$ million). (Source: Stock Exchange of São Paulo (from Nunes and Carvalho 2004))

Petrobrás (oil and gas)	99,164,118
Telecom companies (total)	48,413,253
Private higher education	15,786,386
Vale do Rio Doce (mining)	15,267,167
Airline industry	13,129,826

Because these institutions competed for low-income students who did not qualify for free education in public institutions, they were much more concerned with gaining efficiency and lowering prices, than with investing in quality.

As the pool of new entrants started to stagnate (due to lack of income), the more efficient and capitalized groups bought or drove the smaller ones to bankruptcy. Private universities and university centers used their autonomy to open new campuses (or buildings) so as to get closer to potential students and reacted to the saturation of the market in the metropolitan areas by creating new branches in smaller places all over the country. Faced with the MEC's attempts to comply with standards typical of public institutions, they resisted by finding loopholes or inconsistencies in the regulations, and increasingly by taking the Ministry of Education to court. The size and economic weight of the higher education sector in Brazil had grown sharply. In the last year of the Cardoso administration, the four largest airlines and the country's largest mining company (Vale do Rio Doce) had lower revenues than the private higher education sector as a whole (Table 14.2)

14.3.3 Closing Remarks

The assumption that the government could, at the same time, release the market forces and control its quality through periodical assessment and regulation did not work. The task of overseeing and assessing each higher education institution and course program and revalidating them periodically became too large for the Ministry of Education. Besides, the private higher education institutions did not adhere to the quality standards (and the financial costs) imposed on them and strengthened their ranks through concentration, gaining scale, and litigation. The government also had problems to regulate its own public institutions, for it lacked the power of threatening them with closure. Private institutions could be closed down by the government if they came out too poorly in the assessments, but public institutions, created by law and legally autonomous, with resources assured in the national budget, could not be affected. As for expansion, the net result was disappointing. By the end of Cardoso's government, the private sector was facing idle capacity and the participation rate remained around 11 % of the age group (amounting to 2.4 million students).

14.4 2003–2012: The Quest for Public Education against the "Market"

In 2003 the opposition Worker's Party (PT) won the presidential election with Luis Ignácio Lula da Silva and shifted the higher education policies in response to its main constituencies—social movements and unions, including those in the public sector and in the public universities. The teaching bonus was incorporated to the wages, the Provão was replaced by a new and supposedly broader system of assessment, ENADE (Verhine et al. 2006), and emphasis was placed now on democratizing access to higher education and on increasing the control and supervision of the private sector. Democratization meant expanding access to *free* higher education, particularly for students from low income families. Market control was sought through evaluation mechanisms and intense regulation to enforce compliance and apply legal penalties on private higher education institutions with low performance.

14.4.1 Expansion and the Quest for Equity

During Lula's administration many initiatives were taken to expand access by removing its two most immediate obstacles: lack of income to afford tuition in private institutions and unpreparedness to face the very competitive admission exams in the free, public institutions.

14.4.1.1 Addressing Income Limitations

In 2004, after about 10 months of negotiations, which included the discussion of 292 amendments, Congress approved the legislation proposed by the government called "University for All," which became known as "Pro-Uni" (Law 3582/04; Catani et al. 2007). For the first time, a tax exemption was offered to all private institutions in exchange for the granting of full or half tuition scholarships for low income and minority students.

A parallel effort was initiated regarding the public federal sector. These universities were encouraged to implement quota programs for students coming from public high schools, which generally have poor standards, and for minorities as well. In 2008 the Programa de Reestruturação e Expansão das Universidades Federais (REUNI) program was launched, providing additional funding for federal universities to increase undergraduate enrolment and the provision of evening classes. In 2010, 113,200 new places for undergraduate programs were created, doubling the 2003 intake of 109,000 students. To support such an expansion, the REUNI program created 28,000 new places for professors and 38,500 for administrative staff in federal institutions, and more institutions were established, with the creation of new campuses, the upgrading of 38 federal technical schools to higher education status and the creation of 14 new ones. The ProUni has been by far the largest mechanism for democratizing access to higher education. Since 2005, this program has already

granted more than 1 million scholarships to students who were below the income requirements adopted by the official student loan system (FIES).

Other initiatives complemented these programs. In 2010, the loan program was transferred from a federal bank, Caixa Econômica Federal, to the Ministry of Education, with lower interest and income requirements for takers. In addition, the coverage was raised from 70 to 100% of the tuition costs and the repayment time was expanded. This doubled the volume of loans from 75,603 in 2010 to 152,406 in 2011 (Monteiro 2011). Also, the Ministry introduced a small allowance to low income students in public institutions to pay for transportation and meals.

14.4.1.2 Addressing Unpreparedness

To deal with the unpreparedness of low-income students coming from public secondary schools, the government introduced a quota system and an alternative entrance exam for federal universities. The National Assessment for Secondary Education, ENEM, which was already used as a selection mechanism for students receiving the benefits of ProUni since 2005, became also, in 2010, a door for access to public universities that agreed to receive students according to their achievements in the assessment.

A "Quotas' Act" was enacted by Congress on August 29, 2012, reserving half of the places in the federal sector to applicants from public high schools with low income and minority background. This legislation was preceded by several initiatives by public universities to introduce quotas of different kinds, and in 2012 the Supreme Court decided that race-based quotas in higher education did not go against the Constitutional provision of no discrimination. The federal institutions have 4 years to fully comply with this new Act. As of this writing, only 11 out of the 59 federal universities offer half of their places to affirmative action applicants, 21 offer some system of affirmative action, and 14 have not yet created any kind of affirmative action policy.

Outcomes For the private sector, the use of ENEM to select students for ProUni meant that these students could be more qualified than others that were admitted without any selection procedure. But to the public universities it has the opposite effect, since they had now to admit students that would not otherwise pass their entrance examinations. The unified selection system based on ENEM allowed students to move from their state of residence to other regions, particularly in more competitive fields like medicine.

Comparing 2003 and 2010 in Fig. 14.1 we see a net increase of places in every segment of the system. But, despite all the efforts to expand the public sector, the private sector increased its relative participation from 69% in 2001 to 75.2% in 2013. Behind these figures is the disparity of costs per student: R$ 18,000 in the public federal sector as opposed to R$ 5,000 in the private sector (Schwartzman 2011). Expansion of the public sector hit its limits, while the consolidation of the private sector (and commoditization of its services) picked up from 2005 onward.

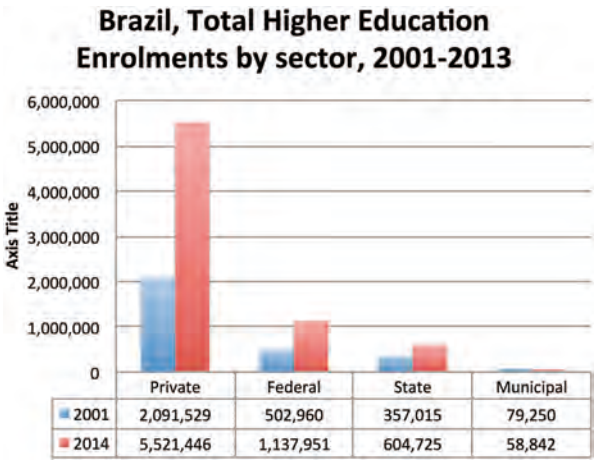

Fig. 14.1 Total enrolments in Higher Education by sector, 2001–2013

Another contributing factor was the development of distance education, which reached 15.8% of the enrolment in 2013.

Indications are that the post-2005 expansion was pushed too far. After noting that 462 out of the 923 worst undergraduate programs were in the ProUni system, the government gave them 2 years to leave the program. Other criticisms that made media headlines concern the insufficiency of the support provided for the expansion in the federal system. The installations were not adequate, the newly hired professors did not have office space, nor the conditions to remain involved in research and graduate education, since they were mostly hired to teach in the new evening courses. This, plus salary and career complaints, led to a prolonged, 3-month-long strike launched by the university teacher unions in May 2012.

A much brighter side of this expansion has been revealed by various studies comparing the academic performance of regular and affirmative action students. They consistently show that the latter has achieved as good or higher academic progress than the former, wiping out prejudices and establishing new grounds to interpret quality of teaching and the impact of motivation in students' outcomes (Ferraz et al. 2010; IPEA 2008; Velloso 2009; Waltenberg and Carvalho 2012). These are, though, preliminary assessments that need to be compared and consolidated into more representative evidence.

In the end, the intended expansion to 30% coverage of the age group fell short, despite being the single shared interest between the government and the private sector entrepreneurs. This points to the presence of other structural problems, particularly the secondary education quantitative and qualitative shortcomings. In June 2012, a new National Plan for Education was approved by Congress after a lengthy discussion, doubling the federal funding for education from 5 to 10% of GDP. Among the targets is the tripling the enrolment in secondary technical and vocational schools. As of this writing, the plan is still pending to be enacted by the Presidency, although the indications are that it will be.

14.4.2 Horizontal Escalation: More Quality Assurance for More Market Control

Quality control policies went through successive changes under the Workers' Party administrations. At first, the government dismantled the assessment mechanisms created in the previous years, but gradually replaced them with a more ambitious system that, while stressing the value of self-evaluation, introduced very controversial rankings based on quantitative indicators. The National System of Higher Education Evaluation Law (Law 10,861, known as the SINAES Law) seemed to represent a move forward in providing a more complete framework for quality development. SINAES intended to evaluate student proficiency, academic programs, and institutions. The coordination of the evaluation processes was assigned to a new National Commission for Higher Education Evaluation (CONAES) and the operations, to the Ministry of Education's Institute for Education, INEP. The guiding principles of SINAES were the respect for the diversity of institutions and programs; multiple perspectives on the evaluation process; self study as the core piece for the evaluation of institutions and academic programs; analysis of the value added by the institutions to the academic performance of the students they admitted; the autonomy of CONAES to represent both the government and the academic community (the private sector was somewhat underrepresented) as well as the transparency of processes and results.

In practice, the high turnover of the Ministry of Education's teams—four Ministers, seven presidents of INEP, and six of the national undersecretaries of education since 2003—along with the full centralization of the evaluation processes made it impossible to meet the initial expectations of SINAES. This led to the gradual replacement of SINAES' initial intentions with more controlled or standardized procedures—routine paperwork (filling out of forms) and the development of indexes to rank the institutions, strongly contested by the private sector.

The current assessment system includes an evaluation of student achievements, measured by the ENADE exam; course assessments provided by peer review committees; student opinions, cast in surveys applied together with ENADE; and statistical information on the proportion of professors with post-graduate degrees and full-time contracts, among others. A comparison between the test achievements of students entering the courses and those concluding it is used to estimate the educational value added by the courses to its students. All this information is quantified and used to produce a combined ranking called "Preliminary Ranking of Courses," a five-point scale that adds all this information with different weights, and the scores of each institution are again combined with data on the assessment of graduate education to produce a general ranking for the institution as a whole. In spite of being "preliminary," these rankings are made public and used by the Ministry of Education to decide which institutions are at the bottom and should be the first to receive the visit of external evaluators, since it would be impossible to do it for all.

The already adversarial atmosphere that evolved between the private sector and the government from the evaluation initiatives of Cardoso's administration was

so greatly aggravated that in 2011 a new office, the Secretary for Higher Education Regulation and Supervision (SERES) was created to specifically oversee the evaluation processes and enforce sanctions on private institutions that were poorly evaluated. Indications are though that this toughening of the government's attitude toward the private sector did not suffice, because in August 2012, a new bill (PL 4372/12) was sent to Congress proposing the replacement of SERES for a new National Institute for Higher Education Evaluation and Supervision (INSAES). This institute would concentrate further the regulation over the market. It would also take over CONAES authority to devise guidelines and instruments of evaluation and INEP's responsibilities over in loco evaluations. It would be partly financed by higher fees and penalties charged to the private higher education institutions, through a supervision fee that would be created and charged every semester to private institutions according to their enrolments. The INSAES project is slowly moving through Congress and does not seem to have the presidential or partisan support that is needed for approval. In the meantime, the existing evaluation fee was raised, and new penalties and fines introduced for delayed payments and other faults.

The regulation environment became too tough for individual providers, and small private institutions started to sell out to larger organizations. The Brazilian higher education sector became a global big business. Instead of controlling market behavior and making it better, the quality assurance policies provoked the capture of private higher education by investment funds and global groups. This sector is increasingly controlled by international holdings and large financial companies with open capital on the stock exchange.

A fair account of the Workers' Party administration must acknowledge the huge novelty brought by the democratization of access to higher education. The participation rate grew only two percentage points, from 11 to 13 %, of the age group, but this meant the incorporation of more than 2 million students who would not have been admitted without ProUni and the other affirmative action policies (Fig. 14.2).

The presence of this new and larger population of undergraduate students as well as of a new generation of professors without office space and participation in the graduate and research programs challenge the research universities' modus operandi. Its impacts are still to be appraised. It might have a win-win outcome with both the quota students and new professors on one side, and the research universities on the other side meeting the challenge, or it may inflict a big loss if the few research universities are turned into mass undergraduate education institutions.

14.5 Conclusions

Despite all the differences in orientation and in the ways of ruling the higher education system, all governments converged since the 1990s on the three issues below:

- They tried to expand participation, but were limited by the narrow pipeline of basic and secondary education. The Worker Party administration moved more

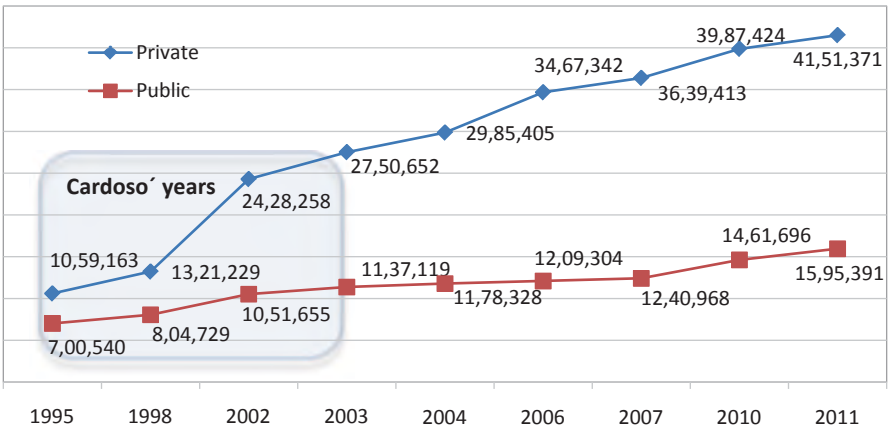

Fig. 14.2 Public and private enrolments in undergraduate programs (1960–2010). (Source: DAES/INEP-MEC)

forcefully to expand access, but could not deal with its main bottleneck: the ineffectiveness of school education.

- They enforced top–down evaluation as an instrument for market control. This aggravated the confrontation between government and the private sector, and may have pushed market consolidation. This caused losses of institutional diversity and increasing standardization of higher education services, which are becoming a commodity. Indications are that the market is running out of control, being globalized by the financial market. The lesson is that centralization, top–down policy making, and intensive regulation could not be more inappropriate to deal with a sector that has the economic weight and political leverage as the private higher education institutions in Brazil.

Table 14.3 shows how intensive the regulation has been since 1997. There are seven different types of enforceable norms and an average of 87 (Cardoso) and 82 (Lula) new regulations per year, reaching a total of more than 1500 between 1997 and 2012. Besides, hundreds of bills related to higher education have been proposed in the House of Representatives and the Senate, which are sometimes approved without proper consultation and assessment of their implications.

One account of what was happening in March 2012 is quoted below from a document that resulted from a Seminar held by the ABMES, the main association of private institution owners.

> The evaluation system is nearing collapse. INEP holds approximately 5,000 assessment visits per year, or about 100 per week. The logistics to support an operation of this size, nationwide, and every day is overwhelming. For example, there are more than 400 flights per week to be scheduled, budgeted, accounted for, and issued by INEP. Yet, for a system with nearly 30,000 undergraduate programs and 3,000 institutions, not counting new authorization and accreditation procedures for courses and institutions, 5,000 visits are insufficient. This causes crowding of the evaluation system and a growing backlog. There are higher education institutions with applications for recognition awaiting for years the visits of committees. (…) At the root of this scenario is a succession of problems, both in the

Table 14.3 Higher education legal acts (1997–2012). (Source: ABMES. Ensino Superior Legislação Atualizada nº 14)

Year	Laws	MP	Decrees	Resolutions	Portarias inter-minist	Portarias MEC	Pareceres CNE	Total
1997	9	4	28	7	4	39	20	111
1998	15	1	41	4	0	13	8	82
1999	4	5	30	3	0	5	7	54
2000	3	42	24	7	0	15	29	120
2001	8	14	14	5	0	4	32	77
2002	0	0	12	25	0	0	39	76
Cardoso	*39*	*66*	*149*	*51*	*4*	*76*	*135*	*520*
2003	5	4	10	5	0	58	22	104
2004	5	2	5	7	8	105	17	149
2005	3	2	2	2	0	166	0	175
2006	5	0	10	28	79	0	5	127
2007	4	1	12	16	63	0	2	98
2008	1	0	0	14	30	0	0	45
2009	0	0	0	0	1	1	1	3
2010	1	0	1	2	10	0	2	16
Lula	*24*	*9*	*40*	*74*	*191*	*270*	*49*	*657*
2011	9	0	10	32	48	57	1	157
2012	8	1	7	22	2	78	0	118
Dilma	*17*	*1*	*17*	*54*	*50*	*135*	*1*	*275*
Total	***80***	***76***	***206***	***179***	***245***	***481***	***185***	***1452***

CNE Conselho Nacional de Educação

> technical and the legal spheres. (…) The consolidation of jurisprudence will transform the lack of dialogue between MEC and the institutions in battles in the Courts. Overcoming this scenario does not mean throwing away the evaluation effort performed to date. Brazil managed to build an evaluation system that stands out in the international arena. Few countries can, for example, apply a test to all students in all courses. But adjustments are urgent. …, surely the Courts are not the best places for such a dialogue. The disputes are accumulating with the understanding that the institutions are being harmed by MEC's conduct. (Garcia et al. 2012)

Despite the litigious relationships with the government, the private higher education sector continued to be highly profitable as big business. In 2009 the "for-profits" segment declared a R$ 24 billion (US$ 11 billion) annual revenues, which almost doubled the 2005 revenue of R$ 15 billion. Also in 2009, 9 among the largest 20 higher education groups had financial market partners or investors. Figure 14.3 compares the 2003 and 2009 rankings of Brazilian higher education institutions in terms of enrolments. In 2003 the ten top higher education institutions were largely surpassed by new open capital groups and by holdings of institutions (international, as Laureate, or not, as Kroton). In 2009, only a few were still in the hands of the

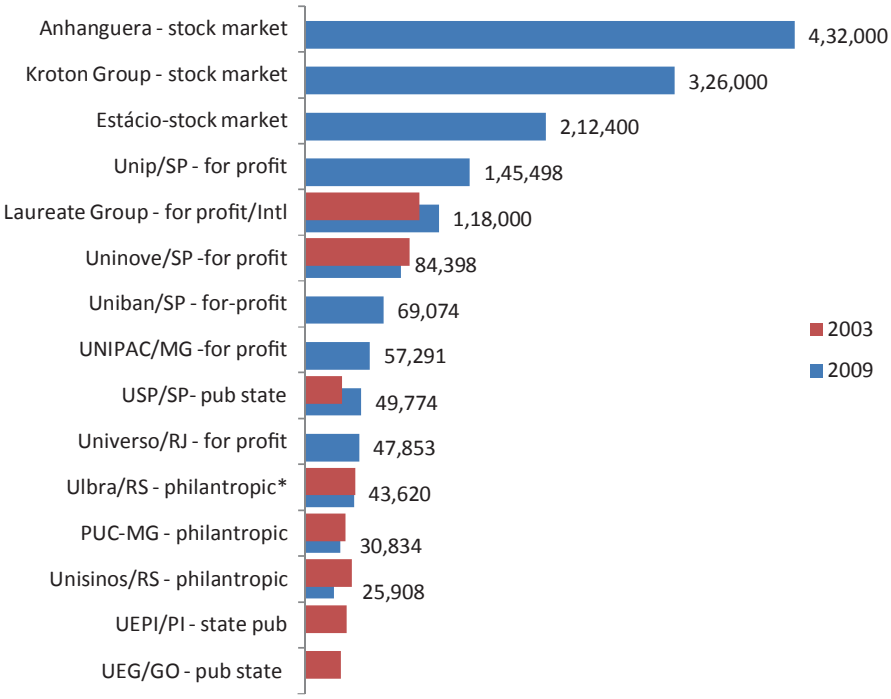

Fig. 14.3 Enrolments in the largest Higher Education Providers in 2003 and 2009 (Source: Nunes and Carvalho 2004; Sécca and Leal 2009, Table 14.2 p. 113–114, and the institutions' (Anhanguera, Estacio, Kroton, and Laureate) websites)

2003 owners.[2] Two state-universities lost their places in this group, while five "for profits" stepped in.

One account of this market in 2011 is quoted below from the newspaper Valor Econômico.

> Since 2007, when the largest groups began to open capital there was not one year with so outstanding deals as 2011 in the higher education sector. According to an assessment prepared for Valor, just the acquisitions made by the four open capital groups amounted to R$ 2.4 billion. This is the amount invested by Anhanguera, Abril Educação, Estácio and Kroton groups only. (Koike 2012).

14.5.1 Microregulation and Macrogaps

Today, the Brazilian higher education sector is marked by the high concentration and gigantic size of its private higher education institutions. Microregulation over academic inputs neither controlled the evolution of the market nor addressed some

[2] These are the cases of Whitney, DeVry, Apollo, and Laureate.

very important aspects of higher education. It has left out, for example, the provision of information on graduates' professional life—their acceptance in the job market, their careers, salaries, and time needed to compensate for the investment in tuition. Also, the *economic dimension* of private higher education institutions has been overlooked by the Ministry of Education:

> Despite the economic relevance of higher education, this regulatory policy has given little attention to economic issues. MEC only collects information on academic matters—pedagogical project, faculty, and facilities. Nothing captures the economic dimension of the institutions. (…) not one out of the 445 variables used in the four assessment mechanisms—*Capes, Enade*, accreditation and re-accreditation of *institutions* and of academic *programs*—deals with economic aspects of private higher education institutions or their sponsors. (Nunes et al. 2005)

A third underregulated area is *internationalization*. To be sure, there has been much internationalization in academic research since the establishment of graduate education and research in the public universities in the 1970s. CAPES and CNPq (Brazil's National Research Council) along with other agencies have provided fellowships for study abroad, supported the flows of visiting professors, their participation in and organization of international scientific events, and the reception of Latin American and Portuguese speaking nationals through specific programs and bilateral agreements. Much incentive has been placed on publications in international scientific journals. Indeed, the country's records are impressive: 32,100 articles in 2009 and the 13th position in the ISI Web of Science ranking (Knobel 2011). With regard to Brazil, Russia, India, China, and South Africa's (BRICS) shares of the world publications, China accounts for 9.9 %, India for 3.4 %, Brazil for 2.7 %, and Russia for 2.4 %, according to a 2010 Thomson Reuters survey.

Apart from this, data on internationalization are scarce and scattered. The existing statistics do not cover the number of international students and professors received in Brazil—their home countries, field and level of studies, and host institutions. Even CAPES, which has a dozen international cooperation programs and bilateral agreements with 22 countries, does not include internationalization in its statistics, except for the distribution of students with CAPES scholarships abroad from 1998 to 2010 and some information on the "exchange student" programs for undergraduate and graduate levels.

With regard to the validation of foreign diplomas, there is just one system in place, an annual exam for holders of foreign degrees in medicine. A pilot experience inspired in the ERASMUS scholarship program covalidated courses in six areas among Mercosur countries and allowed for the exchange of a few dozen students during 2010 and 2011. The main initiative is the "Science Without Frontiers" program, launched in July 2011 intending to grant 100,000 scholarships abroad for undergraduate, doctoral, and postdoctoral studies, especially in the science, technology, engineering, and mathematics (STEM) fields (Castro et al. 2012). One-fourth of the scholarships are being granted by private firms and an unspecified amount (below 20 %) will be granted to either repatriate Brazilians or to attract foreign scientists. No provisions were made to bring back students sent abroad

The last and most worrying aspect is the lack of information and regulation regarding the international providers that are already established in Brazil. They do not show in higher education statistics because they maintain the identities of the institutions they buy and the official information does not register the owners, just the institutions' names. They operate with closed capital that makes it difficult to follow their growth. There is a proposal in Congress limiting the participation of foreigners to 30 % of the shares of a higher education institution. It is, however, part of a higher Education Reform Bill (PL 7200/2006) that has been blocked in Congress since 2006.

In short, there is no strategy for the internationalization of higher education institutions in Brazil. It is possible, but difficult for a foreigner to be hired through the public examination system of access to public university careers, which requires written and spoken Portuguese. Student exchange programs are scattered and some private institutions have developed their own mechanisms. For the public sector the inability to charge fees and the full financial dependence on government make it difficult to create the proper means for registering international students and professors—except those already funded and channeled through official programs. The bureaucracy for obtaining visas, opening bank accounts, and renting apartments, as well as the noncoincidence between Brazil's school calendar and the one adopted in the northern hemisphere pose additional difficulties. Another aspect is the language barrier, which has not been addressed.

We have seen very intensive, although not very successful, efforts to regulate the higher education market in Brazil. The microregulations of academic inputs raised the costs for private higher education institutions, but not its quality. It led to increased use of legal action to deal with the government, along with the concentration of private higher education institutions. The standard has become the provision of low-cost mass education. The market is doing well, but not higher education. The majority of courses focus on the social sciences which are more amenable to evening classes and do not require investment in equipment and labs. One consequence is the growing unmet demand for STEM professionals.

The policy makers have underestimated the complexities and immense attractiveness of the higher education market in Brazil. Some analysts point to the resilience of the ideological bias against markets and the payment for a public good such as education (Nunes et al. 2005). According to this view, strategic solutions for higher education have not been envisioned because the post-1996 governments refused to embrace the option made since the 1968 University Reform to let the private sector take care of the expansion of the system. For decades the private sector has been a major actor but not entitled to participate in government's numerous quality development programs offered to the public sector, or invited into the policy making arenas. As long as the government does not act positively with the private sector to set strategies for higher education, the odds are that the market will endure by its own means and for its own ends.

The subordination of the higher education administration to political control, high turnover, and discontinuities with each new holder of an office only has aggravated the situation. It has prevented the learning from experience, and the consolidation of a more technical orientation, a stable environment, and interactive processes that

are crucial to facilitate adherence to the policies. The country has ended up with a jungle of norms, often conflicting with each other—leaving space for legal action—that did not go beyond detailed bureaucratic verification of academic inputs, fuelling battles in the courts. Centralized regulation has overwhelmed the Ministry of Education agencies and impoverished evaluation. The proposed INSAES insist on the same bad formula: a new top–down policy creating a new government agency to curb the private sector.

However, there are also brighter sides to Brazilian higher education, related to the expansion of research and graduate education, and the quality of many public and private professional courses and the growing but limited access for persons coming from poorer backgrounds. As far as regulation and quality assurance are concerned, there is much to be revised.

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Chapter 15
The Federal State, Regional Interests, and the Reinvention of Russian Universities

Mark S. Johnson

15.1 Introduction

This chapter seeks to analyze the complex policy struggles and institutional changes that have unfolded since the end of the Soviet Union in 1991 around repeated attempts to "reinvent" Russian higher education, with a focus on relations between the federal state, regional interests, and leading universities. Russian higher education has undergone some of the most abrupt—and ambitious—attempted policy changes of any major system in the world during the last two decades. From the highly-centralized and standardized Soviet system which endured until the late 1980s, policy then took an abrupt swing towards radical neoliberal approaches in the 1990s, only to swing back again toward control by the federal state and more selective or strategic engagement with international policy trends in the 2000s. However, the essential thrust of the analysis in this chapter is that while these radical policy swings over the last 20 or more years had significant transformational effects on some leading Russian universities, they were also offset by bureaucratic inertia in the state and institutional inertia in many Russian higher education institutions. Federal state officials have experimented with various mechanisms to improve policymaking authority and steering capacity in recent years, but these reform projects have been complicated by powerful interconnected networks of elites linked together in local industries, private businesses, regional governments, and many universities. Nonetheless, throughout all of these policy cycles, the dominant role of the federal state endured and has been successfully reconsolidated in terms of the influence of state funding, policy steering, and legal and financial oversight.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_15

From another perspective, even as powerful actors in the Russian state and the universities have engaged with international policy trends and multilateral organizations since 1991, they have drawn upon global policy frameworks selectively and strategically, to advance particular national development projects as well as their own professional, institutional, and regional interests. This chapter seeks to sketch out these trends over the last 20 years in broad strokes, and will analyze various issues such as the evolving relations between the federal state and the Russian regions; changes in higher education law, university management, and governance; experiments with new policy "steering" mechanisms such as the use of "new public management" and grant competitions; and recent attempts to create new tiers within the system through institutional differentiation. However, whether these ambitious efforts to reinvest in higher education, to recalibrate relations between the federal state and regional interests, and to foster "modernization" within Russian universities will ultimately translate into fundamental systemic reform and a more innovative and globally competitive economy remains unclear.

15.2 Conceptual Framework: Global Policy Norms and Russian Political Realities

This chapter is also part of a broader line of research that analyzes how and why the Russian Federation and other postsocialist nations are—or are not—aligning with the global neoliberal model of higher education and the US model of the entrepreneurial research university, as fitful as that alignment may have been since 1991. This chapter's theoretical approach combines a "culturalist" critique based in history and anthropology (Shore and Wright 1997; Johnson 2008) with a "realist" critique based in critical political economy and more radical traditions in comparative education (for example, Dale 2000; Robertson 2009). These critiques are directed in part against prevailing neoliberal theories of change in global higher education which often seem to simply assume that the uniform spread of privatization, commercialization, decentralization, and the dominance of market principles is entirely unproblematic and inevitable (on the specifically "postsocialist" version of this neoliberal "education reform package" see also Silova and Steiner-Khamsi 2008). Many accounts of the dominant currents in the globalization of higher education policy adopt such a neoliberal framework, seemingly regardless of whether the authors judge that consensus positively (as inevitable global modernization) or negatively (as inexorable Western hegemony). This broad interpretive consensus focuses on the alignment of systems, curricula, regulatory frameworks, and quality assurance standards (Altbach et al. 2009); and a growing global convergence around the inevitability of "academic capitalism" (Slaughter and Rhoades 2004) and the perceived need for universities to simultaneously become more "entrepreneurial," more autonomous, and more globally competitive.

Other alternative and more critical accounts acknowledge the salience of these global influences and neoliberal policy frameworks, yet highlight institutional, na-

tional, and cultural variations on these patterns (Neave 2006); or offer more forceful critiques of Western neoliberal policies and hegemonic practices. Looking beyond these specific policy arguments, one could argue that the emerging body of work that looks at the impact of globalization on higher educational systems is largely descriptive or presents rich empirical data, yet often without a clear theoretical framework. Almost by default, one influential explanatory framework has become neoinstitutionalism or world culture theory, which depicts an ambitious macrosociological view of institutional isomorphism and the alignment of policy "norms" in global higher education that is shaped primarily by a "global cultural–institutional frame" and shared conceptions of scientific knowledge rather than specific material interests (Schofer and Meyer 2005; Frank and Gabler 2006). In this way, neoinstitutional theory cuts against the grain of liberal (and neoliberal) functionalist theories as well as against the grain of more critical (or neo-Marxist) functionalism and theories of social and cultural reproduction. In other words, the neo-institutional paradigm suggests that the emergence of shared policy frameworks and a normative global model of the "research university" have more to do with cultural and discursive convergence within an emerging world polity and culture than with any "rational" or "optimal" national reform strategies, institutional or professional practices, or regional or local adaptations. In contrast, this chapter acknowledges the importance of global convergence at the level of policy and rhetoric, and also emphasizes the powerful material and professional interests that operate within or beneath that often superficial realm of policy rhetoric.

Admittedly, at least rhetorically or at the level of official policy, it would seem that many leading universities in Russia, Kazakhstan, and in some other nations in Eastern Europe and Central Eurasia have fitfully but inexorably aligned with global development models since 1991 (Gounko and Smale 2007; Heyneman 2010). Yet despite this clear evidence of neoliberal influences in post-Soviet higher education, Russian educators and policymakers have arguably sought to shape distinctive post-Soviet variations on the "entrepreneurial university" and "academic capitalism" to their own purposes through strategically selective relationships with neoliberal ideas and international partners. This chapter argues that Russian officials have experimented with abrupt shifts in higher education policy, such as more radical or doctrinaire neoliberalism in the 1990s and then returned to more statist solutions and the selective imposition of neoliberal steering and regulatory tools in the 2000s, but the cumulative effect of these policy cycles has been to sustain and continually reconsolidate what are in fact remarkably stable networks of political and bureaucratic leaders and their linked corporate interests (even as those elites evolved from communist managers to state capitalist entrepreneurs). These policy shifts were shaped by powerful elites, many of whom cycled into university administration and leadership positions well before 1991, and these administrative-professional "circles" remain woven together in regional networks of power (Petrov and Titkov 2010).

To summarize, Russian higher education policies since 1991 have partially aligned with global neoliberal models and norms as both globalization theory and world culture theory would suggest, but in fact the powerful linked networks of state–business–university interests (arguably a distinctive and distinctly more au-

thoritarian post-Soviet variation on the "triple helix") endured through all of those policy cycles. Contrary to global trends, private higher education emerged but then plateaued in the region (with a large number of small institutions, but a limited share of the total enrolment, about 12%), and the private sector was later constrained by new accreditation procedures and the reassertion of state regulatory authority after 2001. Equally revealing, international branch campuses and the global for-profit sector have remained relatively marginal and carefully controlled in Russia and most of the "post-Soviet space." Over the last two decades, as the national economies of the successor states underwent dramatic changes during the chaotic "transition" from central planning to state-dominated capitalism or "market authoritarianism," virtually all post-Soviet higher and postsecondary institutions have had to confront the necessity of reinventing their relationships with federal officials, their internal management principles, and the nature of their external partnerships with employers and others. As increasing numbers of Soviet-era economic enterprises either shut down or became fully or partially privatized, it would be more accurate to observe that these partnerships had to be reinvented in new, more market-oriented ways, and simultaneously (re)connected to emerging (re)configurations of regional and local power.

15.3 Regional Politics and Soviet-Era Legacies in Russian Higher Education

Admittedly, this interplay between the global, the national, and the regional or local in Russia has been enormously complicated by the "fragmented space" and the abrupt dislocations in economic and social relations around post-Soviet economic changes and reform efforts (Ruble et al. 2001). From another perspective, these reconfigurations have been fluid amid the ad hoc and bitterly contested nature of post-Soviet institutional "patchworks" (Segbers 2001), which have been characterized by the chaotic restructuring and partial privatization of almost all industries and enterprises. In fact, other analysts have argued that the situation in the Russian regions was so chaotic in the aftermath of the collapse of the planned economy in 1991 that it amounted to little more than "imagined economies," in which functionalist or rationalist explanations explain very little (Herrera 2005); the motive force was what powerful regional elites *imagined* to be in their own interests, even if the institutional "subversion" and predatory rent seeking that resulted was in fact often inimical to regional integrity, sustained economic development, and social stability (Slinko et al. 2003). Other scholars have noted the "alignment" between regional elites and partially or newly privatized corporate and industrial interests (Melville 1999); often in ways that could thwart or resist the intentions of the central state on policy issues (Stoner-Weiss 2006). In higher education, these regional power blocs could resist some attempted innovations such as per capita funding through student "vouchers" and alignment with the Bologna Process after 2003; but were unable to thwart other reforms such as the introduction of a standardized admissions process

thorough the Unified State Exam. These same regional power blocs enthusiastically embraced other reforms such as renewed state investments in university infrastructure and a renewed emphasis on applied research and technology transfer.

After 2000, the central government under Vladimir Putin attempted to recentralize power "vertically" in several ways (Reddaway and Orttung 2003). This entailed the creation of eight overarching federal districts as a layer above the 89 subjects of the Russian Federation (these large federal districts were later to become the platforms for the consolidated "federal universities," as shown below); an enforced transition from elected to appointed governors in major cities and regions, which was at least in part an effort to penetrate and weaken these powerful regional networks of elites; and the weakening of the upper house of parliament, the Council of the Federation, which was constructed in the early 1990s precisely in order to embody such regional interests. However, other analysts have expressed skepticism about the effectiveness of these reforms and argued that the ongoing interplay between central and regional interests has created a new sort of "network state," but one that is dysfunctional, neo-patrimonial, and entangled in corrupt patron–client networks rather than successfully "modernizing" (Kononenko and Moshes 2011). A recent insightful analysis of how and why these politics have played out in Russian higher education has also emphasized the importance of regime survival and the patron–client relations nurtured by recent state investments in the sector (Forrat 2012). However, while compelling in many ways, such interpretations may be a bit too cynical in their understanding of the complex interests in play, and of the ways in which both federal and regional policymakers and educators may genuinely agree on the need to improve Russian universities, and to make them genuinely more globally competitive and entrepreneurial, even as those same "reform" processes and renewed public investments serve their own institutional and material interests.

More specifically with regard to higher education, these policy processes between the center and the regions have been shaped by the fact that Russian universities have inherited two very distinctive features from the Soviet system of higher education and research (Bain 2003; Johnson 2008). The first feature was a structural pattern of early and narrow technical and professional specialization in postsecondary and higher education. This resulted in a highly differentiated system, with specialized research institutes, academies, and universities linked closely to branches of industry, the party–state bureaucracy, and the immediate needs of the planned economy. In other words, Soviet-era postsecondary and higher educational institutions were often separated from one another as well as linked rigidly (by "state order" or *goszakaz*) to particular local industries and programs for regional development (Dmitrieva 1996; Westland et al. 2000). However, these connections and "external partnerships" only made sense or functioned within the now-defunct "logic" of the planned economy, which expired along with the Soviet Union in late 1991. The 1990s then witnessed chaotic efforts to harness emerging market forces to reshape such university–business and university–community partnerships, seemingly with at best mixed results in terms of articulation with local labor markets.

The second distinctive structural feature inherited from the Soviet-era higher education system was an institutional separation between advanced research, which

was clustered in the research institutes of the branches of the Academy of Sciences, which was centered in Moscow and St. Petersburg and operated out of powerful regional institutes, and the applied research and professional training programs of the less-prestigious technical institutes and state universities. This separation has persisted despite repeated programs that have sought to "integrate" advanced research and university education (Graham and Dezhina 2008; Radaev 2010). After repeated efforts to trim the autonomy and power of the Academy research institutes were stymied throughout the 1990s (Saltykov 2008), Russian state policy has recently begun to more aggressively shift federal research funding into the new top tier of leading universities, but this pattern of institutional parallelism has persisted.

15.4 Shifts in Federal State Policy: Neoliberal Shocks and Attempted Transformations

Policy experiments with abrupt decentralization and partial privatization in the 1990s and after, did introduce constructive competitive pressures into Russian higher education, and gave rise to a modest role for private providers, especially in high-demand professional fields such as business, management, law, and information technology. The reforms of the *perestroika* period in the late 1980s and especially the radical "opening" of the 1990s also subjected Russian higher education to rapid internationalization, with both negative (massive brain drain) and positive (a vast leap in both state and privately-funded global academic mobility) effects. Higher education access also expanded dramatically in the 1990s, as new private institutions emerged and public institutions expanded rapidly, but acute concerns persisted regarding academic quality and corruption throughout the sector (Petrov and Temple 2004; Heyneman 2009). In terms of accountability, while the increasingly autonomous higher educational institutions were held accountable by the federal state for their budgets and educational performance, the role of the public or of civil society in Russian higher education remained weak throughout this period (Johnson and Kortunov 2011). Thus, the policy struggles of recent years essentially reflect the complex give-and-take between these federal, regional, and institutional interests, with little input from students or the mass public other than choices about where to apply for admission and whether to self-finance their own tertiary education.

After the collapse of the Soviet educational system in 1991, the Russian regime of Boris Yel'tsin crafted a landmark new law "On Education" (July 1992, as amended in January 1996 and November 1997) that sought to facilitate the decentralization of school administration, curricular differentiation, and the use of nonstate financial resources to allow for partial privatization. This latter change allowed for "nonstate" and religious educational institutions for the first time since the imposition of the Soviet party–state monopoly in 1918 (for a compilation of official documents and commentaries on these legal changes, see De Groof et al. 2001; on the broader financial implications of the reforms in the higher education sector see Hare 1997). The weakened state authorities struggled throughout the 1990s to

create new mechanisms for licensing, attestation, and accreditation, although arguably initial weaknesses in these mechanisms and regulatory disorganization allowed corruption to flourish, for the "sale" of public assets, and for the emergence of many under-resourced private and nominally "public" educational providers. It has been argued that this rush for an idealized version of "market democracy" and doctrinaire approaches to neoliberal policies was deformed by a lack of administrative capacity in local administrations, as well as by powerful interest groups at all levels who benefited from rapid policy changes, weak regulatory oversight, and predatory rent seeking (Reddaway and Glinski 2001; Johnson 2008).

Another major law, "On Higher and Professional Education followed (in August 1996, see Lenskaya 1997; also Ministry of Education and Science 2011 for the complete text with subsequent amendments), which established clear guidelines for the autonomy for higher educational institutions (HEIs) and created new financial mechanisms for the financing of both state and private or "nonstate" HEIs. For state institutions, this allowed for two tracks, one involving "budget" (*biudzhetnye*) places for students funded by the federal authorities and the other "paid" (*platnye*) places for self-funded students, which also contributed to the rapid growth in enrolment, although overall numbers remained limited by state licensing rules. The private sector in Russia emerged as a large number of smaller and often proprietary institutions, most with little research capacity and uneven reputations, as well as a small number of high-profile and largely internationally-funded experiments to create new-style graduate degree programs (such as the New Economic School in Moscow, the European University of St. Petersburg, and the Moscow School of Social and Economic Sciences or MSSES; Holden 1999; Guriev 2009).

The 1996 law also declared higher education a "national priority," although state funding, much less significant new investments, remained problematic until the early 2000s. To summarize these developments, while significant progress was made in shifting Russian higher education onto new organizational and financial foundations in the 1990s (Smolentsova 2006), acute problems remained within the sector, most notably in terms of academic quality, university management capacity, and the lack of adequate public funding for facilities and research. It was perhaps to be predicted that "the historical tradition of public provision and centralized government funding for higher education" would result in the continued dominance of the federal state, and the "conservation of supply-driven financial schemes (and) non-transparent administrative allocation of funding for and within" Russian universities (Beliakov et al. 1998, p. 5). In other words, as radical as the changes of the 1990s were in theory, and as much as they aligned with global trends and neoliberal policy models, it was not surprising that in practice, Russian higher education policy would unfold in ways that would maintain the mutually-beneficial relations and interdependence between the federal state, regional interests, and state-funded universities. Nor was it surprising that the private sector would struggle and remain somewhat marginal, even as the new private institutions were able to respond quickly to market demand in key semiprofessional and professional fields.

In a major policy report at the end of this period, the Organization for Economic Cooperation and Development argued that "promising changes" had been made in

the transformation of Russian tertiary education and research (OECD 1999). However, the OECD review team also noted that serious problems remained in key areas, and that overall the sector would remain unstable until larger questions about the future direction of the Russian political economy were settled. More specifically, the OECD team noted that barriers continued to complicate the transition from secondary to vocational and tertiary education, which was a legacy of the parallel structures of the Soviet era and of highly specialized HEIs, as well as of chaotic labor markets during the ongoing post-Soviet "transition." The OECD reviewers also argued that there was an acute need for more consistent academic standards and quality assurance processes in the tertiary sector, in part to overcome the effects of chaotic privatization and the unregulated proliferation of institutions during the 1990s. The review team also noted that problems of academic quality and student retention persisted in the many "correspondence" (*zaochnyi*) and distance learning programs (which included up to a third of enrolments); and that urgent measures had to be taken to improve infrastructure throughout the sector. Furthermore, more had to be done to integrate research and university education; and that the federal and regional authorities had to agree on a "secure and rational system of financing," which would necessarily entail cost shifting onto local authorities and students as well as significant new investments by the federal state. Overall, it would seem that the Russian reformers of the 1990s, along with their international partners, may have underestimated the enduring power of the interlocking bureaucratic and academic networks in Russian higher education, or failed to anticipate that calls for reinvestment in universities would also necessarily entail the reassertion of federal authority under Putin. The reformers may also have overestimated the ability of university leaders and managers to sustain the new responsibilities that flowed from rapid decentralization and institutional autonomy.

15.5 The 2000s: National Priority Projects, University Management, and Governance

After the rise to power of Vladimir Putin in 1999–2000, and the partial recovery of the Russian economy around the aggressive exploitation of natural resources and the export of fossil fuels, the federal state began to reinvest in the higher education sector, to reassert its regulatory and steering role, and to reemphasize adherence to state academic standards, all in pursuit of system-wide "modernization" (Ministry of Education 2002; Filippov 2002). In 2003, federal policymakers, university reformers, and outside experts pushed Russia to join the Bologna Process of European higher education integration and to align more strategically with global policy trends (Larionova et al. 2004; State University Higher School of Economics 2005; World Bank 2005b). These moves were intended, at least in part, to exert policy leverage over entrenched school and university elites and traditionalists, and faced fierce resistance by many university leaders and defenders of Russia's "unique legacies" (Sadovnichii 2004) as well as ongoing resistance by those in the Academy

of Sciences who opposed the "integration" of research and university education. Beginning in 2007, this policy of alignment with European norms would culminate in the formal adoption of the European system of "four plus two" (BA and MA) degrees, efforts to align Russian state standards with European Credit Transfer System (ECTS) and degree qualifications profiles, and initiatives to begin the process of aligning Russian graduate degrees with global standards.

In 2005, an ambitious program of "national priority projects" (NPPs) was begun to rebuild Russia's social infrastructure in agriculture, housing, public health, and education. While the vast majority of the funding for national priority projects in education was for elementary and secondary schools, priorities in higher education included a grant competition to foster "modernization" and new approaches to teaching in "innovative universities" (in two rounds of grant tenders, in 2006 and 2007); additional efforts to draw Academy of Sciences research institutes into closer partnerships with university graduate programs through financial incentives and the shared use of research facilities; efforts to foster applied research and "innovation" together with private sector partners; and the (re)infusion of federal investments into university facilities, laboratories, and information and communication technologies. From one perspective, these projects were successful enough to serve as a platform for the ambitious systemic reforms that were to begin in 2008 (as detailed below). From another and more critical perspective, budget funding remained residual and too entangled in administrative structures, with too little flexibility and autonomy for university fundraising and the cultivation of endowments (Abankina et al. 2008). From a larger perspective, there were chronic difficulties with implementation of the NPPs (Kazantsev 2007), in part because of the dominant role played by national and regional executive authorities. Perhaps most significantly, the well-established institutional and professional conservatism of the interlocking networks of bureaucratic and academic elites remained essentially intact throughout these changes, and may even have been unintentionally reinforced by the new funding.

In terms of university management, both in Russia and globally, there has been a clear trend toward stronger and more centralized management systems, in order to take up the responsibilities that flow from neoliberal decentralization and autonomy, and aggressively reinvent universities' external partnerships and develop the opportunities of entrepreneurialism (Shattock et al. 2004; Sporn 2006). As detailed by numerous authoritative Russian analysts (Filippov et al. 2006), the years since the end of the Soviet Union in 1991 have witnessed repeated cycles of attempted reforms in Russian university management. These management changes were supposed to encompass efforts in the 1990s to decentralize state authority for higher education down to regional and municipal governments; equally chaotic efforts to foster commercialization and privatization within what had been a highly-bureaucratized higher educational system; efforts by Soviet-era specialized, technical, and narrowly professional institutions to "rebrand" and market themselves as universities; and efforts to reinvent internal management and budgeting capacities to handle all of these tumultuous changes. Despite ambitious efforts to professionalize the field of university management in areas such as strategic planning, accounting,

fundraising, professional and staff development, the use of new information technologies, and the development of external partnerships (Bogdasarova et al. 2009; Eliseeva 2010), there seems to be a broad recognition that the systemic reform and quality of Russian university management remains problematic.

In terms of university autonomy and governance, changes that were introduced as early as the 1970s and reinforced again in the 1990s have had both positive and negative effects. Efforts were made to make the positions of deans and rectors elected, or at least more responsive to academic researchers and instructional staff, as well as to empower university academic councils (the *Uchenyi sovet*). Even in the late Soviet period, such moves were intended to foster greater academic freedom and to make university leaders more directly responsible for quality, and yet such autonomy can also contribute to the phenomenon of closed "circles" and the perpetuation of traditional hierarchical structures and insular professional interest groups. Given the tendency of many Russian universities to hire faculty and staff from among their own graduates, such patron–client networks became a formidable force that endured through the late Soviet era and the upheavals of the 1990s until the present, except in the most reformed or best new private universities. From a neoliberal perspective, this contributed to rent-seeking behavior and a reluctance to institute necessary economic efficiencies in HEI staffing (Beliakov et al. 1998), because power flowed to the top, based on budgets and personnel ranks. The organizational logic of the "command–administrative system" also prompted Soviet universities to develop vast apparatuses of ancillary services (in housing, food services, transportation, construction, publishing, and instructional equipment), which were spun off in the post-Soviet period into quasiprivate enterprises or university-owned providers. While this issue remains underresearched, there is strong anecdotal evidence that the old *nomenklatura* networks that had dominated party–state administration in the late Soviet era essentially reproduced themselves throughout post-Soviet university management.

To anticipate the following sections of this chapter, the 2000s witnessed complex attempts to renegotiate all of these boundaries, especially through continual reassertions of state power and the creation of new steering and regulatory mechanisms by the federal government such as competitive grant tenders, new audit procedures, academic program evaluations, and experiments with university rating and ranking schemes (*ranzhirovanie*). Throughout these reform "projects," the Russian federal state was attempting to steer the system to be more globally competitive, while powerful regional academic and economic elites were glad to draw upon this renewed state funding and align with such "national projects," as well as to serve their own institutional and regional interests. Once again, whether these various reform agendas and the points at which they align and diverge will ultimately add up to systemic transformation and global competitiveness remains unclear.

15.6 The Search for New Regulatory Tools: Grant Competitions, Audits, and Rankings

As the Russian federal state struggled throughout the 1990s and 2000s to reinvent the higher education sector and policymaking process, it has experimented continually with new mechanisms for attestation, institutional accreditation, quality assurance, and policy steering. During the 2000s, the federal authorities in Moscow experimented with organizational changes that were clearly inspired by neoliberal "new public management" (Ferlie et al. 2008), in which the public sector would adopt private sector mechanisms such as competition, performance pay, and outsourcing. At the macro level, this represented an effort by the Putin government to reconsolidate its position in the public sector, and especially in key economic sectors such as the defense industry, aerospace and commercial aviation, life sciences and biotechnology, and nanotechnology (the latter through a new public–private entity, *Rosnano*). As the top tier of universities and research institutes were essential to the success of these national (re)development strategies and new state-owned or hybrid public–private economic enterprises, the central authorities adopted ideas directly out of the global neoliberal toolbox such as competitive grants, external evaluations of research productivity, industrial-style benchmarking (Kniazev and Evdokimova 2006) and performance indicators, and new financial audits and accounting mechanisms (Timoshenko 2008), albeit with mixed success. All of these regulatory tools were means to the end of the federal state reconsolidating its dominant or steering role, as well as levers to try and compel the top tier of universities and research institutes to consolidate and improve their internal efficiency and research productivity.

