# Revisiting Resource-based Development Strategies in the Post-Pandemic Era

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# Revisiting Resource-based Development Strategies in the Post-Pandemic Era

Keun Lee*

## Abstract

Disruption of GVCs in the post-pandemic era poses both additional difficulties and new opportunities for emerging countries seeking new modes of development and catch-up. Such a new mode can be something relying more on domestic resources for a more resilient pattern of development. Successful catch-up by specialising in those resource-based sectors is consistent with Lee's (2013) argument that the latecomers should identify low-entry barrier sectors in the international division of labour; these resource-based sectors represented such low-entry barrier sectors for many resource-rich emerging economies. This paper identifies the three enabling conditions for resource-based development (RBD). First, upgrading by resource sectors requires specific 'getting prices wrong' style industrial policy. Second, the eventual emergence of locally controlled firms plus local ownership of resources may be an important ingredient for long-term success with RBD. The third issue is to overcome the 'double resource curse' by promoting high value-added or processed products by bold policy moves to promote innovation-based upgrading combined with non-exchange rate linked, asymmetric support for the resource sector, such as preferential loans, entry controls (licensing), and subsidies.

**Keywords**: resource-based development, industrial policy, entry barrier, local ownership

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## 1. Introduction

Natural resources account for 20% of world goods trade and dominate the exports of many countries. Natural resource or mineral exports and growth are topics highlighted in economic history.[1] Many scholars argue that, on the one hand, natural resource exports can create a growth boom.[2] On the other hand, natural resource abundance may impede growth.

Some countries in the Global South (e.g. several of the Arab Emirates, Malaysia, and Botswana) have managed to harness the potentials of natural resources and maintain both strong investment and economic growth. The economic history of Latin American countries, such as Bolivia and Ecuador, also shows some periods of a boom in natural resource exports leading to growth.[3] In contrast, another strand of literature argues that natural resource abundance is a curse for the economy.[4] The example of Dutch Disease is a classic example of the direct negative effect of resource abundance, whereby the discovery and exploitation of natural gas have led to several incidences of economic difficulties in the Netherlands since the 1960s. Gylfason (2001) stated that natural resource abundance might hurt growth by harming trade, and Sachs & Warner (1997) found that economies with a high ratio of natural resource exports to GDP tended to grow relatively slowly.[5]

Given the debates or contrasting views on resource-based development, this paper revisits this issue in the post-pandemic era. The disruption of global value chains (GVCs), which started at the onset of the pandemic through lockdown restrictions affecting the mobility of goods and people, has extended in the post-pandemic period era. These disruptions pose both new difficulties and opportunities for emerging countries seeking new modes of development and catching up. An OECD (2020) report observes that beyond the health risks, the COVID-19 shock to African economies is coming in three waves: (i) lower trade and investment from abroad, including China, in the immediate term; (ii) a demand slump associated with the lockdowns in the European Union; and (iii) a continental supply shock affecting domestic and intra-African trade. Overall, COVID-19 has further shaken

[1] Natural resource exports are defined as exports of agriculture, minerals, and fuels (Sachs & Warner, 1997). Mineral exports are defined as only fuels and primary metals (Sachs & Warner, 1999).
[2] With regard to the former, De Ferranti, et al. (2002) cited the history of successful natural resource-abundant countries, such as Canada, Australia, Sweden, and Finland. According to standard economic theory, the wealth effects associated with natural resources should lead to increased investment and economic growth in the long run.
[3] In Bolivia, revenue from natural resource exports rose from 11% to 23% of Gross Domestic Product (GDP) over a nine-year period between 1975 and 1984. In Ecuador, revenue from primary exports rose by 19% of GDP in just two years (between 1972 and 1974). In Mexico, revenue from oil exports increased by 6% of GDP between 1978 and 1983 (Sachs & Warner, 1999).
[4] Blum & Leamer (2004) asserted that natural resource abundance is a curse rather than a blessing. Leite & Weidmann (1999) suggested that capital-intensive sectors involving natural resources are a major source of corruption. Paldam (1997) explained that natural resource abundance is, as a rule, accompanied by booms and busts.
[5] Gylfason (2001) explained that natural resources bring risks, with an economy becoming restricted to low-skill and natural-resource-intensive industries. He also found evidence that nations with abundant natural capital tend to have more corruption and less trade, foreign investment, education, and domestic investment than other nations. Leite & Weidmann (1999) discussed the direct and indirect effects of natural resources. Poelhekke & van der Ploeg (2009) also analysed the direct effect of natural resource abundance on economic growth and its indirect effects through the volatility of unanticipated output growth associated with price changes of resources. They found that the direct effect can be positive but can be swamped by the negative effect resulting from volatility.