In 2004, general education, higher and professional education, and science were recombined into one entity, the Ministry of Education and Science (MOES) of the Russian Federation (these functions had previously been together from 1988 to 1992). This reform was intended to facilitate better secondary to vocational–technical and tertiary transitions, as well as to link science policy and technological innovation more directly to higher education policy and university reform efforts. This also entailed the (re)concentration of policymaking authority and research in the Ministry, while key aspects of implementation were allocated to a new Federal Agency on Education (*Rosobrazovanie*); this latter agency directly controlled state budgets and owned and managed educational institutions' property, and handled other supervisory functions. It has been suggested that one goal of this restructuring was to more effectively subordinate the sprawling education system to the fiscal discipline of the Ministry of Finance and the executive branch (Sigman 2007). Responsibility for licensing, attestation of degrees, and accreditation were allocated to a new Federal Supervisory Service for Education and Research (*Rosobrnadzor*), which supervised both the para-statal Higher Attestation Commission (*Vysshaia attestatsionnaia kommissia* or VAK) and a new National Accreditation Center. These organizational changes were intended to increase efficiency in the sector and reduce opportunities for corruption and the exertion of influence through patron–cli-

ent networks, to gain some supervisory leverage apart from ownership (Sigman 2008; Forrat 2012).

These reforms also led directly to campaigns to clamp down on, and in some cases to liquidate, poor quality private providers and overextended branches or regional affiliates (*filialy*) of state universities and specialized academies. In other words, and in contrast to broad global trends, the private sector has remained relatively marginal in Russian higher education (about 30 % of total institutions, but only 10–12 % of enrolments), despite some real successes in certain professional fields (Geroimenko et al. 2012). In 2010, in an implicit acknowledgement that these organizational changes had not resolved such problems, President Dmitri Medvedev abolished the Federal Agency for Education on the grounds of duplication of functions, and as complex plans continued to reallocate HEI property between the federal, regional, municipal, and local authorities.

Guided by the same neoliberal logic, in the early and mid-2000s, the federal state also attempted to leverage major reform initiatives through competitive grant processes and tenders, in areas such as block grants to foster internal reform of degree programs and teaching in "innovative universities" (in 2006 and 2007); for research projects and new facilities (to foster both internationally-recognized publications and successful technology transfer); and beginning in 2007–2008, as part of a major restructuring of the system into three or more tiers (as detailed in the next section). The "innovative universities" competition encouraged alignment with European and global standards, the development of student research programs, new external partnerships with business and industry to revitalize degree programs and redesign internships, the development of new-style MA and professional degree programs, and the recruitment of international students. These reforms were conceptualized by Russian reformers working in federal agencies and at the World Bank in Moscow (World Bank 2005a, b) and at the State University Higher School of Economics, together with experts from the OECD and other international partners (Larionova and Meshkova 2007), often together with independent research and policy organizations such as the National Training Foundation (*Natsional'nyi fond podgotovki kadrov* or NFPK). The purpose of such competitive mechanisms was to force greater efficiency within the tertiary sector, and also to compel the universities to seek out new external partnerships and additional sources of revenue (this latter dimension was often required for federal grants).

Admittedly, some of these ambitious reforms were more successful than others, such as the development of a national testing system (the Unified State Exam, *Edinyi gosudarstevennyi ekzamen* or EGE), which was designed to regulate admissions to higher education, to reduce corruption, and to foster greater mobility across the system. Other attempted reforms, such as a proposal to shift entirely to a per capita or student voucher funding scheme, foundered on resistance from the powerful interest groups in the regions and the universities. According to the logic of the new public management, the Russian state was simultaneously pulling back in some ways (devolving at least partial responsibility for control of property, financing, and quality onto the universities themselves), while at the same time asserting new mechanisms for testing, quality assurance, and supervision. These mechanisms

have included public–private commissions to conduct "intellectual audits" of university degree programs, review boards which have included industrialists and employers in an effort to improve professional preparation for labor markets and training for specific industries, and a variety of new rating systems.

The issue of university rankings has been exceedingly difficult and contentious in Russia, largely because even the best Russian universities do poorly in the types of world ranking systems that emerged in 2003 and that have spread globally, with both negative and positive consequences (Hazelkorn 2011). There are various historical and structural reasons for this deficiency, including the decades-long isolation of the higher education sector during the Soviet period; the fact that few senior researchers or faculty members were able to work or publish in English or other foreign languages; the massive brain drain out of the sector during the economic crisis, which was exacerbated by severe budget cuts during the early 1990s; and the enduring separation of advanced research in Academy of Sciences institutes from the mainstream of university education. For example, in the UK-based Times Higher Education ranking in 2009, only two Russian universities ranked in the top 200 (Moscow State University at 155th and St. Petersburg State University at 168th), both of which declined in the subsequent ranking (Odynova 2010). This led to various schemes to increase research output, especially in English-language publications that are counted in citation indexes; as well as to foster greater international ties, which also factor into most ranking methodologies. For better or for worse, Russian federal officials and university leaders recognize that such rankings shape global markets and mobility, and after several false starts, there are efforts underway to develop a new national ranking system, based in part on a methodology similar to the European U-Multirank project (National Training Foundation 2013). The enduring challenge, as throughout the sector, is whether the federal state can exert enough control over such a ranking system to use it as an instrument for effective steering, while at the same time allowing the rating or ranking agency enough functional independence to be seen as objective and credible by both domestic and international audiences.

15.7 Reordering the Higher Education Sector: Institutional Diversification and "Triage"

All of these policy experiments in the 2000s then contributed to a profound effort to reshape the entire higher education and research sector in Russia, planning for which began in 2005, built on the "innovative university" grant competitions and pilot projects in 2006 and 2007, and launched in earnest in 2008 and 2009. This restructuring was intended to create distinct tiers of institutions, and also implicitly to "triage" the entire system, to raise academic quality and adjust to Russia's emerging demographic reality. Fundamentally, the reforms seek to create three tiers of transformed higher educational institutions. First, to invest state resources and policy attention in a top tier that will become globally competitive (as "world-class" and highly-ranked universities) and thereby also lead the transformation of Russia

in key economic and industrial sectors. Second, to link together public and private resources to rebuild a middle tier of HEIs that will help to redevelop regional economies and rebuild the social infrastructure around public services such as transportation, housing, and health care, as well as help to revive local labor markets. Third, to more carefully regulate a lower tier of locally-owned public and private institutions that will meet demand in low-priority regions and employment sectors, drawing largely on private funding. In part, all of this is also clearly a response to the looming "demographic gap" (*demograficheskaia yama*) in Russian society, which, as a result of a sharp drop in birth rates during the upheavals of 1989–1991, means that significantly fewer young people are entering higher education and there is significant overcapacity throughout the sector, especially in its lower tiers (Karpenko 2011).

Initially, the state plan was to carve out an elite sector of 15–20 "world-class" institutions; a second tier of about 150–200 "reformed" universities; and then to allow a third tier to lapse into local, municipal, or private ownership or to simply "triage" out of existence. As a result of intense lobbying by economic and regional interest groups, these numbers expanded in the first rounds of the process, but are then to be winnowed out by results, such as the ability of the new universities to sustain and improve quality in their enrolments, possibly including the recruitment of new international students; to generate new private funding and external partnerships, and thereby secure financial sustainability; to generate funding from applied and commissioned research projects; and to reform their internal management with an eye to such entrepreneurship and engagement.

First, in November 2005, the process of creating new "federal universities" was initiated, by consolidating various specialized institutions in key regions of Russia (as detailed below). Another key step came in 2006, when the government began the process of bending the Academy of Sciences research institutes toward integration with degree programs in leading universities through both bureaucratic pressure and growing funding incentives for university research and facilities. The fundamental thrust of these reforms was to more coherently and efficiently link together research, university education, and economic innovation, which was articulated in legal changes in December 2007, although many administrative and legal barriers persisted (Gokhberg et al. 2009). In October 2008, a top tier of "national research universities" was created, which in two rounds (2009 and 2010) grew to 29 institutions, along with another round of consolidated federal universities (Fedyukin and Froumin 2010; Berdashkevich 2010). These top tiers of "leading" institutions were selected through competitive tenders, although, predictably, there were accusations that final awards were unduly influenced by bureaucratic, corporate, and regional interests.

This was followed in November of 2009 by the allocation of special legal and budgetary status to two massive "national champions," Moscow State University and St. Petersburg State University. At the same time, a cluster of new institutions was created, led by the Skolkovo Institute of Science and Technology and the Skolkovo School of Management, to be located in an entirely new "innovation city" in Moscow. Following the earlier precedent of full autonomy for Moscow State, both top national institutions were given direct budget lines, effectively removed from

the jurisdiction of the MOES, given autonomy over degree profiles and academic content standards, and given the right to award their own degrees. In exchange they will be subjected to direct scrutiny by the executive branch, and are expected to dramatically increase their research productivity and rise rapidly in world university rankings. The Skolkovo innovation projects, in partnership with the Massachusetts Institute of Technology (MIT) and global corporate partners such as Cisco Systems, Microsoft, Siemens AG, and IBM, are intended to link to state enterprises and firms in fields such as information technology and computer science, stem cell research and genetics, energy systems and storage, and nanotechnology.

The top tier of national research universities (NRUs) is dominated by specialized institutions in key scientific and technological fields such as nuclear engineering and physics, metallurgy and materials science, aviation and aerospace, geophysics and mining technologies, information technology, power engineering and energy systems, medical sciences and biotechnology, and nanotechnology (Zhurakovskii and Arzhanova 2011; also Ministry of Education and Science 2012). This tier includes established universities in Moscow and St. Petersburg, as well as in industrial and regional hubs such as Kazan, Nizhnii Novgorod, Perm, Ekaterinburg, Novosibirsk, Samara, Saratov, Chelyabinsk, Tomsk, and Irkutsk. The explicit goals of the NRUs are to drive rapid technology transfer and the commercialization of university research; to develop global-standard MA degrees and continuing education programs, especially in science and technology; and to combine formerly closed research institutes from the defense-industrial complex (in fields such as physics, chemistry, and engineering) with Academy research institutes, and to combine that capacity in order to rapidly develop university-based research programs. In addition to several multifaculty or "classical" state universities in the new tier of NRUs, the Higher School of Economics (founded in 1992) was also funded, with the explicit goal of consolidating international-quality social science programs, as well as generating policy-relevant research for Russian government agencies in economics, social policy, and in the field of higher education itself (Higher School of Economics 2011; Froumin 2011).

The tier of federal universities began in 2005 with pilot projects in Krasnoyarsk (the Siberian Federal University) and Rostov-on-Don (the Southern Federal University). The explicit goal of this project was to consolidate formerly specialized institutions (in medical, pedagogical, technical, and other fields), and to create new mega-institutions that would act as drivers of regional (re)development (Fedyukin and Froumin 2010). In other words, the goal of the NRU project was to decisively overcome the Soviet-era separation between research and education; and the goal of the federal university project was to overcome the Soviet-era legacies of institutional hyperspecialization and bureaucratic parallelism (so called *otraslevye* or narrow "branch" HEIs). The federal universities also had an explicit mission of regenerating the "innovation systems" in their respective regions as well as a mission of "social responsibility," to help design and implement new public–private partnerships in social services and the service professions. They are also required to work closely with employers to fit degrees to local and regional labor markets, and to generate a growing percentage of their funding from such external partnerships. There are now nine federal universities, including Krasnoyarsk, Rostov,

Kaliningrad (the Baltic Federal University), Arkhangelsk (Northern Federal University), the Volga region (Kazan Federal University), Ekaterinburg (Urals Federal University), Yakutsk in Siberia (Northeastern Federal University), and Vladivostok (Far Eastern Federal University), and now also Stavropol (in 2012, the Northern Caucasus Federal University), with other potential sites under discussion. As with the NRUs, these investments are intended to last for 10 years, but could be revoked or reallocated if the new institutions do not show results in terms of research productivity, new professional development programs, and economic modernization in their regions. The early phases of the federal university projects have been plagued by controversies and conflicts between the formerly independent institutions (Kiroi 2010), and their ultimate success is unclear.

Taken as a whole, these programs constitute a comprehensive and very ambitious transformation of the entire system of Russian higher education and research, comparable in scale to the system-wide reforms that are underway in China and the changes that have unfolded since 1994 in South Africa. However, in the Russian case, such reforms can build upon powerful historical legacies in science and technology, but must also deal with sclerotic institutional structures and powerful vested interests in the universities, in the Academy of Sciences research institutes, and in both federal and regional state agencies. The creation of new tiers was accompanied by efforts to broaden recognition of foreign degrees and align more closely with European standards in November 2011 (Motova and Pykko 2012); and by the creation of a major new grant program in 2010–2011 intended to draw back émigré scientists, together with generous state funding for laboratories and equipment (Clery 2010).

Naturally enough, serious problems with quality and research productivity have persisted (Oleinik 2011), and many Russian degree programs remain "dysfunctional" in their relation to labor markets and employers (Sheregi 2011). There has been ongoing resistance from researchers in the Academy of Sciences to their full integration into university structures (Panfilova 2011), and tensions over the conversion to European and global standards in credit systems and degree qualification profiles. Significantly, there has also been an enduring lack of public and student participation in the development and implementation of the reforms, despite the fact that active student participation is a required component of alignment with the Bologna Process and the European Higher Education Area. While the ultimate success of these transformational reform projects remains to be seen, taken as a whole, they represent a sophisticated blend of selected global policy ideas and steering tools, together with distinctive strategies tailored to Russia's unique institutional heritages and interconnected state and regional interests.

15.8 Conclusion: Neoliberal Models, Russian Political Realities, and Global Competition

The changes in Russian higher education and policy over the last 20 years have been dramatic, and have been shaped fundamentally by the need to rapidly transform the legacies of the rigid Soviet higher educational system, while at the same

time salvaging the scientific and technical capacity for which that system was renowned. Another imperative came from the need to keep up with the dramatic changes underway in Europe around the Bologna Process, and in China around its own ambitious university reforms. The first wave of neoliberal policy experiments in the 1990s broke open the Soviet-era state monopoly on higher education, allowed for the reemergence of private and religious higher education, and established the principle of university autonomy, even as budgets were slashed amid rapid and chaotic decentralization. By the end of the decade, these changes were perceived as contributing to shallow "Westernization," institutional degradation, policy incoherence, and pervasive corruption. Russian higher education policy after 2000 then reemphasized state-led modernization and the reassertion of state academic standards. The federal state reasserted its dominance and moved to rein in the private sector, and yet experts and policymakers also experimented with the use of selected neoliberal tools and steering mechanisms such as competitive grant tenders, quality assurance templates, intellectual audits of academic programs, and more rigorous accreditation for both public and private providers. Admittedly, the new Russian national strategies in higher education and research were informed by neoliberal policy paradigms as articulated by experts associated with the World Bank and OECD regarding issues such as university autonomy, the need for entrepreneurship, national admissions testing, and the necessity of cost shifting onto the public. However, it is also clear that the adoption and selective implementation of such global policy models has been shaped by the political imperatives of the federal state together with complex negotiations involving interconnected networks of bureaucratic, regional, corporate, and academic elites.

In conclusion, the cumulative effect of these ambitious reform initiatives and new state investments is that while the "modernization" of Russian higher education is neither as coherent nor as successful as the Russian authorities and university leaders often seem to assert, there are nonetheless significant sectorwide changes underway that could prove transformational in the years ahead. If successful, the reformed universities could play a leading role as Russia carves out its own distinctive path towards (re)modernization and integration with the global economy, provided of course, that Russia's chronic problems of overbearing bureaucratic power, intellectual isolation, patron–client factionalism, and institutional corruption can be mitigated or overcome.

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Chapter 16
The Complex Web of Policy Choices: Dilemmas Facing Indian Higher Education Reform

Roopa Desai Trilokekar and Sheila Embleton

16.1 Introduction

Enders (2004) astutely observed that "'internationalisation' and 'globalisation' are nowadays performing a kind of 'icebreaker' function for national reform agendas. In many cases, neither the diagnoses of the perceived problems of the system nor the corresponding prescriptions for reform are in any way new. But the international argument lends fresh wind to national debates on higher education reform which can now sail under the flag of 'internationalisation' by claiming to strengthen national capacities in the face of global competition" (pp. 365–366). Indian higher education has been described variously as the Achilles' heel (Altbach 2005), the "sick child of education" (Rizvi 2013), in a "state of disrepair" (Prime Minister Manmohan Singh as quoted in Kapur 2009a) or a state of crisis (Neelakantan 2007; Tilak 2010; Kapur and Mehta 2007a; Trani and Holsworth 2010). However, in the last decade, higher education reform has taken on a new fervor (Bhatia and Dash 2010; Trani and Holsworth 2010; Singh 2008). After a long moratorium and an exclusive policy focus on primary and secondary education (Tilak 2011, 2012), a floodgate of higher education policy initiatives has been undertaken with "aims to transform India into an east [sic] Asian tiger … [with] high rates of economic growth in a globalized world … [that] requires a strong and well-distributed higher education system" (Tilak 2012, p. 37).

Scholars suggest that the "social pact" between higher education and society is changing as a result of globalization (Maassen et al. 2012), although with much disagreement as to the exact role of the nation-state in configuring this relationship. This chapter takes the view that while there are common globalization forces (see for example the role of the World Bank in Tilak 1999; Sachdev n.d.; Praveen 2010;

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_16

Agarwal 2006), nation-states remain predominant actors in shaping higher education policy (Carnoy et al. 2013; Trani and Holsworth 2010; Maassen and Cloete 2002), and also that proposed policy changes are rooted nationally and underscore the specific traditions and circumstances of countries (Enders 2004; Teichler 2004). It is with this framework in mind that this paper examines policy developments in Indian higher education. It uses 2005 as its marker as that is when the Prime Minister of India established the National Knowledge Commission (NKC), a high-level advisory body, to transform India into a knowledge society.

This chapter is organized into four sections. The first provides some context to the higher education policy arena in India. The second outlines the key recurring policy issues. The third analyzes the policy processes and policy choices made by the government. The fourth provides a few policy recommendations. In conclusion, the paper offers a few observations on the role of the nation-state in higher education policymaking in the context of globalization.

16.2 The Policy Context of Indian Higher Education

India is a federal parliamentary state (29 states and 7 union territories). Higher education is a concurrent responsibility of both the Union and State governments (Tilak 1999; Bhatia and Dash 2010; Agarwal 2006, 2009). There are well-developed national policy planning mechanisms, namely the 5-year national plans; the centralization of responsibility through the Ministry of Human Resource Development (MHRD); the University Grants Commission (UGC), the All India Council for Technical Education (AICTE), and 13 national professional regulatory bodies; the Central Advisory Board of Education (CABE); and National Policies on Education (1968, 1986).

The system is complex and diverse; it represents the largest number of higher educational institutions in any country in the world and the third largest number of enrolments (Agarwal 2009; Altbach 2005, 2009, 2010; Mukherjee 2010; Feith 2008). There has been a steep rise in growth since independence from British rule in 1947. In 1950–1951, India had 25 universities and 700 colleges with an enrolment of 0.1 million students (Agarwal 2006, 2009; Kapur and Mehta 2007a). The estimates for 2011 were 600 universities and 32,000 colleges with an enrolment of 17 million students (Tilak 2012; Anand 2012). These numbers mask the wide diversity within the system, the differences across regions, the urban–rural divide, and the vast array of institutions; central, state, and "deemed" universities[1], affiliating and unitary universities, institutions of national importance at the central and state levels, affiliated colleges, and aided and unaided private institutions. The majority of students in the system are enrolled in general arts and science colleges, although the greatest

[1] The deemed university is an institutional innovation that may be sui generis to India. These institutions have a narrow domain but can grant degrees. They usually have high standards and are accorded more autonomy. Agarwal (2009, pp. 76–78) gives more detail on deemed universities; normally a university can only be set up by an Act of the Central or a State legislature, but on the recommendation of the UGC, the Central government can grant deemed status by executive order.

growth in the number of institutions has been in the engineering and technical areas, management and business studies, medicine, law, and other professional and vocational programs. This growth has taken place within a regime of tight fiscal restraint with spending per student declining steeply since independence. From an allocation of 1% of GNP in the 1970s it went down to 0.35% in the mid-1990s before moving up to 0.6% by the end of 2000s (Bhatia and Dash 2010; Kapur and Mehta 2007a; UGC 2008). Future projections aim to increase higher education expenditure up to 1.5% of gross domestic product (GDP), a huge increase from current expenditure (Neelakantan 2007; Sharma n.d.;Agarwal 2012). These projections already seem to face challenges with reports that the 2012–2013 budget has cut expenditure on higher education by 13% (ICEF Monitor 2013). Further, UGC (2008) reports that public expenditure per student in higher education in real terms, when considering the tremendous growth in enrolment, has declined considerably making India a country with one of the lowest public expenditures on higher education per student (US$ 406) compared to other developing countries such as China (US$ 2728) or Brazil (US$ 3986), to name only two.

Recent government reforms were based on the reports of two major commissions, the National Knowledge Commission (NKC) in 2005 and the Committee to Advise on Renovation and Rejuvenation of Higher Education, also referred to as the Yashpal Committee, in 2009. The 11th Five-Year Plan (2007–2012) followed the NKC and is often referred to as *the educational plan* (Tilak 2010), given that it reflected several of the recommendations of the NKC. India is currently in its 12th 5-year planning cycle (2012–2017) and there is much debate about the influence of the Yashpal Committee report vis-à-vis the NKC report in influencing its final form.

The NKC was appointed by the prime minister to advise the government on matters related to the knowledge economy/society, including higher education and research. It outlined over 200 recommendations across 24 policy areas. Its recommendations for higher education focused primarily on increase in growth and size (e.g. a goal of 15% gross enrolment ratio (GER)[2] for 2015 to move up to 30% gross enrolment ratio by 2020 and an increase in institutions—1500 universities and 50 new national universities by 2015). It also made reference to matters of governance, quality, and innovation, with one of its more substantive recommendations being setting up a new centralized independent regulatory body, the Independent Regulatory Authority for Higher Education (IRAHE). The 11th Five-Year Plan (2007–2012) that followed targeted an increase to 15% GER by 2012 and included massive plans for growth of institutions: 30 new central universities, with a greater focus on technical education, 20 National Institutes of Technology, 6 or 7 new Indian Institutes of Management (IIMs), 7 or 8 new Indian Institutes of Technology (IITs), 5 institutes of science and engineering research, 4 institutes of information technology, and 2 Schools of Planning and Architecture (Altbach and Jayaram 2009; Bhatia and Dash 2010; Neelakantan 2007; Mukherjee 2010; Feith 2008; UGC 2008; Pitroda 2010; Thorat n.d.; Sharma n.d.; Altbach 2009; Tilak 2010, 2011). In keeping with glob-

[2] Gross enrolment ratio (GER) is defined as the percentage of persons enrolled in higher education with respect to the total population aged 18–23.

al developments, the 11th plan proposed setting up 14 "innovation universities"[3] (Tilak 2011). Cognizant of higher education's broader goals of access and equity, the 11th plan also addressed issues of new scholarships, loans, and funding schemes to encourage improvement and competition among the nonelite institutions, i.e., institutions, including universities and colleges, often at the state level that are considered second or third tier in comparable quality (Kapur 2010). It outlined setting up colleges in 340 districts in India identified as low enrolment areas. These new institutions were to be set up in partnership with the State governments (Mukherjee 2010). The plan also addressed the need for overall system growth, expecting an addition of 2000 colleges of engineering and technology, 1300 polytechnics, 400 undergraduate colleges, and 50 centers for training and research in the system (Tilak 2011, 2012; Bhatia and Dash 2010; Altbach and Jayaram 2009; UGC 2008).

Following the NKC and the implementation of the 11th plan and to further guide efforts in higher education, the MHRD set up the Yashpal Committee. Originally intended to focus on issues of regulation and governance, it submitted a report that included a wide range of policy reforms. It too recommended the establishment of a new regulatory body, a National Commission for Higher Education and Research (NCHER). The NCHER would work federally through the setting up of State higher education councils which would eventually report back to NCHER. Like the NKC, it spoke for institutional autonomy (not just financial and administrative, but also academic). The Yashpal report focused more on the nature of change within existing institutions than the growth or addition of new institutions. For example, it recommended that premier institutions such as the IITs and IIMs be converted to comprehensive universities and that research and interdisciplinarity be core features across all universities. Unlike the NKC, it spoke against the setting up of foreign and/or private institutions in India and encouraged the hosting of international visiting scholars/faculty as ways to stimulate internationalization. It also supported the notion of diversity within the system, but stressed equalization policies (e.g., funding) so as to eliminate the current differentiation between the Central and State universities (Academics-India n.d.; Education in India 2009; Government of India 2009; Thorat n.d.; Tilak 2010).

Recent government reports boast major policy achievements. The Minister for Human Resources Development proclaimed that India's GER shot up from 12.4% in 2008 to 20.2% in 2012 (The Times of India 2012) and that the government's budget for higher education in 2011–2012 was Rs. 2.9 billion, essentially indicating a 34% increase from 2010 to 2011 (The Chronicle of Higher Education 2011). Fifteen of the 30 planned Central universities have been established, 3 being converted from existing State universities, in addition to 8 IITs and 6 IIMs (Neelakantan 2011). Almost every state in India now has a Central university. By 2030, the government expects 400 million Indian students to enter higher education (equal to the entire population of the USA (The Times of India 2012). To implement change, the

[3] The Innovation University Bill does not define what an innovation university is, but it is assumed to be a teaching and research institution of national importance, encouraged to be different in some significant way (curriculum, governance, organization, etc.) from "traditional" institutions.

government has introduced approximately 15–17 new bills in Parliament[4]. These cover a range of policy initiatives including regulation and governance, funding, quality assurance, new institutional growth, data management, system mobility, and transfer.

Some bills such as the Foreign Educational Institutions Bill and the NCHER Bill have been highly contentious and controversial, and have not yet been approved by Parliament. The NCHER is currently undergoing a consultative process in the context of considerable opposition from Parliament. Others are in a stage of revision or in the process of approval; regardless, as a package, they represent the speed, focus, and intent with which the government is addressing this policy arena (Department of Higher Education 2010; Tilak 2010; The Indian Express 2012; Neelakantan 2011).

The report of the government working group for the 12th Five-Year Plan on higher education indicates the future policy directions of the government. Access through expansion of the system continues to be its primary focus, with the difference being greater clarity in policy that encourages the inclusion of foreign educational providers and more private–public partnerships (Tilak 2010; Government of India 2011). A focus on excellence and innovation is established through an increase in research funding, greater institutional autonomy, and support for interdisciplinary work and academic collaboration. There are plans to set up innovation universities and "meta" universities[5] (Prime Minister 2011; Government of India 2011; Koshy and Nanda 2011). Most importantly, as described earlier, plans for a new regulatory body, the NCHER, seem to be on the way, despite this proposal facing resistance in Parliament.

16.3 Key Policy Issues

Tilak (2012) suggests that "having no policy on higher education has itself been the policy" of the Indian government (p. 36). Perhaps this might have been true in earlier years, when the government was accused of negligence in this policy arena. Clearly times have changed and higher education has become an important policy instrument for the government, as it has for governments in other developing countries. What is of interest is how the Indian government engages in this policy arena. What "Indian" characteristics influence the nature of this engagement? What impli-

[4] The major bills are The Bill to Enable Public Private Partnership in Education, The Educational Tribunals Bill, The Foreign Educational Institutions (Regulation of Entry and Operations) Bill, The Institutes of Technology Bill, The National Academic Depository Bill, The National Accreditation Regulatory Authority for Higher Educational Institutions Bill, The National Commission for Higher Education and Research (NCHER) Bill, The National Institutes of Technology Bill, The Prevention of Unfair Practices in Technical Educational Institutions, Medical Educational Institutions and University Bill, The Protection and Utilization of Public Funded Intellectual Property Bill, and The Universities for Innovation Bill (Tilak 2010; Kapur 2011).

[5] A "meta" university could also be a virtual university that will provide students flexibility in curriculum choices and enable them to access different systems and institutions.

cations do these policy directions hold for Indian higher education and Indian society at large? Higher education policy in India is characterized as an uncoordinated patchwork of initiatives, with more short-term vs. long-term perspectives: the last bastion of the "*licence raj*," being highly bureaucratic and regulatory, politicized and implicated in corruption and "rent-seeking" behavior (Kapur and Khosla 2011; Kapur 2011; Altbach and Jayaram 2009; Agarwal 2006). A host of policy issues emanate from a study of Indian higher education policymaking; listed below are the four most contentious and recurring issues.

16.3.1 The Growth of the Private Higher Education Sector

There has been de facto not de jure expansion of the private higher education system in India (Kapur and Mehta 2007a). This is of particular relevance as the sector has grown the fastest and now accounts for two thirds of all colleges, four fifths of all professional schools, and one third of general program colleges (Kapur and Mehta 2007a; Agarwal 2006). The impact of the growth of private higher education institutions is greatest in professional programs where, for example, private engineering colleges, which accounted for 15 % of all engineering colleges in 1960, had by 2003 come to represent 86 % (Kapur and Mehta 2007b). Similarly, private medical colleges went from about 7 to 41 % of the total pool of medical colleges and private business colleges to close to 90 % of all business schools (Kapur and Mehta 2007b). On the surface, it would seem that the government has simply met demand through enabling the growth of private higher educational institutions. However, the picture is a bit more complex. In India, the government provides funding to certain private not-for-profit institutions, those that are officially labeled "aided" institutions and Tilak labels "pseudoprivate" (Tilak 1999, p. 121). Parallel to these institutions, there has been a growth of unaided private not-for-profit and for-profit institutions. It is this second group of institutions that has attracted attention from the critics. This is because higher education is considered to be primarily a public good in India, and thus privatization of this sector is viewed suspiciously. In such a context, government policy has been criticized for having enabled the mushrooming and creation of a whole new cadre of commercial education providers. As an indicator of the growth and significance of this sector within Indian higher education, it is pertinent to note that they contribute by way of "the largest advertising spending category in print media (the largest share of advertising market in India)" (Kapur and Mehta 2007b, p. 23).

Diminished funding for higher education in a context of increased demand has undoubtedly resulted in policies enabling the entry of aided private institutions, but in particular the growth of unaided private institutions. However, in the Indian context, it would be inaccurate to propose that poor government funding is the major reason for the growth of the private sector. Inherent in the policy is the vested interest of influential politicians and industrialists with political clout. The demand for higher education and related services being in surplus of supply, there are high

returns to be expected from investing in this sector. Thus there has been growth of private higher education not only in degree-granting colleges and universities, but also in parallel educational services, vocational schools, diploma and certificate programs, and extremely popular coaching and testing preparatory centers.

Some of these private institutions extort donations or charge capitation fees, hire unqualified faculty and staff, pay them below-standard wages, and engage in a whole host of unethical and corrupt practices to cut corners and make high profits. This is clearly evident in the numerous judicial cases related to the operation of such colleges. This is not to imply that there are no legitimate or quality private institutions within the Indian system (Kapur and Mehta 2007a, b). This is far from true, as there are many examples of legitimate high quality institutions supported by business houses and charitable organizations, examples being the Birla Institute of Technology and Science (BITS), Manipal University, and more recently Azim Premji University. The point of contention is that "the hand in glove" approach of the government with private profit-seeking enterprises has tainted all efforts in the growth of the private sector with the same brush and dissuaded any form of "genuine" philanthropy. It is indeed disheartening to note that some of India's corporate houses have made extremely large donations (up to US$ 50 million) to private institutions such as Harvard in the USA (Kapur 2011) and that they have built in-house training and development capacities within their own large campuses in India, thus often investing amounts larger than "any single investment by the Indian government in an institution of higher learning" (Kapur 2011, p. 89).

The combination of poor quality education, unethical practices, and crass approaches to commercialization generates widespread anathema to any form of private higher education. In addition, there is a strong view that the growth of the private sector exacerbates issues of access and equity, and therefore provision of higher education should be the sole responsibility of the state. In such a context, there is inevitably increased resentment that government policy approaches are moving toward further encouraging rather than discouraging the growth of the private sector, thus fundamentally restructuring the "social contract" between higher education and society at large (Maassen et al. 2012). For example, recent student financial aid/loan policies allude to the likelihood of students self-financing their education at private institutions, and the government's plans for growth assume public–private investments (Kapur 2011).

The growth of the private higher education sector is thus a highly sensitive and volatile policy issue. What is particularly troubling is that this growth has occurred largely due to the "slip between the cracks" in the policy process, where at one level the government has turned a blind eye toward the growth of private institutions as they assist in meeting growing social demand, and at another it has had stakes in its growth in the form of key political actors who have used their power within the government either to set up their own private institutions or facilitate those of others known to them. Since such growth is less a result of a conscious or strategic government policy direction, Kapur and Mehta (2007a) go as far as to suggest that the growth in private higher education is a result of the breakdown of the state system.

16.3.2 Regulatory/Governance Frameworks

The irony within the Indian context is that when one considers the challenges with issues such as the growth in the private sector, one might suggest the need for increased state regulation. And yet, as Kapur (2010) suggests: "the most acute weakness plaguing India's higher education system is the crisis of governance" (p. 313). India has 13 professional and vocational regulatory bodies, in addition to the AICTE and the UGC. The large number of bodies, each with its own reporting structures, some of which report to other ministries (i.e., not MHRD), makes for a complex regulatory structure, one that works against a cohesive and coherent policy approach (Tilak 2010). The mandates of these regulatory bodies are expansive and they enable control of all aspects of institutional governance—financial, administrative, *and* academic. The result is a lack of academic freedom and institutional autonomy, as many activities such as hiring of faculty/administrators, setting of salaries and fees, curriculum and testing, and many more aspects of higher education are centralized and standardized by these regulators. There is great awareness that such a system offers little by way of effective and efficient governance (Tilak 2010). A former Minister of Science and Technology is quoted as saying "The core of the governance problem lies in the nature of highly centralized state regulation of higher education that seeks to micromanage who can teach what to whom, at what cost … they have destroyed our entire efforts to take education forward" (Kapur 2010, p. 314).

What has made matters worse is that this already complex regulatory system has also been plagued with political interference and unethical and illegal practices. There are many examples. The UGC itself has come under the spotlight for having granted 60 institutions deemed university status in the last 5 years; what was embarrassing was that a review of these institutions judged 44 out of 60 institutions unfit for deemed university status (Gupta 2011; Kapur 2011). There have also been corruption charges involving the chair of the Medical Council of India (MCI) and senior officials from AICTE (Kapur 2011). These incidents hardly speak to a system that builds confidence and trust in its regulatory and governance abilities. As Kapur (2010) states, it is an irony that in the Indian state, regulatory frameworks established to protect academia from political interference and corruption have themselves transformed into political control mechanisms. To remedy this situation, the Indian judiciary has often stepped in to resolve litigations, but in the process has itself taken on new regulatory roles, thus serving to only further complicate the already convoluted system (Kapur and Khosla 2011; Tilak 2010). These core systemic weaknesses are said to further dissuade high quality talent from academia and its administration, further exacerbating the dilemmas within Indian higher education (Kapur 2010; Altbach 2009).

It is with these challenges in mind that a recommendation for a single apex body becomes attractive, and the government seeks to move towards establishing the NCHER (Dhar 2011; Singh 2009; Department of Higher Education 2010; Sharma n.d.). However, there are a number of concerns about whether this is a policy in the

right direction, and if such a move will resolve the major problems with the system. Would a simple elimination of the existing regulatory bodies remedy the issues of politicization and corruption that have made the current regime ineffective? However, there are many recommendations to protect the sanctity of the proposed new body from government interference. For example, it has been suggested that it be established through a constitutional amendment and have constitutional status, that its chairperson be given the same status and privileges as an election commissioner, and that it maintain a national registry for prospective vice-chancellors that it uses for appointments (Singh 2009; Kapur 2010). It is unclear which, if any, of these recommendations will be accepted by the government (Dhar 2011).

The NCHER could have been envisioned as a policy-planning and goal-setting body rather than strictly a regulatory body, thus encouraging the much needed system-wide planning and institutional autonomy (Kapur 2011). Yet, a closer look at the legislation drawn up for the NCHER suggests that it has been envisioned as primarily a regulatory body and, worse still, with such vast and overriding functions that regardless of its own autonomy from the government, it is hardly likely to provide space for any institutional autonomy (Tilak 2010; Neelakantan 2011). It would be in charge of regulating almost all matters of institutional governance and administration (Tilak 2010). Where would this leave new institutional models that have been proposed, such as innovation universities which have been envisioned with total institutional autonomy, "free from government and social control" in India and beyond (Tilak 2010, p. 79)? It is disconcerting to note that the NCHER could fall prey to some of the same administrative shortcomings as the UGC and the current regulatory frameworks and is perhaps the reason that the department-related parliamentary standing committee on human resource development seems to have rejected this government proposal for creation of such an overarching body (India Education Review 2013). Tilak (2010) is right on the mark with his tongue-in-cheek comment that "the solution might be worse than the disease?" (p. 88).

16.3.3 Internationalization

Closely linked with policy issues relating to the growth of the private sector and system regulation/governance is the concern over the internationalization of Indian higher education. There are two aspects here. The first has to do with the large number of Indian students studying abroad and the amount of foreign exchange that leaves the country as a result. As per estimates in 2006–2007, Indian students spend US$ 3.5 billion to study abroad; this is close to the total amount spent by the Indian government on higher education (US$ 4.5 billion) (Kapur 2010; Kapur and Mehta 2007b). A related dilemma is the high nonreturn rates of Indian students who study abroad. What is particularly disturbing is that the nonreturn rates are much higher among students pursuing advanced research programs. Kapur (2010) suggests that "[d]espite the increasing attractiveness of India, the percentage of Indians obtaining PhDs in Science and Engineering who had 'definite plans to stay' in the United

States increased from 56.3% in 1994 to 1997 to 62.7% in 2002 to 2005, even as the number of Indians obtaining PhDs in Science and Engineering declined by 30% (from 5,014 to 3,587)".

However, Agarwal (2010) notes that the former thinking on brain drain has shifted to a focus on brain circulation and brain gain. In addition, with the recent strength of the Indian economy, there is some reverse migration, although returnees usually enter private rather than public sector enterprises. This creates an added pressure in attracting talent back to public institutions such as those of higher learning. The new thinking on brain gain/circulation has encouraged the Indian government to develop many schemes to capitalize on both overseas Indians and Indians who choose to return to India for either a short- or long-term duration. The 25 million people of Indian descent who live abroad are officially labeled NRIs or "nonresident Indians" (Tharoor 2013), and account for approximately 3.2% of the country's GDP in the form of remittances (Agarwal 2010). The government has thus provided many opportunities to attract NRI investment in India and also engage their expertise in policy development and planning. An excellent example is the NKC Chair, Sam Pitroda, who is a diasporic Indian entrepreneur (Rizvi 2013).

The second concern with internationalization has to do with approval for foreign institutions to set up degree programs/independent campuses. This is a contentious policy issue, with the related bill first introduced in 1995 (The Indian Express 2012), rejected, reintroduced, revised, withheld, and as of March 2013 once again cleared by the relevant parliamentary committee and awaiting consideration by Parliament. The Indian government makes a distinction between foreign partners and providers. As of 2010, 140 Indian institutions and 156 foreign institutions were reported as being engaged in 225 academic collaborations (Kapur 2011). These are considered foreign partners as these institutions cannot offer their own degree programs in India. This move to enable international educational *providers* to offer degree programs in India and set up independent campuses has attracted the most controversy thus far. A number of arguments have been made, both in favor of and in opposition to, this policy direction. The government, represented by former minister Sibal (MHRD)[6] is largely in favor of such a policy initiative, as a way to improve competition and the quality of Indian higher education. There is an argument made that such a move would widen access and increase the GER, and also result in retaining foreign exchange, as the funds currently spent by students studying abroad would remain in India (Chakrabarti et al. 2010; Altbach 2010; Agarwal 2009).

The Indian government, like several other governments, is also interested in establishing "world class," or as they are referred to in the Indian context, "innovation universities." This is a strategy that is seen as necessary to make "India the global knowledge hub and set benchmarks for excellence for other institutions of higher learning through path breaking research…" (Tilak 2010, p. 79). Altbach is quoted as saying that India "is a world class country without a world class university" (Baty 2013). Currently only two Indian institutions (IIT Delhi and IIT Bombay) appear on the Times Higher Education rankings and two (IIT Kharagpur and IIS Bangalore)

[6] Kapil Sibal was minister until October 28, 2012. The current minister is Smt. Smriti Zubin Irani.

appear on the Shanghai Jiao Tong University rankings (Chakrabarti et al. 2010). Thus, internationalization, i.e., having foreign educational providers in India, is also seen as a way to stimulate the growth of innovation universities, as such institutions will have campuses abroad as well as in India, have a good balance of Indian and foreign students, operate with complete autonomy, and focus on global themes (Altbach 2010; Singh 2008).

There is strong opposition to this perspective, as internationalization is essentially noted as a move that would signal complete commercialization of the educational sector, making higher education "open and free for all" (Tilak 2010). This would shift education from a public to a private/market good and exacerbate existing cleavages of class, caste, gender, and religion within Indian society. Instead of improving quality, such a measure would invite foreign diploma mills to set up franchises in India, institutions that were more interested in profits rather than offering quality education. Many concerns with consumer protection and the reputation of the overall system have been raised. Others allude to the dangers of cultural imperialism and the loss of traditional state sovereignty in its nation-building function, and worry that the government would eventually walk away from its responsibility for providing a strong public higher education system (Praveen 2010; Kapur 2010) thus reshifting, as discussed earlier, the social contract between higher education and society. Some opponents recommend, as a possible remedy to issues surrounding foreign institutions, that only the top-ranking world institutions be allowed entry into India (Bhushan 2004; Kapur 2010). Although there was some indication that this stipulation might not eventually emerge in the final piece of legislation, The Times of India reported (June 22, 2013) that the eventual regulations would require that the institution be in the top 400 in one of the three major world university rankings.

Internationalization as a policy issue seems to prompt a strong oppositional voice to the commercialization of higher education and raise concerns as to the intent and purpose of foreign providers in coming to India. For example, Tilak (2010) asks whether foreign universities will come with the massive investment needed for the system and if so, for what purposes; whether India will be successful in attracting top-ranked institutions, and if so, whether these institutions would be interested in offering undergraduate degrees, which is what is needed in India, or if they would only be interested in research collaborations. Will attracting foreign institutions to India actually stop Indian students from studying abroad? How will this policy solve issues of funding, quantity, and quality? How will foreign institutions be held accountable if they do not come under the scrutiny and regulation of the Indian regulatory bodies? The overall concern is that simply facilitating the entry of foreign providers and making provisions to fast-track their applications/approvals (as recommended by the last bill) will be more harmful than providing a remedy to the current dilemmas within Indian higher education.

16.3.4 Social Equity/Reservation Policy

Discussions on internationalization inevitably lead to a debate on the Indian "reservation" or affirmative action policies,[7] and whether foreign institutions would have to comply or be exempt from them. Altbach speaks strongly against policies that preclude the concept of meritocracy, a "primary motivating principle," "to have successful world class universities" (Altbach and Jayaram 2009, p. 18). However, reservation policy lies at the very core of any public policy issue in India and sparks the most divisive and contested politics on identity (Rizvi 2013). In higher education, reservation policy influences the admissions processes, the available spaces, the funding and scholarship offerings, and the hiring of staff and faculty, at all public and most aided private institutions (except those considered minority institutions). Thus, as a policy issue, it raises fundamental questions about the role of higher education in promoting social equity and justice, albeit mostly in terms of caste and religion, rather than in terms of income, region, or gender (Agarwal 2006; UGC 2008; Kapur and Mehta 2007b).

There are contradictory views on the overall success of India's reservation policies. Some scholars suggest that higher education is still the domain of the elite upper middle class who continue to keep their stronghold and their interests protected (Sachdev n.d.; Ganguly-Scrase and Scrase 2012). They see the new market-oriented approaches in higher education as serving these interests and thus exacerbating inequalities in the system. There are others who have clearly documented the widening of equity problems in higher education: i.e., the differences between different regions in India as well as urban vs. rural, and high vs. low class groups (Sachdev n.d.; Ganguly-Scrase and Scrase 2012; Sharma n.d.). Still others document "moderate" success between the different castes, but increasing differentiation within castes as the more disadvantaged groups within the designated castes get left further behind (Kapur 2010; Feith 2008; UGC 2008).

Given the centrality of this policy issue to the Indian ethos, it is a powerful policy tool in the hands of government, which often uses it as leverage to attract attention and appease electorates. It is an extremely volatile issue that can take "visible" forms because of its precise nature. For example, the issue of reservation is even more controversial when it comes to its application to elite institutions such as the IITs and IIMs and the proposed foreign institutions. This is in spite of the fact that institutions like the IITs represent barely 1% of all (engineering) students (Feith 2008; Altbach 2005, 2009). The issue does not seem to invoke the same degree of interest or controversy when it comes to the thousands of mediocre- or poor-quality state institutions (Kapur and Mehta 2007b). There are other inherent inconsistencies in how reservation is applied as a policy strategy. For example, the Indian government spends a total of ₹ 76 million[8] on issues of access, equity, and quality at the secondary school level; at the higher education level this allocation goes up

[7] Policies established to redress discrimination against India's lower castes or "Dalits." These set reserved spaces in public service are proportional to the share of Dalit populations.

[8] ₹ 76 million is approximately US$ 1.22 million; ₹ 840 million is approximately US$ 13.5 million as of January 2015.

to ₹ 840 million (see UGC expenditure as cited in Kapur and Mehta 2007b). This seems inexplicable given the high secondary school drop-out rates among students from lower castes and classes and the poorly resourced secondary schools that influence the academic performances of these same groups of students. If educational equity is an issue, why is not enough attention being paid to the pre- and post-higher education experiences/needs of students from disadvantaged castes/classes? Why is there such a singular policy focus on higher education admission criteria, especially at elite institutions and for competitive professional programs?

16.4 Higher Education as Public Policy

A closer look at higher education policy in India over the last 5 or more years would not support Tilak's (2010) claims that there is a "vacuum" in higher education policy in India, or that the "hallmark" of Indian policy is in fact "the absence of a clear, coherent, explicit and long term policy perspective" (Tilak 2011, p. 4; Agarwal 2006; Koshy and Nanda 2011). Higher education as a policy issue has certainly been on the government's radar as is evident through the discussions summarized in this chapter. It has been an active policy arena with policy being formulated and attempts made at its implementation. However, there are many challenges to policy implementation in India (Rizvi 2013; Agarwal 2012). Rizvi (2013) suggests that these challenges to policy reform relate to the "range of dilemmas arising out of the historical constitution of Indian higher education, and to the organizational traditions and cultural attitudes about its nature and functions in society" (p. 93). There are many conflicting roles and purposes accorded to higher education and the government's policy choices have certainly aroused heated discussion and debate on the role of higher education in Indian society and the nature of the social contract between the government, this large public sector enterprise, and society at large. Should higher education be the sole responsibility of the state? Should it be a public good? Should it serve the purposes of social and economic equity or serve an exclusive focus on being the economic engine for the nation? How responsive should it be to local and national needs and demands and in light of these, what is the purpose and place of foreign institutions within a national context?

We would argue that, while globalization has created pressures on higher education in terms of its political, social, and economic roles both nationally and internationally, reaching a consensus across different stakeholder groups such as the government, higher educational institutions themselves, other policy networks and communities, and society at large, is highly unlikely given the nature of the debate and the nature of the public policymaking process. Public policy is inherently political; it involves a deliberate choice on the part of governments to take action on an issue or allow for inaction (Brooks 1998). It implicates the use of power (Simeon 1976) and it is not transparent or orderly, but instead highly chaotic and contentious. So how then does one make sense of it? Kapur (2010) proclaims that higher

education is arguably one of *the* most difficult sectors to reform. This is certainly the case in India given the number of stakeholders with vested interests in the role and purpose of higher education and a political system that allows for healthy debate, sometimes to the detriment of the government's ability to dictate policy efficiently and effectively.

One could argue that, with globalization and the emphasis on the new knowledge economy, the future role of higher education in society is undergoing change in the form of a "new" social contract creating further tensions by way of different policy choices and directions (see for example Neelakantan 2011). How has the Indian government engaged with these tensions? And what policy directions has it chosen? In this regard, as discussed earlier, the environment (both external and internal) has been a key policy determinant. The rhetoric surrounding globalization and internationalization has been engaged as policy discourse by the Indian government and used as party platform and pragmatism to introduce numerous legislative changes. This rhetoric, just as in many other jurisdictions, engages concepts of the knowledge economy, economic competitiveness, and the labor market, and rationalizes specific policy initiatives such as the promotion of innovation, autonomy, privatization, and investment in world class universities. Changes in India in this direction became evident starting with the economic reforms in the 1990s and the subsequent appointment of the NKC.

To create policy change, the Indian government has had at its discretion a number of policy instruments. It has relied on the reports of the commissions it established to develop blueprints for policy development, and in this regard it is the NKC's recommendations, a commission set up directly by the prime minister, that seem to have been accepted more widely in government policy than the report of the Yashpal committee. It is common for governments to commission taskforces, reviews, and reports to assist with policymaking; however, their actual success in influencing policy decisions depends on a whole host of political factors, including the alignment/nonalignment of interests between the different policymakers. It is significant that in the Indian context, the key policy drivers have been the prime minister and the minister of HRD in addition to support they receive from a selected inner circle of advisors (Pitroda 2010; Neelakantan 2011). This is important given the nature of the policymaking process and the significance of individuals in positions of power (Brooks 1998). Certainly, international organizations, state governments, and the nongovernmental sector are also equally important policy actors in the policymaking process. However, for the purposes of this paper our focus has been mainly on the government, specifically the central government's role in policy-making.

The dynamics within nation-states are very important when considering policy development. In India, it is evident that in spite of the central government's support of certain policy directions, its actual influence in policymaking has been challenged by the strong role played by the political opposition parties as well as the mass media, among several other stakeholder groups. Issues specific to the Indian context such as the phenomenal growth in the private educational sector, the con-

tinued emphasis on reservation policies, and the obsession with regulatory frameworks have influenced how policy issues have been taken up and the translation of global discourses nationally. Given this complexity, one cannot simply conclude, as Tilak (2010) does, that globalization has resulted in national issues being overridden with international concerns. It would perhaps be more appropriate to suggest that the two interface, such that domestic issues get internationalized and international issues get nationalized, challenging many of the earlier assumed structures and functions of higher education.

The concept of the world-class university is a fascinating example of how India has indigenized this concept. Contrary to Altbach's recommendation for increased differentiation and investments in select world class institutions in India (Agarwal 2012), we would argue that the notion of concentrating resources into elite premier national institutions is not a new one in the Indian context. India has had this policy since independence and the IITs, IIMs, and IISs are but a few examples of such a model (Altbach 2005, 2009). Second, India has introduced new concepts, i.e., the innovation university and the metauniversity, to capture the ethos of the multidisciplinary research and innovation institution (Koshy and Nanda 2011; Tilak 2010). The deemed university status established many years ago is also an Indian creation (Gupta 2011). The point is that India has had a policy of differentiation and has in the past concentrated resources on a few elite national institutions. It is these precise institutions that appear in the global rankings.

The specificities of Indian higher education can be described in numerous ways; Kapur and Mehta (2007a) cleverly label it as "half-baked capitalism and half-baked socialism." Perhaps this is not an anomaly given that India is a country of contradictions. That aside, the one distinguishing characteristic of the Indian higher education policymaking process is certainly its penchant for centralization. There are numerous examples of this. The central government unilaterally made a policy decision to cofund new central universities with the state governments. It also proposed to cosponsor new student funding agencies with the states. These decisions were taken without prior consultation or state government inputs (Tilak 2010). Similarly, the MHRD initiated an "India Fund" to centralize all overseas donations for education, irrespective of the institution to which they were allocated (Kapur and Mehta 2007b). Policy discourses on accountability and quality get translated consistently into greater regulatory powers for the Indian state. Within the Indian context, there seems an inherent tendency to centralize higher education, even though a decentralized approach could well lead to the intended policy outcomes. Undoubtedly centralization of policymaking *can* be advantageous. National strategies more often than not enable governments to respond more effectively and efficiently to various external forces. However, in the case of India, where policy outcomes such as greater autonomy, innovation, and diversity are highly trumpeted, this high level of centralization in policymaking and execution is a deterrent.

16.5 Policy Recommendations

In light of the above discussions, we put forth four immediate policy concerns that need to be addressed within the Indian context. First, there is the urgent need for institutional autonomy and distance from state control and political interference for both the regulatory bodies *and* the individual institutions. Without increased autonomy and the delinking of higher education from the vested interests of political elites, the current challenges within the system are likely to further intensify. The unfortunate irony within the Indian context is that current government policy is heading towards greater centralization and state control and less autonomy within the system, a step which is definitely inappropriate for rectifying challenges in the current system.

Second, there is the issue of balancing concerns of quantity (i.e., increased access) with quality. The current policy direction encourages the growth of more central/national elite institutions, for example the replication of IIMs and IITs that appear on global rankings. However, such institutions are only ever going to serve a very small percentage of Indian students, leaving access as a recurring issue in the system. What we would suggest is that more important than increased access alone is a concern with quality of the system at large, especially those state institutions serving the largest number of students in the system. These institutions are plagued, inter alia, with problems of governance, lack of funding, lack of autonomy, the need for qualified faculty, and improved working conditions. Unless there is a concerted effort at upgrading the quality and consistency within the system as a whole, higher education will not be effective in serving any of the goals set for it within the new knowledge economy. In fact, today, despite having the highest number of institutions in the world, India has challenges with producing qualified graduates for the current job market. The government needs to focus away from a myopic vision of opening up a few specialized central institutions and concern itself with improving the dependability and quality of the system as a whole.

Third, we would recommend that the government look to systematic growth in the private higher education system to meet both its needs for quality and quantity. We suggest this given the context in which private education has expanded in India, a context that has been encouraged de facto (especially) by the state governments. Rather than skirting the issue, we would argue that there is much to be gained by making private higher education de jure but under firmer policy requirements, not an “open to business for all” environment. The “sugar barons” and political elites with vested interests in higher education need to be kept out of the system, while other reputed industrial and business houses such as the Birlas, Tatas, and Premjis encouraged to invest in the system. Similarly, we would argue that foreign institutions are encouraged to partner with Indian affiliates, including reputed business houses, to set up institutions in India. The existence of private higher education institutions in India is a reality and one we would argue is necessary to meet demand and quality within the time frame required. However, the government needs to take

a look at making its policy on private higher education more proactive to deter "fly by night" operations and encourage reputed providers to enter the system.

Finally, we would recommend a change of the role of the state from the controller or regulator of the system to one that allows for more autonomy in the system. The government should be steering policy direction, but from a distance. The strength in the Indian policymaking process is a climate that allows for healthy debate and discussion before policy implementation. However, the challenge is that often the process results in no decision or movement. Equally important is a concern over who is at the table for these discussions and debates. Where are the voices of the academic community rather than only those of government-appointed administrators? The quality of the system needs to be determined through a process of academic self-governance; and the political and cultural environment for university autonomy and academic freedom has to be nurtured. Similarly mechanisms need to be put in place to move the policymaking process from discussion to decision-making, a process that primarily engages the academic collegium.

16.6 Conclusion

The increased emphasis on higher education policy and the pressure for speedy reform and change, to "leapfrog" ahead (Altbach 2005; Tilak 1999; Trani and Holsworth 2010), given the forces of globalization, is certainly not unique to India. However, as Maassen and Cloete (2002) caution, while globalization can certainly provide some explanatory frames for policy intentions and outcomes, its influence cannot be considered deterministic on higher education policy. It is still very much up to the nation-states to decide the direction of policy, its implementation, and its intended outcomes (see also Trani and Holsworth 2010).

Can there be a consensus that the role of the Indian state is moving from one that was welfare-driven to one that is quasimarket and now to a neoliberal model (Tilak 1999, 2011; Praveen 2010; Ganguly-Scrase and Scrase 2012)? Is the "social pact" between higher education and society being changed as a result of this? Is the state absolving itself of responsibility for higher education? Is it seeing higher education as a private rather than a public good? The trends towards growth in the private sector of higher education, aligning higher education with the labor market, and concentrating resources in a few institutions of national importance, are not new phenomena within the Indian context. What is new is the focus on institutional autonomy, accreditation, and facilitating academic transfer. But is this sufficient proof that the state has less of a role in this sector and that global more than national needs drive government policy? Ironically, in the Indian context, the system seems to be moving towards increased centralization of powers for the state, more regulation, and more funding and growth. Undeniably, Indian higher education is in a state of transition. There will be change, but what is proposed is that the Indian government will settle on models and approaches that are acceptable to the Indian cultural ethos; its vast diversity, and its inherently democratic and "argumentative" (Sen 2005)

society and in doing so, it will define and redefine the purposes and goals of higher education vis-à-vis its society.

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Chapter 17
The Chinese Model of Development and the Higher Education Policy

Qiang Zha and Ruth Hayhoe

17.1 Introduction

China's economic success in the past three decades has triggered a debate on the so-called "Beijing Consensus," vis-à-vis the "Washington Consensus"[1] for development. From a fragile economy in the late 1970s, China has overtaken other major economies one by one and became the world's second largest economy in 2010, after the USA. China's economic growth certainly has implications for its universities, as they are becoming more and more vital to creating human capital and technological innovations able to support an increasingly knowledge-based economy. For this reason, the Chinese government has been investing hugely in elite university schemes (i.e., Projects 211 and 985) in order to raise some universities

[1] The term "Washington Consensus" was first put forward in 1989 by John Williamson, an economist from the Institute for International Economics, to summarize commonly shared themes in the policy advice given at the time by such Washington-based institutions as the International Monetary Fund, the World Bank, and the United States Treasury Department, which were believed to be necessary for the recovery of Latin America from the economic and financial crises of the 1980s. Later, in spite of Williamson's reservations, the term "Washington Consensus" has been used more broadly to describe the general shift towards free market policies that followed the displacement of Keynesianism in the 1970s. Typically, a democratic and "soft" state is characterized by "Washington Consensus" type policies, something which has become controversial as the capitalist world has been suffering from recessions since the 1990s, and governments have often made responses to crises with no due diligence. Most recently, Francis Fukuyama (2011) asked a very radical question about America's political disorder today: has America gone from a democracy to a "vetocracy?" He added, "But we forget that government was also created to act and make decisions."

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_17

and programs to a world-class level. This move has triggered a worldwide competition in efforts to create world-class universities, as well as some discussion over whether or not there is an emerging Chinese model of the university. In this chapter, we attempt to address connections between the "Beijing Consensus" and Chinese higher education, in particular the impacts of social and political change on university operations and the academic profession. The perspectives we draw on are those of social embeddedness and external control of organizations in higher education. We argue that Chinese higher education owes its successful stories (especially the dramatic expansion and massification in the past decade) to some aspects of the "Beijing Consensus," while at the same time Chinese universities are confronting a crisis, which is due to certain inbuilt constraints of China's development model.

17.2 The "Beijing Consensus" and the Analytical Framework

The "Beijing Consensus" made its first appearance in the mainstream political lexicon in 2004 (Ramo 2004), denoting an alternative economic development model to the "Washington Consensus" with its advocacy of market-friendly policies. More recently, Williamson (2012) has described the "Beijing Consensus" as having features that include incremental reform (or gradualism), innovation and experimentation, state capitalism, and authoritarianism (as opposed to either democracy or autocracy). From a more positive perspective, Zhang (2011) highlights the aspects of the Chinese model for development that stand in contrast with Western approaches, which include:

- *A Strong State*: In contrast to the "soft State" in the Western model, the Chinese State often demonstrates a strong will and is "arguably the most efficient organizational power in the world" (p. 93). Essentially, "any weakening or transformation of the state function" could only be introduced by the State itself (p. 93).
- *Practice-based Reasoning:* Unlike reforms in the West, which have often started with amendments to constitutions or changes to laws and regulations, China tends to start with experimentation and pilot projects. The successful experiences are then extended to a wider reach. Finally changes may be made to laws and regulations and ultimately the constitution, if necessary**.**
- *Gradual Reform:* Following a practice-based reasoning, the Chinese model adopts a trial-and-error approach, encouraging local experiments of all kinds and disseminating the successful experiences generated from the experiments. This approach is perhaps best summarized by Deng Xiaoping's wisdom: "crossing the river by groping for stepping stones.**"**
- *Prioritizing Stability:* Deng Xiaoping's doctrine is that "stability prevails over everything else." For this reason, he demanded a no-debate approach to reform policy formation and execution.
- *Primacy of People's Livelihood:* In the Chinese model, the reform must put people's tangible benefits in the first place, rather than seeking democratization for the sake of democratization**.**

It would be surprising if these aspects of the Chinese developmental model did not have an impact on and indeed penetrate the higher education system. Adopting a social embeddedness perspective, we may argue that higher education systems have a relational interaction with the political economy where they are situated. Following this perspective, a higher education system is viewed as both acting to shape the economy of a particular country, and at the same time being shaped and changed by the political economy. More explicitly, the theory of external control of organizations, taking a resource-dependence perspective, views organizations as "being embedded in networks of interdependence and social relationships," and being potentially controlled by the external sources of these resources, though organizations could possibly opt for balancing strategies and actions that are available to them (Pfeffer and Salancik 2003, p. xii). These perspectives are very relevant to Chinese higher education (and our analysis), where a "strong State" has been controlling the crucial resources for Chinese universities and shaping the environment in which Chinese universities operate. In sum, the social embeddedness and external control perspectives of higher education help capture the close linkages and structural parallels between China's developmental model and Chinese university operations. Despite its success in fostering high GDP growth over the past three decades as well as significant higher education expansion in the past decade, the "Beijing Consensus" now faces the paradox of embeddedness, which has serious effects on the way Chinese universities perform their functions.

17.3 The "Beijing Consensus" Behind the Success of Chinese Higher Education

Chinese higher education appears to be booming, very much like the Chinese economy. Driven by a government that upholds the ideology of efficiency for development, Chinese higher education achieved massification in less than 10 years and is now rapidly moving toward a universal system. Higher education enrolment soared from 3.4 million in 1998 (the year immediately before the latest expansion that aimed to massify the system) to 23.1 million in 2011[2]. There was a nearly sixfold increase over 13 years or an annual growth rate of 17%. The number of institutions increased from 1022 to 2409 in the same time span, or by 135.7%. If all kinds of enrolments are taken into account, China's higher education participation rate (of the 18–22 age group) reached 15% (the threshold of mass higher education) in 2002, and 26.9% in 2011, from only 9.8% in 1998. Figure 17.1 below depicts the growth of Chinese higher education, which resembles an emerging mountain. In 2007, the Chinese system overtook the American in terms of enrolment size and became the world's largest higher education system. Now, the Chinese system notably outper-

[2] These figures refer to enrolments in regular or formal institutions and programs. If those enroled in non-regular institutions/programs (e.g., continuing education and online virtual institutions and programs) are also included, China's higher education enrolment reached 31.7 million in 2011.

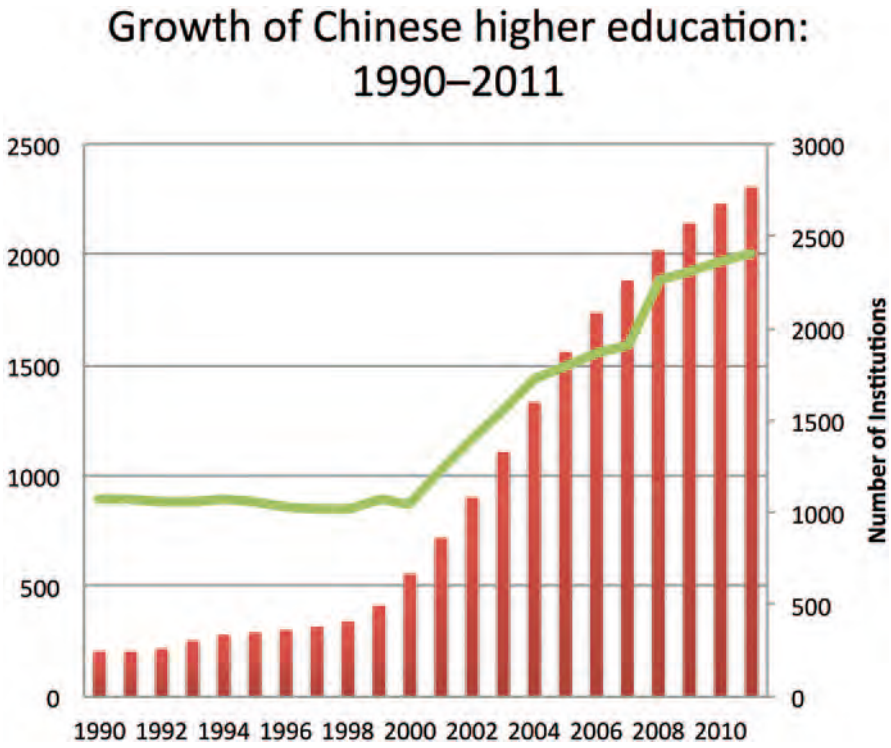

Fig. 17.1 Growth of Chinese higher education: 1990–2011. (Source: produced by the authors with data collected from *China Education Statistics Yearbooks*)

forms the American in the output of science and engineering students who may contribute directly to economic growth. This is illustrated by Fig. 17.2. As argued above, Chinese higher education owes its dramatic expansion to some aspects of the "Beijing Consensus."

17.3.1 A State-Led Massification Process

Arguably, China's move to mass higher education was driven by initiatives and policy of the central government. Since the early 1990s, when China's economy started growing rapidly and required human resource support, the State issued a series of policy papers to propel the higher education expansion. The 1993 policy paper, *Outline for Educational Reform and Development in China*, set expansion as a clear goal for the 1990s (Central Committee of Chinese Communist Party and State Council 1993). In 1996, the State promulgated the *Ninth Five-Year Plan and Plan for Educational Development by 2010* and made this goal explicit, aiming for the aggregate enrolment in all forms of higher education to reach 6.5 million

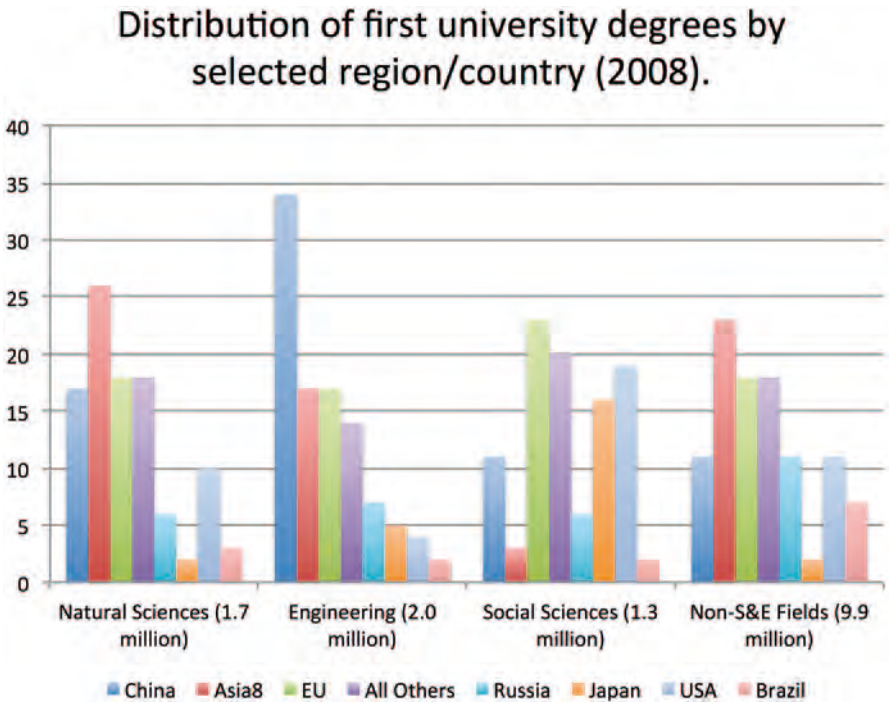

Fig. 17.2 Distribution of first university degrees by selected region/country (2008). (Source: National Science Board 2012, p. O-7)

by 2000, when the participation rate of the relevant age cohort would rise (from 6.5 % in 1995) to 8 %, and to 9.5 million and 11 % by 2010 (Ministry of Education 1996). Only 2 years later, the Chinese government raised the bar for the expansion, bringing the goal of 11 % participation rate forward to the year 2000, as stated in the *Action Plan for Vitalizing Education for the Twenty-first Century* (Ministry of Education 1998). The 1999 *Decision on Deepening Educational Reform and Pressing Ahead Quality Education in an All-Around Way* set forth a new goal of expansion for 2010: 15 % of the relevant age cohort would be participating in some form of postsecondary education (State Council of China 1999).

In this State-initiated and State-dominated expansion process, the Chinese government took advantage of its "visible hand" and employed a series of policy instruments to push for the growth of higher education enrolment. Notably, Chinese universities had exhibited a clear inertia in response to an emerging market economy in China up to the mid-1990s, largely resulting from the residual characteristics of the planned economy which dominated Chinese society and Chinese universities' operations ever since the 1950s. Some even accused Chinese universities of being the last bastion of resistance to the reform trends since the 1980s. In this context, the central governmental policy initiatives served as the major drivers for higher education expansion. Apparently, the execution of these State policy initiatives showed a high level of efficiency and effectiveness. In the following space,

we attempt to illustrate the dynamics behind the scene, employing Hood's (1983) "NATO-scheme": *Nodality* (information), *Authority* (legal official power), *Treasury* (money), and *Organization*. Nodality refers to the central position of government in societal communications and its ability to "send out" information which it judges to be relevant. Authority refers to the ability of governments to issue binding laws, i.e., to formally restrict the behavior of the targeted subjects. Treasury refers to government control of money and other resources. Organization refers to the public bureaucracy and its ability to implement programs, and to monitor environments.

Since the early 1990s, the Chinese government sponsored research on economies of scale in higher education. Characterized by a very high degree of specialization, as a result of the Soviet model adopted in the early 1950s, Chinese universities used to be small in size and narrow in program offering (often limited to a single discipline and serving the human resource needs of a specific economic or industrial sector). This research found that all Chinese higher institutions, no matter how small they were, had had to maintain an isomorphic management structure. Therefore, "without changing the specialization and curricular arrangement, institutional management efficiency could only be increased when enrolment expanded" (Ding and Min 1999, p. 1075). By the mid-1990s, Chinese universities commonly accepted the notion of economies of scale and the related notion of the benefits of curricular comprehensiveness.

Despite the fact that a market economy has gradually come to regulate social life, the patterns of policy making and execution in China remain centralized, to a large extent, up to the present. Therefore the policy papers formulated by the central government possess almost the same binding power as law. The aforementioned policy papers set out clear and specific goals for expanding emrolment and guided the patterns of expansion. The State also used its legislative power to create mechanisms that motivated the higher education institutions to expand. Under the planned economy, Chinese higher education institutions were subject to over-centralized decision-making and detailed resource allocation and administration, and became essentially an arm of the government. Over time, they lost any impetus to innovate and to move their own institutional development forward. Now, the *Higher Education Law* of China, which took effect in 1999, has granted legal entity status to higher education institutions. Furthermore, the *Law* defines the autonomy in seven domains that higher education institutions are entitled to: student admission, new program development, teaching affairs, research and service, international exchange and cooperation, arrangement of their internal structure and personnel management, and property management. The protection of autonomy in these domains and the concomitant responsibilities combined to arouse both motivation and pressure for higher education institutions to strategically plan for their future, which has often included, if not starting with, enrolment growth.

On the treasury dimension, officially from 1997, all higher education institutions in China started charging student fees. From the 1950s up to the early 1990s, university admissions were tightly controlled with quotas set by the State, while students paid no fees and were assigned jobs upon graduation. This policy change had strong implications for enrolment. Previously, the rationale for setting enrolment quotas was to ensure that needed personnel were trained and the State had the capability to

finance their training. Once tuition fees were charged to all students, the justification for setting quotas effectively disappeared. Instead, enrolment would be driven by the social demand for education. The new policy is characterized by cost-sharing and cost-recovery, diversifying the traditional mode of higher education finance in which the State used to be the sole patron. Shortly before this policy change, there was another change in the governmental approach to allocating recurrent funds. The amount of funds for each institution for the current year used to be determined by an "incremental approach," which was based on what the institution got in the previous year. The government would make some incremental adjustment according to development needs of the institution and its own budget for higher education. Since the early1990s, the incremental approach had been replaced by a formula-based approach, which consisted of two parts—a block appropriation based on enrolment and the appropriation for special items, with the former accounting for the largest share. The major allocation parameter was now the number of full-time equivalent students. In general, Chinese universities today must raise an increasing proportion of their operating funds from nongovernmental sources. It is notable that the ratio of fiscal appropriation in the institutional revenue kept declining from 69.3% for national universities and 72.6% for local institutions in 1995 to 51.6% and 44.5% respectively in 2004. Meanwhile, the ratio of student fee contribution was rising, from 10.3% in national universities and 17.2% in local institutions in 1995 to 19.2% and 40.1% respectively in 2004 (Kang 2007).

Finally, since the early 1990s, the State aimed to institutionalize a two-tiered structure of higher education governance, moving more responsibilities and decision powers to local governments at the provincial level, which are now supposed to coordinate higher education growth in their jurisdictions, and some to the institutions themselves. In the planned economy regime, the administration and management of Chinese higher education denoted a strong pattern of centralization, and many central ministries directly ran a large number of universities that served human resource needs of a specific economic or industrial sector. The full-scale restructuring movement started in 1998 when a push came from the nationwide restructuring of the government sector. Some of the central ministries were dismantled and many others were reduced in size to enhance efficiency. The 1998 *Action Plan for Vitalizing Education for the Twenty-first Century* set up a timeline of 3–5 years for creating the two-tiered governance structure. The 1999 *Decision on Deepening Educational Reform and Pressing Ahead Quality Education in an All-Around Way* reiterated decentralization as a major goal of higher education reform and called for a closer integration of higher education into the local economy. Except for the Ministry of Education, now central ministries were generally not permitted to run higher education institutions. Most formerly ministry-run institutions were transferred to local administration and had to find their own means of survival. Higher education institutions became closer to and more active in serving local interests. Naturally, such a policy environment would reward those institutions big in size and comprehensive in curricular coverage, as they offered more opportunities of contributing and connecting to the local economy.

17.3.2 The Emerging Chinese Model of the University

Not only is the sheer size of these growing "mountains" in Fig. 17.1 impressive but also their fast increasing heights. Paralleling the growth in size, the Chinese State launched a number of pro-excellence projects (namely, Projects 211 and 985) to raise a group of selected universities to world standing, through a strategy of concentrating resources. Since 1995, the Chinese government has implemented Project 211, which has identified and given special financial support to 100 top universities in order to elevate them to "world standards" in the twenty-first century. As a step further, the Chinese government announced that the country "needs to have a few first class universities at the world's advanced level" in May of 1998, at the ceremony celebrating the centennial anniversary of the prestigious Peking University. This announcement resulted in an even more elite project being initiated in 1999, which includes only 39 top Chinese universities so far. Project 985 is commonly regarded as the elite part of Project 211, yet otherwise coded from the date of its initial announcement. This elite group has been enjoying huge increases in research funding from the State. Their average level of research funding is now approaching that of members of the Association of American Universities (AAU), a group of leading research universities in North America. With these enhanced efforts, China has now the second largest annual output of science and engineering papers, next only to the USA, a huge increase from its modest position merely 10 years ago (National Science Board 2012, pp. 5–34).

In general, Chinese universities are much more closely articulated with national and local development plans and strategies than their Western counterparts. Chinese universities are, to a large extent, the government's educational and research arm for economic and social development. State control over higher education has always been a dominant tendency in China, but now it appears under the guise of a kind of academic centralization or statization. Since the 1990s, the state has promoted decentralization of steering and management in exchange for institutional performance and accountability, while at the same time tightening its control over normative criteria for knowledge production. This shift is accomplished through a batch of State-led initiatives that aim to create centers of excellence in Chinese universities. State control used to reside mainly in the organizational process under the macroplanning regime of the 1950s and 1960s, but now it is expressed through manipulating the knowledge production process, which is often driven by the State's purpose and follows a rationale of managerialism. A typical example would be the way in which Chinese universities are compelled to set up a schedule for attaining world-class status, mostly measured by research outputs and performance. Put explicitly, knowledge advancement no longer arises from scholars' individual interest, but has become an integral part of national efforts to fulfill the century-long dream of China's resurgence. Chinese universities and scholars are often most willing to articulate their intellectual pursuits with the State's needs, largely owing to influences from the Confucian knowledge tradition that stress a unity of knowledge and action (Lee 2000). For its part, the State is keen to support higher education, in particular those institutions and scholars who excel in terms of producing outputs that can meet the State's needs. On the basis of

the features described above, there have been some discussions about whether a Chinese or Confucian model of the university is emerging (Marginson 2011; Yang 2011; Zha 2011a, b), as what is happening in China today has begun to remake the global landscape, including the world higher education community.

17.3.3 The Postexpansion Policy Initiatives

The State-led higher education expansion met its major goals, while creating some other problems. In the process of expansion, most Chinese universities borrowed hugely from banks to expand their facilities and, in many cases, to build new campuses so as to accommodate their fast growing enrolments. Consequently, many of them became heavily indebted and subject to enormous pressure to pay back bank loans. Since 2010, the Chinese government has stepped in to bail out those troubled universities with public funds on a very short timeline (Zha 2011c). Nevertheless, the issues of quality and equality present the most far-reaching impact on Chinese higher education and society. The tackling of these problems initiated a series of further policy changes. In the *National Outline for Medium and Long Term Educational Reform and Development (2010–2020)* (or *2020 Blueprint*) (State Council of China 2010), which was officially unveiled on July 29, 2010, three themes with respect to higher education stand out: quality, equity, and diversity. In the section on guiding principles for China's educational development, the promotion of educational equity is listed as one of the five fundamental principles, even ahead of quality in education. By contrast, it had never appeared in the previous important strategic planning documents such as the *Outline for Educational Reform and Development in China* (1993), the *Action Plan for Vitalizing Education for the Twenty-first Century* (1998), and the *Decision on Deepening Educational Reform and Pressing Ahead Quality Education in an All-Around Way* (1999). This suggests that equity issues have accumulated over the past decade to the level that they now must be addressed with full attention. The document asserts that education equity upholds social equity as a whole and that the government should take the major responsibility for advancing education equity, while other societal sectors should put forth effort as well.

This new policy paper features an explicit effort to nurture innovative talent in both basic and applied disciplinary areas. It calls for further reforms in aspects that will emphasize and meet individual needs in learning, such as taking a holistic approach to developing students' comprehensive abilities, making sure promising students have established scholars as their tutors, adapting curricular content to students' individual learning needs, nurturing a culture of innovation through exposing the students to lectures given by world class scientists, adopting flexible curricular patterns, granting promising students the access to all types of State laboratories, and creating opportunities for them to study in world class universities. In 2012, China's central government launched a new initiative, Project 2011 (named after a top Chinese leader's remark at Tsinghua University's centennial anniversary ceremony in spring 2011), which supports expanding the innovation capacity of Chinese universities through forging and energizing collaborative research programs—

largely through financial support—among the universities, research institutes, and the industry sector (Ministry of Education and Ministry of Finance 2012).

Notably, in an era of mass higher education in China, the State continues to exercise a firm control over the major policy initiatives that may have a significant impact on the orientation and patterns of the country's higher education development, in spite of the restructuring and decentralization of higher education governance. With a two-tiered governance structure now in place and a majority of Chinese universities under local jurisdiction, as well as more decision powers being delegated to the universities, some complexities are naturally added and can be observed in the process of policy formation and execution. Explicitly put, there may be deviating interests among the State, local governments, and the universities. For instance, as early as in 2002, the central government was aware of the resource deficiency as a consequence of hasty expansion between 1998 and 2001, at an annual rate of 28.3%, and set to control its pace at 5–10% annually. Yet, the local governments encouraged and even pressed for continuously fast expansion. They tended to use the size of higher education as an indicator for local economic and social development. Under this circumstance, many universities aspired to grow bigger, even though they had to go into debt in order to expand their infrastructure and facility. On the basis of 2.68 million new students in 2001, the central Ministry of Education set a quota of 2.75 million for 2002, but ended up with an actual intake of 3.20 million; it then adjusted the 2003 goal at 3.35 million, but again saw a much increased total of 3.82 million; it thus modified the 2004 plan as 4 million, but eventually had to accommodate 4.2 million (*China Youth Daily* 2006, 18 May).

The complexities came also from an increasing number of private institutions. In 1999, there were only 37 private universities, with a total enrolment of 46,000 students. Among them, 17 were fully recognized by China's education authorities and granted the status to confer their own graduation diplomas (Zha 2006). By 2011, the number of approved private universities had grown to 698, including 309 independent colleges (referring to those that are sponsored by and attached to a public university), with over 5 million students, among whom over 3 million in degree programs. They constituted nearly 29% of all the regular higher education institutions in China and 22% of the entire enrolment (Ministry of Education 2012). Admittedly, they are less controlled by government. In this new context, the Chinese governments at all levels put in place programs of government-led evaluation and assessment, whereby central, provincial, and local governments send inspection missions to scrutinize and evaluate the process and outcome of policy execution in the higher education institutions which are under their jurisdictions. The scope of such exercises ranges extensively, from undergraduate program teaching evaluation to anticorruption appraisal, from tuition charge audit to campus safety checks, and all types of institutions, being public or private, are being put through such exercises.

17.4 The Crisis Confronting the "Beijing Consensus" and Chinese Higher Education

In spite of these apparent successes, however, Chinese higher education is embarrassed by a challenging question raised by the late eminent scientist Qian Xuesen[3]: why have Chinese universities failed to engender innovative minds? This question has evoked nationwide discussions and debates on the limitations of Chinese higher education, which in turned resulted in the introduction of the *2020 Blueprint* and in particular Project 2011. If a higher education system fails to nurture innovative minds, it can hardly claim success on any other counts. For this reason, we argue that Chinese higher education is facing a crisis. More precisely, we see this crisis as stemming from and rooted in the externality of Chinese universities, something which lies beyond their control.

17.4.1 The Paradox of the "Beijing Consensus"

To explain the origin of this crisis in the current situation of Chinese higher education, we need to scrutinize the inner constraints of the "Beijing Consensus." Our analytical framework contends that the crisis is essentially interwoven with a concomitant political and social crisis in the country. The "Beijing Consensus," in its current format, places emphasis on efficiency for the sake of accelerating economic growth. This model carries some advantages in terms of the efficacious mobilization of resources (human and material), and the capacity to expand and improve infrastructure dramatically on a short timeline. This is evident in the proliferation of high-speed rail systems nowadays in China, as well as the development of hundreds of magnificent university campuses across the country. Nonetheless, this model contains an inbuilt paradox. The practice-based reasoning that stresses and pursues tangible interest has caused pragmatism and utilitarianism to prevail in Chinese society, such that people tend to behave selfishly and compete unscrupulously with one another. As a result, a kind of social Darwinism that advocates the survival of the fittest has become the dominant moral principle and this has created all kinds of tensions in Chinese society. Social Darwinism may well intensify in future given China's vast population and a cultural tradition that upholds meritocracy. Furthermore, the gradualism exemplified in the phrase "crossing the river by groping for stepping stones" has arguably held back critical efforts at institutionalizing an effective regulatory environment. Consequently, Chinese society is now suffering structural confusion or even disorder, and a massive degeneration in people's ethical

[3] Qian Xuesen (11 December 1911–1931 October 2009), is better known to the West as Hsueh-Shen Tsien. Educated at MIT and Caltech in the 1930s, he established a reputation as one of the leading rocket scientists in the United States, and became one of the founders of the Jet Propulsion Laboratory at Caltech. After his return to China in 1955, he made important contributions to the missile and space programs of the country.

codes. These constraints of the "Beijing Consensus" certainly have implications for the evolution and maturation of a modern university system on Chinese soil, which must find its own expression of values such as university autonomy and academic freedom that require a systemic rationale and institutionalized protection.

17.4.2 Chinese Higher Education Is Facing a Crisis

As a matter of fact, there has been a sense of crisis in Chinese academia ever since the government launched the world-class university campaign. There were hot debates over what should constitute a world-class university and how far Chinese universities are from world standing. The debates eventually revealed that Chinese universities largely lack a university spirit, i.e., an independent ethos that works to hold together an academic community in its pursuit of the truth. In the words of a Chinese university president, "the university spirit in China is really lost. It's a reflection of the whole society, which has gotten lost in utilitarianism. It's in a state of spiritual dehydration" (*CNN International* 2010, June 25). To make their point in these debates, many quoted a renowned Chinese educator of the Republican period, Mei Yiqi, who made the insightful comment that "the greatness of a university lies not in its magnificent edifices, but in its eminent academics."[4] Unfortunately, the "Beijing Consensus" seems to be very efficient in bringing magnificent buildings to university campuses, but is not necessarily able to attract great minds. In this model, the university demonstrates a close linkage to the government, as its education and research arm, and the government shows a strong commitment to supporting the higher education system. In many ways, Chinese universities are still treated as part of the bureaucracy, with some practices carried forward from the 1950s. For instance, the university is always granted an administrative rank, equivalent to that of a bureaucratic unit. This practice has not only been kept but also further developed recently. Most elite universities included in Project 985 are now elevated to the quasi ministerial rank of the central government, as a move to strengthen their status.

State control over higher education has never disappeared in China, despite a gradual shift from a direct state control model to patterns increasingly aligned with state steering approaches since the mid-1980s. The *Higher Education Law* of China

[4] Mei Yiqi gave this well-known saying in his inauguration address when he became the president of Tsinghua University in 1931. He held the longest presidency in the history of Tsinghua University, from 1931 to 1948. As a strong proponent of general education, he led Tsinghua's rapid rise to the top ranks. During the anti-Japanese war period, most of Tsinghua's faculty and students fled south to Kunming, where they were joined with students and faculty fleeing from Peking and Nankai Universities, and formed the Southwest Associated University or Lianda. Mei, the youngest of the three university presidents, became the chief administrator of Lianda. Despite the extremely modest physical conditions, Southwest Associated University reached world class standing at the time. It is argued that an important reason behind Lianda's success was its geographical remoteness and the loose government control during war-time China. (Israel 1998).

granted legal person status to higher education institutions and a degree of autonomy in seven major domains, as described above. Yet, neither it nor other education laws, regulations, and policy documents have ever explicitly limited the capacity of government to interfere in university affairs. Consequently, there appears to be a conflict or a paradox: on the one hand, Chinese higher education institutions have been accorded an increasing amount of decision-making power over their own affairs in recent years; on the other hand, the Chinese government may tighten its control over higher education institutions whenever it feels that to be necessary. We interpret this practice as another form of "crossing the river by groping for stepping stones" or a trial-and-error approach in the higher education realm. In a sense, Chinese universities are now allowed some degree of autonomy on an experimental basis, while the government keeps a close eye by monitoring their operations and performance. Once things are perceived to be going wrong, the government is always ready to interfere and resume control.

This kind of mentality and approach certainly has an impact on the functions of Chinese universities. A recent survey of a group of Chinese university leaders (NAEA 2012) reveals that interference by the government is common and constant. The most common government interferences include direct interventions in the university's personnel management, resource supply and curriculum/program development. Imposition of growth targets and strategies, as wells as performance indicators, are often observed as well. These are all viewed as having significant impact on the daily operation and the development direction of Chinese universities. It might be fair to say the current environment in which Chinese universities operate simply does not allow them to develop an independent spirit and focus on academic pursuits by the faculty and students. Rather, the students are driven by a need to earn all kinds of credentials and certificates in order to prepare themselves for tough competition in the job market, while the professors are attracted by various "shortcuts" to power and influence, taking advantage of the government's generosity toward higher education, which sometimes leads to academic misconduct and corruption. University leaders, for their part, are often distracted from their fundamental responsibilities to pursue all kinds of tangible interests, ranging from ingratiating themselves with the government to running enterprises. It is widely perceived that corruption is not limited to the political sphere in China but has penetrated into universities and academia. Given this situation, China's success in higher education is largely a matter of quantitative progress, which is now being seriously threatened by a lack of integrity. Thus a crisis is looming with respect to standards of excellence and genuine intellectual capacity in the Chinese system, as highlighted by Qian's question. The decline in international citations of Chinese research outputs might be one piece of evidence in support of this point. From 1999 to 2009, China enjoyed a 16.8 % annual increase in research papers in science and engineering fields and is now the second largest article-producing country in the world. However, the share of China's citations that are international witnessed a considerable decrease between 2000 and 2010 (National Science Board 2012). Similarly, the Chinese universities that enter the major world university ranking league tables (e.g., those made by *Times Higher Education* [THE] and Quacquarelli Sy-

monds [QS]) show consistently much lower citation scores than their peers, while standing out for their income from industry. In particular, the *THE World University Rankings* uses a citation score to measure university research influence, which captures the number of times that a university's published work is cited by scholars globally. On this measurement, Chinese universities fall behind their Japanese and Korean peers, which are situated in the same geographic region, and whose scholars write primarily in non-English languages as well. These facts suggest that Chinese universities have tended to lag in original and innovative work, while attending to tasks with tangible rewards.

17.5 Conclusions

Chinese universities seem to be caught between serving governmental agendas and pursuing their own goals as an academic community. Often they appear to be vulnerable in the face of a "strong State" and its interfering hands. Up until recently, they had become used to following the lead of the government, which often comes with rationales and approaches featuring pragmatism and utilitarianism. Even worse, the paradox now confronting the Chinese model for development or the "Beijing Consensus" might well constitute a stifling externality that Chinese universities cannot escape from. James Ratcliff (1997) noted, "What is or is not thought to be quality curriculum is largely the result of our educational philosophies, beliefs, values, and normative positions" (p. 152). By the same token, we argue that the lack of dynamism and innovation that is hindering Chinese higher education's development is largely owing to the political, social and cultural factors prevailing in the environment in which the universities operate. Now that the "Beijing Consensus" is at a crossroads, Chinese universities are exposed to a crisis as well.

For their part, Chinese universities could opt for some kind of balancing strategies and actions. A widely observed phenomenon is the exercise of self-mastery (*zi zhu*). Often this term is used to express the concept of university autonomy in China, yet more precisely it means the university supports but does not subordinate itself to the State while retaining the capacity to initiate its own development strategies and patterns (Hayhoe and Zhong 2001; Hayhoe and Liu 2010). Often this becomes possible with a determined and visionary university leader at an elite university possessing a relatively strong bargaining position. A typical case was the University of Science and Technology of China (USTC) and its former president Zhu Qingshi. He took a strong stand against expansion and argued for functional differentiation in which the central mission for elite universities like his was to raise the bar of quality, not to contribute to growth in quantity. When he stepped down in 2008, he spoke of his decision against enrolment expansion and creation of a new campus as a major merit of his presidency, which saved the faculty from the distractions caused by heavy teaching loads and daily transportation among disparate campuses, and secured their time and energy for research (Zha and Li 2011).

Nonetheless, university leaders come and go, and their charisma and influence can hardly survive an environment that lacks institutionalized self-regulation and protection from external interference. After stepping down from USTC, Zhu Qingshi is now leading the newly founded Southern University of Science and Technology of China (SUSTC), as an experiment intended to explore possibilities for increasing Chinese educational innovation. In contrast to common practice in China, where the central government or local authorities appoint university presidents, the SUSTC has a board of directors for such crucial personnel appointments. The board has the right to examine and approve the university's management, financial reports, and development plans. Ever since its establishment in 2010, this university has been struggling with its bid for autonomy over student enrolment and overall management. It made headlines when admitting the first batch of 45 students who took the university's own set of exams in early 2011, instead of the national university entrance examination in June. It even intended to grant its own academic diplomas, against the rule that university degrees are awarded by the State Council, if those students were not recognized by the education authorities. Eventually, its enrolment plan received approval on January 10, 2011, only a few weeks ahead of the scheduled beginning of the semester. China's Ministry of Education officially approved SUSTC's establishment in April 2012, requiring it to follow the ministry's regulations when it considers adding new courses and making other adjustments to its curriculum. It is now suspected that SUSTC may fall back into the administrative grip of education authorities and gain no more autonomy than other public universities when it has to seek approval for curriculum and enrolment. Recognizing this institutional drawback, the *2020 Blueprint* calls for experimentation in establishing a modern university model on Chinese soil, which features expanding university autonomy and institutionalizes professorial rule over academic affairs. More recently, the Ministry of Education promulgated the *Interim Regulations on Creating Charters for Higher Education Institutions*, which took effect on January 1, 2012 and aim to assist Chinese universities in discerning the boundaries within which they have jurisdiction. Nonetheless, unless a binding procedure can be worked out to constrain the hands of government and limit its scope of functions, there is no easy way to break the vicious cycle which has been described in this chapter.

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Chapter 18
State Power, Transition and New Modes of Coordination in Higher Education in South Africa

Michael Cross

18.1 Introduction

This chapter focuses on national pressures as they relate to the changing state-institutional relations, education policy and new modes of government coordination in higher education in the context of transition and the consolidation of South African democracy. Although institutional 'agency' is always critical in the ways universities respond to external pressures (e.g. national policy, competition, opportunities and constraints), I argue in this chapter that there is a sense in which a particular form of institutional articulation between higher education institutions and Government is reflected in peculiar forms of institutional responses. These responses have resulted in unintended synchronies and synergies between institutional academic projects and the logic of globalisation and values rooted in the ideology of neoliberalism underpinning the Government's macro-economic strategy: efficiency, performance, competition and individualism. It is not the root cause of the adoption of this logic that I am concerned with in this chapter, but the explicit alignment of the discourse and emerging perspectives.

My argument in this chapter posits the following main claims: (i) in the post-apartheid South Africa, the relations between state and higher education institutions changed from state control to state supervision during the first decade of the new political dispensation, which emphasises steering mechanisms, to an increasing degree of government interference; (ii) while the current meddling of the state in institutional affairs has not significantly altered the degree of autonomy that higher education institutions have enjoyed under the new dispensation, it is certainly posing new threats and uncertainties that have altered their institutional choices and responses; (iii) these reflect the dilemma between their commitments to the preservation of their historical legacies and the need to acknowledge the contradictory

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_18

demands around equity and access, institutional efficiency and competiveness, placed upon them by the state. In other words, they reflect the tension in the Government's macro-economic strategy between the logic of globalisation and neoliberalism emphasising efficiency, performance, competition and individualism, and the logic of transformation which privileges democratic values of access, equity, redress and human rights. How institutions navigate through this tension depends on their own institutional legacies and identities and the ability to access the enabling resources.

In tracing this process, I consider three important policy moments. The first moment entailed breaking with apartheid higher education policy, 1994–1998. This period is characterised by government's *policy symbolism* and a 'hands-off' approach to institutional matters in higher education. Virtually no new policy was implemented in this phase; there was however considerable engagement and consultation with stakeholders over possible policy choices, government and institutional strategies. It culminated in the definition of a general higher education policy framework through a higher education White Paper and an institutionalisation of regulative mechanisms through the Higher Education Act of 1997.

The second moment responded to the increasing institutional crises in higher education manifested by financial crises, questionable public accountability and declining confidence in institutional leadership throughout the late 1990s into the millennium. It resulted in *strong steering* including direct intervention of government to deal with situations of institutional dysfunctionality. Reading from current debates, this moment from 2001 could well be described as 'beyond state steering', 'beyond state supervision', or 'the advent of negotiated autonomy', depending on one's perspective. Successive legislative amendments gave the government considerable muscle to tackle several transformation and policy implementation matters, including the mergers, new funding requirements and formula, and so forth. It has changed prevailing interpretations of institutional autonomy granted in the national Constitution, from the notion of institutional autonomy as a guaranteed entitlement to the conception of institutional autonomy as an achievement or negotiated autonomy as referred to in current debates.

During the third period, from 2006 to the present, government not only has shifted from soft to strong steering, but has also shown signs of considerable interventionism illustrated by the increasing number of universities that have been placed under administration. Through a series of legislative amendments, the Minister of Higher Education and Training has not only reinforced and consolidated the Minister's powers over higher education institutions but also spelt out the mechanisms and scope of state intervention, when this is required. Besides the general battle over resources (public and private funding) and institutional responsiveness (accommodation of the increasing cohorts of school graduates and the nature of service delivery—programmes and courses as well as their alignment to the labour market and the wider society), accountability has become one of the main challenges facing higher education in South Africa today.

18.2 Analytical Framework

There are four important theoretical points of departure in my analysis in this chapter. Firstly, for the analysis of the transitional state and its implications for state policy and practice in higher education, I draw on the conceptual relationship between three important modes of transition in the establishment of democracies in developing countries: (i) through *revolution* (*regime overthrow*), which results in a radical dismantling of the existing state apparatus; (ii) through *regime substitution* (or regime change in current global discourses) when change is focused on the political regime; (iii) through 'transplacement', which is through a negotiated transfer of power from the old regime to the forces of opposition (Jonathan 2006, pp. 6–8). The South African experience is approached in this chapter through the last perspective. I shall return to this point later.

Second, critical debates concerning new directions in government modes of coordination in higher education took place in the context of the work of the National Council on Higher Education (NCHE) between 1995 and 1996. In its methodology, the NCHE started by examining the governance of higher education systems throughout the world with reference to the role of the state in the sector. It distinguished three main types of governance. Very often referred to as 'classic' or 'traditional', predominant in higher education systems in Africa, the first type comprises centralised systems characterised inter alia by bureaucratic decision-making, systematic political and administrative control and limited or no institutional autonomy and academic freedom. Though highly criticised in academic circles, such a model appeared suitable for redress politics and for addressing transformation challenges in higher education. It is typical of contexts where the state lacks hegemony or political legitimacy (e.g. the apartheid higher education system and systems of higher education in dictatorial regimes). The second type comprises decentralised systems made possible by consensus politics, political legitimacy and state hegemony in Gramsci's terms. Its defining features include decentralised decision-making, no systematic political and administrative control by government, more academic freedom and full institutional autonomy. For the commissioners, this type of governance appeared unsuitable to deal with redress politics and to address national needs and interests in the post-apartheid context.

1. The last is shared governance, typical of situations where state hegemony is not well established and the presence of strong stakeholders requires their participation in decision-making. It entails limited political and administrative control and a balance between national and local/institutional concerns, opening more room for academic freedom, institutional autonomy, academic freedom and social responsibility than centralised models of governance. More attractive to the NCHE was shared governance, though it required modifications to suit the peculiar circumstances of higher education in South Africa (systemic racial and ethnic fragmentation, regional and institutional inequality, diverse institutional legacies, cultures and identities). Thirdly, linked to the three modes of governance were three distinctive forms of state coordination of higher education

(state control, state supervision and state interference) central in understanding the relationships between government and higher education institutions in South Africa.[1] State control is premised on systematic state control and administration of higher education executed by a professional bureaucracy located in both government and higher education institutions (NCHE 1995; see also Johnson 2000). The 'continental' model, typical of Western Europe in the twentieth century, is essentially a state control model in which the state directly or indirectly determined key functions and operational procedures of the institutions such as student admissions, the validation of courses and diplomas, the size of academic staff and the formal structures of internal management and governance. A typical example of strict state control was that of Taiwan before 1987 where even academic publications by university institutions were assessed and screened by government (Mok 2000). In such a socio-political context, '…academic freedom and intellectual autonomy seemed to be a very remote thing to students and academics' (Mok 2000, p. 641). However, while the state retains control over institutions essentially foregoing institutional autonomy, academic freedom remains strong. Ironically, in the instances of the Anglo-Saxon model associated with the UK and particularly, the USA, while university autonomy has been strong and more influenced by the market than the state, academic freedom has been less pervasive.

State supervision is based on less-centralised forms of control. The locus of power shifts from 'centralised control' to 'steering' in which governments provide the broad regulatory framework, and through the use of instruments such as planning and funding, institutions are 'steered' to produce governments' desired outputs. It is the preferred mode of coordination in many countries, albeit with divergent mechanisms and levels of steering (Moja et al. 2003). The state assumes the task of supervising the higher education system to maintain quality and public accountability. It becomes 'the arbiter who watches the rules of the game played by relatively autonomous players and who changes the rules when the game no longer obtains satisfactory results' (NCHE). State interference refers to the mode of control which is neither systematic nor through steering but based on arbitrary forms of intervention. This model can be found in many developing countries and in the African context, where in theory, claims that institutional autonomy are made, but in practice, higher educational institutions are subjected to different forms of state intervention, which ultimately curtail both institutional autonomy and academic freedom.

Fourthly, important to my analysis is also the periodisation of the policy process following the 1994 elections. A leading critic of government policies, Jansen presents a useful subperiodisation of the changes in the policy process in South Africa between 1990 and 2001, which add important insights for understanding the significance of the vision of higher education in South Africa. These are outlined by Jansen as *positioning*, which refers to the 1990–1994 period of democratic struggle

[1] The state interference model was defined as the state's direct intervention in higher education institutions' affairs (NCHE Governance Task Group 1995; Johnson 2000).

and education debate; *frameworks*, which refers to the early policy work of the first ANC-led government from 1994 when the proposals formed by the liberation movement were converted into legislation (e.g. White Paper 3, *A Programme for Higher Education Transformation*—1997 and the Higher Education Act 101 of 1997), and the more recent *implementation* period that began in 1995–1996 and continued to the present (Jansen 2001).

18.3 Higher Education in South Africa: Institutional Landscape

At the time of the first democratic elections in 1994, the South African higher education system comprised 36 public institutions structured along 'racial' and ethnic lines characterised by a binary divide between universities (21) and technikons (15)—similar to polytechnics—under the administration of the different racially defined education departments.[2] These included: (i) four English-medium universities originally reserved for white students, (ii) six Afrikaan-medium universities originally reserved for white students, (iii) eight technikons reserved for white students, (iv) six universities and five technikons located in the 'Bantustans' and self-governing territories and reserved for African students, (v) two urban universities reserved for black students, (vi) one university and one technikon for Coloureds (people of mixed race) and one university and one technikon for Indians and (vii) two distance education institutions (one university and one technikon; see the Table 18.1). Some technikons have since become universities of technology.

The Department of National Education (1988, pp. 22–23) made the technikons concentrate on 'training in and practice of technology including development, and the specific side of the spectrum of vocational preparation, that is, preparation for specific occupations'. The university provided 'training in and practice of science (in the broad sense of the word which includes all scholarly activities), including research, and mainly the general side of the spectrum of vocational preparation'. Thus, the binary distribution of higher education institutions was not just an institutional or technical divide. It reflected a difference in admission requirements, a difference of knowledge types and the way higher education institutions were organised, and a difference of pedagogical approaches and epistemologies. There were differences in access (lower entry requirement in technikons vis-à-vis standard university entrance), in qualifications (vocational certificates, diplomas and degrees vis-à-vis academic diplomas and degrees), in orientation (outwards to practice vis-à-vis inwards to the discipline) and in research (applied and responsive to industry, business and government vis-à-vis basic and responsive to the academic discipline), and in knowledge structure with the universities providing more room to acquire

[2] There were four different departments in the so called 'white South Africa' and four in each of the Bantustans.

Table 18.1 Higher education landscape in South Africa (1994). (Source: Adapted from CHE 2004)

Authority	Universities	Technikons	Total
House of assembly (for whites)	11	8	19
	English: University of Cape Town, University of Natal, Rhodes University and University of the Witwatersrand	Cape Technikon, Technikon of the Orange Free State, Natal Technikon, Pretoria Technikon, Vaal Traingle Technikon and Technikon Witwatersrand	
	Afrikaans: University of the Orange Free State, University of Port Elizabeth, University of Pretoria, Potchefstroom University, Rand Afrikaans University and University of Stellenbosch		
	Distance: University of South Africa	Distance: Technikon of South Africa	
House of representatives (for coloureds)	1	1	2
	University of the Western Cape	Peninsula Technikon	
House of delegates (for Indians)	1	1	2
	University of Durban-Westville	ML Sultan Technikon	
Department of education and training (for Africans)	4	2	6
	University of the North, University of Zululand, Medical University of South Africa and Vista University	Mangosuthu Technikon and Technikon Northern Transvaal	
Republic of Transkei (Bantustan)	1	1	2
	University of Transkei	Eastern Cape Technikon	
Republic of Bophuthatswana	1	1	2
	University of Bophuthatswana (North-West)	Setlogelo Technikon (Technikon North-West)	
Republic of Venda	1	0	1
	University of Venda		
Republic of Ciskei	1	1	1
	University of Fort Hare	Ciskei Technikon (Border Technikon)	
Total	21	15	36

general knowledge, arts and humanities than technikons, which focused on training and marketable skills.

18.4 Government and Higher Education Relations: The Legacy

South Africa inherited a very complex legacy in terms of state and higher education relationships. Under apartheid, the relationship between individual institutions and the state varied considerably. The four English-medium universities—University of the Witwatersrand (Wits), University of Cape Town (UCT), Rhodes University and the University of Natal—enjoyed a substantial degree of autonomy and were subjected to little state interference. This particular relationship was consolidated when these universities declared themselves 'open universities' and rejected any form of government interference in institutional affairs.[3] They emerged as the 'liberal universities', which posed a serious challenge to apartheid policies. The Afrikaan-medium universities—Stellenbosch University, University of Port Elizabeth (UPE), Rand Afrikaans University (RAU), University of Pretoria (UP) and the University of Potchefstroom (UPotch)—occupied a unique space and enjoyed a special status within the apartheid order, as a part of the official state ideological apparatus. They enjoyed similar freedom. In contrast, the six homeland universities—University of the North, University of Fort Hare, University of Venda, University of Zululand, University of Transkei and University of Bophutatswana—were designed as extensions of the Bantustan Bureaucracies. The Extension of University Education Act, which established these institutions in 1959, gave the state absolute powers and control over them in determining through legislation whom to admit, whom to teach and what to teach. In other words, institutional autonomy and academic freedom were permissible in so far as they were not in conflict with the state policy and ideology.

From 2004 onwards, the higher education system was restructured through a series of mergers 'to rationalise the 36 universities and technikons into 23 institutions only', which resulted in three types of institutions, namely 11 so-called traditional universities, 5 'universities of technology' and 6 'comprehensive universities'. Underpinning this development were the following stated goals: (i) to establish institutions better positioned to address the needs of national skills, (ii) to equalise student access and (iii) to sustain growth in student numbers (Jansen 2003). These changes in public higher education were accompanied by considerable expansion of private education in the late 1990s into the 2000s. Jansen (2004, p. 6) notes that the number of private schools increased from 518 in 1994 to around 1500 in 2001, while more than 100,000 students were registered in 145 private higher education institutions by 2004. The market of private providers is

[3] The open universities in South Africa and academic freedom, 1957–1974. Witwatersrand University Press, 1957—Education—47 pages.

mostly concentrated on further education and training, and restricted to commercial and business curriculum and do not pose any significant competition to the public sector.

18.5 The Transitional State: A Web of Constraints

In a paper commissioned by the Council on Higher Education, Jonathan makes two important theoretical points concerning the conceptual distinction of 'state' and 'government' in a society in transition from an authoritarian regime to democracy. The first is that, as in any oligarchic or authoritarian regime with a ruling ideology, prior to the 1994 elections, 'state' and 'government' had been indistinguishable (Jonathan 2006, p. 6). The year 1994 marks the building of a democratic state and building such as state is not an event but a lengthy process, which entails all 'organs of state'—e.g. the judiciary, the parliament and the government. In this process, 'civil society, the health and welfare sectors and public education at all levels—as well as those bodies and groupings which make up civil society and cultural life, play their part' (Jonathan 2006, p. 6). It is a particularly complex process in cases like South Africa where the formal establishment of democracy was 'not through revolution (regime overthrow), not through "replacement" (regime substitution) but through "transplacement": the negotiated transfer of power from the old regime to the forces of opposition' (Jonathan 2006). While apartheid state hegemonic power gave way to democracy, the particular formula agreed through negotiations between the apartheid government and the resistance movement, based on compromises on both sides, guaranteed the safeguard of fundamental continuities across the established organs of state and existing social structures that would require systematic transformation later.

The second point is that, while South Africa can claim its uniqueness for having a formal constitution with a democratic project at the centre of its agenda, its provisions are declaratory rather than normative. It sets a framework for a South African democratic state. This meant that the substantive dimensions of this state were to be built through legislation enacted by successive democratically elected governments and through appropriate performance of other organs of state under severe constraints imposed by the legacies and continuities. Paradoxically, in both cases the government tends to play a contradictory role. On the one hand, it is the custodian of the continuities secured by the transitional constitutional arrangements (e.g. maintenance of old government structures, bureaucracy and policies). On the other hand, it is the instrument for breaking up with the legacies through social, economic and political transformation, and for building a new democratic state.

Sehoole (2005), who locates this explanation within the elite pact theory developed by Adler and Webster (1995) has highlighted the main implications of this sort of transition. The National Party—the apartheid ruling party—abandoned its demand for regionalism in favour of a unitary state while the ANC let go of a 'winner takes all' system of majority rule to settle for a Government of National Unity with

proportional representation based on the electoral outcome (Sehoole 2005). The constitutional pact posed serious constraints to the newly appointed government and to its ability to mobilise resources for transformation. Firstly, the new government was forced to operate on the basis of apartheid laws with limited chances to repeal them in line with section 229 of the Interim Constitution. Secondly, apartheid government departments were given continuity, which meant that the Minister of Education had to continue to run the 19 racially and technically defined education departments, without tempering with the old bureaucracy. Thirdly, the constitutional pact secured continued employment of civil servants, a stipulation contained in clause 236 (2) of the Interim Constitution also known as the 'sunset clause'. Fourthly, a provision was made for the continuation of the Public Service Commission, which implied that new appointments were governed by the apartheid Public Service Commission. More specifically concerning higher education, section 247 of the Interim Constitution prevented the national government from altering the rights, powers and functions of the controlling bodies of universities and technikons, unless an agreement was reached with such bodies (Sehoole 2005, pp. 74–79).

18.6 Breaking with the Apartheid Legacy in Higher Education: 1994–2001

As already pointed out, this particular period was characterised by the departmental restructuring in government with the establishment of the higher education branch in the existing Department of Education and Training (DOE) in 1998, and according to the reading of key scholars such as Jansen, a symbolic policy for higher education and a relatively long interregnum during which no significant government intervention at institutional level was felt. In fact all institutions fully enjoyed the institutional autonomy and academic freedom enshrined in the constitution though, given the legacy, some of these could certainly have benefitted from some form of pressure and support from the state. Preliminary signs of government intervention in higher education came with the appointment of the National Commission on Higher Education (NCHE) in 1994, to make policy recommendations in consultation with stakeholders. The Commission was suggested by the African National Congress' (ANC) new draft policy framework on education and training in January 1994, which recommended the establishment of a commission to investigate the entire higher education system as a part of the policy formulation process.[4] The process was acclaimed both nationally and internationally as an important way through which to create space for policy debate, negotiation, consultation, consensus-building (Bundy 2006; CHE 2004; Moya and Hayward 2001). Indeed, its outcomes range from organisational learning, policy awareness and consensus

[4] Note that the commissioning of research for policy is part of a long tradition in South African history that the newly-elected government embraced with some modifications in the principles and values and the composition of the Commission.

building amongst stakeholders, to the actual policy recommendations submitted to the minister.

18.7 National Vision for Higher Education

Following the report of the NCHE released in September, 1996, and the White Paper on Higher Education (1997), the Higher Education Act (1997) set out the national vision for higher education in South Africa (DOE 1997). Three main features underpin this vision: (i) increased participation, (ii) greater responsiveness and (iii) increased cooperation and partnerships (Cloete 1998).[5] The Higher Education Act also spelt out the key principles for institutional governance and the regulative framework within which institutions should operate. The development of this vision required an internal organisational repositioning and a realignment of the relations between the Department of Education and the relevant stakeholders (from higher education institutions, industry and civil society), which entailed the establishment of the Higher Education Branch in 1998 and the establishment of statutory bodies to facilitate policy formulation and implementation in higher education. The Council on Higher Education (CHE) was also launched in 1998 to advise the Minister of Education and assume responsibility for the quality of higher education through its subcommittee, the Higher Education Quality Committee (HEQC).

18.7.1 Increased Participation, Responsiveness and Cooperation

Increased participation was to be achieved through an expansion of student enrolments, feeder constituencies and programme offerings, guided by the principles of equity and redress as well as alignment with the South African demographic realities and developmental concerns. Responsiveness to societal interests and needs requires engagement with the challenges posed by the South African context: elimination of racial discrimination and oppression, social justice and equal opportunity. Aspects of this context had to be reflected in the content, focus and delivery modes of higher education programmes as well as in the institutional missions and policies. For this purpose, governance structures had to provide for wider stakeholder consultation and participation in decision-making processes. At an epistemological level, concerns with responsiveness were symptomatic of a shift from closed knowledge systems (controlled and driven by canonical norms of traditional disciplines and by collegially recognised authority) to more open knowledge systems with greater mix of programmes and growth in transdisciplinary, transfaculty and transinstitutional programmes (in dynamic interaction with external social interests, ‘consumer’ or ‘client’ demand, and other processes of knowledge generation).

[5] For further details also see M Cross, Campus Diversity Audit (CHET).

Concerns with responsiveness also had implications for the research function of higher education. In this regard, researchers needed to interact not only with their colleagues in universities, but also with knowledge producers in a range of other organisations. Higher education institutions had to display greater accountability towards the taxpayer and the client/consumer regarding the cost-effectiveness, quality and relevance of teaching and research programmes. In essence, heightened responsiveness and accountability provided for greater impact of the market and civil society on higher education and the consequent need for appropriate forms of regulation.

Finally, the inherited tendency towards academic insularity and institutional self-reliance had to make way to the recognition of the interdependence between multiple actors and interests with a stake in higher education through cooperation and partnerships. A single, coordinated system was proposed as it was the only way in which the inequities, ineffectiveness and inefficiencies of the existing system could be eradicated. Cooperation has implications for relations between higher education and the institutions of civil society. The vision called for more linkages and partnerships between higher education institutions and commercial enterprises, parastatals, research bodies and NGOs, nationally and regionally. Cooperation has implications for relations between government and within higher education institutions. 'To do more with less', the vision emphasised new partnerships and cooperative ventures among regional clusters of institutions to optimise the use of human and infrastructural resources. Increased cooperation and partnerships among a broader range of constituencies would require participatory, responsible and accountable structures and procedures. These would depend upon trust and constructive interaction among all constituencies (National Commission on Higher Education (NCHE) 1996).

Increased participation and access, greater responsiveness, inter-institutional coordination and partnerships and efficiency—key aspects in the South African higher education vision—opened immense opportunities and possibilities for universities in terms of systemic and institutional development. These were accompanied by a set of additional strategic goals, including the production knowledge and curriculum relevant to the South African socio-economic environment, promotion of quality assurance and promotion of mechanisms for articulation, mobility and transferability across the education and training system through the incorporation of a National Qualifications Framework (NQF). The achievement of these policy goals has been constrained by the need to address the South African history of a stratified class and racial structure and South Africa's entry into the world economy during a period of intensified international competition (DOE 2001, pp. 31–33).

18.7.2 Shared Governance: A Model of State Supervision for Higher Education in South Africa

After an extensive examination of models of governance in higher education as discussed in the conceptual framework, the NCHE developed and proposed a particular form of coordination, a South African variant of state supervision, based on

the notion of cooperation, which they called *cooperative governance*. One of its key features was the emphasis on institutional autonomy attached to public accountability as stated in the constitution. In broader terms, cooperative governance entails autonomous civil society constituencies working cooperatively with an assertive government; its mechanisms encourage an active role for associations and different agencies and promote interaction and coordination through a range of partnerships at national and institutional levels.

At national level, it involves national stakeholder structures—statutory bodies—to allow for participation of key stakeholders such as staff, students and people with professional expertise in national governance, more specifically policy formulation and implementation. This is to promote cooperation between government and higher education. At the regional level, it entails nonstatutory regional structures with a mix of internal and external stakeholders that could be consulted on the planning needs of the region, mergers, rationalisation, programme distribution, sharing of resources and the development of institutional capacity. At the institutional level, councils, senates, academic boards and student representative councils were to be established or restructured to allow for stakeholder participation, regardless of race, gender or religion.

Cooperative governance was proposed and adopted as the most appropriate mode of higher education governance. Cooperative governance was given expression as policy through the 1997 White Paper with its regulatory provisions outlined in the Higher Education Act of 1997. From its inception, the idea behind state supervision or steering was to create a policy environment and framework in which institutions are able to respond and address national priorities from the vantage point of their institutional contexts through making clear the goals and principles of the higher education system. It was not aimed at delving into the daily, operational activities of institutions whether student admissions or internal resource allocation. In line with this policy, the directive role of the state was reconceived as steering and coordination. To enable the state to steer institutional behaviour, it utilises financial incentives, the leverages of planning evident through for example the enrolment planning process, and funding as opposed to measures of control and top-down prescription. Institutional autonomy was to be exercised within the redefined framework of accountability.

18.7.3 'Doing-For-Not-Doing-Anything': Considerations on the Initial 'Hands-Off' Approach to Higher Education or Policy Symbolism

Essentially the post-apartheid state during the first decade adopted a distant 'hands off' approach to the developments in higher education, focusing on organisational issues referred to as *positioning* and development of new policies labelled *frameworks* by Jansen (Sehoole 2001). Within the framework of institutional autonomy granted by the Constitution, institutions responded to the market pressures and pur-

sued their own interests and priorities, not always in line with the emerging government higher education vision. For example, in terms of funding, the implication was that the Apartheid government's South African Post-Secondary Education Information System (SAPSE) subsidy formula for universities of 1984 was applied to all institutions from 1985 until the implementation of the new funding framework in 2004, a decade into the new democratic government. The consequence of this was the continuation of apartheid inequalities between higher education institutions; for example, historically white institutions received more government funding because they had more students in the natural sciences and a higher success rate (Bunting 2004; Macfarlane 2004).

The 'hands off' approach also gave room to a proliferation of private higher education provisioning after 1994, particularly evident in the establishment of a number of private postsecondary education institutions operating in South Africa such as Lyceum College owned by Educor, Damelin Education Group owned by Educor, Institute of Marketing Management independently owned, Midrand Graduate Institution owned by Educor and Boston City College owned by Adcorp Mabizela (2003). Institutions also boosted their profits through distance education provisioning especially in faculties of education, which were mostly negatively affected by patterns of student choice. In some instances, in the context of contact institutions not having sufficiently developed support systems in place for distance education provisioning, the quality of education was compromised. Student choice was marked by a surprising shift in student mobility from historically black to historically white institutions and from universities to technikons in response to the perceived marketability of degrees from these institutions and perceived opportunities. In addition, institutions drastically increased their student enrolments in anticipation that more funds would be available from the National Treasury to support the growth stimulated through increased participation rates in higher education.

Overall, mixed responses are articulated ranging from education policy as pure symbolism, which reflects political pressures of the time vis-à-vis government under preparedness and lack of capacity,[6] the challenges of inclusion and participation in the policy process (Friedman 1995; Sayed and Carrim 1998) reforms initiated in 1994 as fundamentally flawed efforts (Muller 1990),[7] mistaken assumptions about teaching, learning and the curriculum to the borrowing of models developed in western democratic countries without critical evaluation of their consequences (Cross et al. 2002).[8] Cloete et al. (2002) refer to this as the production of symbolic policy evident in other countries such as those in Central and Eastern Europe after, for example, the fall of the Soviet Union in the late 1980s and early 1990s. By their very nature, because these policies are born out of political necessity, they are difficult to implement as they focus on general principles and benchmarks for the

[6] Some policy initiatives are interpreted as reflecting a very strong need to break symbolically with apartheid very often without an understanding of how one changes symbolic formations at the level of consciousness. See also (Jansen 1998, 2003; Mason 1999).

[7] See [(1990, p. 7). See also Muller (2000).

[8] Cross et al. (2002); De Clerq (1997, pp. 27–146).

system without creating targets for each institution against the backdrop of system benchmarks. For many, the significance of this policy formulation process was that the post-apartheid period required the new democratic government to declare a political break from the past and signalling a new direction through both the policy process and actual policy.

18.8 Steering Change in Higher Education

Two important aspects underpin state supervision in the South African context. Firstly, state supervision may take different forms and content in different institutional contexts and across time. For example, it may lend itself to rather murky relational dynamics at times veering to *strong steering* which may be experienced as state's meddling in institutional affairs or state interference. It may also translate into *weak steering*, which may be interpreted as lack of strength and internal capacity of the state to exercise its muscle. In South African higher education, we have seen a gradual transition from *weak steering* to *strong steering*. Government steering has been translated into two main forms. It is essentially undertaken within a planning framework based on benchmarks for the higher education system and institutional plans, linked to sustainability and a goal-orientated performance-related funding system. In this regard, the planning cycle consists of the assessment of the performance of institutions against their goals and targets set in their institutional plans approved by the Minister of Education (Cloete and Bunting 2004, p. 3). This requires the application of performance indicators for the higher education system and individual institutions. Developing such indicators resulted in an enormous uproar in the system as institutions argued against the competitive drive behind such an approach, its dangers and lack of sensitivity to the legacy of apartheid inequities and fragmentation in the higher education system. Government plays a coordinating role while institutions retain their autonomy but remain accountable for the ways in which they utilise their resources.

Secondly, the particular forms and mechanisms of steering adopted by the South African government cannot be separated from the larger context of government's concerns with fiscal control and austerity expressed through its macro-economic strategy. The vision and goals of the Reconstruction and Development Programme (RDP), which informed the proposals of the NCHE, were to be achieved under GEAR (*Growth, Employment and Redistribution*) macro-economic framework. The RDP emphasised access, expansion and massification of higher education. GEAR demanded greater fiscal discipline to minimise budget expenditure, monetary restraint to reduce inflation, a social contract based on salary restraint to protect and create employment, and limits on public expenditure. Under the circumstances, questions of rationalisation, performance, competitiveness, efficiency, effectiveness and educational performance became more pressing than ever. GEAR created an increasing realisation that, for institutions to meet these challenges successfully, they had to engage in a 'whole new game'—a paradigm shift. This was approached in

different ways, from developing ‘a strong and visionary entrepreneurial leadership’, ‘changing the character of the academic corpus’ to injecting ‘an business approach’ to university work. In practice, institutional responses to GEAR have been twofold.

18.8.1 The Regulatory Framework and Mechanisms: Regulations, Standardisation and Funding

The Higher Education Act of 1997 introduced three major issues. Firstly, it explicitly provided powers for the minister to determine regulatory policy for public and private higher education. Secondly, it established an advisory body—Council for Higher Education (CHE)—and a quality control body—Higher Education Quality Committee (HEQC), two major regulatory bodies in South African higher education. The Council for Higher Education is the statutory body, which advises the minister on public and private higher education. While the minister is not obliged to take its advice, the minister is obliged to publish its advice even if he/she does not accept it. It draws its membership from a whole range of constituency representatives of higher education, industry and civil society. The HEQC is a CHE committee responsible for quality control. Thirdly, the Higher Education Act spells out in detail the key regulatory provisions of the system. Accordingly, all universities came to be considered higher education institutions, which eliminated the legacy of a binary system, and all of them, including private institutions, became juristic persons with legal powers and the powers to award degrees once accredited by the HEQC. The Act also set the framework for institutional governance and the regulatory apparatus in terms of which institutions were expected to operate. Each institution was also given the option of having its own statute or a set of institutional regulations. At the institutional governance level, the Act stipulated that each public higher education institution should have a Vice-Chancellor who is the CEO of a council, a senate, an institutional forum as well as a student governing body—the student representative council. The council was given the power to govern the university and make all appointments, some of which could be delegated. At least 60 % of its composition includes individuals who are not university staff or students. A peculiar South African invention, the institutional forum represents a sort of work place forum where the internal stakeholders come together (see Lolwana, Chap. 13).

There are five important regulative mechanisms, which characterise the governance of higher education in South Africa. The first is the South African Qualifications Authority, which set up a national qualifications framework that provides for a regulatory system for accrediting qualifications. The second is the Programme Qualifications Mix (PQM) provision. In essence, the PQM is the mechanism through which the minister can assign each individual university the authority to offer qualifications in certain subject areas up to defined levels.

The third concerns the accreditation process through which the qualifications get approval. This is a process driven by the HEQC assisted by faceless reviewers recruited from the various universities. The fourth is essentially bureaucratic and

entails registration of accredited qualifications with the National Qualifications Authority. The last (and not to be underestimated) issue is Enrolment Planning and Funding. The Higher Education Act also makes it compulsory for any university council to have a written admissions policy that makes provision for redress.

18.8.2 Standardisation as a Measure of Quality

The drive towards standardisation as a measure of quality in higher education is tied up with the regulatory frameworks emanating from statutory bodies, very often perceived as operating outside government (e.g. the Council on Higher Education—CHE, the National Research Foundation, and other science councils, and the South African Qualifications Authority). For example, through registration of qualifications, SAQA ensures compliance with the provision of the NQF and its outcome-based philosophy in curriculum structuring. Similarly, the CHE sets criteria and standards for program accreditation, which include inter alia: compliance with national policies and regulations regarding higher education qualifications in South Africa; program strategy and coordination; student recruitment, admission and selection; staff; teaching and learning; research; supervision and research dissertation; student assessment; infrastructure and library resources; student retention and throughput rates; and program reviews (CHE 2007). These bodies exert external pressures around compliance with government policy and tend to constrain academic freedom or the ability of faculties to decide on curriculum issues (Quicke 1996, p. 1). In this regard, it is legitimate to argue that this increasing pressure for external control over academic program development, as manifested through the establishment of new national accreditation schemes and renewal and innovation strategies, stands in contrast to the political ambitions concerning institutional autonomy and academic freedom. The dual logic seems to collide. Institutions and academic staff are now required to review their programs and curriculum and align them with the national policy framework. Program accreditations and concerns with standards or standardisation may be interpreted as an invitation for more integration and coherence across the system; they also reflect the complex ways in which the relationship between the state and academia has been redefined and reorganised to the disadvantage of the latter, particularly at the level of curriculum practice.

18.8.3 From Weak to Strong Steering

From the late 1990s and the mid-2000s, the government shifted gear from benign steering from a distant to higher levels of control and interference (Johnson 2005), drawing on new forms of planning, financial and quality assurance regimes, particularly programme review and accreditation, a highly contested aspect by a range of stakeholders who believe that the autonomy of institutions is being eroded (Jansen 2004, p. 296). This has been referred to as a ‘highly active state supervi-

sion model' (Johnson 2005; Kraak 2001) and is concerned primarily with transformation through standardisation. After developing a National Plan (2001) for the higher education system, the Department of Education changed its stance from a 'hands off' approach to a far more direct government intervention to steer change in higher education. This period saw the Department of Education implementing enrolment planning, the new funding framework and the mergers, regardless of the heightened contestation of these measures at the institutional level. The National Plan was aimed at: (i) changing the shape of the higher education system through increasing participation rates, shifting enrolments towards engineering, commerce and technology and ensuring that staff and student equity targets are met, (ii) ensuring that program differentiation and institutional mission diversity exist between institutions and (iii) ensuring that the numbers of institutions are reduced without compromising the number of delivery sites. With respect to the National Plan, Sehoole (2001) notes two critical points defining the changed stance of the government. Firstly, with the unveiling of the National Plan, the ministry strongly indicated that the Plan was 'not negotiable'. Secondly, successive amendments of the Higher Education Act conferred more powers to the minister and the Department of Education to enable them to lead the transformation of higher education (Moja et al. 2003; Sehoole 2001). This signalled a gradual transition from *weak* to *strong steering* which, according to Moja et al. (2003), could well be described as beyond steering or 'transition from steering to an increasingly control approach' (see also Muller 2004; Amuwo 1999).[9]

In the early 1990s, severe criticisms were waged by the private sector and market-orientation protagonists at government about the character of the country's universities and the unbalanced trends in the output of 'science' and 'arts and humanities' graduates (Pouris 1991). It was argued that South African universities had the tendency to train more arts and humanities graduates, whereas the numbers of science graduates remained constant, which could compromise the economic development goals of the country. Following these and other criticisms, a new funding mechanism was introduced in 2003, which favours the fields of maths, science and technology (Stumpf 2001). Since then, this has been a general pattern in both public and private student support, including research funding. Underpinning the new funding formula was the division of the courses into two broad categories: natural sciences (comprising health sciences, engineering) and life and physical sciences (comprising agriculture, mathematical and computer sciences and arts and humanities), amalgamating all other disciplines.

The funding framework provides the 'funding lever for the systemic and institutional planning approach set out in the National Plan'. It proposes block grants, earmarks funding and, in so doing, it replaced the South African Post-Secondary

[9] See Moja et al. (2003). For more details see Muller (2004). The most extreme case of tightened state-institutional relations is evident in Africa and takes on extreme forms of state authoritarianism and repression as discussed in the Nigerian case (Amuwo 1999).

(SAPSE)[10] formula (Stumpf 2001). Block grant funding is allocated to teaching inputs, such as full-time equivalent student enrolments per field and level of study and staff; teaching outputs, namely graduates; research outputs, namely publications and master's and doctoral graduates; institutional costs and foundation programs, such as academic development. Earmarked funding is meant for the National Student Financial Aid Scheme, institutional redress and development, and for developmental priorities (Sehoole 2001, p. 36; Stumpf 2001, pp. 1–2). The latter may evolve over time as more government funding becomes available and government priorities develop or change.

This new subsidy formula differs from the apartheid engineered SAPSE formula in unique ways: (i) it allocates subsidy for teaching outputs for students who have completed a module or a subject regardless of whether they had completed their diploma/degree; (ii) while previously funding was made available for research inputs based upon student numbers, the new formula focuses only upon research outputs, while still taking into account Master's and Doctoral graduates as a teaching input subsidy and a research output subsidy (Stumpf 2001, p. 1). It is essentially a 'goal-orientated performance-related' or output orientated funding framework (Macfarlane 2004, p. 12), with the possible danger of prioritizing quantity outputs and not sufficiently being able to monitor the quality of these outputs. Whether in fact it is necessarily a better funding formula and is able to effectively support the reengineering of the apartheid higher education system remains to be seen. Already, some cracks are visible. It is questionable whether the funding framework enables sufficient funding to be allocated to institutional needs such as the running costs and infrastructure expenses especially aggravated by rising inflation, justified demand for increased financial aid and allocations to teaching and learning approaches that support the increased numbers of students who have been recipients of a substandard schooling system.

Funding allocations to higher education institutions are informed by the planning which is based on the submission of institutional plans initially delivered through a 3-year rolling plan. The Department of Education's analysis of the 3-year rolling plan indicates that the plans are largely visionary and reflective of the ambitions of institutions with most of them projecting themselves often unrealistically as the Oxford of Africa. Very few plans reflect individual institutional identities and positioning. The 2003/2004 Enrolment Planning process replaced the 3-year rolling plan out of the realisation that it was far more accurate as it was based on the current realities of institutions as recorded in the Higher Education Management Information System (HEMIS) developed during the previous period. The challenge for government steering is to ensure that sufficient support is put in place to effectively break institutions out of their historical moulds.

By linking funding to enrolment planning, the formula requires institutions to ensure a shift in graduate profiles towards science, engineering and technology as

[10] The SAPSE formula was based on rational choice theory, in that it was driven by the idea that students make rational choices about their careers. SAPSE was applied to universities in 1983 and to technikons in 1987 (Stumpf 2001, p. 1).

priority areas. However, it brings to the fore new contradictions: institutions are under pressure both to increase their student numbers in these areas and their graduation rates, which in turn increases financial pressures as more poor students are taken in without sufficient funds to support them in their studies and insufficient academic development to support them in their transition to higher education is available (Stumpf 2001, pp. 4–5). Insufficient financial assistance has triggered student protests for access to funding at the University of the Witwatersrand, North-West University, Tshwane University of Technology (Macfarlane 2004), University of Cape Town, University of Natal and University of Durban-Westville, resulting in the death of a student at UDW during 2000 (Vally 2000). This has remained an on-going area of contention and continued to be so into 2008.

The new funding formula does away with research inputs, as historically these funds were used for other purposes. Of concern is the lack of funding for capacity building initiatives. However, it was indicated in the Ministerial Statement on Funding that in 2007–2008, the Minister of Education appointed two task teams, namely the Teaching Development Task Team and the Research Development Task Team, whose briefs include ways in which the higher education institutions can be supported in building capacity in the areas of teaching and research. Nonetheless, research outputs are likely to be adversely affected in the long term. Note that, in 1999, 70 % of all research came from 6 of the 36 higher education institutions (Stumpf 2001, pp. 5–6). If more institutions improve their research outputs, within the constraints of current available funds, fewer funds will be available. In addition, output orientation or goal orientation in research tends to emphasise applicability and relevance to problem solving with detrimental effects on primary research. Muller (2004) argues that the only way for higher education to save itself is through entering a strategic regime of research that aims at combining basic research with applied research, allowing for the continuation of knowledge production (Muller 2004). The challenge in this regard entails enabling institutions to reconceptualise the nature of the research that is undertaken and for which funding is provided.

Briefly, two major defining features of the state's steering strategy carry the dangers of a double-edged sword. The first is a consistent emphasis on the outputs (measurable outputs) and movement of figures (students completing courses, students graduating, number of publications) at the expense of more complex and sensitive areas of academic and social practice as already indicated. Steering has essentially been *a strategy for growth* and not a catalytic mechanism for transformation. It seems for example, to be more concerned with cost and efficiency issues than with equity and redress concerns (Ntshoe 2002). The contradictions of such a perspective are already beginning to play themselves out on campuses. The second is the reporting overload that is driving institutions to a degree of administrative exhaustion and political fatigue. In addition to the existing reporting system, in 2012 the minister announced that higher education institutions would be held accountable to the auditor general. With a degree of disillusionment, Stumpf (2001) notes that the shift towards implementation has come fast and furious with overwhelming consequences for institutions:

> Institutions are totally overstretched in their efforts to respond with vigour and decisiveness to the many issues raised by the National Plan, the new funding framework, the new planning regime for institutions, the Higher Education Quality Committee and the South African Qualifications Authority. South African higher education is in severe danger of suffering from alarming levels of system overload. Most institutions would simply not have the capacity at the moment to develop sustainable institution wide research development programmes in addition to all the other pressures generated by the above mentioned policy initiatives (Stumpf 2001, p. 6).

18.9 Institutional Crises, Public Outcry and State Interventionism

The National Constitution (1996) granted institutional autonomy to all higher education institutions, which left the government with steering as the sole mechanism for influencing change in higher education. Nonetheless, the state's role in driving higher education change through policy has been more significant than initially anticipated (Adam 2009, p. 73). The notion of relative autonomy, which the new government bestowed upon institutions, soon came under scrutiny by the government and other stakeholders. In the 2000s, a number of imperatives prompted a slight shift in the government positioning on the matter of autonomy. Government argued that after 10 years of transition to democracy, institutions were not fully transformed and many continued to reflect old apartheid historical divisions. This claim was further justified by high failure rates and inefficiencies. Government maintained that institutions needed to be made more accountable. It introduced a range of mechanisms to steer institutions towards effectiveness and efficiency. In a speech in 2004, the Minister of Education, Naledi Pandor, put it this way: 'We cannot stand by and watch institutions collapse'. A series of amendments of the Higher Education Act of 1997 which gave the Minister of Education the following powers: (i) the power to appoint Administrators to a higher education institution where there is financial or other maladministration of serious nature, (ii) the power to determine the scope and range of operations of an institution (for example the amendment stipulated that an institution may not, without the approval of council and, under certain circumstances, without the concurrence of the minister, enter into a loan or overdraft agreement, or develop infrastructure) and (iii) the power for indefinite appointment of administrators and the repeal of private Acts.[11] In this regard, the minister can appoint an independent assessor to investigate the problems within the institution concerned, and if necessary appoint an administrator to resolve issues preventing the normal functioning of an institution.

Generally, the administrator takes over the authority of the council or management of the institution and implements the assessor's recommendations endorsed by the minister. Depending on the case, these may include dissolving the university

[11] For details see the Higher Education Amendments Act 55 of 1999, the Higher Education Amendments Act 54 of 2000 and the Higher Education Act 23 of 2001.

council, rewriting the university's statute to sort out governance problems, conducting a forensic audit into procurement and management in connection with financial accountability problems, resolving the relationship between top university administrators and sorting out financial management. The situation concerning state intervention at institutional level is currently assuming alarming proportions. In 2011, three universities were placed under administration, namely, the Walter Sisulu University in the Eastern Cape in October; the Tshwane University of Technology in August; the University of Zululand in April. In June 2012, the Central University of Technology in the Free State was placed under administration. In July 2012, the Vaal University of Technology in the Vaal Triangle was handed over to an administrator for at least 6 months, following an investigation by an independent assessor.

18.10 Conclusion

The National Constitution made provision for institutional autonomy of all higher education institutions, a provision that has determined or conditioned all governance structures and practices at both national and institutional levels. Against this background, beyond the adoption of a model of shared governance, the mode of state coordination of the higher education system has been through evolution and very often tension between different forms of steering (weak or strong) and increasing interference or state interventionism from the initial 'hands-off' approach characterised in the South African debate and policy frameworks.

Open to debate is whether a total withdrawal or a 'hands-off' strategy adopted by government against a legacy of state control could be interpreted as a form of government steering in the sense of 'doing something-for-not-doing-anything' or policy symbolism in the sense that the intention was to demarcate the new dispensation from the past by focusing on symbolic policy frameworks. It certainly produced serious unintended consequences. The difficulty is to interpret which consequences were part of the government's intentions. However, beyond this polemic domain, government's steering mechanisms were explicit. For a differentiated and coordinated system within the national policy framework warranted different targets and benchmarks, and required an adequate up to date information system to assess institutional performance. These were achieved through a comprehensive regulatory strategy and mechanisms, the mergers, the new funding framework, and at institutional level, the reconstitution of governance structures, including an interactive planning process tied up to state funding and performance, and the development of the necessary skills in statistical modelling and analysis.

The change in the method of steering has also warranted perceptions about a shift from the initial interactive steering advocated by cooperative governance to an approach close to the centralised state control. An example in this regard is the new funding model, the 'top-down' manner in which the merger concept recommended by the National Plan for Higher Education (1998) was implemented. The interpretations given to these interventions are varied among critics and protagonists. There

are those who regard them either as instances of *strong steering* as outlined above or as manifestations of occasional state interference. There are those who have blamed government for reinstating the legacy of centralised state control and infringing the right of individual institutions to determine their primary goals enshrined in the Constitution. From a different perspective, some argue that there can be no legitimate state interference in academic freedom (as distinct from institutional autonomy):

> The crucial question must be whether the state's 'legitimate interest' can justify, not just 'state steering' but actual 'state interference' in the internal affairs of the university. In terms of my own approach, the answer must be that while institutional autonomy cannot be an absolute value, academic freedom itself may not be compromised. In other words, while there can be legitimate state interference in the internal affairs of universities, provided that this does *not* compromise academic freedom, there cannot be any notion of legitimate state interference with academic freedom itself (Du Toit 2006, pp. XX).

Protagonists of these forms of state intervention have either justified them with reference to state moral or political responsibility in situations of crisis or by resorting to the notion of conditional autonomy tied to the principle of public accountability.

Some institutions responded through massive recruitment and diversification of their forms of programme delivery or from a narrow technicist view through alignment of their programmes to the marketplace. In some instances, the transformation focus shifted to efficiency due to a change overload, particularly, the reporting requirements of the Department of Education (3 year rolling plans) and the South African Qualifications Authority (programme registration) and more recently, the HEQC programme reaccreditation initiative. Concerning institutional choices in the post-apartheid South Africa, the following typology can be identified: (i) the strategic managerialists trying to reconcile academic excellence with market pressures, (ii) the unwavering entrepreneurs concerned with selling of goods and services of higher education institutions at a competitive price, (iii) the reformed collegialists that recognise the centrality of the intellectual agenda while striving for the institution to respond to the changing context and (iv) the transformative managerialists striving to transform the institution from authoritarianism to democracy from the centre (Cloete and Kulati 2003).

Kulati (2000) argues that institutions that have adopted an outright entrepreneurial approach are white Afrikaans universities, which historically had the least state control. English speaking institutions such as Wits, UCT and Rhodes have been caught between retaining their cultural legacies (e.g. perceived collegial traditions, academic elitism and commitment to knowledge advancement) and responding to global pressures for international competitiveness (Kulati 2000). Left out of the mergers, they still enjoy the considerable autonomy they enjoyed in the past, though have they have been under greater external pressure to alter their institutional make-up. Most of them have been successful in balancing their student enrolment in terms of gender and race, though most of the new students (labelled 'non-traditional' students) are dependent on financial aid under a declining government subsidy. Most of these students also enter the university with higher degrees of under-preparedness, a problem that cannot be effectively addressed without a comprehensive academic support strategy.

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Part V
Research and Innovation

Chapter 19
Research and the 'Third Mission' in Light of Global Events

Creso M. Sá, Andrew Kretz and Kristjan Sigurdson

19.1 Introduction

Research activity is becoming more geographically dispersed, whether one examines corporate research and development (R&D) or academic investigation conducted in universities and other scientific institutions. The chapter situates Brazil in this global context, with the aim of addressing the following question: *how ready are Brazilian universities to contribute to industrial innovation, considering the growing globalisation of R&D?* To address this question, the chapter reviews major policy developments over the last 15 years, delineating the conditions that shape the ability of Brazilian universities to contribute to industrial innovation in the 2010s. First, we provide an introduction to the country's research system, highlighting key institutions. We then give an overview of federal research and innovation policies intended to transform university research in Brazil. In the context of a policy environment increasingly oriented towards innovation, the following section discusses initiatives to support university–industry linkages. In the last section, several of Brazil's internationalisation initiatives are discussed in connection with national and state efforts to build national research and innovation.

19.2 The University Research System

Brazil has an extensive research infrastructure that consists almost entirely of public institutions. Universities and public research institutes contribute to the country's growing research productivity. Most scientific research, however, is generated in public universities, which published more than 90 % of articles in 2010 (Thomson

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_19

Reuters 2012). The research capacity of Brazilian public universities is largely a product of graduate education (Balbachevsky and Schwartzman 2010)—public universities host 81 % of graduate programs and 83 % of the graduate students (GeoCapes database n.d.).

Most research takes place in a handful of universities. Although there is no formal classification of universities according to research performance, one estimate identified 32 universities as doctoral/research institutions, most of which were federal universities (Steiner 2007). Moreover, most research and graduate education in Brazil is concentrated in the south-eastern states. This region is home to the ten most productive research universities, which together account for nearly 59 % of published journal articles authored by Brazilian researchers (Thomson Reuters 2012), and host nearly 79 % of the country's Ph.D. students (GeoCapes database n.d.). In the state of São Paulo, Brazil's most populous and economically powerful state, four of the best regarded public universities account for nearly 36 % of Brazil's published scientific articles and enrol nearly 30 % of the country's Ph.D. students. The University of São Paulo (USP) is especially prolific, accounting for 20 % of the country's publications (Thomson Reuters 2012), and notably, 16 % of enrolled Ph.D. students (GeoCapes database n.d.). Moreover, among graduate programs assessed by the Ministry of Education (MEC) as meeting international standards in research, academics, and productivity, a third are found at USP (Schwartzman 2007).

Although universities in São Paulo remain national leaders in research and in training highly skilled graduate students, states in other regions of Brazil have been increasing the percentage of expenditures on science and technology (S&T) (MCTI 2012). In 2000, 72 % of the expenditure of state governments in applied science was attributed to São Paulo; however, by 2010, São Paulo's share of state S&T expenditures had decreased to 55 % (MCTI 2012). Moreover, São Paulo's share of enrolled Ph.D. students declined from 55 % in 2000 to around 36 % in 2011 (GeoCapes database n.d.). Indicators such as these reveal some degree of decentralisation of graduate education over the last decade.

Although states play an important role in financing university research, most funding (c. 60 %) comes from the federal government (de Castro and de Souza 2012), disbursed through a number of federal agencies. The National Council for Scientific and Technological Development (CNPq) and the Coordination for the Improvement of Higher Education Personnel (CAPES) are major sponsors of university research (Britto and Stallivieri 2011). Today, CNPq is dedicated to promoting research and training in S&T through the provision of scholarships for graduate students, and through research funding programs. CAPES similarly supports graduate training, but it is an agency of the MEC and is responsible for the coordination and monitoring of the country's graduate programs. A third significant source of research funding is the Financing Agency for Studies and Projects (FINEP). Whereas CNPq and CAPES emphasise training and supporting highly skilled personnel, FINEP's mandate is to finance R&D programs. Both CNPq and FINEP are housed within the Ministry of Science, Technology and Innovation (MCTI).

Arguably, one of the greatest challenges facing the further development of Brazilian science is the need to internationalise Brazil's best universities (de Brito Cruz

and Chaimovich 2010). Efforts of international scientific collaboration took place in the early twentieth century, and later and more successfully, to improve graduate education (Pereira Laus and Costa Morosini 2005). However, Brazil's universities remain inward looking, and even the best among them lack the orientation to compete internationally. Few Brazilian universities have undisputed international standing or figure prominently in the (albeit disputed) international rankings.[1] A 2008 World Bank report emphasised the need for universities in Brazil to foster increased international collaborations, send more Brazilian students to study abroad, and promote interactions and faculty exchanges with foreign institutions (Rodríguez et al. 2008). Schwartzman (2007) has noted that the local-oriented academic culture and the international limits of the Portuguese language make 'Brazil less accessible to the trend of internationalisation of higher education that can be observed in other countries' (p. 24). Even in the case of Brazil's leading institution, USP, it is uncertain whether there is sufficient general interest in abandoning the stance of a local institution to assume a globally oriented posture (Schwartzman 2007).

19.3 Research and Innovation Policies

Since MCTI was formed in 1985[2] there have been numerous efforts at connecting S&T more directly to private industry (Schwartzman 2008). Although some attempts were made in the 1980s to support business R&D (Rodríguez et al. 2008; Britto and Stallivieri 2011), it was not until the 1990s that the federal government began seeking to integrate S&T policy with industrial policy (Lotufo 2009). New funding programs and regulatory policies implemented over the last 15 years have aimed at increasing private investment in innovation, largely through enhancing the interactions among firms and universities and other research institutes. At the state level, support for R&D is largely channelled through research support foundations, which have increased in number in recent decades.

Together, state and federal governments contribute a majority of total expenditures in R&D, with the private sector's contribution totalling 47 % (Britto and Stallivieri 2011). From 2000 to 2010, Business Expenditure on R&D in Brazil has remained nearly a constant proportion of Gross Expenditure on R&D (GERD) and has been characterised as 'anomalously low' considering the rate of economic growth during this period (Adams et al. 2013, p. 7).[3] Although private firms also typically

[1] In the 2012–2013 Times Higher Education World University Rankings, USP was Brazil's highest ranked university at 158th and the only other Brazilian institution in the top 400 was the State University of Campinas (Unicamp), ranked between 251st and 275th. The Academic Ranking of World Universities lists USP in the 101–151 range, Unicamp in the 201–300 range, and four other universities between 301st and 500th.

[2] In 2011, the Ministry of Science and Technology (MCT) was renamed the Ministry of Science, Technology, and Innovation (MCTI).

[3] Adams, Pendlebury, and Stembridge (2013) propose that comparatively low BERD may 'be caused by unusually high levels of public R&D investment especially from a highly supportive tax

rely on public sector research as a source of S&T expertise (Rapini et al. 2009), university–industry interactions are generally characterised as weak (Suzigan and Albuquerque 2011). Explanations for the weak patterns of interaction between universities and industry include a historical lack of articulation between S&T policies and industrial policy (Chiarello 2000); past policies of import-substitution industrialisation, in which the private sector was sheltered from foreign competition and thereby lacked incentive for investment in innovation (Zawislak 1996); problems with the implementation of new laws intended to stimulate university–industry relations (Schwartzman et al. 2008); overemphasis on research for conceptual knowledge in the humanities and social sciences (Rodríguez et al. 2008); administrative and financial autonomy of universities that prevent substantial engagement with the economy (Castro and Levy 2000), and the preference of domestic firms to import or license foreign technology (Lotufo 2009).

Concerted efforts to bring industry and universities together under a consolidated S&T policy began in the 1990s (Britto and Stallivieri 2011). The creation of the Sector Funds program in 1999 was an important attempt to increase public–private collaboration (Sá 2005). The program consists of 16 thematic funds, one of which is focused on university–industry interactions, which disburse research funding drawn from corporate taxes. The funds target innovation-oriented projects in strategic sectors undertaken by a non-profit university or research institute. The budget of the Sector Funds expanded from nearly R$ 1.08 billion in 2001, invested in seven funds, to R$ 3.78 billion in 2011 financing all current 16 funds (MCT 2001; MCTI 2011). However, considering fluctuations in overall research funding for universities and difficulties with annual sequestrations from the Sector Funds budget, the program has arguably fallen short of having a transformational impact.

The policy trends initiated in the 1990s continued in the 2000s during the government of President Luiz Inácio Lula da Silva (2003–2011). In his first year, the National Innovation, Technology and Trade Policy was adopted as a general framework for innovation policy-making. Budgets for ministries and agencies supporting S&T significantly increased, as the administration's policy framework focused on the promotion of research activities in the private sector and integrating academic and industrial research with other economic policies (de Brito Cruz and de Mello 2006). Public spending on S&T grew from R$ 8.65 million in 2000 to R$ 32.41 million in 2010. At the same time, the percentage of private spending on university research as a share of total sponsored research increased from 0.94% in 2000 to a high of 1.8% in 2007 and 1.37% in 2010—well below the 6.16% average in OECD countries (OECD 2013). During this same period, non-targeted public R&D spending at universities declined from slightly over 60% in 2000 to around 56% in 2010 (MCTI 2012).

States also came to play a significant role in S&T. The longstanding São Paulo Research Foundation (FAPESP) leads Brazil in public investments in research and contributes 64% of public R&D funding in the state of São Paulo. The government of São Paulo's strong support of research, through FAPESP, makes the state the second largest sponsor of research in Latin America. Similar foundations have

regime in the São Paulo region' (p. 7).

been created elsewhere: 22 states and the federal district now have research support foundations. By 2008, state investments in public R&D accounted for about 32% of total research spending (de Brito Cruz and Chaimovich 2010). State spending on S&T grew from R$ 7.43 million in 2000 to R$ 11.56 million in 2010 (MCTI 2012).

A key component of the federal approach during the 2000s was the Law No. 10,973, or the 'Innovation Law', of 2004. Supported by a broad coalition, the law aimed at promoting innovation by facilitating university–industry collaboration. The law helped to legitimise and formalise such interactions by mandating the creation of Centres for Technological Innovation (NIT) at public S&T institutions to manage technology transfer policies and coordinate linkages with industry. The law also permitted the shared use of S&T infrastructure and resources by public research institutions and private firms, secured direct government funding for business R&D, and encouraged the flow of researchers between public and private sectors. When the law was implemented in 2006, financial and intellectual property (IP) regulations were lifted to encourage interaction between public researchers and private firms. For example, the law allowed researchers from federal universities to hold equity in spin-off ventures and other commercial efforts while maintaining status as public sector employees, enabling university researchers to retain retirement benefits (Penalva 2008; Botelho and Almeida 2010).

Subsequent laws took the same approach as the 2004 Innovation Law by providing a set of fiscal incentives to promote private R&D (Britto and Stallivieri 2011). The 2005 Law of Fiscal Incentives and Regulatory Framework for Technological Innovation—otherwise known as the 'Lei do Bem' (the Good Law) because it was meant for the good of business—modified the national tax code to simplify procedures for firms to claim tax breaks aimed at supporting innovation. The law also expanded deductions for R&D expenditures and eliminated ceilings on tax reductions from the purchase of related machinery and equipment (Araújo 2011). Moreover, the law allows public agencies to subsidise the salaries of researchers with advanced degrees employed by domestic firms to perform R&D (Rezende 2010).

Reinforcing these laws was the government's 2007 program for accelerating growth (PAC), which is composed of various sectoral plans, such as the *Action Plan in Science, Technology and Innovation for National Development* (PACTI). The plan had four primary objectives: increase funding for students and researchers; promote technological innovation in business by fostering a culture of R&D and increasing the number of private sector researchers; support R&D and innovation in strategic areas; and make science, technology, and innovation socially and economically relevant (Rezende 2010). Phase one of the PAC program ended in 2010 with mixed reviews. The government claimed spending on projects reached 63% of the total amount promised but even this figure remains contested. Contas Abertas—a non-profit, non-partisan watchdog that tracks federal income and spending—claimed that less than 14% of the promised money had been invested, with delays attributed to excessive bureaucracy. Part of the discrepancy may be accounted for by the government counting state spending as PAC projects, and including companies' 'intentions to invest' in the final calculations (Skalmusky 2011). The PAC program as well as the PACTI were renewed in 2011 as PAC2 and PACTI II, respectively, and continue the policy priorities established in 2007.

With the launch of PACTI, the government signed several decrees impacting research policy. Important among them is a new regulatory framework for the National Fund for Scientific and Technological Development (FNDCT) that authorises resources to be used to support a wider range of initiatives beyond the Sector Fund program, potentially diluting its impact. Another initiative was the establishment of the Brazilian Technology System (SIBRATEC) with the objective of supporting the technological development of domestic firms through services that include technology transfer. Through SIBRATEC, states receive funding from the federal government and the private sector—channelled through the FNDCT—to finance R&D activities aimed at developing innovation projects within established national priority areas (Penalva 2008; Rezende 2010).

Since August 2011, the Greater Brazil Plan 2011–2014 (Plano Brasil Maior) has further emphasised innovation as the centrepiece of the federal government's industrial policy. The plan integrates policy instruments from several federal ministries and agencies (Brazilian Development Bank 2012) to build on the Good Law's inventive framework of tax credits, relief, and exemptions for research firms in the private sector, to continue permitting the public financing of private non-profit research activities (Botelho 2011), and to allow university-associated foundations to work with numerous S&T institutions. Beyond reinforcing the role of innovation in economic development, the plan also provides an additional R$ 2 billion for FINEP to invest in innovative projects.

19.4 Bolstering University–Industry Linkages and Technology Transfer

Changes within the Ministry of Science, Technology and Innovation reflect these policy priorities. One program reflecting these changes is the National Institutes of Science and Technology (INCTs), which was launched in November 2008 to create 101 networked research centres of excellence across 16 different states. The creation of the institutes, many of which have links with universities, was made possible with about R$ 605 million from Capes/MEC, several state research foundations, the Ministry of Health, BNDES, and Petrobras. There are currently 122 approved projects within 120 institutes specialising in specific areas considered strategic by PACTI: agricultural sciences and agribusiness, energy, engineering and information technology, human and applied sciences, ecology and the environment, nanotechnology and healthcare (CNPq 2008; CNPq 2010; INCT n.d.).

In 2008, the federal government transformed the country's Federal Centres of Technological Education (CEFET)—secondary schools with a technical–vocational mandate—into 36 Federal Institutes of Education, Science and Technology (IFET) (MEC n.d.). The Federal Institutes were created to expand on the historical mission of vocational training to encompass post-secondary education and research (Silva et al. 2009). There are now 38 federal multi-campus institutes which are oriented towards regional productive sectors, offering opportunities for vocational

training, undergraduate degrees, and post-graduate degrees in science and technology. With their objectives of promoting local development through the diffusion of science and technology, the institutes have acknowledged the need for cooperation agreements and strategic partnerships with public and private organisations (de Souza Machado 2011). Government investments in the federal network have expanded the system of technical education campuses in Brazil from 140 in 2002 to a planned 551 by 2015. Despite this growth, some contend that this expansion has yet to catch up with demand, while others point out cases in which budgetary constraints result in the lack of necessary equipment and qualified staff to deliver programs (Downie 2011).

One strategy to strengthen the relationship between publicly funded research and industry is the 2004 Innovation Law's requirement that public universities form Centres for Technological Innovation (NIT). Such units are roughly equivalent to technology transfer offices in American universities. As outlined in Act 17 of the Law, the minimum competencies of an NIT are to: develop institutional policies related to licensing, innovation, and other forms of technology transfer; manage information of innovation activities; evaluate invention disclosures; promote and protect the IP; disseminate IP; and monitor the processing of patent applications and the IP titles maintained by the institution. The 2004 Innovation Law doubled the number of NITs in operation at universities. Today, nearly three quarters of NITs are at federal (53%) or state (22%) universities. Although prolific, Torkomian (2009) contends that most NITs are constrained by several challenges, including problems related to hiring and training staff competent in licensing IP, the absence of an institutional culture supporting the protection and transfer of IP, and limited financial resources. Nevertheless, Lotufo (2009) argues that by addressing NIT's, the Innovation Law effectively sanctions university–industry interaction and structures the terms of these relationships.

Many organisational structures similar to the NIT existed in various universities prior to the 2004 Innovation Law. The Federal University of Rio de Janeiro's Coordination of Graduate Engineering Programs (COPPE), created in 1971, claims to be the precursor to technology transfer management in Brazil. Until the mid-2000s, university-owned patents accounted for 5.1% of patents, placing Brazil just above Australia and China, but below Mexico and Canada (OECD 2008). The first formal NIT was established in 1990 at Unicamp (Santos and Rebolledo 2008). Now known as Inova, it is a national leader in promoting technology transfer and research commercialisation. Between its inception in 2003 and 2010, Inova has applied for 324 patents in Brazil (38 granted), made 56 software registrations, licensed 51 technologies, and incubated 23 companies (Inova 2010). Inova also filed 12 international patents following the Patent Cooperation Treaty (PCT), covering more than 100 countries. To put this in international perspective, Iowa State University in the USA filed 353 patents applications with the USPTO during 2003–2012, all under the PCT, and had 194 granted[4] (AUTM 2011). By 2012, Unicamp ranked second only to Petrobrás

[4] Unicamp had 26,233 published scientific articles during 2003–2012, comparable to the 26,863 articles published by Iowa State (Thomson Reuters 2012). UNICAMP claims to have filed 12 Patent Cooperation Treaty international applications in the same time period.

in the number of patent applications filed with Brazil's National Institute of Industrial Property (INPI), and the gap between the two has been narrowing (Table 19.1).

Inova has been involved in many projects that make it a leader among Brazil's NITs, networking and disseminating practices in the field of technology transfer regionally, nationally, and internationally. For instance, the centre was a founding member of the Network of Intellectual and Industrial Property in Latin America (PILA Network), which was established in 2011 to promote the modernisation of university management practices related to technology transfer.[5] Another initiative, Inova Semente (Seed), promotes university entrepreneurship through various means. For example, it supports the Startup Council, a program created by Unicamp Ventures and Startups Campinas to provide business mentoring to start-ups by experienced entrepreneurs and advisors. In 2010, Inova partnered with InovaSoft, Softex Campinas, and others to form the Project for Business Innovation to survey the market feasibility of registered software developed by Unicamp and similar institutions and to promote the transfer or creation of new businesses based on such software.

The dissemination of NITs has occurred alongside a growing involvement of universities in patenting (Fig. 19.1). Despite the proliferation of such units, their work remains ambiguous and diffuse and they still lack legitimacy among researchers, administrators, and companies (de Castro and de Souze 2012; Santos and Rebolledo 2008). Concerted efforts have been made to further integrate firms and universities and to overcome barriers to innovation. In 2006, the National Forum of Managers of Innovation and Technology Transfer (FORTEC) was formed as a representative body of NIT professionals from universities and research institutes to facilitate the dissemination of IP and technology transfer policies and practices (Ritter dos Santos et al. 2009). To further support NITs, FINEP invited Inova to develop a national program for training NIT professions (Toledo 2009; Ritter dos Santos et al. 2009).

FINEP has grown to promote and encourage R&D not just in universities, but in other public and private institutions as well. Increased efforts in supporting business include a number of grant and loan schemes. FINEP helps support new government initiatives to strengthen industrial innovation, such as the Brazilian Enterprise for Research and Industrial Innovation (Embrapii), which aims to foster cooperation between domestic firms and research institutions to generate innovative products and processes (FINEP 2013); and Inova Empresa, an initiative to finance technological innovation in key economic sectors (Planalto 2013). FINEP also runs specialised programs to support industrial innovation, such as the Support Program for Research in Business; Inovar, which strives to create a business environment favourable to venture capital; and the National Program for Business Incubators and Technology Parks (PNI), which supports the development of such organisations (Rezende 2010).

[5] Similarly, at the state level, the university has been at the forefront of Inova São Paulo, an initiative to improve the processes for evaluating the potential and marketing of innovative technologies in the state's universities. Through Inova, Unicamp also joined RedEmprendia, an Ibero-American network of universities for business incubation that promotes innovation and entrepreneurialism (USP and UFRGS are also members).

Table 19.1 Top 50 domestic patent holders by rank for 2001–2011. (Source: INPI)

Depositor	Patents	Depositor	Patents
Petroleo Brasileiro S. A.	668	Fundaçao Universidade de Brasilia	73
Universidade Estadual de Campinas	589	Natura Cosmeticos S. A.	72
Universidade de Sao Paulo	587	Universidade Federal de Sao Carlos	71
Whirlpool S.A.	467	Universidade Estadual de Maringá	62
Universidade Federal de Minas Gerais	408	Instituto Nacional de Tecnologia	64
Fundaçao de Amparo a Pesquisa do Estado de Sao Paulo	324	Universidade Federal de Lavras	59
Universidade Federal do Rio de Janeiro	251	Dana Industrias LTDA	54
Semeato	218	Universidade Federal da Bahia	51
Electrolux do Brasil	186	Dixie Toga	51
Grupo Seb do Brasil Produtos Domésticos Ltda	170	Uniao Brasileira de Educaçao e Assistencia—Mantenedora da PUC RS	50
Fundaçao de Amparo a Pesquisa do Estado de Minas Gerais	163	Universidade Federal de Uberlândia	50
Universidade Federal Do Rio Grande do Sul	161	Universidade Federal do Pará	50
Universidade Federal do Parana	152	Universidade Federal de Juiz de Fora	49
Comissão Nacional de Energia Nuclear	140	Fundaçao Universidade de Caxias do Sul	48
Electrolux do Brasil S.A.	137	Universidade Federal de São Paulo	46
Companhia Vale do Rio Doce	135	Universidade Federal de Ouro Preto	45
Empresa Brasileira de Pesquisa Agropecuaria	125	Embraer S.A.	44
Universidade Estadual Paulista "Julio de Mesquita Filho"	104	Universidade Federal do Ceara	43
Maquinas Agricolas Jacto S.A.	103	Universidade Estadual de Londrina	43
Usinas Siderurgicas de Minas Gerais	102	Universidade Federal de Santa Maria	41
Universidade Federal de Santa Catarina	88	Universidade Federal do Rio Grande do Norte	36
Universidade Federal de Pernambuco	84	Instituto Nacional de Pesquisas da Amazônia	37
Universidade Federal de Viçosa	83	Universidade Federal Fluminense	34
Fundaçao Cpqd	78	Universidade Federal do Rio Grande do Norte	34
Fundaçao Oswaldo Cruz	73	Mahle Metal Leve S/A	34

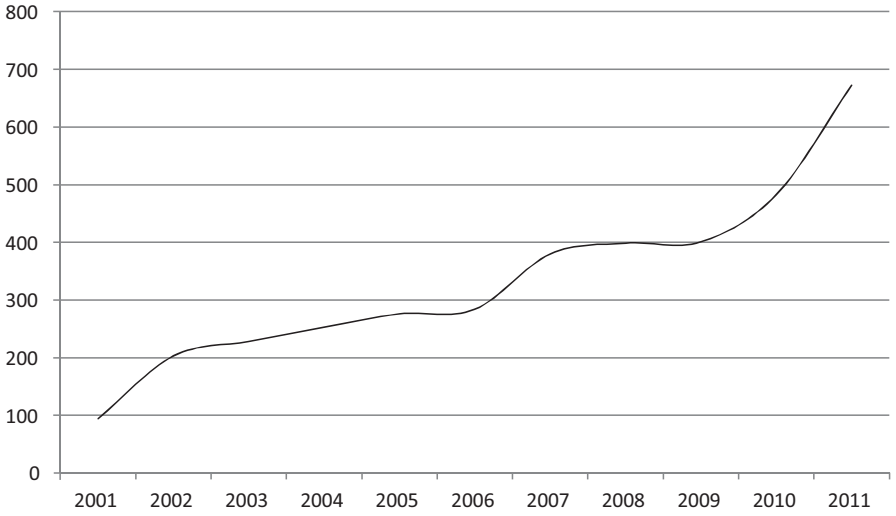

Fig. 19.1 Patents filed in Brazil by universities (2001–2011). (Source: INPI)

As government support for start-up creation has expanded, technology parks and business incubators have increased, most of which are connected to universities. The first incubators in Brazil were created from an initiative of the CNPq in the 1980s (Anprotec 2012b). In 1984, CNPq established ParqTec (Fundação Parque de Alta Tecnologia de São Carlos), a private, non-profit organisation in São Carlos to help institutionalise technology transfer between universities and the productive sector. According to the National Association of Entities Promoting Innovative Enterprises (Anprotec), there were 384 incubators in Brazil at the end of 2011 (Anprotec n.d.). Together, these incubators have spun-out 2,509 firms employing 29,205 people (Horn and Augusto 2012). Of these incubators, a recent survey by Anprotec suggests 71% are managed by universities or research institutes, and 80% have connections with universities or research institutes (Anprotec 2012a). Anprotec also reports that 32% of incubators focus on creating spin-off companies from research (Horn and Augusto 2012). In December 2012, the MCTI announced Start-Up Brasil, a program to support start-ups throughout the country. The program seeks to accelerate early-stage start-ups in the areas of software and information technology by providing 1-year grants to be used for development and expansion of the business (Stewart 2012). In early 2013, Start-Up Brasil—in partnership with six local accelerators—selected 40 start-ups for the program (Stewart 2013). In its second phase, the program aims at supporting 100 technology-based start-ups (Raupp convoca startups a participar do esforço de inovação 2013).

Incubators are typically consolidated within technology parks. The first technology park was the Ciatec Technology Park in Campinas, created in 1980. Today, there are 26 operational parks, with 19 in development and 34 in design (Anprotec 2012a). The recent growth of incubators and technology parks has been fostered at least in part through government programs that encourage entrepreneurship and

innovation (de Brito Cruz and Chaimovich 2010). One recent step towards this aim was a 2011 public call in support of business incubators sponsored by MCTI, in which 28 projects were funded (País tem 2.640 empresas em incubadoras, mostra estudo 2012). The PRIME program (O Programa Primeira Empresa Inovadora) is another initiative supporting business incubators. Established by FINEP in 2009, PRIME distributes funds to 17 incubators—many affiliated with universities—to foster innovative start-up companies. Also supporting incubators is the National Program of Support to Business Incubators and Technological Parks (PNI), established in 2006 by FINEP (FINEP 2011), and the Brazilian National Support Service for Small and Medium Enterprises (SEBRAE) (World Bank InfoDev 2010).

The cities of Recife, Campinas, Florianópolis, and Porto Alegre are home to some of Brazil's main science parks. In Recife, the Porto Digital, a science park affiliated with the Federal University of Pernambuco, has developed a cluster of technology-based firms specialising in computer science and software development, drawing in global companies like IBM, Samsung, and LG. Among the three technology parks in the city of Florianópolis, Parque Tec Alfa is partnered with Universidade Federal de Santa Catarina and managed by the state's research foundation (Anprotec 2008; Municipality of Florianópolis n.d.). In the city of Campinas, Unicamp and Pontifical Catholic University of Campinas are likewise engaged with technology parks. Both are affiliated with the Ciatec Technology Park, which specialises in biotechnology, nanotechnology, energy, and information technology, while Unicamp manages Pólo de Pesquisa e Inovação, a research park with a focus on energy, biotechnology, agribusiness, and nanotechnology (Anprotec 2008; ParqTel 2011). In Porto Alegre, the Projeto Porto Alegre Tecnópole, established in 1995, has promoted the technological profile of the region. The Catholic University of Rio Grande do Sul's science park, Tecnopuc, one of the most distinguished technology parks in Brazil, is one example of this development.[6]

Another attractive location for R&D intensive businesses is the city of São José dos Campos, where multinational companies such as General Motors, Ericsson, and Philips among others have been based (Diniz and Razavi 1999). The city became the host to a thriving aerospace industry after the establishment of the Aeronautics Technological Institute (ITA) in the late 1940s (Diniz and Razavi 1999), and aircraft manufacturer EMBRAER, initially a state-owned company, in 1969. The National Institute for Space Research (INPE) is another public research institute that contributes to the local S&T agglomeration, with its leadership in Brazilian satellite and geographic information system technology. These institutions are home to some of the most competitive graduate programs in engineering in the country. The city is also home to the São José dos Campos Technology Park (PqTec-SJC), which incubates innovative companies in high technology fields.

Findings from a survey of 1005 researchers and 326 companies conducted by researchers at Unicamp and other universities show that in the period 2008–2012, university–industry interaction levels surpassed those of other Latin American

[6] Tecnopuc has twice received Anprotec's (in partnership with the Sebrae) National Award for Innovative Entrepreneurship—Best Technology Park.

countries such as Mexico and Argentina. In addition, the research shows that low and medium technology-using sectors are important users of the knowledge generated by universities. Such sectors include agronomy and agricultural production, forestry, petroleum, electrical equipment, vehicle production, and metallurgy and metallurgical products, (Monteiro 2012).

Exemplifying these patterns is the longstanding role of Brazil's oil company Petrobrás, which has established extensive relationships with universities. Petrobrás has formed technological partnerships within 50 networks involving more than 100 universities and research institutes since 2006. The Federal University of Rio de Janeiro (UFRJ) is home to the Leopoldo Américo Miguez de Mello R&D Centre (Cenpes), Petrobrás's main research lab. The UFRJ furthered its relationship with Petrobrás in 2012 when the two founded the Centre for Biofuels, Oil and its Products to carry out research in biotechnology and chemical engineering. The presence of Petrobrás, which spends more on R&D than any other company in Brazil, has undoubtedly contributed to UFRJ's technology park becoming a hub for companies from the oil and gas industry such as Schlumberger and Halliburton (Tautz 2012).

Another sector in which university–industry partnerships feature prominently in Brazil is that of biotechnology. The Brazilian biotechnology industry emerged in the late 1990s not as a result of a centralised government strategy, but because of a number of small initiatives such as the genome networks in São Paulo and the Biominas biotechnology cluster in Minas Gerais (Camargo Mendes and Jacon 2012). Only a decade later, the maturation of the country's biotechnology sector has reached a point where Brazilian scientists are increasingly seen as players on the international stage (Brazil's Biotech Boom 2010). The work of large networks of Brazilian university scientists coordinated by FAPESP has led to the launch of companies such as Alellyx, an applied genomics company that develops traits primarily for sugarcane (Simões 2009). Alellyx and its sister company CanaVialis, which breeds sugar cane varieties and is also driven largely by the work of university scientists, were purchased by Monsanto in 2008 for R$ 616 million (Monsanto Company 2008).

The Brazilian biotechnology industry benefits from government actions such as the creation of the Innovation Law and Biosecurity Law that have helped pave the way towards a supportive legal and regulatory framework that safeguards IP rights and streamlines bureaucracy (Camargo Mendes and Jacon 2012). In 2011, there were 237 biotechnology firms in Brazil, most of which are concentrated in the southeast region in the states of São Paulo and Minas Gerais (BRBIOTEC 2011). Upwards of 95 % of these firms are connected with universities or research centres and only 14 % use venture capital financing, indicating the importance of the public sector and public funds in promoting the sector.

Stories of success in certain fields such as biotechnology and energy notwithstanding, technological innovation in Brazil remains relatively weak even though the country has seen more than a doubling of the numbers of Ph.D. researchers per 100,000 residents and a comparable increase in the share of ISI-indexed world scientific papers from 2000 to 2008. Moreover, as noted above, innovation as measured by university patenting has also been rising steadily. However, private expen-

ditures in R&D remain relatively small and research output has been concentrated in fields outside of the physical sciences and technology-related disciplines, which some suggest may limit the contributions of research to future economic development (Adams et al. 2013, p. 12). Furthermore, innovation policies of the mid-2000s that have helped establish supportive institutional frameworks and a growing array of science, technology, and innovation support instruments have been less effective in enhancing the innovation process than in stimulating the growth of academic research and the training of new scientists (Schwartzman et al. 2008). Although there has been no shortage of intent to improve the link between university research and innovation, new laws and programs that have appeared over the last decade have yet to make an appreciable impact on innovation, at least at the national level.

19.5 Internationalisation

Recent Brazilian policy documents have recognised the need for enhancing internationalisation. The 2007 *Action Plan for Science and Technology for National Development* prioritises the extension and consolidation of international collaboration (MCT 2007). Priority is being placed on projects that involve Brazil in activities of international cooperation (Rezende 2010). International scientific collaboration in Brazil has generally been supported both federally and at the state level through scholarships to individuals, as well as bilateral and multilateral collaboration programs. A variety of international cooperation initiatives and new study abroad scholarships have emerged in recent years (Pereira Laus and Costa Morosini 2005; de Moura Castro et al. 2012).

During President Lula's second term, the Brazilian government announced the launch of several new federal universities with explicit regionalisation and internationalisation mandates: the University of Latin American Integration (UNILA), the University of the Southern Border (UFFS), the University of International Integration of Afro-Brazilian Lusophony (UNILAB), and the University of Amazonian Integration (UNIAM). These institutions seek to enhance international and regional integration, while responding to local communities (Lorenzoni 2009). The missions of each university are closely tied to the promotion of social and economic integration within specific regions based on cultural, linguistic, and geographic ties. For example, UNILAB was founded in a modest town in Ceará state, attracting half of its students from the local community and the other half from Portuguese speaking countries in Africa and Asia. Its programs respond to local demands and also serve international students from low income countries who have little opportunity to access higher education. Overall, these institutions represent an investment in creating ties with other countries from the 'global south'. Presently, relatively modest enrolment figures range from just a few hundred students to just over a thousand. However, expectations are for rapid expansion, with some institutions aiming to enrol upwards of 10,000 students (OBHE 2009).

Since the late 1990s, the MEC and the MCTI have been the major drivers of internationalisation. Within the MEC, CAPES has developed a diverse portfolio of measures for financing international collaboration (de Brito Cruz and Chaimovich 2010): scholarships for graduate studies abroad, funds for the participation of researchers in international events, and exchange programs, among others (Pereira Laus and Costa Morosini 2005). CAPES provides funding for joint research projects and supported over 500 such projects in 2009 alone (de Brito Cruz and Chaimovich 2010). Support for the international mobility of graduate students through CAPES has grown significantly over the past decade. The total number of graduate level scholarships for study outside of Brazil has risen from 2,498 in 2000, to 3,586 in 2005 and 4,951 in 2010 (GeoCapes database n.d.).

The recent high-profile investment in student mobility represented by the Science Without Borders (CSF) program has extended these efforts. Over 4 years, the program will fund as many as 100,000 scholarships for Brazilian undergraduate and graduate students, technicians and professors to study and work abroad (de Moura Castro et al. 2012). It also aims to attract researchers from abroad, and Brazilians trained abroad to return home. CAPES and CNPq jointly manage the program, which has an estimated cost of R$ 3.2 billion. The personal involvement of President Dilma Rousseff reflects the perceived importance of CSF. At full implementation, it has the potential to increase the number of foreign study scholarships by up to four times their current levels. However, the implementation of such an expansive program comes with serious challenges. Some note in particular the unprecedented size of the program, the challenge of managing the new scholarship modalities it proposes, and the challenge of recruiting participants given the low foreign language knowledge of Brazilian students (de Moura Castro et al. 2012). These problems notwithstanding, CSF is representative of a major push by Brazil to internationalise higher education.

CNPq operates a range of programs in support of international cooperation (de Brito Cruz and Chaimovich 2010). Specific international initiatives to emerge in the 2000s include PROSUL and the PROAFRICA. PROSUL, established in the early 2000s (Ordinance MCT 872, December 20, 2001), funds cooperation activities between groups in Brazil and South American countries. PROSUL is part of an attempt originating at the 2000 South America Summit to create a regional strategy for S&T development by intensifying regional research (IDRC 2007). Between 2006 and 2008, over 60 projects were supported each year (CNPq n.d.a). Created a few years later, PROAFRICA aims to contribute to building S&T capacity in African countries (Ordinance MCT 363, July 22, 2004). Priority is given to projects incorporating Portuguese-speaking African countries (CNPq n.d.b). Similar to PROSUL, PROAFRICA funds joint research projects and scientific events (IDRC 2007).

CNPq also manages other programs targeting specific fields of research. For example, the Inter-American Collaboration in Materials involves the participation of researchers from South America and North America (de Brito Cruz and Chaimovich 2010). National research institutions such as INPE and the National Institute of Amazonian Research also fund large-scale collaborative programs, such as the China–Brazil Earth Resources Satellites (CBERS) program.

The volume of international collaboration as measured by co-authorship of articles with scientists of other countries has increased significantly over the past three decades (Perez-Cervantes et al. 2012). In terms of international collaboration in publishing, data from the Institute for Scientific Information (ISI) suggest that Brazil is the leader in Latin America and that its scientific community is characterised by intense international collaboration both within the region and with North America and Europe (Glänzel et al. 2006). ISI data indicate that over the past two decades, co-authorship with US academics has been most common with over 11 % of all articles with a Brazil-based author including an American connection. Other major collaborating countries include France, Germany, England, Spain, and Italy (Thomson Reuters 2012).

19.6 Conclusion

Contemporary research policy in Brazil has emphasised innovation, at least formally. In the last decade, S&T policymaking has broadened its support for research to include private firms, and legislation has been passed to remove institutional obstacles to university–industry collaboration. The 2004 Innovation Law symbolises this change, encouraging university relations with private companies, IP management, and entrepreneurial engagement. Federal and state governments, research foundations, trade associations, and universities have all taken measures to increase the country's research and innovative capacity. However, while academic research has expanded, national innovation measured by traditional indicators such as patents has remained relatively low and has not responded consistently and in a positive direction to legal changes and the creation of new support instruments.

Universities seem to be pursuing industry linkages and technology transfer more intently. The presence of NITs, and the proliferation of university-linked business incubators and technology parks denote an expanded infrastructure to support entrepreneurial activity. Increased patents filed by universities show a more concerted effort to manage IP. To further contribute to innovation in a context of intensifying global competition, more ambitious and long-term investments in university infrastructure, R&D, and S&T education and training are needed, tied in to concerted efforts to move national industry up in the global R&D value chain. It is precisely in the more upstream activities in generic research that universities can make a greater contribution, and attracting such investments should be a priority for Brazilian policymakers.

New regionally focused higher education institutions, research programs and international scholarship programs indicate that relevant efforts are being made to internationalise Brazilian higher education. Brazil has not succumbed to the international fever to formally designate and support world-class universities—a trend often superficially associated with the need to stimulate innovation. Instead, regional and international initiatives appear to be aligned more closely with human resource development and foreign policy objectives rather than the pursuit of greater visibility in global rankings or the stimulation of university–industry linkages.

Furthermore, activities in support of research and innovation continue to be concentrated in the southern regions of the country where a relatively small number of public universities perform most research, and where firms performing most R&D are based. Regional scientific inequalities, such as numbers of scientists per 100,000 residents and publication output continue to reflect broader social and economic inequalities across Brazil's states and territories. Some argue that the policies and programs of the 2000s have merely sustained existing inequalities when it comes to scientific infrastructure (Cavalcante and Uderman 2012). However, in terms of the support structures for innovation and technology transfer, inequalities are arguably being widened as resources become even more concentrated in the regions with the strongest innovative activity. This raises important questions for Brazilian policymakers who may be caught between facilitating investments and growth in regions with the highest potential (i.e. the southeast and south) and supporting the regions that have the most catching up to do (i.e the north and northeast).

Success for Brazilian universities in achieving new, more economically oriented objectives beyond the usual exceptions one finds in certain research groups and universities (Schwartzman 2008; Schwartzman et al. 2008) is problematised by a number of factors. First, the legacies and path-dependencies of the higher education system compel universities towards more local orientations (rather than global) and a focus on academic outputs (rather than innovative or commercial outputs). Second, the industrial sector continues to play a subordinating role in promoting innovation, limiting the impact of public research applications. Third, S&T policy has reinforced academic outputs under the veneer of innovation rhetoric. Although there has been an increase in the number of patents filed by universities, the value of these patents for industry remains in question. While national higher education powerhouses such as USP and Unicamp are well positioned to make important contributions to research and innovation, that they do not project such roles globally in a more aggressive way speaks to the overall orientation to national or even local frames of reference. As R&D and innovative activity become increasingly global, a more cosmopolitan perspective is needed among leading universities seeking to expand their roles in the innovative economy. Current policy efforts to bolster Brazilian science, university–industry linkages, and internationalise higher education move in this general direction but have not yet had a major impact on the scale of technological innovation in the country.

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Chapter 20
Globalization and the Research Mission of Universities in Russia

Anna Smolentseva

20.1 Introduction

Government policy declares the development of human capital as a key factor of economic development, as an essential resource for the modernization of Russia (Kontseptsia Federal'noi tselevoi programmy razvitia obrazovania na 2011–2015 g 2011). In this framework, education and especially tertiary education, is considered an important part of the formation of a knowledge-based economy, innovative economy, and modernization of the country. Such an approach corresponds to that in most developed and developing countries as the global challenges generate national responses from governments. The official perspective of long-term socio-economic development of Russia up to 2020 also recognizes that the capacity of a raw materials-based economy has been largely depleted. Thus, there is a need to restructure the national economy, which by 2020 is expected to secure for Russia a leading position in the markets of high technological products and intellectual services, about 5–10 % (Kontseptsia dolgosrochnogo 2008).

The chapter begins with the historical legacies of Russian higher education which have shaped the relatively weak position of the research function of the higher education sector in the country, it then goes on to explore the impact of globalization on the recent development of research activity at national, institutional, and individual levels.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_20

20.2 Historical Legacies and the State of Art

The first "foundational rule" of Russian higher education is its establishment and legitimization by the state for the needs of the state. State utilitarianism and political legitimization at the international level have become distinctive characteristics of the Russian model. Here universities were not the first establishments of higher education. The Academy of Science designed to combine research and teaching was founded in 1725 in St. Petersburg. It included a research unit, university, and gymnasium. The capacity building of new academic structures involved high participation of Western European scholars in the development of the Russian system due to the lack of national academic staff. Initially it was planned that an Academy university was supposed to be an integral part of the system of knowledge production, dissemination, and the training of new generations of scholars. However, that university had to be closed, postponing the realization of the idea of unity between research and education. In fact, research evolved in Russia prior to the development of a mature system of higher education. Thus, some accounts argue that the real origin of the Russian higher education should be traced to the foundation of Moscow State University in 1755.

The Soviet government strengthened the tradition of state utilitarianism. It considered tertiary educational institutions in university and nonuniversity sectors as serving the needs of the national economy. Soviet policy fostered a further "division of labor" between the higher education and research sectors. Research itself was conducted in three sectors: Academies of Sciences, sectoral research institutes (under profile ministries), and higher education institutes. During the Soviet period the Academy of Science became a major organization with a public status that focused on conducting basic research. It was and is not only an honorary society of outstanding scholars but also a network of research institutes in the various academic fields.

20.3 Post-Soviet Decline

At the fall of the USSR, sectoral research institutes under various ministries were dominant in the research and development (R&D) sphere, judging by the number of staff and levels of funding. They undertook 79% of all R&D expenditures in the country, while Academies of Sciences had 10%, higher education institutes 6%, and industries 5% (calculated by author from Nauka Rossii v tsifrakh 1994, p. 41). The size of these sectors can also be presented in terms of their respective number of staffs: 11% in Academies of Sciences, 7% in higher education, 75% in sectoral institutes, and 7% in industry (calculated by author from Nauka Rossii v tsifrakh 1994, p. 25). However, it was the Academy of Sciences that concentrated in its institutes the most qualified staff—52% of all had doctoral degrees and 29% had Candidate's degrees.

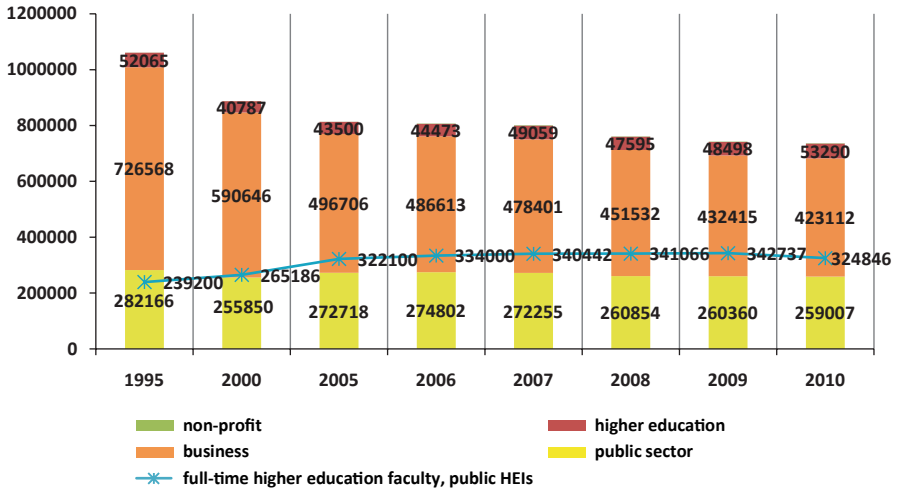

Fig. 20.1 Number of staff in R&D by sector, 1990–2010. (Source: Nauka Rossii v tsifrakh 2011)

The decline in staff within the total R&D sector since 1995 can be seen in Fig. 20.1. A recent trend toward growth in the number of research staff in higher education sector can be observed. The staff of the Russian Academy of Sciences (RAS), included in the public sector, declined from 128,519 in 1992 to 105,699 in 2000 and further to 95,280 in 2010 (Nauka Rossii v tsifrakh 1999; Nauka Rossii v tsifrakh 2011), to be approximately twice the size of staff in higher education institutions. The teaching mission of higher education has been expanding in the Post-Soviet period, which has been reflected in an increased number of faculties.

20.4 Post-2000 Developments

The funding for R&D fell drastically during the 1990s, but in 2000, it gradually started to grow again. Federal R&D funding has slightly increased over the past few years from 0.36 to 0.57% of GDP, and has increased as a share of federal expenditures (Table 20.1). There has also been a minor decline in federal funding for basic research, which took place in 2010, while expenditures for applied research have noticeably grown over the same period.

The data on expenditures for R&D also demonstrate the modest role of the higher education sector in the R&D area. In an international perspective, only 7.1% of the Russian gross domestic expenditure on R&D is located in higher education, compared to 12.8% in the USA, 17.3% in Germany, and 26.5% in the UK (OECD 2010). The national statistics also shows that only 8.7% of total expenditures for R&D are spent in the higher education sector (Table 20.2). However, the expenditures on R&D within higher education have grown three times since 2000, while in other sectors the increase was between 1.5 and 2 times (Nauka Rossii v tsifrakh 2011, p. 95).

Table 20.1 Federal funding for R&D, 2000–2010. (Source: Russian statistical committee)

	2000	2005	2006	2007	2008	2009	2010
Federal expenditures, million rubles	*17,396.4*	*76,909.3*	*97,363.2*	*132,703.4*	*162,115.9*	*219,057.6*	*237,656.6*
Including							
Basic research	8,219.3	32,025.1	42,773.4	54,769.4	69,735.8	83,198.1	82,173.8
Applied research	9,177.1	44,884.2	54,589.8	77,934.0	92,380.1	135,859.5	155,482.8
In %							
To federal expenditures	1.69	2.19	2.27	2.22	2.14	2.27	2.35
To GDP	0.24	0.36	0.36	0.40	0.39	0.56	0.57

Table 20.2 Expenditures for R&D by sector 2010. (Source: Nauka Rossii v tsifrakh 2011)

	Million rubles	%
Public sector	151,825.1	31.0
Business sector	294,103.8	60.0
Higher education	42,552.2	8.7
Nonprofit	969.6	0.2
Total	489,450.8	100.0

The higher education sector is more involved in applied and basic research (41.8 and 32.1 % of expenditures, respectively), rather than in development (26.1 %; Table 20.3). The Russian Academy of Sciences (RAS) is mostly involved in basic research: 80 % of its expenditures go there, with 13 % to applied research and 7 % to development (Table 20.3).

Table 20.4 presents data on the dynamics of the expenditures of the RAS and higher education sector, which have been increasing. Despite the lower funding of higher education R&D compared to the Academy, the gap in funding has decreased: higher education comprised of 47 % of RAS funding in 2000 and 70 % in 2010.

The expenditures per staff member involved in R&D in 2010 were 0.82 million rubles for the higher education sector and 0.66 million rubles for the RAS. The respective indicators for 2000 are 0.09 and 0.07. Hence, the per capita funding for R&D has been better for higher education over past decade.

20.5 Trends in Research Productivity

How can the effectiveness of the funding be assessed? Trends in the productivity of research can be approached in terms of trends in publication activity. Using US National Science Foundation data, based on the Thomson Reuters Science Cita-

Table 20.3 Expenditures for R&D by sectors and research type, 2010 (%). (Source: Nauka Rossii v tsifrakh 2011)

	Total	Public sector		Business sector	Higher education	Nonprofit
		Total	Russian Academy of Sciences			
Basic research	19.6	42.8	80.0	5.8	32.1	26.5
Applied research	18.8	20.4	13.0	14.6	41.8	39.7
Development	61.6	36.8	7.0	79.7	26.1	33.8

Table 20.4 Expenditures for R&D in higher education and Russian Academy of Sciences (RAS), 2000–2010 (million rubles). (Source: Nauka Rossii v tsifrakh 2011)

	2000	2005	2007	2008	2009	2010	Number of staff in R&D 2010
Higher education	3489.3	13,338.0	23,471.9	28,868.6	34,642.2	43,714.0	53,290
Russian Academy of Sciences	7449.3	25,799.9	44,276.4	55,912.0	61,370.7	62,471.8	95,280

tion index and the Social Science Citation index, it can be observed that over past 15 years, Russian publication intensity has decreased by about a quarter, staying stable during recent years. There is a remarkable contrast with the growth of Chinese research, which over the same period has increased seven times and significantly outpaced Russia, India, Brazil, and South Africa (Fig. 20.2). Brazil and India have demonstrated less impressive but sustainable growth. India already reached total output levels higher than Russia and Brazil has achieved close to the Russian level. However, the decline in publication activity can be partly explained by the drastic decline of R&D staff in Russia.

The data allow us to look at the publication dynamics in various fields. The most remarkable decline in the Post-Soviet period is found in physics, biology, engineering, medical sciences, i.e., the disciplines that are traditionally strong in the USSR and very expensive to maintain. Interestingly, the number of articles in each of chemistry and astronomy, also traditionally strong fields, has been relatively stable (Fig. 20.3). Some growth in publications is observable in geosciences, agricultural sciences, and mathematics. The social sciences, which were not well developed previously, experienced a gradual decline in publications in recent decades. Given that the same time period saw an extensive growth of the field, mostly in higher education institutions and educational programs, the concurrent decrease of publication activity confirms once again the absence of capacity building in research.

Thus, the publication data suggest that on average, as well as in most fields the positions of Russian research have deteriorated. Unfortunately, this data does not go deeper into the institutional dimension of publications. It combines publications from all sectors. So what is the pattern in the role of research conducted within higher education institutions?

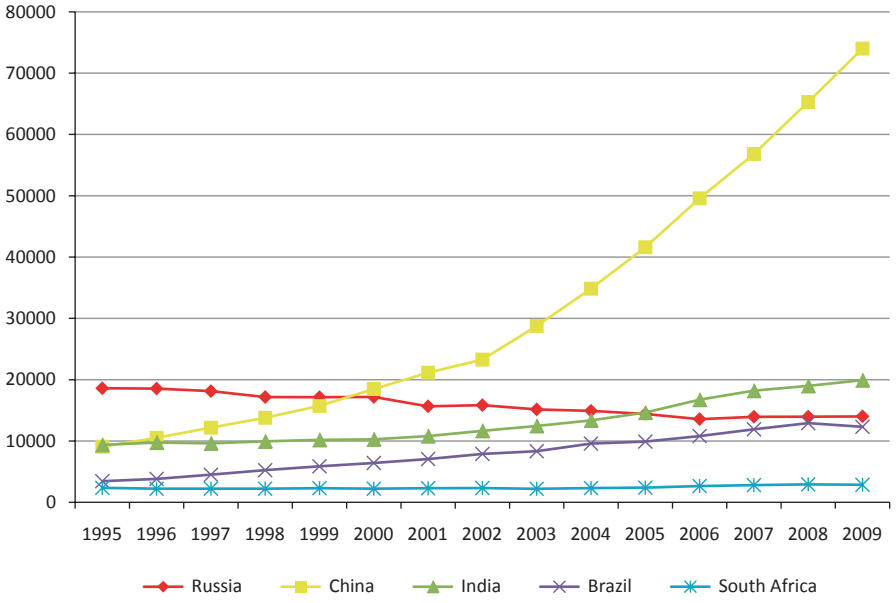

Fig. 20.2 Number of articles published, BRICS, 1995–2009 (Article counts from set of journals covered by Science Citation Index (*SCI*) and Social Sciences Citation Index (*SSCI*). Articles classified by year of publication and assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Details may not add to total because of rounding; Source: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2011) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/)

By publications and citations, the staff of the RAS significantly outpaces universities staff: about 90 % of the 1000 most cited Russian articles over 1996–2003 came from institutes of the Academy of Sciences (Markusova 2006). According to recent research, the Academy of Sciences is still the leader, despite the efforts to develop research capacity in higher education institutions (Pislyakov and Shukshina 2007). The same conclusion can be drawn from the Scimago Insitutions Ranking, which uses publication indicators only on the basis of the Scopus database. It includes 34 Russian institutes in the Eastern Europe report (for comparison, 50 for Poland). The prominent leader is the RAS with about 88,907 publications—it is ranked third in the world. The next major provider of publications is Lomonosov Moscow State University (18,954 articles). Other universities are much less productive. The third in Russia, St. Petersburg State University, lags behind having produced 5538 publications. The next higher educational institution, Novosibirsk State University is in eighth place with 1670 articles (Scimago Institutions Ranking 2011).

In identifying productivity, the size of institution matters. In 2011, the researchers at RAS numbered 53,702 (Indicatory nauki 2013), the faculty and research staff

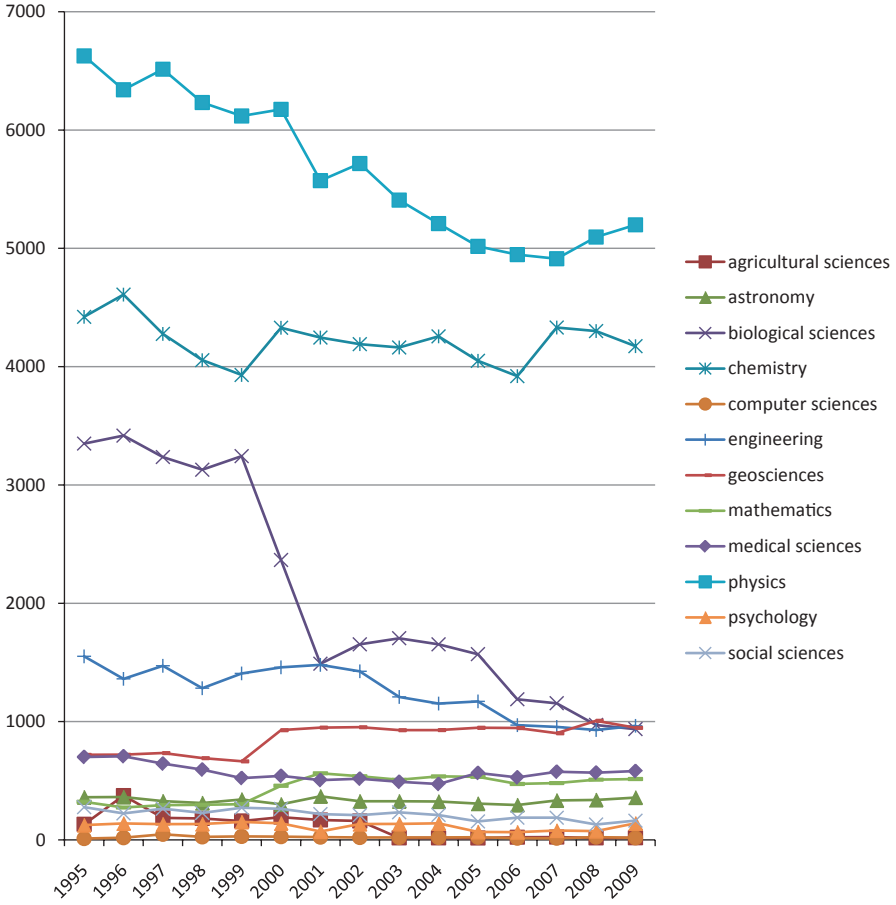

Fig. 20.3 Number of articles published by field, Russia (1995–2009). (Articles classified by year of publication and assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Details may not add to total because of rounding; Source: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2011) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/)

at Moscow State University—about 18,000 (according to the university web site). Relating those numbers to the number of indexed publications by Scimago, we can conclude that effectiveness of RAS is a little higher than the effectiveness of MSU: 1.6 articles vs. 1 article per researcher/faculty member. The difference becomes even more remarkable if we recall that at RAS the level of per capita R&D is lower than in higher education institutions.

20.6 The Challenges of Globalization for University Research

After the fall of the Soviet Union, globalization has been one of the significant forces in the reformation of Russian higher education. The economic crisis and political shift have also contributed to the direction of reform. Post-Soviet reforms started in early 1990s and followed a neoliberal course. For higher education, neoliberal reform has usually meant introducing markets into the sector, reducing state funding, the privatization of costs, demand for accountability for performance, and an emphasis on higher education's role in the economy (Neave and Van Vught 1991; Marginson and Rhoades 2002).

Practitioners and experts who support neoliberal reform argue that their policies simply "work" better; others believe the economic globalization is exogenous or there are international normative pressures to construct liberalization as "inevitable" (Fourcade-Gourinchas and Babb 2002). The direction of educational reforms in Post-Soviet countries is largely supported by a normative argument stating that neoliberal reform in education in the former USSR is a result of the forces of globalization which local institutions cannot withstand, and not that it is a consequence of pressures from powerful international organizations such as the World Bank, but rather than that it can be explained by worldwide similarity in requirements for excellence in higher education (Heyneman 2010). The same normative rationale is shared by national governments in Russia and elsewhere.

Despite similarity in the policy efforts undertaken by governments across the globe, there is little evidence to suggest that higher education systems, even within larger regions sharing common histories such as Latin America, Western Europe, or Eastern Europe, have been moving toward convergence (see for instance, Torres and Schugurensky 2002; Gornitzka et al 2007; Silova 2010). Economic sociologists analyzing economic transformations in a comparative perspective highlight the critical role of the local institutional conditions determining the way in which neoliberal transformations have been carried out. Differences in these local conditions in turn lead to differentiated outcomes (Fourcade-Gourinchas and Babb 2002). European studies of the impact of multilateral processes and agreements in higher education confirm the continued autonomy of national policymaking and the viability of national steering (Marginson and Van der Wende 2009).

The reforms in higher education in the Post-Soviet countries were similar to each other and followed the international neoliberal template (Smolentseva 2012). These reforms included the establishment of a nonstate sector, the introduction of user fees in the public sector, the introduction of national tests to replace either graduation exams in secondary school and/or admission exams to higher education, per capita funding, loans for education, and the differentiation and stratification of the institutional landscape. The new emphasis on the knowledge production of universities is another example of the enormous impact that globalization is having on higher education worldwide.

The reformation of higher education has been intensified in recent years. In the early 2000s, educational policy and public debate were focused mostly on admission

reforms (introduction of unified state examination) and the two-cycle (bachelor-master) degree system in the context of the Bologna process. Until recently, the reformation of research and innovation involved higher educational institutions only to a lesser extent. However, in the past decade, especially, there has been growing discussion in government and the academic community about how to restore scientific production in Russia, how to reform the Academy of Sciences, and how to establish an effective system of research financing.

The debate about strengthening research involves ideas of merging or closer collaboration of research-specific institutions and universities, and of the intensification of research in the higher educational system itself. Some efforts were undertaken as early as the 1990s: the governmental program of "Integration" for 1997–2000 aimed at the establishment of partnerships of higher educational institutions and research institutes. Due to financial constraints, the program eventually supported mostly existing partnerships rather than starting new ones, thus tending to encourage and benefit the strongest research communities. The program did not change the predominantly teaching-focused nature of the academic profession in Russian universities. Nor did it foster the teaching activity of researchers (Dezhina 2011). In 1998 another program funded by the Ministry of Education and the United States' CDRF foundation targeted the integration of higher education and research by establishing education-research centers which received initial funding for 5 years.

From mid- to late 2000s, government has addressed issues of the differentiation of higher educational institutions, and of increasing their research activity. Government has also introduced changes in the financing of higher education, and the regulation of educational quality. The various laws and programs promulgated by government have established a number of designated federal and national research universities, and provided a new organizational status for autonomous establishments with more economic freedoms than is the case with traditional budget establishments. There is more emphasis on university endowments, innovation-focused companies affiliated with the universities, and academic staff development.

20.7 Global Rankings

Global "relativisation" has become one of the important drivers pushing forward the strategic development of higher education across the world (Marginson and Van der Wende 2009). Global referencing in research had been critical in Russia during the Soviet era, in which global super-power competition was uppermost, but was neglected for the first post-Soviet decade. In the past decade, however, policymakers and stakeholders have started to again relate the national system and its institutions to international standards. For example, global rankings have stimulated a critical analysis of the current state of higher education and research in Russia.

For instance, the Report of the Public Chamber of the Russian Federation (2007) approached the assessment of the quality of tertiary education largely from an international perspective, employing such indicators as the low position of Russian universities in international rankings and the decreasing number of international students. The positions of leading Russian institutions are usually understood in terms of failure. In the Shanghai Academic Ranking of World Universities during 2004–2012, Moscow State University occupied 66–80th positions (80th in 2012) and St. Petersburg State University was in the fourth-fifth hundred in the list of world top institutions. The Times Higher Education-QS version of the world's top institutions was also disappointing for Russia: during 2004–2009, MSU's ranking varied from 79 to 231. In 2012, THE-Thomson Reuters ranking placed MSU, Moscow State Engineering Physics Institute in the third hundred. In the now separate QS ranking, MSU was 116th in 2012.

For one part of the academic community, the relatively low positions of Russian institutions in the global rankings has not come as a surprise, and only serves as one signal of the troubles of Russian higher education and research. Other groups of the society have found it difficult to accept the low rank of Russian higher education. The ranking methodologies have been widely criticized, especially for lacking an adequate representation of teaching and learning as key activities of higher education institutions.

Dissatisfaction with the methodology and, mostly, the outcomes of the global rankings led to the design of a new global ranking, which was declared to be more correct and objective. This was prepared by the 2009 Russian "Independent Rating Agency RatER." The authors emphasize that in contrast to existing rankings they pay more attention to educational quality and teaching. The data collection methods include a survey of universities, the use of educational statistics, universities reports, and Scopus data on the number of published papers and citations. The indicators include the number of educational programs (fields of study), patents and certificates of discoveries, performance of the computer center, number of publications and citations, international awards, university budget per student, presence of university on the web, and international students. As a result, in this global ranking Moscow State University occupied fifth place, being ahead of Harvard, Stanford, and Cambridge. The academic community was critical of the ranking and its methodology. The latter was not entirely transparent and clear.

The pressures of relativisation, transparency, and accountability stimulated further development of a national ranking system by the National Training Foundation, with governmental support (2011–2013). This foundation uses a more transparent methodology and works with the cooperation of international experts in the field.

20.8 System Differentiation and Leading Universities

Perhaps the principal focus of recent higher education has been the differentiation of the higher education system. This has been pursued by selecting a group of leading universities which are expected to provide top quality education, research,

innovations, and the enhanced commercialization of research. In 2006–2008, within the framework of the national priority project "Education," a total of 57 universities were identified on a competitive basis and received federal funding of up to US$ 33 million per institution, for developing innovative programs. The process of identifying the beneficiary institutions also provided a foundation for the selection of leading institutions, a group with an ongoing importance beyond the life of the "Education" project.

The first public policy steps to identify leading institutions were undertaken in 2006 when the Ministry of Education and Science merged several regional institutions to found two federal universities, Siberian and Southern, in order to strengthen higher education in their respective regions. In 2009 another five federal universities were established in different parts of the country, and again, the merging of higher education institutions was the method of launching these projects. Federal universities are expected to provide training for the workforce and research support for regional development and for the country as a whole, in order to better involve higher education in the development of regions, and better involve regions in the development of higher education (Kontseptsia Sozdania i Gosudarstvennoi Podderzhdki Razvitia Federal'nykh Universitetov 2009). The merged institutions had various profiles—classical comprehensive universities, polytechnics, pedagogical institutes, engineering institutions—and entailed the intersection and duplication of many disciplinary units. The newly constituted merged institutions are expected to employ the new economic form of autonomous organization, in contrast to the previously existing budget organizations, which had comparatively more financial entitlements. However, the merged and more autonomous federal universities are still heavily dependent upon the federal budget and lack fuller economic freedom.

The mission of lifting Russian universities into the world class tier was allocated to another group of institutions, while leaving to federal universities the more regional focus. The government decided to create world-class universities (WCUs) by developing existing capacities, rather than creating new institutions from scratch. In 2008, two universities received the status of national research universities along with funding for the next 10 years—a nuclear university and a technological university in Moscow. Later, in 2009 and 2010 national competitions organized by the Ministry of Education and Science resulted in the selection of 27 national research universities for federal funding (up to US$ 60 million per institution) for the first 5 years. The selection was partly based on innovative development programs in priority fields that were designed by the universities. In the first competition, a dozen universities received this status. Nine of them are technical universities, the others are classical universities in Nizhniy Novgorod and Novosibirsk and an economics university in Moscow. Out of the 15 universities selected in the second competition eight were technical and engineering institutions, six were classical comprehensive universities and one was a medical university (Table 20.5). National research universities are expected to change their legal status from "budget organizations" to autonomous educational establishments, which as noted, are meant to provide them with more economic freedom.

Table 20.5 National research universities, of 2009–2010 competitions (number of HEIs)

	Competition 2009	Competition 2010
Specialization		
Classical universities	2	6
Polytechnic/engineering universities	9	8
Other (economics/social science, medical)	1	1
Geography		
Moscow	4	5
St. Petersburg	2	2
Kazan’	1	1
Perm’	1	1
Tomsk	1	1
Other	3	5

The federal law in relation to Moscow State and St. Petersburg State Universities grants them special statuses. They are federally funded universities able to use additional admission examinations and issue their own diplomas. The rectors of these institutions are appointed and fired by the President of Russia. Thus, Russia has followed the path of some other countries, such as Germany, China, Japan, and France in defining elite (or to-be-elite) institutions and providing them with specific financial support. The implementation of the “excellence” program is a major challenge for public policy and higher education. The crucial questions here are why does government and universities choose to have top quality institutions; what are the goals of the leading universities; and what are the criteria and procedures for their selection and for the tracking of their performance? The rules of the competition imply tight control over the realization of the innovative programs that were incorporated into the selection process. If an institution fails to realize its program, it will lose the status of a national research university.

However, the competition lacked integrity in some respects. There was a short period between the announcing of the competition and the application deadline (about a month) within which it was difficult to prepare a competitive document. For institutions it was unclear what priorities were to be presented in programs of university development. There were bureaucratized financial procedures, and a relatively traditional and only weakly informative set of indicators of program implementation. It was also significant that governmental funding allocated for national research universities could not be spent on research activity itself, but only on the modernization of research and educational equipment, the training of academic staff, curriculum development, information resources development, and improvement of systems of administration of quality assurance and research. Similar questions can be raised in relation to the federal universities project.

Apart from the excellence initiative, the research capacity of higher education institutions is supported by the governmental act #220, a “mega-grant” scheme allowing establishing laboratories under the leadership of prominent researchers

from any country, with funding for 3 years: 40 laboratories were established in the competition of 2010 (up to US$ 5 million funding), another 39 in 2011 (up to US$ 5 million) and 42 in 2013 (up to US$ 3 million). Almost all of these labs conduct research in science and engineering.

Recent governmental initiatives have also been aimed at encouraging universities to engage with *industry* in order to foster the development of innovations. In 2010, a set of acts enabled universities and academic research institutes (budget organizations) to establish innovative companies, partnerships with industry/business for 3-year projects, and encouraged the commercialization of results and the development of the innovative infrastructure of universities. In particular, Act #218 offers an opportunity to establish companies jointly with industry, and 57 companies received federal subsidies to establish innovative companies with universities (up to US$ 3 million a year, for 1–3 years). According to Act #219, 77 higher education institutions were successful in the competition for funding for 2010–2012, and as of late 2011 they established 456 companies. Nevertheless, the economic effectiveness of most of these companies was relatively low.

20.9 Internationalization

Excellence in higher education, as built into the notion of national research universities in Russia, largely incorporates the internationalization of higher education. The relevant performance indicators include target numbers of international students that institutions attract, international R&D projects, and the number of students and staff who have studied/worked abroad in leading international higher education institutions. The publication indicators set by the government involve articles indexed in both international (Web of Knowledge, Scopus) and national (Russian citation index) databases. The data on internationally coauthored articles provides some information regarding the state of international research collaboration. Data from the US National Science Foundation provides no division by type of institutions, so it does not distinguish between the RAS and the universities. However, the general trend is toward the escalation of research collaboration over the past few decades, the same trend that we find in all BRICS countries. China demonstrates the most significant increase, increasing by eight times, while Russia that had started with a higher number of coauthored papers than the other BRICS countries, exhibits the lowest increase among them, only 23% between 1995 and 2010. (Table 20.6)

However, research on citation patterns shows that to improve citation rates Russian scholars need to involve themselves in international collaborations. More than 90% of Russian highly cited papers entail collaborations (Pislyakov and Shukshina 2007). It would be unreasonable to expect that the positions of Russian universities in global rankings could notably improve over a 5-year period as is expected by the policymakers. Indicators of publications and citations do not grow so fast. The Academy of Sciences trains graduate students and is able, at least in some research units, to produce internationally recognized research. Given the present or-

Table 20.6 Internationally coauthored science and engineering articles, by selected country/economy pairs (1995 and 2010). (Source: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2011) from Thomson Reuters, SCI and SSCI. http://thomsonreuters.com/products_services/science/)

	Russia	China	India	Brazil	South Africa
World 1995	5509	2914	1583	1893	682
World 2010	6791	24,164	6033	5629	2587
Growth (1995 = 100)	123	829	381	297	379

Articles classified by year of publication and assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Details may not add to total because of rounding

ganization of higher education and research, it is important to establish and develop horizontal networks between universities and research institutions, and between universities. However, policymakers have chosen the ineffective path of letting the Academy of Science decline rather than taking advantage of its strengths.

20.10 The Role of Research at the Institutional and Individual Levels

20.10.1 Funding for Research

At the institutional level, analysis of funding shows that in the past decade research has continued the same modest role within total university budgets. In the early 2000s, the average budget of higher education institutions was composed mostly of funding for the provision of education (86%), with only 4.6% allocated to research and development (Ekonomika obrazovania v zerkale statistiki 2004). As of 2011, a survey of top higher education administrators, conducted within the program for the monitoring of economics of education at the National Research University—Higher School of Economics, found that research income has a share of university budgets at 5.4% in public institutions and 7.5% in classical universities, which are expected to be more involved in research (Table 20.7).

The structure of financing of higher education institutions as of 2009 reflected the dominant role of governmental provision (54.7%) and the high share constituted by family money (28.7%). Another 15.3% was through funding from organizations, with 0.7 and 0.6% in the form of off-budget money and international money, respectively (Indikatory obrazovania 2011). Similar patterns can be drawn from surveys of top university administrators (Monitoring of Economics of Education). In 2011, on an average 51% of a public university budget came from the federal government, 26% from families, and 7% from organizations (calculated by author using survey database).

Table 20.7 Share of research income in a public higher education institution budget, 2011 (%). (Source: Calculated by author using the database of Monitoring of economics of education by National Research University—Higher School of Economics. Survey of top university administrators (2011))

Type of higher educational institution (profile)	Number of responses	Mean (%)
Industry, construction	24	7.4
Agriculture	22	3.2
Transportation, communication, IT	16	5.3
Trade, services	5	3.2
Economics, law, management	35	2.2
Health, physical culture, sport	18	4.0
Education	34	3.4
Culture	22	0.5
Classical/comprehensive university	37	7.5
Institution with two or more above specializations	66	9.0
Total	279	5.4

20.10.2 Research Output at the Institutional Level

The comparative data on publications across BRICS countries show that performance of top Russian universities lags behind other nations in the group. Table 20.8 shows the leading BRICS institutions according to the Scimago Institutions Ranking (2012). The table includes the top five institutions in the higher education sector in each country. Output refers to the total number of documents published in scholarly journals indexed in Scopus. The data indicate the very modest positions of top Russian universities. Across BRICS countries, the highest output can be found at top Chinese universities, with all top five institutions within the first four deciles of the world ranking. The first top five institutions of Brazil, India, and South Africa also generally outdo the top Russian universities. In fact, only Moscow State University is competitive with the top universities of the other BRICS countries. After that St. Petersburg State University (with only one third of Moscow State University's output) is in the seven hundreds. The next Russian universities in the ranking produce 2.5 times fewer publications than StPSU.

The institutional data demonstrate that despite the better position of Russia in the national comparison in terms of number of publications, compared to Brazil and South Africa, the level of research productivity of the higher education sector and its top universities is below the other countries. Comparing Russian institutions by the level of international collaboration (IC, institution's output ratio produced in collaboration with foreign institutions), we can note that generally it is quite average. For the top five institutions, it varies from 26 to 44 %. However, the data on high quality publications (Q1), which provides the proportion of its publications that an institution publishes in the most influential scholarly journals of the world, show that Russian institutional performance is comparatively low and does

Table 20.8 Institutional data on research publications in BRICS (Scimago data). (SIR World Report 2012. http://www.scimagoir.com)

World rank	Country rank	Organization	Country	Sector	Output	IC (%)	Q1 (%)	NI	Spec
2	1	Chinese Academy of Sciences	CHN	GO	146577	21,4	42,1	1	0,6
3	1	Russian Academy of Sciences	RUS	GO	92898	33,3	23,8	0,5	0,7
10	2	Tsinghua University	CHN	HE	45325	17,4	29,8	0,9	0,7
11	1	Universidade de Sao Paulo	BRA	HE	44619	24,4	38,1	0,8	0,5
15	3	Zhejiang University	CHN	HE	41635	16,4	31,6	0,8	0,6
23	4	Shanghai Jiao Tong University	CHN	HE	37207	15,7	30,5	0,8	0,6
24	5	Graduate University of the Chinese Academy of Sciences	CHN	HE	37061	11,8	37,9	0,9	0,7
34	6	Ministry of Education of the People's Republic of China	CHN	GO	32876	13,2	34,6	0,8	0,6
36	7	Peking University	CHN	HE	32146	24,3	43,9	1,1	0,5
82	1	Council of Scientific and Industrial Research	IND	GO	21671	15,6	51,5	1	0,7
105	2	**Lomonosov Moscow State University**	RUS	HE	19111	34,5	24,9	0,6	0,8
156	2	Universidade Estadual de Campinas	BRA	HE	16221	21,3	36,1	0,8	0,5
174	3	Universidade Estadual Paulista Julio de Mesquita Filho	BRA	HE	15128	16,3	29	0,7	0,7
206	4	Universidade Federal do Rio de Janeiro	BRA	HE	13600	25,7	37,5	0,8	0,5
271	5	Universidade Federal do Rio Grande do Sul	BRA	HE	11110	23,7	35,8	0,8	0,5
376	2	Indian Institute of Science	IND	HE	8573	24,1	54,2	1,1	0,7
381	1	University of Cape Town	ZAF	HE	8526	50,4	57,8	1,5	0,6
460	3	Indian Institute of Technology, Kharagpur	IND	HE	7215	18,2	46,9	1,1	0,7
536	4	University of Delhi	IND	HE	6234	20,6	38,3	0,8	0,6
548	2	University of the Witwatersrand, Johannesburg	ZAF	HE	6099	42,7	51,3	1,3	0,6
553	5	Indian Institute of Technology, Delhi	IND	HE	6035	20,9	41,7	1,1	0,7
555	3	University of Pretoria	ZAF	HE	6024	37	38,4	0,9	0,6
560	6	Indian Council of Agricultural Research	IND	GO	5973	10	23,5	0,5	0,9
593	4	Stellenbosch University	ZAF	HE	5722	40,3	49,4	1,2	0,6
600	7	Indian Institute of Technology, Madras	IND	HE	5654	19,6	45,8	1,0	0,7
620	3	**Saint Petersburg State University**	RUS	HE	5481	44,4	28	0,6	0,8
653	4	Russian Academy of Medical Sciences	RUS	HL	5142	23,8	20,8	0,6	0,8
660	5	Joint Institute for Nuclear Research	RUS	GO	5054	75,7	40,4	1,2	10
661	5	University of KwaZulu-Natal	ZAF	HE	5036	43,8	42,5	1,1	0,6
1203	6	Russian Research Centre Kurchatov Institute	RUS	GO	2522	49,1	32,6	0,8	0,9
1203	6	Russian Research Centre Kurchatov Institute	RUS	GO	2522	49,1	32,6	0,8	0,9
1280	7	Alikhanov Institute for Theoretical and Experimental Physics	RUS	GO	2330	73,9	52,1	1,5	10
1395	8	**Novosibirsk State University**	RUS	HE	2082	26,1	27	0,6	0,8
1652	9	**Southern Federal University**	RUS	HE	1640	26,4	17,6	0,3	0,8
1722	10	**Moscow Engineering Physics Institute**	RUS	HE	1554	39,3	25,9	1,0	0,9

not exceed 28 % (for StPSU). Meanwhile some governmental organizations that specialize in physics and nuclear research achieve better results (Joint Institute for Nuclear Research—40.4 %, Alikhanov Institute for Theoretical and Experimental Physics—52.1 %).

The normalized impact (NI—the relationship between an institution's average scientific impact and the world average set to a score of 1) emphasizes the low impact of the Russian universities, compared to the BRICS countries. Only for Moscow Engineering Physics Institute does this indicator equal 1.0, which means the citation rate is at the average world level. For other universities it is 0.3–06. The Scimago data also confirms the narrow specialization of publications from Russian higher educational institutions (in the indicator Spec, which indicates the extent of thematic concentration/dispersion of an institution's scientific output, the values range between 0 and 1), while other top universities in the BRICS publish research in a wider range of areas. This points to the historical legacy of Russia's strength in sciences and military research fields.

20.10.3 Research in Faculty Work

The division between research and teaching is still strong at the level of everyday faculty work. There are no strict formal requirements in relation to the research work of faculty. Formally, the teaching load decreases when moving from junior faculty ranks to the senior ones, while the research load, as calculated in hours, increases (Smolentseva 2003). However, many faculty are not aware of how many hours they are formally assigned to do research and how many they are meant to use for teaching. In interviews, no faculty member could formulate strict and clear requirements in relation to their research activity. Nevertheless, despite unclear university demands, for most of the faculty members research is a natural component of the professional identity. Many academics are still eager to conduct research in spite of numerous material hardships and lack of research funding. Discussing the most important changes in their work over the past 5 years, the majority of faculty focused on changes in teaching, especially updates in courses, higher teaching loads in their full-time position, and the use of new teaching methods. However, every third respondent (33.1 %) emphasized that they conducted more research than before (Smolentseva 2011).

Research data show that currently faculty is weakly involved in research activity as measured by participation in externally funded research (universities do not offer their own separate research financing) and publications. About half of the faculty have never participated in funded research, which would mean they have never been involved in research other than their dissertation research and research within departmental plans. About a half of all faculty have not published an article in a Russian refereed journal over past 3 years. Moreover, for 10 % the only publications were abstracts in conference proceedings. The good news is that half of all faculty have participated in funded research, an indication that they are adjusting to the changing system of knowledge production. In addition there is a small proportion of

faculty who regularly publish in national and international resources. While quantitative assessments of trends in Russian scholarly activities do not provide an absolute indicator of changes in academic practices, these trends do offer some insights about the current status of research and suggest directions for further analysis. It can be said that generally, at this stage, Russian university faculty are not ready to meet the challenge of knowledge production that is implied in the notion of a research university (Smolentseva 2011).

At the same time there is differentiation in research activity across university type. Classical universities outperform their technical and pedagogical counterparts in some aspects of research activity. There is also a differentiation of faculty by rank: senior faculty demonstrate much more research involvement and productivity. Junior and middle rank faculty are considerably less productive than full professors. Policymaking should address that gap, due to the problem of a "lost generation." This "generational gap" evolved during the 1990s due to a brain drain of young and middle aged researchers and university faculty who left for posts abroad or moved to other sectors of the economy, at a time when universities and research institutes were in serious difficulties and professional rewards were poor. In the near future, the lack of this indispensable layer of mid-career scholars, along with the aging of the older generation of academics, might impose serious challenges for Russian R&D (Smolentseva 2011).

20.10.4 Research Activity by Field

Qualitatively, the difference across fields in the patterns of research is considerable. Out of this sample, two "hard" fields—physics and biology—follow a path that is different from other disciplines. Characterized by higher involvement in externally funded research supported by national and foreign foundations and government, and higher publication rates in national and international journals, these fields are, on average, more internationalized than the others. It is likely that these fields have a different culture that transfers different patterns of behavior within the field, including a more active search for funding (they can do little without laboratory equipment), and a higher orientation toward the international academic community as an immanent part of their reference group. In these fields, both individual faculty and departments also have limited opportunities to attract funding by teaching. In contrast, IT can be more "marketable" in terms of teaching and contract work and is correspondingly less dependent on research activity as a source of income. Mathematics is different: it has financial support through grants and contracts with governments, but somehow this has not led to higher publications rates among faculty. Maths might also experience relatively high demand in terms of teaching, as an examination in math is one of the most typical entrance requirements in natural sciences and engineering departments.

Two "marketable" fields in soft sciences, sociology and economics, are intensively involved in funded applied research. For sociology and economics, this might

be more a result of collaboration with government and business. The economists are also markedly involved in grant activity. Economics held third place in this study in terms of internationalization. There has been something of a boom in the social sciences, which gained recognition in the Post-Soviet period and has been substantially supported by numerous international foundations as well as by demand from government and business in the transitional economy. However, this boom has not resulted in particularly high research productivity in terms of publications, as has been notable in the cases of physics and biology.

The humanities—e.g., history and philosophy—are at a disadvantage in the transforming Russian society, perhaps as they are in many other countries. These fields rely on grants or contracts with governments and business to a lesser extent, because they do not have a product of immediate practical utility. Teaching is probably the main activity for faculty members in these fields, and as a result, they generate average or lower research productivity. Furthermore, these two fields are more tied to national contexts and by their nature cannot be as global as natural sciences. For that reason they are highly dependent on national financial sources.

20.10.5 Other Issues

Another critical issue in the analysis of the research activity of Russian universities is the quality of professoriate and graduate/postgraduate training. Academic staff and graduate students determine the capacity for and the success of research at higher educational institutions. As the Soviet system concentrated research at research institutes and left most universities only with the right to teach, it would be foolish to anticipate a fast-growing research boom in higher education institutions. Moreover, as noted, during the crisis of the 1990s the quality of the professoriate was deteriorating because of the aging of faculty along with little influx of young academic staff and the brain drain abroad and to other sectors of the national economy. The diversification of research funding is another critical issue in the development of research capacity of Russian higher education.

The reform of research in the Russian higher education system should also address the issue of building-in a stronger research component into university culture and practice. This might involve decreasing teaching loads, and clarification of standards of demand and rewards as regards research productivity. Institutional demands continue to favor the teaching related qualities of faculty members (Smolentseva 2011). A critical issue in the development of Russian higher education and research is an absence of a system of peer-review at national, institutional, and field levels.

The government's identification of technological universities (former Soviet polytechnic institutes) as future leaders of Russian tertiary education demonstrates that when building the new economy of knowledge and the institutions of a democratic society, the government prefers to foster innovations in applied research and development, and underestimates the strategic importance of basic research in the various fields. In addition, the levels of program funding can hardly provide the

basis for dramatic changes. However, as an experiment with new forms of autonomous organization, the polytechnics program could be quite stimulating in relation to the present inertial development of Russian higher education, by opening new opportunities for R&D at universities. Participating institutions are unlikely to appear among the world's top institutions in the near future, but the program will test whether innovations are possible in the traditional construction of Russian higher education.

The formal process of diversification of universities should not lead to the deterioration of the majority of institutions. Those institutions that are not designated leaders not only fulfill important social functions in their respective regions, they also supply talented students to the leading institutions and could enhance the national potential for innovation as well. Demographic decline is decreasing the overall number of students, and thus the level of financing from tuition. This may encourage universities to search for new sources of funding through innovation and research. Overall, however, the pattern of knowledge production seems to be moving toward greater vertical diversification, and therefore to a partial decline in some elements of the university system. The Academy of Sciences is also experiencing decline.

20.11 Conclusions

In the contemporary world, higher education is a key institution in shaping the social and the economic development of nations. It is both a public and private good. Global economic competition intensifies competition in higher education and research and tests whether higher education and research is effectively organized and administered at the national, regional, and institutional levels.

Like many other countries, Russia has undergone social transformation. The idea of the social pact builds on freedoms and social mechanisms of interaction between subjects and authorities. In Russia such interactions have not been the norm. In the Soviet period, there were limited freedoms at institutional and individual levels, and there were no mechanisms of feedback between authorities and actors/stakeholders. Civil society, which never existed historically in Russia, is crucial in all its aspects for building a social pact. In the Post-Soviet time, there is a continuing lack of those freedoms and social mechanisms and civil society is still fragmented and embryonic. That is especially true for higher education institutions, which are yet to gain their autonomy.

Various research findings suggest that only independent, autonomous institutions can be successful in national and global competition (Clark 1998; Mohrman et al. 2007; Aghion et al. 2009). However, this view is based mostly on the US model of higher education, which has become an "emerging global model" (Mohrman et al. 2007). It overlooks the historical legacies of higher education in other cultures. Historically, Russian universities have always been highly dependent upon state (Smolentseva 2003), unlike the US universities, which have come to be seen as the

global model for research universities. The government, especially in the Soviet period, has regulated everything: from the scope and quality of incoming students to the content of education. Despite some reform efforts undertaken in the Post-Soviet period, university autonomy is still very weak. Recent legislation has allowed the transition of Russian universities into formally autonomous establishments, but in the context of the continuing dominant impact of government, that organizational form tends to be less effective. Universities are reluctant to change their legal status, as they lack long-term guarantees of economic and political stability, and have no certainty of a stimulating environment. They are limited by shortages of relevant administrative and academic staff, and perhaps often lack innovative vision. Moreover, proactive competitive universities will not suddenly emerge in the absence of a transparent financial system, low corruption, a democratic culture, and a developed civil society.

The sociocultural aspects of building research capacity in higher education deserve special attention. The development of top research universities depends not only on the implementation of research incentives, huge budgets, high levels of internationalization and other "physical" constituents, but also on building a certain culture. Academic freedom, transparency and collegiality in decision-making, open and honest competition, and blind peer-review practices, constitute the basis of long-term excellence in research and teaching. Those values are endangered in many developed and developing countries, but remain important. In Russia, the realization of academic freedom, peer-review, and transparency in decision-making and competitions are still insufficient. This cultural component might be an essential obstacle in the search for excellence. The achievement of excellence might also require adequate compensation for faculty, a clear demands and rewards system at institutional and societal levels, better stimuli and opportunities to do research, better integration into the international academic community, and greater English proficiency. Universities in which these characteristics were uppermost could attract the "best and brightest" faculty and students, promote initiative and innovations, and form a strong academic culture, where excellence and therefore world-class institutions become realized.

In Russia there is no public consensus regarding the society and economy that are being built. Social inequalities are dramatically deepening. The question about what kind of education needs to be answered. The centralization of governance, the bureaucratization, the corruption, the shortage of democratic procedures, and the absence of stability and a long-term perspective, are important barriers to positive transformations at all level and all sectors, including education and research. Russia needs a systematic approach to reform. How can we expect a dissipation of corruption in education while it flourishes in other areas? How can Russia build itself in the European Higher Education Area while the transitions from cycle to cycle are not elaborated and academic mobility is almost absent? How can one build a single world-class university while only inter- and intra-institutional competition and mobility serve as the basis for growing the professional and personal characteristics of the best students and faculty? Those and other issues are still to be resolved.

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Chapter 21
Research and Innovation in Indian Higher Education

Radhika Gorur and Fazal Rizvi

21.1 Introduction

The Indian system of higher education, in its modern form, is both enormous and complex. Established in the image of British universities in the mid-nineteenth century, it now boasts over 600 public and private universities, with almost 35,000 affiliated colleges that teach programs developed and examined by key public universities. Another 350 specialist teaching and research institutions provide training in areas such as medicine, engineering, agriculture and computer science, and conduct high-level research. The system as a whole employs more than 450,000 teachers and caters for almost 20 million students. Over the past four decades, the increase in students' demand for higher education in India has averaged more than 4% annually, and shows no sign of decline. As a response to this growing demand, India has, in recent years, witnessed the emergence of an extensive, financially independent, for-profit sector in higher education.

Despite its impressive size, the system's record in promoting research and innovation is at best uneven. With the exception of some institutions, such as The Energy Research Institute (TERI) and the Centre for Cellular and Molecular Biology (CCMB), and some leading institutes and universities managed by the Central Government, such as the Indian Institute of Science, most universities in India are focused almost exclusively on teaching. Most state universities and colleges affiliated to these universities do very little research. The quality of research in Indian higher education is also uneven, with a comparatively small number of high quality, high impact papers in international refereed journals and a relatively small number of international or national patents (Agarwal 2009).

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_21

India's policy community now widely acknowledges this deficiency. It regards the poor research performance of Indian universities as a major problem, especially against the backdrop of India's growing participation in the global knowledge economy. The rise of India as an emerging economic power and its consistently high economic growth over the past two decades is clearly linked to its decision to open up its economy in the early 1990s, when it deregulated and privatised its key economic institutions. As a consequence of its engagement with global processes, India has established robust links with transnational corporations, which now widely believe that India cannot sustain high rates of growth without major reforms to its system of higher education, and in particular its research efforts. As Kaul (2006) points out, in order to ensure that India does not throw away its advantage in business process outsourcing/knowledge process outsourcing (BPO/KPO) sector, it is imperative that it continues to produce 'a critical mass of highly skilled manpower at an accelerated pace'. Recent government reports, such as the report of the National Knowledge Commission (2007), similarly underline the importance of developing a robust research performance culture in Indian higher education.

In this chapter, we discuss some of the ways in which Indian policy authorities have at last begun to address the multiple challenges faced by the Indian system of higher education. They have instituted a range of reforms in an attempt to meet the growing demands of students for higher education and promote greater equality of educational access and opportunity, and to address the issues of academic quality and research performance. The last two five-year plans in India (2007 and 2012) have significantly increased levels of public investment in higher education. This investment is designed to increase the amount of research conducted in India and to enhance its quality. At the same time, we want to argue that Indian policymakers have subtly shifted the focus of research from pure, conceptual and disciplinary research to research that is considered applied, solution-focused and relevant to the demands of different stakeholders, encouraging a new way of linking research and innovation. The new goals of research straddle the requirements of India's population at the 'bottom of the economic pyramid' as well as the country's aspirations of participating in the global knowledge economy.

21.2 A Story of Research in India

India has a long tradition of scholarship and academic work. As the Nobel Laureate, Amratya Sen, points out in his book, *The Argumentative Indian* (2005), scholarship and the efforts to produce new knowledge have always been celebrated in India. During the colonial period, various local academies continued to teach and research in the Sanskrit and Persian traditions, even as these modes of learning were much derided by the British rulers of India, who sought to replace them in the nineteenth century with colleges and universities in the European image. According to Deepak Kumar (2006) the colonial institutions were designed largely to teach the curriculum that was imported from Britain. Some effort was made to support research, with a number of societies established to create local knowledge helpful

in the administration of the colony. So, for example, in the middle of the ninetieth century, plantation, medical, zoological, geological, metrological and agricultural research was encouraged, but always with the interests of the colonial administration in mind. Kumar notes that the British did very little to establish a research infrastructure in India, fearful of its potential to undermine their authority.

It was not until after independence in 1947 that serious thought began to be given to the creation of a research infrastructure in India, of the kind with which we are familiar today. The post-independence leaders of India knew implicitly that research, especially scientific research, was necessary for national economic development. They realised, however, that Indian universities were not set up to promote the research that the nation needed. In the early 1950s, the Indian Government therefore established a number of specialist research centres in areas that were considered to be of the greatest importance and utility, mostly with American or European expertise and advice. These centres were deliberately kept separate from the universities, and were managed by the relevant ministries. So, for example, agricultural research was funded and coordinated by the Indian Department of Agriculture. In this way, research was expected to produce knowledge outcomes, applicable to the nation's developmental needs, in line with its aspiration to become a leading industrialised nation. This dream, most forcefully articulated by India's first Prime Minister, Jawaharlal Nehru, became the ideological backdrop for government funding of research, focused largely on industrial and agricultural initiatives. Nehru viewed science and technology (S&T) as the way out poverty, disease, illiteracy and ignorance—the lever that would draw India from the margins into the mainstream of the world community.

In 1958, the Indian Government developed the Scientific Policy Resolution which sought 'to foster, promote and sustain the cultivation of sciences and scientific research in the country and to secure for the people all the benefits that can accrue from the acquisition and application of scientific knowledge' (Government of India 1958). In a nation at once new and ancient, already riddled with multiple problems—poverty, disease, poor infrastructure, wide-spread illiteracy, communal disharmony—science was expected to benefit society generally, and not just the economy. To work towards this goal, the Indian government set up a number of research agencies under the Ministry of Science and Technology (S&T). The Council of Scientific and Industrial Research (CSIR) was given the responsibility to coordinate research efforts across the nation. Research was to be conducted through a number of institutes, established especially to work on the emerging needs of the various industries, as defined by the Indian Planning Commission's strategic focus on development through industrialisation.

The government's efforts to develop an extensive S&T network and set up elite technology institutes to harness human power did not, however, keep pace with need. Investment levels were low and research leadership was often inadequate. Indeed, the next major science policy document, the Technology Policy Statement of 1983, presented a rather grim picture. The Nehruvian vision of science and technology lifting India out of poverty and 'backwardness' and into the light of modernity, appears still a distant dream. The report hinted at a nation burdened with 'imposed technologies', and expressed a strong desire to develop home grown technologies that were tailored to people's aspirations and to local and specific needs of communities. It declared:

> Our development must be based on our own culture and personality. Our future depends on our ability to resist the imposition of technology which is obsolete or unrelated to our specific requirements and of policies which tie us to systems which serve the purposes of others rather than our own, and on our success in dealing with vested interests in our organizations: governmental, economic, social and even intellectual, which bind us to outmoded systems and institutions. (Government of India 1983)

Apparent throughout the statement were references to the complexities of a nation as large and diverse as India and the vested interests, outmoded systems and imposed technologies which slowed down growth. It presented a view of an independent India unable to break free from its dependence on colonial structures and foreign technologies.

Towards the end of the century, it was clear that by most standards, Indian research was performing poorly. Most research centres established in the 1950s and 1960s to address the developmental needs of India had outlived their relevance, and yet could not be easily closed and replaced with new centres focusing on contemporary problems. Many had become self-serving bureaucratic agencies, which often prevented researchers from developing new lines of thinking and taking risks. They also resisted any attempt to cooperate with institutions of higher education, even with such prestigious universities as the Indian Institutes of Technology (IIT). Given this structural separation, Indian institutions of higher education, barring a few exceptions, became bystanders in the research game. In 2005, Professor Mashelkar, Head of CSIR, estimated that 'only 10% of India's 229 universities do world class research' (Leadbeater and Wilsdon 2007). The major reasons for this poor record, he noted, were the paucity of funding and the lack of well-trained people with a deep commitment to research.

21.3 Challenges Facing Indian Higher Education

Generally, the consequences of the structural separation between universities and research institutes have been disastrous for both Indian research and the Indian system of higher education. The labour pool of researchers in India has remained comparatively small, despite the seemingly enormous size of the Indian system of higher education. According to Bound and Thornton (2012), India has around 119 researchers per million people engaged in R&D, while Brazil has nearly 700, and China over 1000. In terms of investment, China spends five times the amount India devotes to R&D. India's research output is also much lower, with only one third as many research publications as China's, and less than 1300 patents granted annually to Indian researchers compared to 4500 patents in China. What makes these figures even more alarming is the fact that a very small proportion of India's research investment goes to universities, with over 60% of the R&D expenditure going to just three departments: The Indian Space Research Organisation (ISRO), Department of Defence Research Organisation (DRDO) and the Department of Atomic Energy (DAE).

The structural separation has also impoverished the general quality of Indian higher education. At the beginning of the century, only the Indian Institute of Science, Bangalore and the Indian Institute of Technology Bombay were rated among the top 400 universities in the world. Student access to key research universities is limited, with less than 2 % of the 300,000 applicants to IITs securing a place each year, following one of the world's toughest entrance examinations. Indian universities also have a serious faculty shortage. Even the IITs are facing a severe shortage, with nearly one third of the posts vacant, largely due to competition from multinational companies. Moreover, according to Government of India estimates (2012), most of the lecturers at state universities lack adequate preparation for either teaching or research. Almost half of them do not possess any postgraduate qualification. This problem is more complex in the affiliated colleges where resources such as libraries and laboratories are also often inadequate and sometimes non-existent. More than 90 % of the IT, engineering and management colleges are private, established to make quick returns on investment rather than provide effective teaching, let alone do any research.

In addition to the size and complexity, the politicization of the Indian system of higher education has made it difficult for both central and state governments in India to implement programs of genuine reform in a systematic and coordinated manner. In 1985, for example, the Indian Ministry of Education proposed an extensive reform package that included such measures as a moratorium on the expansion of conventional colleges and universities; a fair and robust admissions regime based on scholarly merit; a new accreditation and accountability scheme; decentralisation of educational planning; and a campaign to ensure 'academic depoliticisation'. Sensible though these reforms were, they were widely resisted by most state bureaucracies and universities, and produced little improvement, leading one writer to conclude that 'higher education in India stands as an immobile colossus—insensitive to the changing contexts of contemporary life, unresponsive to the challenges of today and tomorrow, and absorbed so completely in trying to preserve its structural form that it does not have the time to consider its own larger purpose' (Dube 1988). Subsequent reform attempts have met a similar fate, with the system becoming more complex and unwieldy, and the challenges ever more urgent (Neelakantan 2009).

Most commentators now note that, apart from a very small elite public sector and a few emerging privately-funded institutions, the problems faced by Indian higher education institutions are enormous. Despite its many distinct advantages, such as having the third largest student numbers in the world (after China and the USA), the use of English as a primary language of higher education and research, a long tradition of academic freedom and a highly talented pool of students, Indian higher education is bureaucratically inflexible, hampered by poor governance structures and characterised by uneven and modest quality at best (Venkatesh and Dutta 2007).

In the past, the lack of resources was a major issue, but this has largely been rectified, with the Indian government increasing its investment in higher education substantially, especially in the past two five-year plans. Academic salaries have almost doubled in the past 5 years, and money has been found to create new institutions, including new IITs and innovation universities. Yet the challenges faced by

Indian higher education remain daunting. While many more Indian students now have access to higher education, the system as a whole is still characterised by gross inequalities (Desai and Kurkarni 2008). Alarmingly, affirmative action initiatives have themselves become a major source of debilitating identity politics that inhibits systemic organisational reform.

With demand for higher education rising rapidly, in line with the capacity of the emerging middle class in India to pay higher tuition, private institutions have mushroomed. This growth appears to be taking place in a policy vacuum, as a major private education bill and a foreign institutions bill have lingered in the Indian parliament for over two decades (Johnson and Bowles 2010). According to Altbach (2005), the quality of education in private colleges is largely poor, with corrupt practices in staff appointment and student enrolment rife in many institutions. The demand is so great that many colleges are able to remain in business despite poor reputations. At the same time, regulatory frameworks, accreditation mechanisms and processes of quality assurance remain confused (Venkatesh and Dutta 2007). Furthermore, private colleges do not view themselves as having any responsibility to support and conduct research, and sometimes even discourage it.

21.4 Reforming Indian Higher Education

Over the past decade, there has been a growing realisation that the Indian system of higher education needs to be systematically overhauled and restructured, if India is to realise its ambitious economic agenda, linked to its emerging self-perception as a leading player in global knowledge industries. Freed from the vestiges of colonialism, and buoyed with a "techno-nationalism" (Leadbeater and Wilsdon 2007), India is now embracing, with vigour, the mantras of a globalising world and the challenges of the knowledge economy. It is enjoying the world's attention as a consumer market. And it is showing every sign of becoming an influential economic power on the global stage (Appadurai 2012), along with other BRICS countries.

It is within the discourses of these geopolitical aspirations that India's plans for higher education reform are now couched. These plans stress not only additional investment in the system of higher education but also structural, political and cultural shifts. More ambitiously, Indian policymakers now insist that India needs to rethink the purposes of higher education, particularly with respect to the role it should play in the economic and social transformation of the country. To promote this rethinking, in 2005, India established a National Knowledge Commission (NKC) under the leadership of diasporic Indian entrepreneur, Sam Pitroda, allocating it the task of suggesting strategies for meeting the nation's knowledge needs. Significantly, this task was couched in much broader terms than simply higher education reform. Accordingly, the Commission produced a series of major recommendations, as well as a policy template that outlined a knowledge structure in which higher education was to play a major role in the creation and distribution of knowledge. This template

linked higher education reforms directly to the requirements of innovation. It spoke of the 'global imperatives' faced by the Indian knowledge sector, drawing heavily on the neoliberal policy ideas circulating around the world (Srivastava 2007; Rizvi and Lingard 2010). It maintained, for example, that, 'to respond to the global challenges more strongly than ever before, India today needs a knowledge-oriented paradigm of development to give the country a competitive advantage in all fields of knowledge' (National Knowledge Commission 2007). NKC's recommendations for reform thus put knowledge at the heart of the broader issues of system-wide reforms relating to the access, creation and application of information, as well as delivery of services.

With respect to higher education, NKC recommended a rapid expansion of the system creating many more universities (1500 to attain the gross enrolment ratio of 15% by 2015); changing the system of regulation of higher education by establishing an Independent Regulatory Authority for Higher Education (IRAHE); increasing public spending and diversification in the sources of financing higher education; and establishing 50 new national universities focusing on its innovation agenda. NKC also sought reform of India's existing universities and the restructuring of undergraduate colleges, placing a greater emphasis on measures to enhance quality. It sought greater inclusion of disadvantaged groups in Indian higher education and access for all deserving students through more targeted and efficient programs of affirmative action. And most notably, it underlined the importance of research linked to the requirements of India's growing participation in the global knowledge economy.

NKC thus established a new language of reform in Indian policy discourses about higher education. And, to its credit, the Indian government has taken up many of the Commission's proposals. India's 11th and 12th five-year plans (2007 and 2012) have devoted a great deal of attention to higher education and reform, reframing its funding priorities within the framework of NKC's policy template. The plans have significantly increased levels of public funding for research, setting ambitious targets for India's leading universities and institutes in both research training and research outputs. They have also loosened some of the bureaucratic rigidities in the system, giving universities greater organisational autonomy, enabling them, for example, to develop stronger collaborative links with universities abroad.

Amongst its various objectives, the plans have also provided funds to establish 30 new central universities, 16 in states where these did not exist and 14 as world class innovation universities. Each of these innovation universities is expected to develop a new admissions system; robust processes of course evaluation, review and credits; strong incentives for faculty; and linkages with industry and research institutions. Funding is also allocated to establish a National Science and Engineering Research Board for the rejuvenation of research in Universities, and for the launch of a national mission to ensure greater broadband connectivity through a National Knowledge Network. Indeed it could be argued that India now has a coherent policy framework within which institutional reforms can proceed.

21.5 Linking Research to Innovation

The idea of scientific and technological innovation appears to be a central focus of this policy framework, and critical to India's plans for reforming its research culture. As we have already noted, the importance of research for national economic security and prosperity has always been acknowledged in India, right from the time of its independence. However, the understanding of the nature of the relationship between research and national development has been shifting over the last couple of decades. Clearly evident in India's Science and Technology Policy (STP) of 2003, was a notion of innovation built around the ideas of human capital development which viewed India playing a significant part on the global scene. The research areas that the 2003 Policy highlighted included: agriculture, health care, chemicals and pharmaceuticals, nuclear energy, astronomy and astrophysics, space technology and applications, defence research, biotechnology, electronics, information technology and oceanography as well as food production (Government of India 2003).

While this list might not appear entirely new, it is worth noting that the elaboration of these research areas assumes a new understanding around the relationship between science, technology, innovation and economic development. Given the explosion of new information technologies, it views knowledge itself as a tradeable commodity, consistent with what Gibbons et al. (1994) refer to as Mode 2 knowledge. This policy framework for thinking about research and knowledge speaks of the opportunities and challenges of globalisation, particularly with respect to global trade. Following India's decision in the early 1990s to liberalise its economy, these themes made their way into most policy documents in India, including NKC, where knowledge came to be increasingly viewed in terms of innovation and its capacity to produce social transformation and commercially useful products.

Over the past decade, India has embraced the notion of 'innovation' to such an extent that the Indian Government has declared 2010–2020 as the 'Decade of Innovations'. The Decade of Innovations brings a significant shift in policy orientation. Where the discourse of 2003 emphasised India's role, on the global stage, in the knowledge economy and visibility through patents and publications, the new policies and strategies bring much more sharply into focus a solution-oriented approach to address large national, regional and global issues such as food and water security, the prevention of environmental disasters, cross-border security and eradication of poverty and disease on the one hand, and the needs of those at or below the poverty line in India and the region on the other. In these plans, alongside the focus on the global stage and the knowledge economy, there is an explicit call for a focus on interdisciplinary innovations that go beyond the conventional notions of R&D to include innovations in service delivery, banking and finance and marketing, and focused on the needs of those at the bottom of the economic pyramid (BOP). Today the acronym 'STI' (Science, Technology and Innovation) is widely used in the place of the earlier 'R&D' (Research and Development) or 'S&T' (Science and Technology). The global popularity of the notion of innovation and its critical role in driving economic progress, security and stability is now well accepted in India.

These shifts in policy focus and strategy represent significant changes in the extent and pattern of federal, state and private investments in STI encouraged and coordinated by the Ministry of Science and Technology. The Ministry has several departments: the Department of Science and Technology (DST), Department of Scientific and Industrial Research (DSIR), Department of Atomic Energy (DAE), Department of Space (DoS), Department of Biotechnology (DBT) and Department of Ocean Development (DOD). DST is in charge of developing and implementing policy and facilitating and promoting research. Some of the departments have a number of institutions, laboratories or councils under them. For example, the Council for Scientific and Industrial Research (CISR), which sits under DISR, has some 40 institutes and 100 field stations throughout the nation, dedicated to different branches of science (Government of India 2013).

To support innovation, India has followed the global trend in establishing a number of 'technological parks' and 'innovation centres' which include over 400 research laboratories designed to work largely on local problems. There is also private investment in innovation by individual entrepreneurs, non-government organisations (NGOs) as well as banks and hospitals. Privately funded research initiatives and innovations are spreading throughout India, and in some cases are spilling over the boundaries of the country through collaborations and exports.

However, the role of public investment in Indian research and innovation remains dominant, not least because a large proportion of private initiatives are still supported through public private partnerships (PPP). Estimates suggest that almost 80 % of this investment is public (Leadbeater and Wilsdon 2007). While the current investment in STI is around 0.8 %of GDP, the 2013 STI Policy aims to more than double investment to 2 % of GDP in the next 5 years (Government of India 2013). However, it is assumed that this is only possible if roughly half of this investment comes from the private sector. Currently, most Indian companies do little research. Even the big software companies spend very little of their overall expenditure on research. Infosys for instance spends 2.1 % (Infosys 2012). Only the pharmaceutical companies currently appear prepared to invest, with a rise of over 300 % in research spending reported in the last 5 years (Government of India 2013). This apparent reluctance to invest could be because it is not easy to borrow capital or obtain government approvals, and entrepreneurs face significant risk. Indeed, if India expects private investment in innovation to significantly increase, it will need to address these inhibiting factors.

These changes in STI thinking have been driven, in part, by policies and practices globally. 'Innovation' is the new buzz word of the 2010s. Technological human capital has played a huge part in the rise of India as an emerging economic giant in the world. Currently, this has still meant mostly 'back office' type of work in STI, with some of India's best talent leaving to develop significant innovations in foreign countries. A large number of Indian scientists are working in multinational laboratories abroad, while few globally significant breakthroughs are produced in India itself. But this is changing, as India, along with other BRICS countries, is poised to play a much bigger role in an area previously dominated by the USA and the mature European economies (Brown et al. 2010). In the process of this global

shift, new ways of thinking about research and innovation are emerging (Peters and Besley 2006), as countries like India recognise the need to solve problems that are locally constituted but are also globally significant.

21.6 Towards Inclusive Innovation

Over the past two decades, India has witnessed an explosion in innovations, with some highly visible inventions such as the low-cost car 'Nano'. These innovations have not been restricted to the area of science and technology, but embrace such areas as banking, marketing and service delivery. They are not merely focused on products, but on systems and practices. Unlike conventional innovations of the past, some of these innovations do not require a great deal of equipment or infrastructure, and so there is every expectation that innovations will continue to proliferate.

However, although there is a global convergence of discourses around innovation (Peters and Besley 2006) and even a 'global innovation index' that has developed standardised ways to compare and measure innovation across nations, Indian innovation has a distinctive form, with particular recognisable characteristics. These characteristics are not easily captured in traditional macro indicators such as levels of investment, number of publications, number of PhDs in science and engineering and so on (Rajan 2012). Indian innovations are often ad hoc, involving opportunistic responses to India's own situation and the particular challenges it faces.

India's population of 1.18 billion is growing at 1.5 % a year, causing scarcities—many acute—in the areas of water, food, fuel, education and healthcare (Bound and Thornton 2012). Adding to these scarcities are the huge inequities in India, so that a sizeable section of the population is challenged even more acutely. These factors have led to innovations that are focused on extracting greater value from any activity. There is also the imperative to focus on sustainability and care for the environment. Social and cultural issues specific to India render Indian innovations distinct from the global approaches and practices. Several terms are now used to describe India's innovations, such as 'frugal innovation', 'inclusive innovation', 'jugaad' and 'affordable innovation' (Rajan 2012; Singh et al. 2012).

Inclusive innovation focuses on India's large rural populations, and often involves micro-financed products and services, mobile phone use and applications to help farmers source seeds and other materials and sell their products at optimal rates. 'Frugal innovation' refers to innovations that are low cost and make essential goods and services available at affordable rates. The concept of 'jugaad' refers to innovative 'workarounds' necessitated by the vast number of obstacles that one faces in India while attempting to do any kind of work. It denotes ad hoc solutions to problems that arise; it is the chewing-gum-and-string approach to solving problems. Whilst some see 'jugaad' as clever and appropriate for a country such as India, others lament that such quick fix and crude approaches produce precarious and temporary solutions and get in the way of finding more secure, sustainable and efficient solutions to problems in a systematic manner. There are now a range of

experiments in India dealing with finding new ways to use innovation to improve conditions for the very poor.

While this kind of responsive and needs-based inclusive innovation is widely celebrated in India, there is also deep anxiety that in order to address the enormity of challenges that India faces, such innovations should be scaled up and their benefits maximised. It is this line of thinking that has led to the declaration of 2010–2020 as the 'Decade of Innovations'. The rationale underlying this symbolic initiative is that although India has made impressive progress on many fronts, existing strategies are not yielding adequate results. The *Decade of Innovation 2010–2020 Roadmap* (Office of the Adviser to the Prime Minister 2011) specifically mentions the uneven and inequitable distribution of wealth, an unsustainable growth curve, and the 'huge backlog' of unmet needs in the areas of education, health, water, sanitation, urban development, public transport and energy as the challenges that require urgent attention. The *Roadmap* underlines the importance of new and creative approaches to both research and innovation. It sees inclusive innovation as being at the centre of India's development strategy, and envisages innovation as not restricted to science and technology but as including 'new delivery mechanisms, along with innovations in products, services and processes' (Office of the Adviser to the Prime Minister 2011).

21.7 Role of Higher Education

India has clearly embarked on an ambitious agenda of reforming its systems of knowledge creation and utilisation. Issues of research and innovation are now widely debated, not only with respect to the kind of innovation that is necessary for a country still marked by gross social and economic inequalities, but also the ways in which a new knowledge culture might be developed. The question of how new researchers, mindful of the needs of inclusive innovation, might be trained and supported is of utmost importance. So is the question of how India's vast system of higher education might contribute to the government's agenda relating to its declaration of a 'Decade of Innovation', both through its own efforts in generating new knowledge and through various collaborative links with industries, NGOs and governmental agencies. More broadly, how Indian universities and colleges develop a performance culture in which teaching is informed by scholarship and research is a question that demands serious policy and organisational attention.

The role imagined for higher education in India's STI policies has varied over the decades. In the early days of India's independence, the hope was that the IITs and other national institutes and laboratories would produce the type of research that would galvanise India into becoming a major industrial nation. Specialised labs also focused on such critical areas as epidemiology and agricultural research. But these activities were secluded, and worked independently from each other, and from universities. As the Indian population grew and as more people aspired to higher education, there was an explosion in higher education institutions that were

typically mediocre at best, and that focused almost exclusively on teaching, with research separated from instruction and even research training. Despite growing levels of investment, a robust culture of research and research training is yet to be established in Indian universities.

In India, it is becoming increasingly clear that no single approach to renewal and reform is sufficient, and that a wide variety of strategies at each of the levels of decision-making, from the Central Government to the institutions, are necessary. To begin with, Indian higher education needs to overcome a culture of isolation that has long persisted in its universities and colleges. They need to develop closer links not only with their communities but also with industries, governments and non-government civic organisations, responding to their knowledge requirements. Indian universities need to take seriously the advice of the Yash Pal Report (The Committee to Advice on Renovation and Rejuvenation of Higher Education 2009) that, to promote a culture of innovation, they must bridge the binary that they often assume between teaching and research. All institutions of higher learning, Yash Pal insists, must undertake research, to a greater or lesser extent. To do this, India needs to invest heavily in research training, enabling academics to acquire the skills of critically reading research that informs their teaching, demonstrating to their students the importance of research in addressing India's many challenges.

In the same way as the IITs were set up as institutions of excellence, the Indian government has announced the setting up of 14 'innovation universities', although this bill is still under consideration (Vishnoi 2013). Each would focus on a significant problem area such as urbanisation, environmental degradation or issues in public health, and seek to build a complex set of capabilities and bodies of knowledge to solve problems in that area. In order to do this, the universities will themselves have to be innovative with their curricula, pedagogies, assessments and organisation. These universities are expected to enjoy a fair amount of autonomy and thus be free from the heavy administrative and bureaucratic machinery that handicaps most of the existing universities. In this way, these universities might be able to contribute effectively to the goals set for the Decade of Innovation.

While the new innovation universities might develop the capacity to operate as centres of research excellence and research training, most existing universities are unlikely to do so. To address this challenge, India's think tank, the National Innovation Council (NInC), which has drafted the *Roadmap for Innovation* (Adviser to the Prime Minister on Public Information Infrastructure and Innovations 2011), plans to encourage existing universities to participate in networks along with a range of stakeholders. This will be facilitated and funded through Cluster Innovation Centres (CICs) where a range of participants—industries, universities, national laboratories, NGOs, business houses—are connected in collaborative relationships. As the *Roadmap* explains:

> The CICs would connect the universities with industry, institutions, and government to share their ideas, develop them, create intellectual property rights, develop new business models, create new markets, and spawn demand-driven collaborative R&D activities and an overall ecosystem subject to organic growth. The CICs would be networked with each other so that ideas could be dynamically shared and resources optimally deployed in order to increase visibility and to spread the knowledge across the ecosystem. (Government of India 2012b)

These ‘innovation mega-communities’ could also involve global organisations, such as the Bill and Melinda Gates Foundation and the Wellcome Trust.

Given the huge range of participants, and India’s growing investment in research and innovation, the more urgent task before India’s universities is not so much direct engagement with research to produce innovative ideas and products, as to develop the capacities in their students to become competent participants in research and innovation. Bhattacharya, Director of the Tata Institute for Fundamental Research in Mumbai, has been quoted as saying: ‘The biggest bottleneck in Indian science is not money—it’s a lack of people and a lack of ideas. The human resource crunch is the single biggest difficulty that India faces’ (Leadbeater and Wilsdon 2007) (DEOMOS report p. 21). There isrecognition, however, that this ‘talent gap’ cannot be bridged overnight—it will take time for India to train the required number of scientists and researchers with an appropriate set of attributes. In the interim, India might need to attract scientists from overseas—both foreign nationals and returning Indians—as China does.

Simultaneously, a number of other initiatives are also being considered to raise the capacities of universities and to leverage existing expertise for maximum impact. One such is the networking of high calibre universities with a range of institutions across the nation, so that expertise and such events as lectures can be shared widely. Recently, Delhi University was linked to 500 institutions across the nation to launch the National Knowledge Lecture series. Not only could students in 500 institutions hear the lecture, but many could also participate using the interactive technology. The hope is that such practices will become routine, and enable the maximisation of resources. As encouraging as these initiatives are, the challenges faced by Indian higher education, with respect to its capacity to contribute effectively to the nation’s innovation agenda, needs shifts in national policy priorities, institutional practices and external inputs.

Indian policymakers have increasingly recognised the role that global research collaborations can play in transforming Indian universities. They have realised that changes occurring in higher education globally are interconnected and quite fundamental, with universities becoming transformed into international, networked and multi-sited organisations. They understand that collaborations have become an inevitable part of these shifts. The question for India is no longer whether or not to engage in global collaborations, but how it might do so to best suit its current and long-term interests, and how it might harness the opportunities not only to address some of the pressing issues such as expanding access to higher education and tackling inequities, but also to participate meaningfully within the global context of knowledge production and dissemination. Around the world there is a great deal of interest in collaborating with Indian universities, and a number of significant initiatives are already in existence. Many of these initiatives focus on student mobility and educational exchange. But equally important are collaborative programs through which research training is provided and transnational research projects are conducted.

21.8 Conclusion

In this chapter, we have provided an overview of some of the key shifts in thinking about research and innovation in Indian higher education. From independence, India inherited a very weak research infrastructure, not least because Indian universities were mostly concerned with teaching rather than research. This situation did not change with independence, with the nationalist leaders setting up a parallel system of knowledge production in which various research institutes were established to meet India's industrialization agenda, as well as its agenda of social and economic development. The failures of this agenda led India to move away in the 1980s from imported technologies, highlighting instead modes of research that addressed local problems and issues. Since the liberalisation of the Indian economy in the early 1990s, a new global discourse of research has emerged in India, couched in the language of innovation, which views research in instrumental terms, associated with the needs of India's participation in the global knowledge economy. It links research and innovation to socially and commercially useful outcomes. Thinking about the extent and nature of the contribution that Indian universities might, and perhaps must, make to this policy agenda is still evolving. However, what is becoming clear is that for Indian higher education to contribute effectively to the nation's innovation agenda, not only shifts in national policy priorities and institutional practices are needed, but also there is a need of external inputs through various forms of global collaboration. This requires a fundamental transformation in the academic culture of Indian universities, which could be achieved through a wide-ranging and sustained program of professional development. Not every academic will be able to (or even needs to) meet this challenge. But institutionally, all universities will need to embrace a commitment to scholarship and research to a greater degree than they currently espouse, if India is to realise its goals in the Decade of Innovation.

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Chapter 22
Promoting Entrepreneurship and Innovation in China: Transformations in University Curriculum and Research Capacity

Ka Ho Mok and Kan Yue

22.1 Introduction

In the past decade, higher education in China's mainland has experienced significant transformation. In order to cope with the growing challenges of the knowledge-based economy, the Chinese Government has adopted different reform measures to enhance research and promote innovation through the promotion of entrepreneurship education in university curriculum. The growing popularity of entrepreneurship education has not only become a fashion worldwide but also provided China with fresh ideas and new alternative measures for enhancing student learning experiences. On the research front, the Chinese Government is equally keen to enhance research capacity; hence, the government has introduced different funding schemes and adopted various measures to strengthen the overall research capacity and promotion of innovation in the past decade. This chapter focuses on three aspects of higher education reforms in China, critically examining (1) the promotion of entrepreneurship education through curriculum reform, (2) the enhancement of research capacity, and (3) the promotion of university–industry–enterprise cooperation. This chapter also discusses major challenges in implementing reform measures in transforming curriculum and research capacity in Chinese universities.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_22

22.2 Policy Context for Promotion of Entrepreneurship and Innovation

Soon after the establishment of the People's Republic of China in 1949, the Chinese Government adopted the Soviet Union's model of science and technology (S&T) development that aims to build a national industrialization strategy (NIS) composed of both comprehensive and specialized universities and a pervasive network of public research institutes under the governance of a central agency (1950s–1970s) (Segal 2003). According to this design, public research institutes were given the duty of scientific research, while universities were designated with the pedagogical function for S&T with limited involvement in R&D. One of the typical examples concerned is the China Academy of Science (CAS). Founded in 1949 in Beijing, it has expanded steadily across the country through establishing directly-controlled institutes and supportive organizations, and has become the nation's highest academic institution of natural science and high technology.[1]

Since the recovery from the Cultural Revolution (1966–1876) and the launch of economic reforms in the late 1970s, the Chinese NIS has been undergoing dramatic reforms through a process of decentralization of the central government's power. In line with the orientation of building a strong internal market in the early stage of economic reforms, the government pressured foreign enterprises to conduct technologically advanced research in China, while encouraging domestic enterprises to improve their research capacity through active absorption of the imported technology (Hu and Mathews 2008). As a latecomer to the international S&T market, China has enjoyed the advantage of cheap cost with S&T imitations and quickly utilized them to boost economic growth. Yet, similar to the Four Little Dragons of Asia—Taiwan, South Korea, Singapore, and Malaysia, which adopted the same approach earlier, diminishing benefits from S&T imitation would eventually force China to focus on self-innovation.

The Chinese Government thus began to encourage the establishment of horizontal, market-based ties between research institutes/universities and enterprises in various forms (Wu 2007a; Chen and Kennedy 2007). Recognizing the sluggish circulation of innovation in the industrial sector due to the lack of in-house R&D capacity in most industrial enterprises, steps have been taken to strengthen entrepreneurship within the NIS. To begin with, malfunctioning public research institutes were eliminated through mergers with the existing industrial or university-affiliated enterprises. Second, essential technological and infrastructural support was given to enable enterprises to gradually establish their own in-house R&D facilities. Strategies applied to industrial enterprises, particularly those after the National Technology and Innovation Conference in 1999, have boosted R&D performance and patent acquisition in the sector. The performance of industrial enterprises in the nation's

[1] CAS, China, 2009. http://home.sinica.edu.tw/en/about/history_and_mission.html. The authors want to thank the Research Grant Council of the HKSAR Government for offering research funding support to enable them to conduct the present research numbered GRF HKIEd 750210.

R&D has increased from less than 40 to over 65 % in 10 years from the mid-1990s to mid-2000s.

Moreover, through encouraging research institutes to engage in launching commercial spin-offs based on applicable research outputs, spin-off enterprises have increased rapidly in number and contribute considerably to the funding of research institutes. Meanwhile, in order to frame a nationally unified intellectual patent system, the Chinese Patent Office was set up in 1980, and the patent law and copyright law were enacted in 1985 and 1990, respectively. In 1999, the State Council approved the "Several Provisions on Promoting the Transformation of Scientific and Technological Achievements," introduced a generous rewarding mechanism for commercially useful discoveries and allowed research personnel to enjoy greater mobility between their research and industrial careers.

In parallel with its effort to catalyze collaboration between industries and universities/research institutes (URIs), the government collectively held a series of national-scale research programs at the beginning of the 1980s.[2] The largest S&T program in China in the twentieth century is the *Key Technologies R&D Program* launched in 1982. Given the orientation towards national economic construction, the main purpose of this program is to solve key and comprehensive problems encountered during the Chinese social and economic reform era. After almost three decades since its first launch, this program has covered a wide range of S&T fields, such as agriculture, electronic information, energy resources and transportation, and has attracted tens of thousands of personnel from over 1000 research institutes nationwide. In March 1986, after reviewing a thorough study conducted by several hundreds of Chinese scientists from the S&T sector, former Chinese leader Deng Xiaoping approved and initiated another program named the *National Hi-tech R&D Program* or the *836 Program* geared towards high-end technological exploration, such as biotechnology, space flight, information technology, and laser research with a total of 20 themes. Unlike the Key Technologies R&D Program, state intervention in the operation of this program is considerably less, except for the sake of macromanagement or the provision of necessary legal and administrative services.

Two years later, in 1988, the Chinese Ministry of Science and Technology initiated a nationwide innovation program, the *Torch Program*, to further develop its high-tech capability in the fields of new material, biotechnology, electronic information, integrative mechanical-electrical technology, and advanced energy-saving technology. This program plays the most important role in bringing into full play the potential of China's S&T capacity. It reduces the burden of excessive regulation on S&T development and provides physical support to infrastructure to attract foreign high-tech companies and private investors and promotes commercialization, industrialization, and internationalization of the national S&T market. By the end of 2008, 54 national S&T industrial parks had been built in close proximity to URIs. These zones have experienced rapid growth, but there are critics who argue that much of this growth is in product assembly that does not meet the Western standard

[2] Ministry of Science and Technology, China, 2009: http://www.most.gov.cn/eng/programmes1/index.htm.

of high technology (Cao 2004). Nevertheless, the balance of China's national import and export of high-tech products has begun to reverse since 2004, reaching a surplus of US$ 342,000 million in 2006.[3]

In 2006, the State Council promulgated the *Medium- and Long-Term National Plan for S&T Development 2006–2020*.[4] Among the strategies introduced are the promotion of S&T development in selected key fields and the enhancement of indigenous innovation capacity. Considering enterprises as the major players in technological innovation, fiscal and tax policies were reviewed to create a favorable climate for entrepreneurial innovation. Moreover, integration among universities, research institutes, and enterprises was also encouraged. A total of 11 fields, 68 topics, 16 special programs, 27 frontier technologies, 18 basic science questions, and 4 research plans were identified, forming the country's research priority over the next 15 years.

Finally, over the past decade, a steady growing trend in terms of both the gross expenditure on R&D and the patenting activities has emerged. Through doubling the percentage of R&D expenditure from 1.23 % in 2004 to 2.5 % in 2020 and increasing innovative patents over the next 15 years, the objective is to make China an "innovation-oriented country" by 2020 and a global leader in S&T by the mid-twenty-first century. In order to enhance China's global competitiveness in the knowledge-based economy, the government has introduced various reforms in Chinese universities to prepare students for the future world. The following discussion will first focus on how the university curriculum has been reformed by promoting entrepreneurship education. Second, we will examine what major strategies the government has adopted in enhancing research capacity. Finally, we will discuss how university–enterprise–industry cooperation has been enhanced in China.

22.3 Reforming University Curriculum in Promotion of Entrepreneurship Education

22.3.1 The Rise of Entrepreneurship Education

Two major factors account for the call of entrepreneurship education and the promotion of innovation in mainland China. The first factor is closely related to the rapid expansion of higher education in the past two decades, especially as China is now experiencing the "massification" of higher education.

[3] Ministry of Science and Technology, People's Republic of China, 2009.

[4] MST China (2009).

22.3.1.1 Massification of Higher Education and Graduate Unemployment

Entrepreneurship education is increasing in demand in China, especially as the country is becoming keen to transform itself from a super "economic power" to the "power of human capital." Experiencing a great expansion since 1998, the gross enrolment rate (GER) of higher education in China has rocketed from 9.8 to 26.5 %, which makes China the largest higher education system in the world in terms of the absolute number of students. Currently, the Chinese higher education has been able to produce 6 million university graduates annually. This rapid expansion has produced unintended consequences. Among those, employment is a crucial one. According to official statistics, the first employment rate for university graduates fluctuated between 70 and 75 % in recent years; such a trend was also confirmed by Yin Weimin, the minister of human resources and social security in 2011 (Yin 2011). It is against this context that millions of fresh university graduates cannot find jobs every year (Fig. 22.1).

In order to enhance the employability of university graduates, the promotion of entrepreneurship education by international communities has indeed paved the way for introducing and developing ideas and practices in entrepreneurship education in the Chinese higher education as a solution to meet the challenge resulting from the massification of higher education in mainland China. Realizing that massive graduate unemployment would cause social and political instability, entrepreneurship education has been identified as one of the top political agendas by the central government in devising public policies appropriate for addressing the complexity of these issues (Mok et al. 2013).

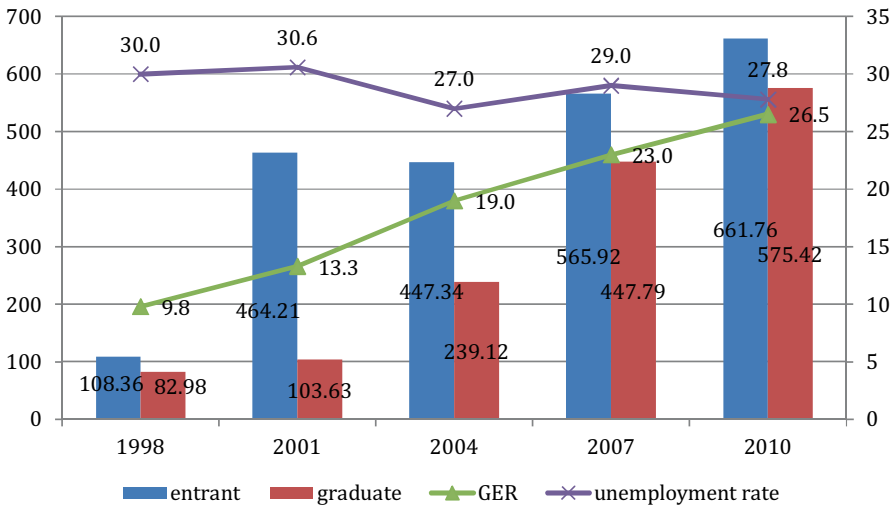

Fig. 22.1 The expansion of higher education and the pressure of graduate employment in China (unit: 10,000). Note: The data of adult higher educational institutions is not included in this figure. (Source: MOE 1998, 2001, 2002, 2004, 2005, 2008, 2010b)

22.3.1.2 National Call for Soft Power and Culturally Strong Power

The second reason accounting for the rise of entrepreneurship education in China is the national call for enhancing soft power to make the country a culturally strong power in the global sense. More specifically, the government has embarked on a process of advancing entrepreneurship education as one of the key drivers to achieve sustainable and inclusive social development through restructuring the economy to become more innovation-driven and knowledge-intensive to increase the employability of university graduates in the coming years. In the first policy document titled *Action Scheme for Invigorating Education Towards the Twenty-first Century*, released in 1999, the State Council of China stressed strengthening entrepreneurship education for teachers and undergraduates in Higher Education Institutions (HEIs) and encouraging them to set up hi-tech enterprises. In 2007, the government enacted the *Employment Promotion Law* and advocated that workers should improve their employability and entrepreneurial skills so that they could start a self-employment career. In May 2010, the Ministry of Education issued the *Guidelines on the Promotion of Creative and Entrepreneurship Education in Higher Education Institutions and Self-employment Activities of University Graduates*. As the first and only specialized policy, this document provided a new impetus to the further development of entrepreneurship education through integrated approaches and measures to implement entrepreneurship education in HEIs. In the same year, entrepreneurship education was written into *The Outline of the National Plan for Medium and Long-term Education Reform and Development (2010–2020)*, formulated by the State Council, with the stipulation of promoting entrepreneurship education and employment services through the new mechanism of collaboration between HEIs, R&D institutions, industry, and enterprises.

The Chinese government also openly calls for establishing the country as a power with culturally strong capacity, making attempts to engage the Chinese population in enhancing creative industries and other innovation measures to diversify the Chinese economy. The government is aware that simply relying on manufacturing would not sustain China's economic growth. It has thus begun looking for ways to diversify its economic pillars, particularly making serious efforts to internationalize its industries and upgrade its service sectors. Openly realizing that China is now experiencing a major transition from an economy primarily based on the manufacturing sector to a more diversified economic mode, which is closely related to the knowledge-based economy, the Chinese government has issued different policies and adopted various measures to enhance its human capital. For example, in recent years, the government has launched different forms of reforms in promoting knowledge transfer through the incentivization of research and the introduction of more entrepreneurial ideas/practices in university curriculum (Ramesh 2012). With these efforts, the Chinese government aspires to become a major "soft power" in the global context (Li 2008). We have briefly outlined the policy context for the promotion of entrepreneurship education in mainland China; the following section focuses on strategies that the government in particular and universities in general have adopted in promoting innovation and the entrepreneurial spirit.

22.3.2 Promoting Entrepreneurship Education: Strategies and Measures

Socioeconomic transformation needs a variety of personalities, imaginations, talents, and skills to deal with new challenges. Entrepreneurship is increasingly regarded as a key competence and the engine fuelling innovation, employment generation, and economic growth. According to Matlay (2001), it is becoming fashionable to view entrepreneurship and entrepreneurship education as the panacea for stagnating economic activity in both developed and developing countries. Although the theory of entrepreneurship education was initiated by Prof. Myles Mace of Harvard Business School and Prof. David Birch of the Massachusetts Institute of Technology (MIT) more than half a century ago, entrepreneurship education has been mainly promoted by important international organizations in recent years.

With a strong conviction for establishing a laboratory of ideas and a catalyst for international cooperation, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is an active advocate of entrepreneurship education. In the *World Declaration* on *Higher Education for the Twenty-First Century: Vision and Action* adopted at the World Conference on Higher Education (WCHE) 1998, UNESCO called on its member states to "develop entrepreneurial skills and this initiative should become a major concern of higher education, in order to facilitate employability of graduates who will increasingly be called upon to be not only job seekers but also and above all to become job creators" (UNESCO 1998). Since then, the UNESCO reiterated in the Communiqué of the 2009 World Conference on Higher Education that "the training offered by HEIs should respond to and anticipate societal needs. This includes promoting research for the development and ensuring the provision of technical and vocational training, entrepreneurship education and programmes for lifelong learning" (UNESCO 2009). The International Labor Organization (ILO) also recommends its members to consider pursuing the development of entrepreneurial attitudes through programs of education, entrepreneurship, and training linked to job needs and the attainment of economic growth and development (ILO 1998). The World Economic Forum (WEF), an independent international organization committed to economic and industrial issues has also begun to be concerned about entrepreneurship education. In a report titled *Educating the Next Wave of Entrepreneurs*, the WEF highlighted entrepreneurship and education as two extraordinary opportunities that need to be leveraged and interconnected if we are to develop the human capital required for building societies of the future (WEF 2009).

In 2002, a pilot program on entrepreneurship education was launched in nine universities under the supervision of the MOE, which marked a new stage in the development of entrepreneurship education in China. Since then, both governments and HEIs have made consistent efforts to explore various strategies to benchmark their programs with international practice and experience.

22.3.3 Organizational Strategy

The organizational changes at the governmental and institutional levels are remarkable when promoting entrepreneurship education in HEIs. In order to follow up the national development strategy of "improving the capacity of independent innovation and constructing the innovation-oriented country" and "creating new businesses to stimulate employment," the ministry of education (MOE) established a Steering Committee on Entrepreneurship Education in Higher Education Institutions (MOE-SCEE) in 2010. The committee is composed of 41 members from HEIs and 14 invited members from related ministries, NGOs, and renowned enterprises with a mission to provide research, guidance, and consulting services in entrepreneurship education. In the past 2 years, the committee has played a special role in promoting curriculum and instruction reforms, establishing the exchange platform, mobilizing various resources, and conducting survey of the *status quo* throughout the country.

In recent years, a number of schools/colleges of entrepreneurship education have emerged in Chinese HEIs. These institutions tend to provide different training programs ranging from specialized courses and professional practices to innovative activities, aiming to develop the entrepreneurial spirit, improve entrepreneurial skills, and foster entrepreneurial talent. Several modes could be found for this institutional innovation. The first is the integration mode represented by Shanghai Jiao Tong University. This university provides both general programs for all students and special programs for students with strong entrepreneurial intentions through its newly established School of Entrepreneurship and Innovation. The second mode is that some HEIs may promote entrepreneurship education in two different tracks. For example, in Zhejiang University, the general programs include business plan competitions, entrepreneurship salons, and lectures coordinated by the College of Dandelion Entrepreneurship jointly founded with the Hangzhou Yuhang District Government. For its special program, it offers the Intensive Training Program of Innovation and Entrepreneurship in Chu Kochen Honors College. As for the third mode, such schools basically have the single function of cultivating the talents required for entrepreneurship. An example is the Academy of Entrepreneurship established by the Business School of Sun Yat-sen University. Among different modes, one common feature shared by almost all HEIs is the special program usually following the "elite" style with a rather high threshold and very small enrolment (normally 30 to 60 students). Also, their teaching groups are combined with professionals from HEIs and entrepreneurs from well-known corporations. Table 22.1 shows different modes of operation where institutions of higher learning have made attempts to promote entrepreneurship in mainland China.

In addition, a student services center is another strategy to achieve organizational change. For instance, the Beijing Institute of Technology (BIT) in collaboration with the China Talent Group (CTG) jointly established the BIT-CTG Entrepreneurship Center. According to its four functions of training, counseling, research, and exchange, the center played a role in disseminating knowledge, improving capacities, and strengthening guidance in entrepreneurship, especially in

Table 22.1 Modes of schools/colleges of entrepreneurship

	University	College/school	Types of program	Activities/courses
Model 1: Integration	Shanghai Jiao Tong University	School of Entrepreneurship & Innovation	General program	Forum of entrepreneurship & innovation, entrepreneurship salon, elevator pitch, business plan competition…
			Special program	Five modules: core curriculum, featured course, seminar, practice, setting-up of a firm
Model 2: *Two track*	Zhejiang University	College of Dandelion Entrepreneurship	General program	Business plan competition, entrepreneurship salon, entrepreneurship lecture, entrepreneurship training…
		Chu Kochen Honors College	Intensive program	Modules
Model 3: *Specialization*	Sun Yat-sen University	Academy of Entrepreneurship		Six modules: environment, operation, finance, leadership, practice, internship

providing various student services in entrepreneurship training, career planning, and employment guidance.

The third organizational strategy is to create an open research platform. In this regard, the successful case is the joint laboratory established since 2008 by Tencent, the largest Internet service provider in China, and the China Academy of Science (CAS), Tsinghua University, Harbin Institute of Technology (HIT), and Huazhong University of Science and Technology (HUST). As a follow-up, Tencent and six top universities launched a new University-Enterprise Cooperation Open Platform in 2011. Tencent planned to invest 300 million CNY in the early stage construction (Tencent 2011). Both the joint laboratory and the new open platform serve as channels to close the links between university and industry to develop student capacity for innovation and entrepreneurial skills through conducting frontier research and development.

22.3.4 Strategies for Enhancing Student Learning

Another approach to enhancing entrepreneurship among university students is to engage them in extracurricular or cocurricular activities ranging from training

programs and business plan competitions to entrepreneurship clubs playing an indispensable role in fostering a campus culture of entrepreneurship. As for the training programs know about business (KAB), generate your business (GYB), start and improve your business (SIYB), and expand your business (EYB), all developed by ILO constitute a well-integrated training system in entrepreneurship. Among them, KAB is the more popular training program promoting youth entrepreneurial consciousness and capacity and carried out widely in over 30 countries. In order to learn from this successful international experience and explore a path suited to China's practice, the All China Youth Federation (ACYF) and the Central Committee of the Communist Young League (CCYL) in collaboration with ILO introduced the KAB Program in HEIs in 2005. Since then, the four systems of the KAB program, including curriculum construction, teacher training, quality control, and exchange and promotion have been increasingly developed. The KAB course is provided as a public optional course in Chinese HEIs. Students can get academic credits by choosing and completing the program. As a supplement, students can also attend some extracurricular activities such as joining the KAB club, summer camp, and classroom. The KAB program achieved rapid development in China. Up to February 2011, the training course "KAB Entrepreneurship Education" was provided in 600 HEIs, the KAB club was established in 100 HEIs, and 2931 teachers and 200,000 students in 850 HEIs have been involved in related KAB activities (KAB (China) Promotion Office 2012).

After being initiated by American universities in the 1980s, the business plan competition (BPC) is accessible all over the world. In 1998, the first pilot BPC in China was organized by the Tsinghua University. It then spread rapidly into a national event held every 2 years, supported by MOE, China Association of Science and Technology (CAST) and ACYF. Since 1999, seven "Challenge Cup" National BPCs have been hosted in different universities. At present, the competition system at three levels (institutional, provincial, and national) and over three rounds (preliminary, semi-final and final) have also been well established. This event has aroused great enthusiasm for innovation and entrepreneurship in college students. With the support of government and enterprises, many business plans were adopted and applied in the practical operations, which promoted the further combination of technology, capital, and market. The practice demonstrates that BPC is an effective approach to improve entrepreneurial consciousness and competence for college students. Table 22.2 shows the development of a "competition cup" as a way to promote competition among university students striving for entrepreneurship.

22.4 Strategies for Enhancing Research and Development

In the post-Mao period starting from the late 1970s, the government began to put in concerted efforts to advance its research and technology. In recent years, the government is particularly keen to transform the country into one that is culturally strong and technologically advanced, to cope with the growing challenges resulting

Table 22.2 The development of "Challenge Cup" national business plan competition. (Source: The Organizing Committee of National "Challenge Cup" Business Plan Competition 2012)

No.	Year	Hosted by	HEIs involved	Projects submitted	Sponsored by
1	1999	Tsinghua University	120	400	hexun.com
2	2000	Shanghai Jiao Tong University	137	455	Wanwei investment
3	2002	Zhejiang University	244	542	TTGG investment
4	2004	Xiameng University	276	603	Bank of China
5	2006	Shangdong University	300	605	Philips
6	2008	Sichuang University	356	600	Wengfu Group
7	2010	Jilin University	374	640	First Automobile Works (FAW)

from the knowledge-based economy. Various special funding schemes have been adopted since the 1990s to drive universities to perform, with additional funding attached to those universities with excellent performance benchmarked against world-class standards. The following section highlights a few major initiatives that the Chinese Government has adopted in the past few decades to enhance university research capacity and technological advancement.

22.4.1 Strategies for Enhancing University Global Competitiveness

University restructuring was part of the plan to increase China's competitiveness in the global marketplace. Up to the mid-1990s, top Chinese universities were not considered good enough by international standards. To increase China's high-level professional manpower, the Chinese Government initiated Project 211 in 1995. The idea was to achieve rapid progress in teaching, research, and administration in about 100 higher education institutions and in certain key disciplinary areas in the twenty-first century. During the Ninth Five-Year Plan period (1996–2000), a total of 18.6 billion Yuan (RMB) was invested in 99 universities, with 2.8 billion Yuan from the central government. During the Tenth Five-Year Plan period (2001–2005), another 18.8 billion Yuan was spent on 107 universities, with the central government contributing 6 billion Yuan. In the Eleventh Five-Year Plan period (2006–2010), the project's third phase, the central government planned to spend 10 billion Yuan. The total investment was not large. In fact, the total government expenditure on regular higher education institutions reached 196.3 billion Yuan and 428.6 billion Yuan in the 1996–2000 and 2001–2005 periods, respectively.

"Project 211" accounted for 9.5% of the total government expenditure on higher education in the 1996–2000 period, but fell to 4.4% in the 2001–2005 period. While its financial significance has been declining, becoming a "Project 211" university

matters a great deal to the status of a university. Although "Project 211" universities make up only 6% of China's regular higher education institutions, they take on the responsibility of training four fifth of doctoral students, two third of graduate students, one half of students who are abroad, and one third of undergraduates. They account for 85% of the country's key subjects, 96% of national key laboratories, and 70% of scientific research funding.

"Project 211" was soon overshadowed by another initiative known as "Project 985." Speaking at the 100th anniversary of Peking University on 4 May 1998, then President Jiang Zemin stressed that: "China must have a number of world-class universities." Project 985 was launched thereafter. Immediately, building up world-class universities became a national policy. The MOE proposed increasing the share of educational expenditure in the central budget by 1% every year for three successive years. At first, the Peking University and Tsinghua University were handpicked by the central government. Each received 1.8 billion Yuan from the MOE within 3 years from 1999. From July to November 1999, another seven universities joined the project. Unlike the first two, they belong to the category of "joint development," thus receiving funding from both central and local governments. The list was further expanded in 2001 and afterwards to include 30 other universities. Because they entered the list later than the first nine, the 30 universities were considered relatively lower in status. In recognition of this difference, the first nine "Project 985" universities formed the C9 League in 2003 and met annually to ritualize their exclusive membership.

"Project 985" and "Project 211" provided a new way of certifying the status of a university. On their websites, none of the "Project 985" universities or "Project 211" universities can afford not to declare their newly gained status as they are largely judged by their listing in these projects. While there were elements of meritocracy in the listing of the universities, the university's relationship with the state was the most important determinant. "Vice ministerial" universities and centrally administered universities had a much higher chance of being listed than other universities. For "Project 985," all the 31 "vice-ministerial" universities made the list. This means that out of nearly 2000 universities and colleges without a vice-ministerial rank, only eight could become a "Project 985" university. Without exception, the eight universities that made the list are all centrally administered universities (see Tables 22.3 and 22.4).[5]

For "Project 211," all the 31 "vice-ministerial" universities are on the list. In fact, all the 39 "Project 985" universities are also "Project 211" universities, suggesting that "Project 985" is more selective and of a higher status than "Project 211." Out of the 111 centrally administered universities, 71 were funded by "Project 211" in the first phase, while only 20 local universities could benefit from the project. A new tiered system has thus emerged with C9 League members at the top, followed by 30 other "Project 985" universities. Below them are dozens of "Project 211" universities. Further down the hierarchy are centrally administered universities that failed to make it to the two lists. At the bottom are local and *min ban* higher education

[5] Zhao and Zhu (n.d.).

Table 22.3 Funding for China's first nine "Project 985" universities. (Source: Zhao and Zhu n. d.)

University	Funding (billion RMB)	Source of funding
Peking University	1.8	MOE
Tsinghua University	1.8	MOE
University of Science and Technology of China	0.3 + 0.3 + 0.3	MOE + Chinese Academy of Science + Anhui
Nanjing University	0.6 + 0.6	MOE + Jiangsu
Fudan University	0.6 + 0.6	MOE + Shanghai
Shanghai Jiaotong University	0.6 + 0.6	MOE + Shanghai
Zhejiang University	0.7 + 0.7	MOE + Zhejiang
Xi'an Jiaotong University	0.6 + 0.3	MOE + Shaanxi
Harbin Institute of Technology	0.3 + 0.3 + 0.4	MOE + Commission for Science, Technology and Industry for National Defence + Heilongjiang

institutions. Although the structure may look somewhat different from that which existed before, the underlying stratification mechanism remains the same. "Project 211" and "Project 985" served to reinforce the importance of administrative ranks of Chinese universities and consolidate the state as a status conferrer vis-à-vis the university.[6]

After the "211" and "985" Projects, the C9 League was established in 2009. The aim of the C9 is to facilitate communication among universities in order to foster better students and share resources, including campuses and teachers (Baer et al. 1999; Ball 2003). More importantly, these institutions have committed themselves to world-class excellence (Ball 2003; Batra and Stone 2004). In the first phase, nine universities were selected and allocated funding initially for 3 years: Fudan University, Harbin Institute of Technology, Nanjing University, Peking University, Shanghai Jiao Tong University, Tsinghua University, University of Science and Technology of China, Xi'an Jiao Tong University, and Zhejiang University. Peking University and Tsinghua University are in Beijing, the capital and a municipality of China. Fudan University and Shanghai Jiao Tong University are in Shanghai, a municipality in East China. Nanjing University is in Nanjing of Jiangsu province. The University of Science and Technology of China is in Hefei of Anhui province. The Zhejiang University is in Hangzhou of Zhejiang province. These five universities are in the greater Yangtze River Delta region. The other two universities are in Western China and Northeast China, respectively. The Xi'an Jiao Tong University is in Xi'an of Shaanxi province and the Harbin Institute of Technology is in Harbin, Heilongjiang province.

On October 10, 2009, these nine universities formed the C9 League. The league was self-organized, and it made a much anticipated decision to formalize an elite

[6] Zhao and Zhu (n.d.).

Table 22.4 China's "vice-ministerial" universities and "Project 985" universities. (Source: Zhao and Zhu n. d.)

University	Vice-ministerial rank	Funded by "Project 985"
1. Peking University	Yes	Yes
2. Tsinghua University	Yes	Yes
3. Renmin University of China	Yes	Yes
4. Beijing Institute of Technology	Yes	Yes
5. Beihang University	Yes	Yes
6. Beijing Normal University	Yes	Yes
7. Chinese Agricultural University	Yes	Yes
8. University of Science and Technology of China	Yes	Yes
9. Fudan University	Yes	Yes
10. Shanghai Jiaotong University	Yes	Yes
11. Xi'An Jiaotong University	Yes	Yes
12. Harbin Institute of Technology	Yes	Yes
13. Zhejiang University	Yes	Yes
14. Nankai University	Yes	Yes
15. Tianjin University	Yes	Yes
16. Nanjing University	Yes	Yes
17. Wuhan University	Yes	Yes
18. Sichuan University	Yes	Yes
19. Sun Yat-sen University		Yes
20. Jilin University	Yes	Yes
21. Xiamen University	Yes	Yes
22. Dalian University of Technology	Yes	Yes
23. Shandong University	Yes	Yes
24. Tongji University	Yes	Yes
25. Huazhong University of Science & Technology	Yes	Yes
26. Southeast University	Yes	Yes
27. Central South University	Yes	Yes
28. National University of Defence Technology	Yes	Yes
29. Chongqing University	Yes	Yes
30. Lanzhou University	Yes	Yes
31.Northwest A&F University	Yes	Yes
32. Ocean University of China	No	Yes
33. Hunan University	No	Yes
34. University of Electronic Science & Technology	No	Yes
35. South China University of Technology	No	Yes
36. Northeastern University	No	Yes
37. Northwestern Polytechnic University	No	Yes
38. Minzu University of China	No	Yes
39. East China Normal University	No	Yes

group that is pitched as China's equivalent of the USA's Ivy League. As a matter of fact, the nine universities account for 3% of the country's researchers but receive 10% of national research expenditures. They produce 20% of published journal articles and 30% of total citations. The establishment of the C9 League has been welcomed by the Chinese public. Its central idea of building world-class universities has been well supported by both government and society. However, there is criticism of C9, with concerns, such as the sharing of benefits of the C9 with other universities in China, being raised.[7]

22.5 Promotion of University–Industry–Enterprise Partnership

In order to foster a conducive environment for university and industry or enterprise cooperation, the Chinese Government has offered multidimensional support in the form of funds, sites, experiences, and practices to college students who are willing to set up their own businesses. Considering that work experience is an important component and facilitating factor to build entrepreneurial capacities, the China–UK Graduate Work Experience Programme, a joint initiative launched by MOE, China and Department of Education and Skills (DfES), UK in 2006, is aimed at strengthening university and business links between the two countries. According to the agreement, the program provides 12–50 weeks' work experience with UK employers for up to 200 of the most promising final-year and postgraduate students in China. From 2006 to 2010, seven intakes, totaling over 1000 Chinese students, have been placed with employers in the UK, including Accenture, Standard Chartered Bank, EC Harris, JP Morgan, Tesco, and Somerset County Council.

Financial support is indispensable for start-ups to get their ideas off the ground. Therefore, local governments have set up an entrepreneurship foundation called the Angel Foundation for college graduates. Shanghai Technology Entrepreneurship Foundation for Graduates (STEFG) was the first nonprofit public fund for entrepreneurial activities for graduates in China, which was initiated by the Shanghai Municipal Education Commission (SMEC) and the Science and Technology Commission of Shanghai Municipality (STCSM) and invested by Shanghai Municipal Government in 2006 (STCSM 2005). Between 2006 and 2010, the Shanghai Government invested a total of 500 million CNY in this foundation. The STEFG works mainly through the two sub-schemes. One is the Eyas Scheme to provide seed funding of no more than 100,000 CNY to the projects that could achieve a balance of profit and loss with a small investment. The other is the Eagle Scheme to provide venture funding of no more than 300,000 CNY to a project with hi-tech quality or market prospects. By June of 2012, the STEFG had received 2336 applications and funded 514 projects (SETFG 2012a). Statistics show that the survival rates for funded enterprises within 3 years reach 30% and the revenue of 10% funded

[7] http://en.wikipedia.org/wiki/C9_League.

Table 22.5 The operation of STEGF. (Source: STEFG 2012b)

	Eyas Scheme	Eagle Scheme
Type	The project could achieve balance of profit and loss with a small investment	The project with hi-tech quality or good market prospects
Amount	No more than 100,000 CNY	No more than 300,000 CNY
Target group	Within 2 years of graduation	Within 5 years of graduation
Duration	2 years	3 years
Form	Interest free non-mortgage loan	Corporation share transfer
Withdraw	Half loan is matching the monthly repayment of principal and the other will be repaid at the expiration	Within the duration, the share of fund in the corporation will not receive bonus; enterprisers can repurchase most of share at the previous price after the expiration

enterprises exceeds 10 million CNY (Zhang 2011). Similar cases are the Zhejiang Foundation for Youth Entrepreneurship and Employment (ZFYEE) founded by Zhejiang Provincial Government together with 11 private enterprises in 2007 with a total fund of 110 million CNY the Shandong Entrepreneurship Foundation for Graduates (SEFG) was founded by the Shandong Provincial Government and China Unicom Shandong in 2009 with funding of 35 million CNY. Table 22.5 outlines two different schemes, which are aimed at promoting entrepreneurship among university students.

In China, with this background of innovation and entrepreneurship, the University Science Park has been given a new mission, that is, to promote the development of entrepreneurship education in HEIs and foster high-level innovative and entrepreneurial talents. Since 15 pilot University National Science Parks (UNSP) were approved by MOE and Ministry of Science and Technology (MOST) in December 1999, 86 UNSPs have been established in 24 provinces and 134 HEIs (MOST and MOE 2011). The UNSP created a unique mode of cultivating entrepreneurial talents through its strong atmosphere of entrepreneurship, the close interaction between university and enterprises, and the many opportunities for practice and internship for students. Taking Zhejiang University National Science Park (ZUNSP) as an example, student entrepreneurs not only can be supported by a rental subsidy for 50 m^2 office for 2 years and 20,000–200,000 CNY Entrepreneurship Fund, but also can be provided with various services, including a weekly Entrepreneurship Salon and entrepreneurial training and instructions (ZUNSP 2012). The total number of UNSP will reach 100 in 2015. Based on these UNSPs, the government planned to develop 3000 hi-tech enterprises set up by university students, transfer 10,000 scientific and technological achievements, and cultivate 100,000 innovative and entrepreneurial talents in the coming 5 years. (MOST and MOE 2011). In the following sections more examples of university–industry/entrepreneur partnerships are provided.

22.5.1 Tsinghua University

The Tsinghua University established its University–Industry Cooperation Committee (UICC) in 1995 and the overseas branch of the committee was set up in 1996; its membership has expanded to include more than 190 companies. Its partner enterprises in China include Baosteel Group, China Telecom, Shanghai Automotive, China Metallurgic Group Corp, China Huaneng Group Corporation, Shenhua Group, Ertan Hydropower Development Company Ltd., Huawei, Sichuan Changhong Electric, Dongfang Electric, Guangdong Nuclear Energy Development Group, and Juhua Group. Its overseas partners include Toyota, Hitachi, Toshiba, Sony, P&G, GM, United Technologies Corp., KONE, Siemens, and Veolia. The UICC of Tsinghua provides services such as technological advice, education, and consultation for its partner enterprises; as of 2012, it has 190 members (150 local Chinese members and 40 foreign members). The UICC helps these partner enterprises to build bases at Tsinghua to conduct research and development and personnel training.[8]

In August 2012, Weichai Power signed a partnership agreement with Tsinghua to build a joint research platform—the Tsinghua–Weichai R&D Center of Automotive Engineering. Weichai Power also agreed to set up the *Weichai Power Scholarship Endowment Fund*; United Technologies Corporation and Tsinghua signed the second phase of the cooperative agreement of Tsinghua–United Technologies Corporation Research Institute for Integrated Building of Energy, Safety and Control Systems in December 2012; Siemens AG and Tsinghua signed an agreement to initiate the second phase of the Center of Knowledge Interchange on 25 Oct 2012. Meanwhile, Chinluck and Tsinghua jointly set up the "Tsinghua-Chinluck Frontier Science Research Center" on 28 Aug 2012. Statoil ASA and Tsinghua signed an agreement to support joint research projects on 8 June 2012; Bristol–Myers Squibb (BMS) and Tsinghua signed cooperative agreements on biomedicine on 16 May 2012; Bayer Healthcare and Tsinghua signed a cooperation agreement on 26 May 2012 to extend the research of the "Tsinghua-Bayer Innovative Medicine Joint Research Center," and to carry out joint research in 2013–2015 in the areas of biomedicines; and the "Tsinghua-Massachusetts Institute of Technology Program on Energy and Climate Change Modelling Program," which is sponsored by Rio Tinto, was launched on 20 March 2012.[9]

22.5.2 Zhejiang University of Science & Technology

The Zhejiang University of Science & Technology cooperates with local enterprises. It has set up some specialized centers such as the Renewable Energy R&D

[8] Tsinghua University—Enterprise Cooperation. http://www.tsinghua.edu.cn/publish/then/5991/index.html#.

[9] Tsinghua University—Enterprise cooperation. http://www.tsinghua.edu.cn/publish/then/5991/index.html#.

Center, the Paper Making and Color Printing R&D Center, the Electronic Technology R&D Center, Applied Material Science R&D Center, the Intelligent Appliances R&D Center, and the Institute of Applied Bio-technology Products.[10]

22.5.3 Xidian University

Xidian University has numerous joint laboratories with multinational corporations, such as Microsoft, Intel, IBM, HP, Philips, Infineon Technologies, Agilent, ADI, TI, Altra, Cisco, Ansoft, Microchip, Amaranten, Renesas, Kingdee, AWR, CST, Sunplus, and Xilinx.[11]

22.6 Promotion of Entrepreneurialism in China: Challenges and Issues

In Asia, countries with higher degrees of market openness (marked by exports and foreign direct investment) and technological innovation have a greater demand for skilled labor. While low-income economies and low-technology clusters (such as Vietnam, Cambodia, and Lao PDR) are still specialized in producing low-skill intensive goods, firms in middle-income countries have already become more skills-biased (Almeida 2010; World Bank 2012; See Fig. 22.2). Therefore, education, especially higher education, has never been more crucial. This chapter set out in the wider socioeconomic context discussed above to examine how China has engaged in transforming the country by promoting entrepreneurship and innovation in higher education in order to strengthen its international competitiveness.

It is against this wider policy context that even in face of a budget crisis, there has been a stronger call for increasing government's role in Organisation for Economic Co-operation and Development (OECD) countries in promoting R&D, especially in advancing the demand-side factors "such as smart regulations, standards, pricing, consumer education, taxation and public procurement that can affect innovation" (OECD 2010, p. 2). Apart from the OECD, the World Bank, which is more concerned about developing countries, has also issued a number of publications on the relationship between higher education, innovation, and economic growth in the past decade. The Asian Development Bank also highlighted in its 2008 report entitled *Education and Skills: Strategies for Accelerated Development in Asia and the Pacific* that the advancement of working skills of the populace has become an imperative for developing Asian countries to achieve high rates of economic growth (Asian Development Bank 2008).

[10] Zhejiang University of Science & Technology. http://www.zust.edu.cn/english/Research.htm.

[11] Xidian Unviersity. Joint Laboratories with Multinational Corporations. http://www.xidian.edu.cn/English/cooperation_and_exchange/joint_laborartories/index.htm.

Technology clusters	**Top**				Japan South Korea Taiwan Singapore Hong Kong
	Middle	*Upper*		China	
		Middle		Malaysia Thailand	
		Lower		Philippines Indonesia	
	Low		Vietnam Cambodia Lao PDR	Mongolia	
			Low-income	**Middle-income**	**High-income**
			economies	**economies**	**economies**

Fig. 22.2 Typology of East Asian economies and their technological development levels. (Source: World Bank 2012, p. 8)

Analyzing the recent initiatives employed by China in promoting the entrepreneurial spirit and practice in higher education, we have noted that the increasing workings and interconnections of the global economy and societies pose common problems for higher educational systems around the world. Among these, how to increase the creativity and employability of graduates and social relevance of higher education in an era of massification of higher education undoubtedly is the crucial one. This is the reason why entrepreneurship has become synonymous with and a catchword for students, HEIs, and even national success (OECD 1998a). The realistic challenge along with the existing international ideas and experience facilitates entrepreneurship education to be "borrowed" and introduced in Chinese higher education. The present case studies have vividly reflected what was indicated by Mok and Lee (2003, p. 15) that governments around the globe, particularly in East Asia, have tried to make use of the globalization discourse to address/justify the

local policy/political agendas. However, instead of simply being part of a process of globalization, the formulation of national policies is the result of the complicated and dynamic processes of "glocalization" (Mok 2003, p. 126). The analysis here has clearly suggested that the Chinese government could creatively adopt different strategies and measures when making responses appropriate to the challenge and pressure for the globalizing trend of entrepreneurship in higher education. However, a close scrutiny of what has been implemented/introduced in Chinese higher education in terms of entrepreneurship education has not affected the core academic structure, which is the most essential part when promoting creativity and innovation in learning.

As Mok and Chan (2012) have argued, the Chinese government is at a crossroads in its further development of higher education. On the one hand, the growing prominence of transnational higher education (TNHE) has posed potential problems related to quality assurance and management of the increasing number of these programs. On the other hand, an international review of higher education governance conducted by the OECD has suggested that the Chinese higher education system is overregulated and centralized but not well planned. According to the OECD review, there is a growing role for the nonpublic sector, including the private/*minban* higher education institutions. But the review recommends "inculcating civilizing values among students, which emphasize rational enquiry, tolerance and respect, the pursuit of truth and respect for human rights within a sense of global citizenship" (Gallagher et al. 2009, p. 50). In short, the OECD review identifies one major weakness of the Chinese higher education system, which is the lack of "critical democratic thinking." In view of the national strategy to transform the country from a strong economic power, relying heavily on manufacturing, to a world force with strong brain power, the Chinese Government has no choice but to review the conventional higher education governance system, which has been characterized by the "University President's leadership under the guidance of the CCP."

Nonetheless, without a fundamental change in the relationship between the party and academic administration, academics in mainland China have found it problematic to push further reforms, since academic decisions have long suffered from "interference" by administrative and political actors under the unique co-leadership of universities by the Party and the academic community (Mok 2009). In order to emancipate human minds and inculcate a spirit of innovation and creativity among university academics and students, the Chinese Government has to rethink how the higher education system is to be governed, by exploring the possibility of structural reform that will not only touch upon the administrative structure, but will also touch upon the Party's role in steering academic development. In 2010, during the celebration of the 30th Anniversary of the Shenzhen Economic Zone, one of the zones for testing new ideas of reforms in the mainland (Ming pao Daily 2010, September 7), former President Hu Jintao and Premier Wen Jiabao declared the importance of deepening political reforms in order to drive Chinese economic development to a new level. Central to their messages was the need to create a proper platform to nurture future generations with creative minds and innovative skills. Without structural

reforms in the higher education system, it would be difficult to achieve the goals of enabling the country to scale new heights as a world power with a great civilization, strong human capital, and "soft power."

22.7 Conclusion

This chapter has made an attempt to review major policies and measures adopted by the Chinese Government in particular and universities in general, in the promotion of entrepreneurship and innovation. Recognizing that the country has confronted significant challenges during the transition from a manufacturing-based economy to a knowledge-based economy, the Chinese Government has made serious efforts to promote innovation and entrepreneurialism in higher education through the engagement of faculty members and students to work closely with industries/enterprises. The success in the promotion of innovation and entrepreneurship in higher education is not only related to how curriculum is designed but has also to do with the academic structure and university management. Without serious reviews and critical reflections upon its current university governance structure, characterized by strong political influence from the party in university governance, it would be difficult to see significant changes being introduced in Chinese higher education.

Although China has achieved a global outlook adapted to local conditions, the further development of entrepreneurship education in higher education is still restricted. For instance, the government dominates and actively promotes entrepreneurship education with a clear intention of employment generation, but enterprises have a limited interest in involving HEIs. As a way forward in the future, China could follow the action recommended by WEF (2009) to build an entrepreneurial ecosystem in which multiple stakeholders, including government, HEIs, and enterprises could interact with each other and work together.

As for the government, legislation should be adopted and funding mechanisms should be created to support relations between private enterprises and HEIs in developing action learning programs, leading to new entrepreneurial skills. In the meantime, networks and programs should be developed to bring together different HEIs and the enterprises in a common strategy of sharing information, good practices, and experiences. Different departments of the government could set up a coordinated program to underpin the above legislation and add a financial budget to it. With a long-term view, enterprises should actively get involved in related activities on entrepreneurship within HEIs, in providing back-up infrastructure (e.g., venture capital and incubators) that can improve entrepreneurial skill as well as take an active role in organizing business plan competitions and in providing support for getting the winning ideas off the ground. They should also facilitate successful entrepreneurs and business practitioners to dedicate time and effort to teaching out of a sense of contribution to society and as part of their social responsibility.

HEIs have a critical role as intellectual hubs in the entrepreneurial ecosystem. HEIs should establish a framework to support and help their academic entities to develop and expand their entrepreneurship mission and activities, with a vision beyond utilitarianism, to focus more on student personal development for lifelong learning. It is better for HEIs to identify key skills and integrate entrepreneurship across different subjects and courses, notably within scientific and technical studies, and encourage mobility of teaching staff between HEIs and the business world. At the same time, a background in academia and recent experience in business, such as in consulting for example, or initiating entrepreneurial initiatives will be very helpful for teaching staff.

This chapter has shown how the government has made attempts to identify "good or best practices" overseas to reform higher education delivery. However, the promotion of innovation and entrepreneurialism in higher education will be doomed to fail without a careful contextualization of best practices adopted elsewhere being introduced to mainland China. It is against this particular context that we must be critical about policy learning and policy transfer. Without contextualizing good practices to solve local problems, China is bound to witness policy copying instead of effective policy learning. This chapter has demonstrated the importance of sensitization to the policy context when new and good practices are introduced in Chinese universities. Perhaps, the Chinese Government really needs to consider structural reforms in its higher education sector to unleash the energy and dynamism necessary for the enhancement of innovation and entrepreneurship.

Note: This chapter is based upon the authors' relent article published at *Frontiers of Education in China*, vol. 8, no. 1, for a revised chapter here.

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Chapter 23
Research and Innovation in South Africa

Pundy Pillay

23.1 Introduction

This chapter examines the state of research and innovation in South Africa in the democratic era, that is, since the collapse of the apartheid regime in 1994. It commences with a brief description of the policy environment developed by the government departments responsible for research and innovation namely, the Department of Higher Education and Training (DHET) and the Department of Science and Technology (DST). In the light of other chapters analysing the higher education (HE) situation in South Africa (particularly Menon—Chap. 9; and Cross—Chap. 18), this chapter assumes prior knowledge of the HE system and structures currently prevailing in the country and focuses largely on the activities of the DST.

Section 23.2 provides a brief description of the protagonists of research and innovation in South Africa namely, the private business sector, the HE institutions, government, and to a lesser extent, the non-profit sector. The government sector can be further broken down into government departments including state-owned enterprises (SOEs) and the nine science councils.

Section 23.3 provides an analysis of the country's expenditure on research and development (R&D), its stock of research personnel, and the type of research undertaken. Sections 23.4 and 23.5 describe respectively the role of the private sector, government, and HE institutions in research and innovation. Section 23.6 provides a comparative analysis of the relationship between innovation and technology using United Nations Development Programme (UNDP) data. This analysis provides first a comparison of South Africa with the other BRICS (Brazil, Russia, India, China) countries, and then with a range of middle-income countries. Section 23.7 examines how South Africa performs in terms of the 'Global Innovation Index' with a detailed comparative analysis. Section 23.8 provides a brief conclusion.

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_23

23.2 The Policy and Institutional Framework

At the dawn of democracy in 1994, the new African National Congress (ANC)-led government inherited a reasonably well-developed 'infrastructure' for research and innovation, comprising some high quality universities and government-sponsored science councils. During the apartheid era however, many of these institutions, in particular the science councils, catered to the priorities of the white minority government. For example, some of the science councils focused on research and innovation in sectors such as defence and internal security, and on fostering a sense of independence in such areas as arms manufacturing and oil-from-coal production to stave off the possibility of international sanctions.

At the same time, the economy was characterised by what might be termed 'racial dualism' with a highly developed 'first world' economy controlled by the white minority and an 'underdeveloped' segment in which the black majority was largely marginalised from full participation in the economy and mostly banished to the rural Bantustans. In terms of research and innovation during the apartheid era, the private business sector was also largely dependent on licences and patents developed by multinational and other companies in the industrialised countries.

As in other policy areas, the ANC government was motivated in HE and the research and innovation sector more broadly by the objectives of radical transformation to promote equity, greater efficiency and effectiveness in the utilisation of limited financial and human resources, and by the need to participate competitively in the global economy. In the HE sector, as described in earlier chapters, the White Paper of 1995 (DOE, 1995) set the agenda for transformation. One of the outcomes has been that the racially defined university system was transformed into a system comprising three types of institutions: traditional universities, comprehensive universities[1], and universities of technology.

In the S&T domain specifically, several important policy measures were developed. Amongst these, the DST White Paper of 1996 and its Ten-Year Innovation Plan (TYIP) (DST 2008) stand out as the documents that most clearly defined the objectives of the new government in the area of research and innovation. In addition, there were the National Research and Development Strategy (DACST 2002) and the National Research and Technology Foresight (NRTF) project initiated in the late 1990s.

The DST White Paper (1996) is based on a view of the future where all South Africans will

- 'enjoy an improved and sustainable quality of life;
- participate in a competitive economy by means of satisfying employment; and
- share in a democratic culture'. (DACST 1996).

[1] 'Comprehensive universities' combine activities of both traditional universities and universities of technology.

In order to attain this vision, the following three goals were identified:

- The establishment of an efficient, well-coordinated, and integrated system of technological and social innovation;
- The development of a culture within which the advancement of knowledge is valued as an important component of national development; and
- Improved support for all kinds of innovation which is fundamental to sustainable economic growth, employment creation, equity through redress, and social development (DACST 1996).

The development and application of S&T within a national system of innovation (NSI) in South Africa were seen to be central to the success of the government's economic and social development policies. In keeping with a variety of political, constitutional, social, and economic changes introduced by the government, the NSI was seen as an enabling framework for S&T to support the government's growth and development strategy.

The White Paper also identified a number of trends and developments at the global level that were seen to be influential in affecting planning and resource allocation in the country. These were:

- The knowledge-based transformation of many of the world's societies as a result of the increased flow of information made possible by ever-improving global communications technologies;
- The competitive pressures on the South African economy as it opens up to global market forces;
- Increased coordination of innovation policies and strategies in response to the complex challenges generated by global social and economic changes; and
- A problem-solving, multidisciplinary approach to innovation as a mechanism of growth and development (DACST 1996).

In terms of the White Paper, the basic requirements for a science and technology policy (S&T) comprised five broad interrelated themes that were regarded as fundamental to the expression of a sound S&T policy. These were:

- promoting competitiveness and employment creation;
- enhancing quality of life;
- developing human resources;
- working towards environmental sustainability; and
- promoting an information society (DACST 1996).

The 2002 R&D strategy rested on three pillars: innovation; science, engineering, and technology (SET) human resources and transformation; and creating an effective government S&T system (DACST 2002). The innovation pillar involved the establishment and funding of a range of technology missions that were seen to be critical to promoting economic and social development. These included biotechnology and information technology; technology for manufacturing; technology to leverage knowledge and technology from the natural resources sectors; and technology for poverty reduction.

The creation of a dedicated institution under the auspices of the then Ministry of Arts, Culture, Science, and Technology, the Foundation for Technological Innovation, as a 'knowledge-based financing agency concentrating on innovation within each of the technology' was envisaged (DACST 2002, p. 16). Key areas identified for human resource development (HRD) included astronomy, human palaeontology, and indigenous knowledge with the National Research Foundation seen as the key institution for promoting science and HRD.

The third pillar of the R&D strategy addresses the issue of governance and institutional responsibilities by 'creating a clear distinction between the roles of line departments (such as agriculture and health) that deliver to specific sectors and the DST, which should play an integrative role; (and) ensuring that international best practice with respect to government funding of S&T, namely the well-articulated functions of basic research (knowledge generation), innovation (new businesses, products, and services), and venture capital, is observed' (DACST 2002, p. 17).

The NRTF project was developed in the mid-1990s. Its objectives were as follows:

- Identify those technologies and latent market opportunities that are most likely to generate benefits for the country;
- Develop consensus on future priorities amongst the different stakeholders in selected sectors;
- Coordinate the research effort between different role-players within selected sectors; and
- Reach agreement on the actions needed in different sectors to take advantage of existing and future technologies (Seetal 2008, p. 2)

According to Seetal (2008, p. 2), the objectives of the NRTF were to: contribute to broad policy guidelines in S&T consistent with the national strategic vision; identify possible funding priorities for publicly funded research; build capacity in foresight methodologies; gather intelligence, particularly for industry, on future opportunities; encourage greater R&D investment from industry; improve communication between public and private sectors in S&T; advise on the implications of the findings for skills development; and focus capacity development in the tertiary sector.

The NRTF resulted in the production of scenarios for 12 sectors: agriculture and agro-processing; biodiversity; crime prevention, criminal justice and defence; energy; environment; financial services; health; information and communication technologies; manufacturing and materials; mining and metallurgy; tourism; and youth. Despite the fact that the NRTF provided valuable learning and networking opportunities for the participants and the parties they engaged as well as the scenarios that still influence S&T policy and strategy, there were several shortcomings that undermined the value and sustainability of the process. These included the following (Seetal 2008, p. 5):

- The time horizon for the NRTF was 20 years. However, the lack of follow-up surveys at regular intervals limited the opportunity to determine the actual value and impact of the work conducted between 1997 and 1999. There was inadequate

monitoring and no summative evaluation of the process. Therefore, the impact of the process on decision-making related to R&D investments, the establishment of new structures, technology choices, capacity development, and foresight awareness creation was not formally determined;
- The process has not been repeated since, despite the attention for it not to be a 'once-off event, but the beginning of a continuing process that informs the functioning of the country's NSI';
- An inadequate awareness campaign and information dissemination process diluted any attempt at instilling a nationwide culture of foresight; and
- The NRTF was influential in establishing future-orientated networks. Whilst many of these networks are still active today, the lack of follow-up processes diminished the opportunity of building a substantial grouping of future expertise in the country.

In 2008, a 'Ten-Year Innovation Plan' was developed by the DST. The purpose of the DST's TYIP is to help drive South Africa's transformation towards a knowledge-based economy in which the production and dissemination of knowledge lead to economic benefits and enrich all fields of human endeavour (DST 2008).

The plan builds on previous work undertaken by the DST and proceeds from government's broad socioeconomic mandate—particularly the need to accelerate and sustain economic growth—and is built on the foundation of the NSI. It recognises that while the country's S&T system has taken important strides forward, there is a huge gap between South Africa and the countries identified as knowledge-driven economies. To close this gap, it was felt that the NSI must become more focused on long-range objectives, including confronting South Africa's failure to commercialise the results of scientific research and the inadequate production of knowledge workers capable of building a globally competitive economy.

It was acknowledged in the TYIP that South Africa's prospects for improved competitiveness and economic growth rely, to a great degree, on S&T. Moreover, the government's broad developmental mandate could only be achieved if South Africa took further steps on the road to becoming a knowledge-based economy. Transformation in this direction would necessarily shift the proportion of national income derived from knowledge-based industries, the percentage of the workforce employed in knowledge-based jobs, and the ratio of firms using technology to innovate. Progress towards a knowledge-based economy was to be driven by four elements:

- human capital development;
- knowledge generation and exploitation (R&D);
- knowledge infrastructure; and
- enablers to address the 'innovation chasm' between research results and socio-economic outcomes (DST 2008, p. viii)

The challenge areas identified in the plan were the following:

- The 'farmer to pharma' value chain to strengthen the bioeconomy—over the next decade, South Africa needed to become a world leader in biotechnology

and pharmaceuticals, based on the nation's indigenous resources and expanding knowledge base.
- **Space science and technology**—South Africa should become a key contributor to global space S&T with a National Space Agency, a growing satellite industry, and a range of innovations in space sciences, earth observation, communications, navigation, and engineering.
- **Energy security**—the development of safe, clean, affordable, and reliable energy supply to ensure that South Africa meets its energy supply requirements while innovating for the long term in clean coal technologies, nuclear energy, renewable energy, and the promise of the 'hydrogen economy'.
- Global change science with a focus on **climate change**.
- **Human and social dynamics**—as a leading voice amongst developing countries, South Africa should contribute to a greater global understanding of shifting social dynamics and the role of science in stimulating growth and development (DST 2008, p. viii).

In essence, the TYIP suggested that government must address the 'innovation chasm', in other words, improving access to finance, creating an innovation-friendly regulatory environment, and strengthening the NSI. The TYIP also recognises that a significant strengthening of the production of 'human capital' and the institutional environment for knowledge generation is necessary.

The main actors in the research and innovation environment are the following: the private sector comprising business enterprises on the one hand, and the not-for-profit (NPO sector) on the other; the government sector including line departments, SOEs, and the nine science councils, which fall under the auspices of the DST; and the HE institutions, comprising the 23 universities.

23.3 R&D Expenditure and Personnel and Type of Research Undertaken[2]

This section analyses expenditure on R&D, the stock of research personnel and the type of research undertaken, and the expenditure associated with each form of research.

23.3.1 R&D Expenditure

The 2009/2010 R&D survey by the Human Sciences Research Council (HSRC) and the DST recorded that South Africa's gross domestic expenditure on research and

[2] The data in this section is taken from a survey conducted by the Human Sciences Research Council for the Department of Science and Technology: National Survey of Research and Experimental Development (2009/2010) Fiscal Year.

development (GERD) amounted to R20.9 billion[3], a nominal decrease of R 86 million from the R 21.0 billion recorded for 2008/2009. With the GERD as a percentage of gross domestic product (GDP) at 0.87%, the findings indicated a third consecutive decline in the ratio, from 0.93% in 2007/2008 to 0.92% in 2008/2009. Between 1997 and 2006, GERD increased from 0.6 to 0.95, thereafter decreasing to the 2009 value of 0.87%. This is also the first time over the past decade that the survey recorded a nominal decline in overall R&D expenditure. A decline of 9.7% in business sector R&D expenditure, a significant contributor to R&D investment, was the primary driver of this trend.

In terms of the sector contribution to GERD, in 2009/2010, the business sector contributed 53% to total GERD; HE 24%; science councils 17%; government 5%; and the NPO sector 1%. Notwithstanding an overall increase of just over R 1.1 billion in expenditure within the public sector (i.e. government, HE, and science councils), this was not adequate to offset the decline of R 1.4 billion in the business sector R&D and the NPO sector expenditures. Government was the largest funder of R&D in 2009/2010, contributing about 44% of total funding. The public sector received 84% of total government funding while the business sector received about 15%, leaving the rest to the NPO sector. The business sector was the second largest funder of R&D, financing just under 43% in 2009/2010. Other sources of funding included the HE and NPO sectors and foreign funding sources (about 12% in 2009/2010, mainly for the NPO sector and, to a lesser extent, the science councils and the HE sector).

According to the HSRC/DST survey, these findings also reflect the global trends of slowing growth in R&D investment in many parts of the world in the years 2009–2010 as a result of the global financial crisis. Further analysis indicates that South Africa when compared with countries such as China, India, and Brazil, and other newly industrialised countries in the Asian continent, did not capture a large enough share of the shifting global R&D investments favouring developing countries—a prominent trend over the past decade.

The current focus of public policy is to scale up investment in boosting the human resource base for science, engineering, and technology, enhancing and improving publicly funded scientific facilities and creating necessary conditions and incentives for encouraging growth and development. Private sector and international R&D investment are clearly needed to support efforts to increase overall levels of R&D investment in South Africa. A cause for alarm is the fact that the private business sector is spending less on local R&D. On the basis of one interview, Wild (2013) concludes that the reason for this is that local technology is often more expensive than imported technology. The reality however, is that there is considerable evidence that South Africa business often prefers the ‘apartheid model’ of reliance on Western Europe and the USA, even to the extent of migrating to these countries usually under the pretext of ‘globalisation’—a trend remarkably absent in other comparable middle-income countries. Private sector investment in R&D has been falling in spite of the fact that the DST has introduced tax incentives to encourage

[3] R = South African rand; the exchange rate to the US$ is approximately R10 = 1$.

Table 23.1 Researchers by race and gender, percentage distribution (2010). Source: HSRC/DST (2010)

Race and Gender	Researchers with doctoral degree	All researchers
African		
Male	12.7	14.8
Female	5.4	9.9
Coloured		
Male	2.8	2.9
Female	1.8	2.4
Indian		
Male	4.6	4.6
Female	2.6	3.8
White		
Male	46.1	37.9
Female	23.9	23.7
Subtotal		
Male	66.2	60.2
Female	33.8	39.8
Total	*100.0*	*100.0*

local companies to undertake R&D, but the take-up has been slow. In 2012, the scope of R&D tax incentives was widened to include the energy and natural resources sectors (Wild 2013).

23.3.2 R&D Personnel

In 2009/2010, full-time equivalent (FTE) R&D personnel in South Africa amounted to 30,891. Total researchers amounted to 19,793 FTEs. Of the total R&D personnel (headcount), 40,797 were researchers, 41% of whom were female. During 2009/2010, South Africa employed a total of 1.5 FTE researchers per 1000 employed. Most R&D personnel were employed in HE institutions, totalling 33,292 in headcounts or 54% of total R&D personnel in 2009/2010. Businesses enterprises employed the second most R&D personnel, with 18,216 headcounts or 31% of the total. However, business enterprises still had more FTE R&D personnel than HE institutions during 2009/2010 (12,025 versus 11,870). Science councils employed the third most R&D personnel (5926 headcounts and 1904 FTEs) and NPO (380 headcounts and 310 FTEs). Table 23.1 shows that the number of female researchers is disproportionately small and African researchers comprise less than a quarter of the total, even though Africans make up 80% of the country's population.

According to Badsha and Cloete (2011), from 1992 to 2006, the total number of FTE researchers increased by only 33%. South Africa's stock of approximately 1.5

Table 23.2 R&D expenditure by research field (2009/2010) (%)

Sector	Natural Sciences, Technology, and Engineering	Social Sciences and Humanities
Business enterprises	96.4	3.6
Not-for-profit	27.6	72.4
Government	75.7	24.3
Science councils	90.9	9.1
HE institutions	66.0	34.0

FTE researchers per 1000 employed is relatively fewer than countries that have a similar ratio of R&D spending to GDP, e.g. Portugal (4.8) and Italy (3.6).

23.3.3 R&D Expenditure by Type of Research

A total of 27% of R&D expenditure was on 'basic research'; 31% on 'applied research', and 42% on 'experimental development' in 2010. In addition to this, 53% of R&D expenditure was undertaken by business enterprises; 1% by the NPO sector; 5% by government; 17% by science councils; and 24% by HE institutions.

As is evident from Table 23.2, the overwhelming majority of R&D expenditure by business, government, the science councils, and HE institutions is in natural sciences, technology, and engineering. Business enterprises tend to focus on information, computer and communication technologies (26%); engineering sciences (30%); medical and health sciences (11%); and applied sciences and technologies (11%). The NPO sector, on the other hand, concentrates on the social sciences (71%) and agricultural sciences (11%). Government's three priority areas in terms of expenditure were: agricultural sciences (26%); medical and health sciences (27%); and social sciences (23%). The science councils' major spending areas were: engineering sciences (27%); agricultural sciences (19%); medical and health sciences (13%); and social sciences (5%). Finally, the HE sector's R&D expenditure pattern was as follows: medical and health sciences (23%); social sciences (25%); humanities (9%); physical sciences (7%); biological sciences (7%); applied sciences and technologies (6%); and engineering sciences (6%). In total, the four largest areas of expenditure were: engineering sciences (22%), followed by medical and health sciences (17%), ICT (16%), and social sciences (11%).

In terms of the R&D expenditure by socioeconomic objectives, the breakdown was as follows: 'Economic development' was seen as the main priority (59% of total expenditure), with the main agencies being the private business sector, government, science councils, and HE. The second priority was 'social development' (16%—main actors being the private sector, HE, and government) followed by 'advancement of knowledge' (15%, HE, science councils, and private sector). About 6% of R&D expenditure was on the defence sector (private business sector and science councils) and 5% of funds were spent on 'environment' research (science councils and HE).

23.4 Research and Innovation in the Private Sector

This section distinguishes between private business enterprises and the NPO sector.

23.4.1 Private Business Enterprises

Business enterprises are currently the second largest contributor to GERD. The majority of business R&D expenditure in South Africa is performed by large enterprises, with the top 100 R&D business performers accounting for almost 80 % of business expenditure on R&D (BERD). The percentage of BERD financed by government decreased from 21 % in 2008/2009 to 13 % in 2009/2010 while the percentage of BERD financed by industry itself increased from 68 % in 2008/2009 to 73 % in 2009/2010. The other significant source of BERD financing was foreign sources at around 14 % in 2009/2010. 'Experimental development' accounted for the majority of R&D expenditure in the business sector (59 % in 2010), while applied research took up about 30 % and basic research 11 % of BERD in 2009/2010.

23.4.2 Not-for-profit (NPO) Sector

In this sector, in 2009/2010, 17 % of research expenditure came from local industry and 20 % from government. With regard to R&D expenditure by type of research in 2009/2010, basic research accounted for 59 % of expenditure, followed by applied research at 28 % and experimental development at 13 %. The main sources of funds for this sector were foreign (45 %), government (20 %), and business (17 %), respectively.

23.4.3 Research and Innovation in the Government Sector

In the South African context, it is useful to distinguish between 'government departments and institutions' and the 'science councils'.

23.4.3.1 Government Departments and Institutions

The government sector comprises national departments, provincial departments, local government departments, government research institutions, and museums. SOEs are included as part of the business sector. The government's contribution to GERD in 2009/2010 was just over 5 %. Applied research accounted for the greatest portion of R&D expenditure (58 %), followed by basic research (24 %) and experimental development (18 %).

23.4.3.2 Science Councils

The science councils were established by Acts of Parliament and are mandated to perform research with outcomes that are critical to the direction of policy development and revision as well as for achieving the country's development goals (DST 2012). There are nine science councils and they are the third largest source of R&D in the country. The science councils are the following: the Agricultural Research Council (ARC); Council for Geoscience (CGS); Council for Scientific and Industrial Research (CSIR); Human Sciences Research Council (HSRC); Medical Research Council (MRC); Council for Mineral Technology (Mintek); Africa Institute of South Africa (AISA); South African Bureau of Standards (SABS); and the National Research Foundation (NRF).

The NRF in turn has seven 'performing facilities', namely: South African Astronomical Observatory (SAAO); South African Institute for Aquatic Biodiversity (SAIAB); iThemba Laboratory for Accelerator Based Sciences (iThemba LABS); National Zoological Gardens (NZG); Hartebeesthoek Radio Astronomy Observatory (HartRAO); South African Environmental Observation Network (SAEON); and Hermanus Magnetic Observatory (HMO).

In-house R&D expenditure by the science councils accounted for 17% of GERD in 2009/2010. The highest proportion of R&D expenditure in the science councils was on applied research (45%), with experimental development taking 33% and basic research 23%. The majority of funding for the science councils came from government (71% in 2009/2010) in the form of both grants and contracts, followed by own source funding at 13%, foreign sources at 12%, and business at 4%.

The objectives of the science councils are numerous. For example, the functions of the AISA are to:

a. promote knowledge and understanding of African affairs through leading social scientists acting in concert across all disciplines and through training and education on African affairs;
b. collect, process, and disseminate information on African affairs and give effective advice and facilitate appropriate action in relation to the collective needs, opportunities, and challenges of all South Africans; and
c. promote awareness and consciousness of Africa at grassroots level (DST 2012).

The objectives of the CSIR are to foster industrial and scientific development either by itself or in cooperation with the private or public sectors and, thereby contribute to the improvement of the quality of life of the citizenry (DST 2012).

The HSRC undertakes social science research. The NRF promotes and supports research through funding, HRD, and the provision of the necessary facilities in order to facilitate the creation of knowledge, innovation, and development in all fields of S&T, including indigenous knowledge and, thereby contributes to the improvement of the quality of life of all citizens. The NRF provides substantial funding to promote research in the universities, through for example, the funding of research chairs.

The objectives of the South African National Space Agency are to: (a) promote the peaceful use of space; (b) support the creation of an environment conducive to industrial development in space technology; (c) foster research in space science, communications, navigation, and space physics; (d) advance scientific, engineering, and technological competencies and capabilities through human capital development outreach programmes and infrastructure development; and (e) foster international cooperation in space-related activities (DST 2012).

There is also a National Advisory Council on Innovation (NACI) that advises the Minister of S&T on the role and contribution of science, mathematics, innovation, and technology, including indigenous technologies in promoting and achieving national objectives, namely to improve and sustain the quality of life for all South Africans, develop human resources for S&T, build the economy, and strengthen the country's competitiveness in the international sphere.

23.5 Research and Innovation in the Universities

According to Badsha and Cloete (2011, p. 4), the South African HE system could be characterised as being "medium knowledge producing and differentiated, with low participation and high attrition rates, with insufficient capacity for adequate skills production and having a small 'number of institutions which are in chronic crisis mode'". The HE sector is the second largest performer of R&D in the country and contributes to the largest component of human resources devoted to research activities. As stated earlier, the public HE landscape in South Africa experienced significant changes between 2003 and 2005 with the merging and restructuring of institutions and the introduction of traditional universities, comprehensive universities, and universities of technology. Amongst the HE institutions, the University of Cape Town (UCT) reported the highest R&D expenditure of R 944 million in 2009/2010, followed by the University of KwaZulu-Natal (UKZN-R 656 million) and the University of the Witwatersrand (Wits–R 631 million). UCT also reported the highest number of researchers by headcount (2321), followed by Wits (2102) and the University of Pretoria (2004).

The HE sector, including doctoral and postdoctoral students, accounted for 53% of total R&D human resources in 2008/2009 and 54% in 2009/2010. Of the 40,797 researchers in SA in 2009/2010, 70% were in the HE sector. In terms of type of research, basic research accounted for the largest proportion (48%), followed by applied research (34%) and experimental development (18%). University funds provided 50% of HERD in 2009/2010 while external sources (including government, science councils, and business) provided 39%. As Table 23.3 shows, total article output remained very stable from the inception of the HE funding framework in 1987 until the revision of the original policy in 2003. With the promulgation of the new policy framework in 2003 (which came into effect in 2005), there occurred the first significant increase in 15 years—a trend that continued until 2006 (when the system reached its peak of 7400 article units) (CREST 2011).

Table 23.3 Research output of South Africa's universities (1987–2007). (Source: CREST 2008)

Year	Publication units	Year	Publication units
1987	4977	1998	5162
1988	5060	1999	5130
1989	4943	2000	5546
1990	5226	2001	5504
1991	5187	2002	5832
1993	5336	2004	6156
1994	5636	2005	6662
1995	5500	2006	7403
1996	5662	2007	7136
1997	5614		

Table 23.4 Article equivalents by university (2007). (Source: CREST 2008)

University	Total article equivalents recorded	Percentage
Cape Town	17,204	16.8
Wits	16,352	16.0
KwaZulu-Natal	12,804	12.5
Stellenbosch	13,740	13.4
Pretoria	14,967	14.6
Free State	6304	6.2
Rhodes	3103	3.0
Western Cape	1588	1.6
North West	5542	5.4
South Africa	6878	6.7
Nelson Mandela Metropolitan	2527	2.5
Durban University of Technology	347	0.3
Tshwane University of Technology	486	0.5
Fort Hare	639	0.6
Total	102,445	

Table 23.4 shows 'article equivalents' by university. It is evident that research output is dominated by a group of five universities, which together account for 73 % of all articles.

The Centre for Research on Evaluation, Science and Technology (CREST) (2011) also points out that a distinction should be made between those South African journals that are indexed in the Web of Science (approximately 65, mostly in the natural and health sciences) and those that are not. In the group of the most productive universities, large differences are evident between the three (historically) English-medium and the two (historically) Afrikaans-medium universities. The relatively high proportion of outputs from Cape Town, Wits, and KwaZulu-Natal

universities in foreign ISI-journals (all above 50 %) contrasts with the relatively small output in local non-ISI journals; conversely, Pretoria and Stellenbosch academics still publish extensively in local South African journals. In the outputs of medium-sized institutions, some of these differences are even more apparent. With the exception of Rhodes University (RU), the other universities in this category are either historically Afrikaans or dual-medium universities. These patterns have to be understood in conjunction with the dominance of the social sciences and humanities at the traditionally Afrikaans-medium universities. The profile for RU could be explained partly by the fact that it does not have a medical school (publication in the health sciences is more prevalent in foreign journals). It is also clear from the institutional profile that the social sciences and humanities are quite strong at RU (constituting nearly 42 % of total output). In terms of accredited research output within South Africa, the natural sciences are the most productive (36 %), followed by the humanities (21 %) and medical and health sciences (20 %).

However, scientific output production is not evenly distributed in South Africa. A recent analysis showed that the system is clearly differentiated into three groups with respect to knowledge production. Knowledge production in this case is measured by a combination of input and output variables, consisting of indicators such as masters and doctoral enrolments and graduates, proportion of staff with doctorates, proportion of PhD graduates to permanent staff, and ISI accredited publication output (Badsha and Cloete 2011). The universities of Cape Town, Rhodes, Stellenbosch, and Witwatersrand are in the high knowledge producing category; all the other universities (with the exception of Walter Sisulu and Limpopo) are in the medium category, and all the universities of technology are in the low knowledge producing group. However, according to Badsha and Cloete, the medium knowledge producing group is not homogenous; it comprises dynamic institutions such as Western Cape, North West, Johannesburg, and Fort Hare, increasing their proportion of the overall output during the last 5 years, while institutions such as Pretoria and Nelson Mandela Metropolitan have declined (Badsha and Cloete 2011).

The Centre for Higher Education Transformation (CHET) has also categorised the universities into three clusters based on their research and analysis. Table 23.5 shows the classification of the South African universities on the basis of knowledge production input and output indicators, including masters and doctoral enrolments, the ratio of PhD enrolment to staff, PhD graduation rates, the ratio of PhD graduation to staff, and publication output.

Not only is there a clear difference in the ratio of publication output per full time staff member between the three groups, they also differ significantly in terms of success in producing doctorates. In a longitudinal study (2000–2009) tracking doctoral students, the institutions in the high producing category managed to get 64 % of their doctoral enrolments to graduate, as opposed to 43 % for the medium group and 30 % for the low producing group (Badsha and Cloete 2011). Badsha and Cloete (2011) also show that there has been a steady increase between 1998 and 2009 in research publication output and in international citation impact. However, the proportion of masters graduates remained constant at 19 % and the proportion of doctoral graduates decreased from 15 to 13 %. Doctoral graduates increased from 961 in 2000 to 1420 in 2010—an average annual increase of 4 %.

Table 23.5 South African universities by knowledge production

Cluster 1: high	Cluster 2: moderate	Cluster 3: low
Cape Town	Fort Hare	Cape Peninsula UoT
Rhodes	Free State	Central university UoT
Stellenbosch	Johannesburg	Durban UoT
Witwatersrand	KwaZulu-Natal	University of Limpopo
	Nelson Mandela Metropolitan	Mangosuthu UoT
	North West	Tshwane UoT
	Pretoria	Venda UoT
	South Africa	Vaal UoT
	Western Cape	Walter Sisulu University
	Zululand	

UoT University of technology

Badsha and Cloete quote the example of the University of São Paulo to show that in international comparative terms, South Africa may be seriously lagging similar middle-income countries. For example, the University of Sao Paulo in Brazil (almost 90,000 students) in 2010 produced 8200 ISI publications, while the entire South African system (almost 900,000 students) produced just over 9000. Moreover, São Paulo produced 2400 doctorates compared to South Africa's 1420. Another big difference between São Paulo and, for example, South Africa's top-ranked university, Cape Town, is that at the former 98 % of academics have doctorates, while at UCT, the corresponding figure is 57 %, which is the highest in South Africa. Overall in South Africa, only 35 % of academics have a PhD (Badsha and Cloete 2011).

23.6 Innovation and Technology: A comparative Analysis

South Africa is, without doubt, the leader on the African continent in terms of scientific output. This is due both to the quality (in terms of research) of a significant number of its universities as well as to the relative sophistication of its economy, where the potential for innovation is much greater than elsewhere on the continent. According to CREST (2008, p. 14), South Africa dominates scientific knowledge production on the continent with about 37 % of the total output of 236,567 papers between 1990 and 2007. Together with Egypt and Nigeria, South Africa produces three quarters of total scientific output on the continent.

This section attempts an analysis to determine how South Africa fares in terms of 'innovation and technology' in an international context. Two sets of country comparisons are made against three indicators defined by the United Nations Development Programme (UNDP), namely R&D; innovation; and technology adoption. South Africa is compared first with the rest of the BRICS countries and then with a selected sample of middle-income countries.

Table 23.6 Research and development—South Africa versus BRICS. (Source: UNDP 2013; DHET 2012)

Country	Expenditure (% of GDP), 2005–2010	Researchers (per million people)	Graduates in science and engineering (% of total)
South Africa	0.9	396	27.5
Brazil	1.1	696	12.2
China	1.5	1199	
India	0.8	136	
Russia	1.3	3091	28.1

23.6.1 Research and Development

23.6.1.1 South Africa versus Rest of BRICS

Table 23.6 provides a comparison of South Africa and the other BRIC countries on three indicators relating to research and development, namely, expenditure on R&D; researchers per million people; and graduates in science and engineering. In terms of R&D expenditure, South Africa is almost on par with India but lags Brazil, China, and Russia. Its number of researchers is also very low in comparison with Russia, China, and Brazil. On the proportion of S&T graduates, South Africa's score is relatively high, almost on par with Russia, and much higher than Brazil's.

23.6.1.2 Selected Sample of Countries

Table 23.7 compares South Africa against a sample of middle-income countries. In this sample of ten comparator countries, it outperforms all but one of them on R&D expenditure; has a higher number of researchers than five countries (out of eight for which data are available); and is exceeded in the number of science graduates by only one country, Malaysia (out of seven for which data are available).

23.6.2 Innovation

23.6.2.1 South Africa versus Rest of BRICS

Table 23.8 compares South Africa against the other BRIC countries on three 'innovation' indicators, namely, patents granted to residents and non-residents; royalty and licence fee receipts; and the electrification rate. On patents, South Africa fares better than all the BRICS member countries, except Russia, which is quite far ahead on this indicator. On royalty receipts per capita, it fares better than China and India, but poorly with respect to Russia and Brazil. On the electrification rate, it is rated the worst (with India) out of the four countries, for which data are available.

Table 23.7 Research and development—South Africa versus sample of middle-income countries. (Source: UNDP 2013; DHET 2012)

Country	Expenditure (% of GDP), 2005–2010	Researchers (per million people)	Graduates in science and engineering (% of total)
South Africa	*0.9*	396	27.5
Argentina	0.5	1046	14.3
Chile	0.4	355	20.4
Uruguay	0.7	346	13.6
Mexico	0.4	347	25.6
Malaysia	0.6	365	37.7
Mauritius	0.4	–	–
Egypt	0.2	420	–
Tunisia	1.1	1862	–
Thailand	0.2	316	–
Botswana	0.5	–	13.0

Table 23.8 Innovation—South Africa versus BRICS. (Source: UNDP 2013; DHET 2012)

Country	Patents granted to residents and non-residents, per million people, 2005–2010	Royalty and licence fee receipts, $ per capita, 2005–2011	Electrification rate (% of the population), 2009
South Africa	106	1.3	75.0
Brazil	17	3.0	98.3
China	101	0.6	99.4
India	5	0.1	75.0
Russia	212	6.1	–

23.6.2.2 Selected Sample of Countries

On the innovation indicators, South Africa ranks highest on the number of patents granted, but it fares poorly on royalty and licence fee receipts per capita, as well as on electrification (Table 23.9).

23.6.3 Technology Adoption

23.6.3.1 South Africa versus BRICS

Table 23.10 compares South Africa against the other BRIC countries on four 'technology adoption' indicators, namely, number of personal computers in the population; Internet users; fixed broadband Internet subscriptions; and fixed and mobile telephone subscribers. With the exception of Russia, South Africa has the highest

Table 23.9 Innovation—South Africa versus sample of middle-income countries. (Source: UNDP 2013; DHET 2012)

Country	Patents granted to residents and non-residents, per million people, 2005–2010	Royalty and licence fee receipts, $ per capita, 2005–2011	Electrification rate (% of the population), 2009
South Africa	106	1.3	75.0
Argentina	31	4.7	97.2
Chile	60	3.7	98.5
Uruguay	9	0.1	98.3
Mexico	83		
Malaysia	77	9.5	99.4
Mauritius	6	1.7	99.4
Egypt	4	1.6	99.6
Tunisia		2.4	99.5
Thailand	11	2.2	99.3
Botswana		0.1	45.4

Table 23.10 : Technology adoption—South Africa versus BRICS. (Source: UNDP 2013; DHET 2012)

Country	Personal computers (per 100 people), 2002–2009	Internet users (per 100 people), 2010	Fixed broadband Internet subscriptions (per 100 people), 2010	Fixed and mobile telephone subscribers, (per 100 people), 2010
South Africa	8.4	12.3	1.5	109.2
Brazil	6.8	26.5	4.3	127.5
China	5.7	34.4	9.4	86.2
India	3.2	7.5	0.9	64.3
Russia	13.3	43.4	11.0	199.4

number of personal computers per 100 people, the second lowest number of Internet users and fixed broadband Internet subscriptions (after India), but the second highest number of fixed and mobile telephone subscribers per 100 people after Russia.

23.6.3.2 Selected Sample of Countries

In comparison with the sample of middle-income countries, South Africa fares poorly on all four indicators: 7/11 on personal computers; 9/11 on Internet users; 10/11 on fixed broadband Internet subscriptions; and 9/11 on fixed and mobile telephone subscribers. In the comparative analysis shown here, in terms of 'research and development', South Africa spends a relatively high sum on R&D, but it produces a relatively low number of researchers—a reflection probably of the inequalities

Table 23.11 Innovation—South Africa versus sample of middle-income countries. (Source: UNDP 2013; DHET 2012)

Country	Personal computers (per 100 people), 2002–2009	Internet users (per 100 people), 2010	Fixed broadband Internet subscriptions (per 100 people), 2010	Fixed and mobile telephone subscribers, (per 100 people), 2010
South Africa	8.4	12.3	1.5	109.2
Argentina	9.0	36.0	9.6	166.5
Chile	14.1	45.0	10.5	136.2
Uruguay	13.6	47.9	10.9	160.8
Mexico	13.9	31.1	10.0	98.1
Malaysia	22.7	56.3	7.3	135.3
Mauritius	17.6	28.7	6.1	123.2
Egypt	4.1	26.7	1.8	99.0
Tunisia	9.7	36.6	4.6	117.6
Thailand	6.6	21.2	4.6	113.6
Botswana	6.1	6.0	0.6	124.6

(particularly of quality) prevailing in the education system at both the schooling and university levels (Table 23.11).

Second, on 'innovation', South Africa performs well on the indicators relating to patents. However, it performs very poorly in terms of 'technology adoption' on indicators such as internet access and fixed and mobile telephones (as well as on the innovation indicator—'electrification rate'). These last findings reflect the high levels of poverty and inequality characterising a country that is nevertheless able to make relatively high levels of investment in R&D.

23.7 The Global Innovation Index: A comparative Analysis

In 2013, the Global Innovation Index (GII) ranked 142 countries, with Switzerland ranked at the highest and Yemen the lowest at number 142. China was the highest ranked BRICS member at number 35, followed by South Africa at 58, Russia at 62, Brazil at 64, and India at 66. Thus, all the BRICS countries are ranked in the top half in the world in terms of the GII rankings. In terms of the GII, South Africa was ranked as the 16th highest 'upper middle income' country after Malaysia, Latvia, China, Costa Rica, Lithuania, Bulgaria, Montenegro, Chile, Romania, Macedonia, Uruguay, Mauritius, Serbia, Argentina, and Thailand. It was the second highest ranked country in Sub-Saharan Africa after Mauritius. The GII 'subscribes to a broad view of innovation that includes traditional scientific output indicators and also a wide range of new indicators for creative outputs' (Dutta and Lanvin 2013).

The GII relies on two subindices—the innovation input subindex and the innovation output subindex—each built around pillars. Four overall measures are calculated:

1. **The innovation input subindex**: five input pillars capture elements of the national economy that enable innovative activities: (1) institutions; (2) human capital and research; (3) infrastructure; (4) market sophistication; and (5) business sophistication.
2. **The innovation output subindex**: innovation outputs are the results of innovative activities within the economy. There are two output pillars: (1) knowledge and technology output and (2) creative outputs.
3. The overall GII score is the simple average of the input and output subindices.
4. The innovation efficiency ratio is the ratio of the output subindex over the input subindex. It shows how much innovation output a given country is getting for its inputs.

In terms of the 'innovation input' rankings, South Africa ranks at number 51, the ninth highest amongst upper middle-income countries (China ranks at 46; India at 87; Brazil at 67; and Russia at 52). In terms of the 'innovation output' rankings, South Africa ranks at number 71, only the 25th highest amongst upper middle-income countries (China ranks at 25; India at 42; Brazil at 68; and Russia at 72). South Africa's relatively low ranking in terms of 'innovation output' suggests that it is unable to use its relatively highly rated 'innovation input' pillars to create knowledge and technology output, unlike China and India, for example, which are currently rated highly in this regard in the GII. China and India are listed among a group of what are called by the authors, 'innovation learners' (after the 'innovation leaders'), a group of 18 high-, middle-, and low-income countries that also includes Moldova, Uganda, Armenia, Viet Nam, Malaysia, Jordan, Mongolia, Mali, Kenya, Senegal, Hungary, Georgia, Montenegro, Costa Rica, Tajikistan, and Latvia. According to the authors of the GII report, these countries demonstrate rising levels of innovation results because of improvements made to institutional frameworks, a skilled labour force with expanded tertiary education, better innovation infrastructures, a deeper integration with global investment and trade markets, and a sophisticated business community.

In Sub-Saharan Africa, of a total of 32 countries, Mauritius (GII 53rd) and South Africa (GII 58th) make it to the upper half of the GII rankings. South Africa comes 4th in the region in terms of GDP per capita. It also places above its income group's average in the three indices: GII (58th); input (51st); and output (71st). Its relatively strong pillars are institutions (44th) and market sophistication (ranked 16th globally with a score above the average performance of high-income economies). However, its performance in the following three pillars is below par: business sophistication (71st); knowledge and technology outputs (79th); and infrastructure (83rd). The ranking in human capital and research (102nd) was not considered reliable, as six data points were missing in the first two sub-pillars. Table 23.12 confirms the GII rankings of South Africa vis-à-vis its BRICS counterparts.

Table 23.12 Comparing the GII across the BRICS

Indicator	Brazil	China	India	Russia	South Africa
GII	64	35	66	62	58
Innovation output	68	25	42	72	71
Innovation input	67	46	87	52	51
Innovation efficiency Ratio	69	14	11	104	99
Pillar 1: Institutions	95	113	102	87	44
Pillar 2: Human capital & research	75	36	105	33	102
Pillar 3: Infrastructure	51	44	89	49	83
Pillar 4: Market sophistication	76	35	49	74	16
Pillar 5: Business sophistication	42	33	94	52	71
Pillar 6: Knowledge & technology outputs	67	2	37	48	79
Pillar 7: Creative outputs	72	96	65	101	68

Box 23.1 The Global Innovation Index and its Seven Pillars

The GII was launched by INSEAD in 2007 with the simple goal of determining how to find metrics and approaches to better capture the richness of innovation in society and go beyond traditional measures of innovation such as the number of research articles and the level of research and development expenditures.

The Innovation Input Sub-Index includes five pillars:

Pillar 1: Institutions: including legal and regulatory framework for business and economic growth; good governance.

Pillar 2: Human capital and research: quantity and quality of schooling; enrolments in HE, especially S&T; and level and quality of R&D activities.

Pillar 3: Infrastructure—ICT; general infrastructure; and ecological sustainability

Pillar 4: Market sophistication—availability of credit, investment funds, access to international markets (trade and competition)

Pillar 5: Business sophistication—how conducive are firms to innovation activity

Innovation Output Sub-Index

Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index. There are two output pillars: Knowledge and technology outputs and Creative outputs.

Pillar 6: Knowledge and technology outputs—three sub-pillars: creation of knowledge; knowledge impact; knowledge diffusion.

Pillar 7: Creative outputs—three sub-pillars: intangible assets (e.g. trademark registrations); proxies for creativity—e.g. national feature films; daily newspaper circulation; online creativity.

23.8 Conclusion

A relevant question to ask is this: to what extent have the objectives of the South African government as reflected for instance in the 1996 White Paper on Science and Technology and the 2008 Innovation Plan been achieved, or at the very least, what progress been made towards achieving these objectives? These objectives included, inter alia, improving the quality of life of all citizens, increasing economic competitiveness and enhancing growth, developing human resources, and promoting the knowledge economy.

The evidence provided here has suggested that the country has performed well with respect to some dimensions of research and innovation particularly in terms of R&D expenditure, the production of patents relative to this expenditure, and achieving high rankings in terms of other R&D and innovation indicators as described in Sect. 23.6 of this chapter. Moreover, South Africa does comparatively well on all of these indicators in the African context including a relatively high ranking in the GII in this regard.

Nevertheless, the main conclusion of this chapter is that South Africa is underperforming in terms of its research and innovation potential, given its level of investment and its status as an 'upper middle income country'. In addition, S&T policy has yet to put South Africa onto a higher value-adding growth path characterised by increasing emphasis on the knowledge economy, the main purpose of the DST's TYIP.

The country's achievements with respect to research and innovation (or rather the lack thereof) are symptomatic of the broader socioeconomic cleavages that continue to characterise South African society almost 2 years after the advent of democracy. This is still a society that is characterised by high levels of income and wealth inequality (amongst the highest in the world), poverty, and general underdevelopment of a significant proportion of the (previously-disadvantaged) population. Inequality is reflected, for instance, in the quality of universities, the quantity and quality of schooling, and in the racial distribution of researchers. Furthermore, there is a deep level of distrust between the white-dominated private business sector and the ANC-led government even though the latter has adopted conservative economic policies in response to the demands of the former. This distrust has not been conducive to promoting cooperation inter alia, in research and innovation.

There is no doubt that South Africa has excelled in the policymaking arena with respect to all of schooling, HE, and S&T policies. However, it has failed dismally in significant areas of policy implementation particularly with respect to schooling. The schooling system still faces significant challenges with respect to retention and enormous challenges with ensuring that all children have access to good quality schooling. The proportion of Black children leaving school without passing Mathematics and Science is still abysmally high. For many young people, poor schooling leads to poor post-school education. Universities and other post-school institutions are clearly delineated in terms of good and poor quality, with children from poor households overwhelmingly crowded in the latter group. In such a context, it is

difficult, if not impossible, to implement S&T policies that go beyond benefiting the few.

In conclusion, South Africa's research and innovation policies are providing lower 'economic and social returns' than they should be, not because of a lack of financial resources, but largely because a significant proportion of the country's young population is still being prevented from contributing meaningfully to such policies and hence to economic growth and development.

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Chapter 24
Higher Education in the BRICS: Key Lessons and the Road Ahead

Rómulo Pinheiro, Simon Schwartzman and Pundy Pillay

The rich empirical accounts provided in this volume—around the four main themes surveyed—suggest that our assumptions regarding the fundamental differences of the dynamics within the higher education sector, as well as the links with society and key actors were largely correct. Considerable differences do exist amongst the BRICS. This is largely a result of the complex interplay between historical legacies and trajectories (path-dependencies), the role of government (policy), the social demand for higher education and the ability of education providers (both public and private) to respond to it, the array of values and strategic interests characterizing the various stakeholders (internal and external), as well as the nature and scope of primary activities, including but not limited to the importance attributed to knowledge production (research) in the context of a globalized economy.

That said, the empirical evidence provided throughout this volume also points to similarities and convergence trends around a number of critical domains. In the policy realm (role of government), the situation is characterized by a mix between increasing delegation of authority (China), enhanced centralization or state oversight (Russia), and the lack of a coherent policy framework resulting from over-regulation (Brazil) and the competing interests of regulatory bodies (India). In a number of contexts (e.g. Brazil and India), the exponential increase in the number of enrolments (massification) and providers relied largely on a fast growing and increasingly unregulated (i.e. uncontrollable) private sector. In all of the BRICS countries with the

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries*,
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_24

exception of Brazil, there is a general recognition by policy makers that domestic higher education institutions are "lagging behind" and that instruments geared towards resource concentration and institutional capacity building within research are warranted. In this sense, the BRICS are following the general trend observed elsewhere towards embracing the "world-class" paradigm, with a selected number of institutions (top of the system) with responsibility for global knowledge production and the development of scientific excellence of the highest level (Altbach and Salmi 2011; Hazelkorn 2009). This strategic posture is not a problem as such, but in the case of the (B)RICS (with the exception of South Africa), the selection of top-contenders occurs in a rather arbitrary and opaque manner, taking into account political considerations and the strategic interests of certain (powerful) constituencies—within and outside government—rather than being the outcome of an open and meritocratic process of performance assessment and long-term strategic considerations linked to societal needs.

As far as equity-related issues are concerned, substantial differences have also been detected. Affirmative action policies are particularly salient in India, China, and South Africa, and Brazil is moving in that direction as well; but they do not exist in the case of Russia where minority-related aspects are considered a taboo topic. That said, there is sketchy evidence suggesting that the benefits of such policies have been widespread, with only a limited number of minority groups (the top pupils within this sub-category) taken advantage of the circumstances. All countries with the exception of Brazil have embraced cost-sharing (tuition fees) across the public sector, and the private sector (including its for-profit arm) is rather prominent—in *size* not quality—in most countries with the exception of South Africa where the sector is still relatively marginal (less than 20 % of total enrolments). In short, as far as the role of government is concerned, the functionalistic paradigm associated with the notion of higher education as an instrument or *tool* for reaching specific socio-economic policy agendas (Maassen and Olsen 2007) is rather pronounced across the board. This, however, does not necessarily suggest that governments across the BRICS have full control over the dynamics across their respective systems, particularly when it comes to the fast growing private sub-sector. This is particularly salient in the cases of Brazil and India where attempts at over-regulating a rather autonomous sector have proven to be greatly inefficient, thus stretching the "limits of government" (Johnston 1984) and that of regulatory regimes (Gornitzka et al. 2005). This is best reflected in the words of one of the Indian authors whilst attending a seminar event held by the research group in Campinas, Brazil (November 8–9 2012[1]), when claiming, "the Niagara falls of good intentions and governmental expectations have been met by a Saharan desert of meaningful outcomes".

Beyond policy, the volume provides empirical support for the claim that the dynamics of domestic higher education systems are *partly* linked to the expectations and strategic agendas of certain internal and external constituencies or stakeholder groups (Jongbloed et al. 2008; Neave 2002). Yet, as the respective country chapters attest, the influence of this rather heterogeneous group of stakeholders varies by context as well as in the light of specific historical circumstances.

[1] http://www.gr.unicamp.br/ceav/brics_english/

Within institutions, and as is the case elsewhere (Salminen 2003; Santiago and Carvalho 2008), there is evidence of a power shift from academic groups towards a stronger central administration or *steering core* (Clark 1998), resulting in increasing centralization of strategic decision making and a much more "top-down" orientation than was the case in the recent past. This is part and parcel of an ongoing process of *professionalization* (Gornitzka and Larsen 2004) and *rationalization* (Ramirez 2006) within higher education institutions, with the aim of making them more responsive and accountable to society at large (Pinheiro and Stensaker 2013; Ramirez 2010).

This, in turn, leads us to the rise of *strategic science regimes* (Rip 2004) within the BRICS, and the links or the lack thereof between scientific production and national and regional economic development on the one hand (Cloete et al. 2011; Pillay 2010; Pinheiro et al. 2012) and innovation and global competitiveness on the other (Lester and Sotarauta 2007; Nilsson 2006). The overall picture across the BRICS is that of the concentration of research excellence in a selected number of institutions, sometimes outside the formal higher education sector (Russia and India). The available indicators suggest that, for the most part, and despite some positive developments when it comes to increasing linkages with the private sector (in the context of technology transfers and innovation), the contribution of higher education institutions across the BRICS—as regards the absorptive and innovative capacity of firms and the national economy as whole (see Vang and Asheim 2006)—is sub-optimal. This lack of performance is a result of a larger structural problem facing most systems, namely: inadequate funding and governance frameworks, restrictions in the "real" autonomy enjoyed by institutions, as well as constraints in academic autonomy facing the various professional communities across the BRICS (see Teichler et al. 2013).

Turning now to the idea—alluded to at the onset—of a changing "social pact" or contract between higher education and society (Gornitzka et al. 2007; Maassen 2014), the picture provided in this volume suggests that, as a key sector of society and economy, higher education across the BRICS is evolving—albeit not always in the desired direction—in tandem with the growing expectations amongst various social groups for: *social mobility; democratization* (or at least some degree of social freedom); *employability*; and a stake on the *global community of nations*, in the form of globally competitive firms and scientific knowledge production (Drori 2003; Drori et al. 2006). This social pact, however, is still "work in progress" and thus is far from being realized or explicitly stated or agreed upon by the various stakeholder groups, including the competing interests within the state/government itself. In this regard, the current situation with respect to the social and economic role of higher education across the BRICS can best be characterized around a series of "nested tensions and dilemmas" (Pinheiro et al. 2014), some of which had already been identified earlier in this volume:

- How to deal with enrolment expansion, diversification (equity), and the rise in the number of new public and private providers in a manner that is both fiscally responsible and socially accountable (e.g. addressing the needs of students, parents, labour markets)?

- How to cope with and overcome—in a creative and partnership-based manner—fiscal limitations, particularly in periods of economic stagnation or decline as is the case following the 2008 global financial crisis?
- How to best regulate the growing market for private higher education while ensuring freedom of choice, accessibility, and the availability of market-based information?
- How to make higher education institutions more accountable to their students, employees, and to society as a whole, while, at the same time, respecting and even strengthening traditional notions of self-governance and academic freedom?
- How to improve and maintain the quality and social relevance of learning and research in higher education institutions without jeopardising its critical socialization function (civic values, norms) and the idea of knowledge as a public good?
- How to best take advantage of the opportunities brought by globalization (e.g. including the internet and the social media revolutions), the internationalization of higher education, and science as a global institution whilst minimizing the risks associated with the outward mobility of talent or brain drain?

Future studies—comparative or otherwise—could start shedding critical light on the various ways in which policy makers and institutional leaders across and beyond the BRICS countries can start addressing—in a systemic and sustainable fashion—some of the abovementioned tensions and dilemmas. Our hope is that, despite its methodological limitations and data gaps, this volume marks the first step in that direction.

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Erratum to: Higher Education in the BRICS Countries: Investigating the Pact Between Higher Education and Society

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Erratum to:
Chapter 11 in: E. Knyazev and N. Drantusova, *Russian System of Higher Education and Its Stakeholders: Ten Years on the Way to Congruence*
DOI 10.1007/978-94-017-9570-8_11

In the online version of the chapter published there were following errors:

1. Anna Smolentseva's name was misspelt as Ann Smolentseva
2. Anna Smolentseva was listed as an author while she agreed to act as the corresponding author as the original authors of the chapter passed away in November, 2013.
3. The following line will be included on the chapter opening page in the updated file:
   a. The original authors of the chapter both passed away in 2013, and their colleague Anna Smolentseva, acted as the corresponding author during production, but she is not included as a chapter author since her contribution was minimal. For any correspondence please contact Anna Smolentseva at asmolentseva@hse.ru

The online version of the original chapter can be found under
DOI 10.1007/978-94-017-9570-8_11

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S. Schwartzman et al. (eds.), *Higher Education in the BRICS Countries,*
Higher Education Dynamics 44, DOI 10.1007/978-94-017-9570-8_25