commodity-driven growth models in Africa that had largely failed to create more and better jobs or improve well-being. Further, Rudahindwa and Huellen (2020) observe that COVID-19 has demonstrated the fragility of globally dispersed supply networks and reinvigorated an interest in regional networks.

Whatever alternative modes are possible, one common point of a new departure would be the need to rely more on domestic or regional resources for a more resilient pattern of development, where possible. The same OECD report also argues that strategies to recover from the crisis should include a strong structural component to reduce dependence on external financial flows and global markets and develop more value-adding, knowledge-intensive, and industrialised economies. In this context, it is worthwhile to revisit the prospect of resource-based development strategies. Further, given that high-end manufacturing sectors imply higher entry barriers for most emerging economies at the middle-income stage, the possibilities of high-value-addition in resource-based sectors should be explored.

In fact, a recent paper by Lebdioui, et al. (2020) suggests that Malaysia and Chile are showing some signs of growth beyond the middle-income trap[6], owing their success not to manufacturing but to several resource-based sectors, such as petroleum, rubber, and palm oil sectors in Malaysia, and salmon, fruits, wine, and forestry in Chile. These sectors are not just domestic market-oriented but export-oriented, and further, they are not exporting crude resources but processed or high-value-added exports. These cases point to the possibility of resource sectors serving as the engine of export-oriented growth in resource-rich countries, including those in Africa.

Successful catching-up through specialisation in resource-based sectors is consistent with the argument that the latecomers should identify low-entry barrier sectors in the international division of labour (Lee, 2013). These resource-based sectors represented such low-entry barrier sectors for many resource-rich emerging economies. Somewhat differently from the early arguments by Latin American scholars (Perez, 2008) that emerging economies could utilise resource-based development to leapfrog into emerging technologies, such as IT, it may be argued that the resource sectors could be the ultimate leading sectors generating intra-sectoral diversification and deepening in value-chains, and not just transitional sectors leading diversification into non-resource sectors.

This paper explores the possibility and strategies for resource-based development (RBD) in the post-pandemic era, and it will focus on three enabling conditions for resource-based development.

First, it will be argued that upgrading by resource sectors requires a specific 'getting prices wrong' style industrial policy, in particular, given the possibility of a different kind of resource curse; a price boom reinforcing the prevailing export of crude or unprocessed commodities (e.g. crude palm oil) but discouraging the desired transition to the export of

[6] The middle-income trap is defined as the per capita GDP of a country/region remaining within 20%–40% for several decades (World Bank, 2010; World Bank, 2012).

processed commodities (Sato, 2016). 'Getting prices wrong' by taxes, subsidies, or regulation may be necessary, like in the example of the successful manipulation of export taxes on crude vs. processed palm oil in Malaysia (Oikawa, 2016).

Second, the eventual emergence of locally controlled firms plus local ownership of resources may also be an important ingredient for long-term success with RBD, although the sources of initial learning importantly included foreign actors and foreign direct investment (FDI). This is consistent with early insight by Amsden (1989) that foreign investments and multinational corporations (MNCs) can be important channels to access foreign knowledge but tend to interfere with the eventual growth of indigenous technological capabilities. It is also consistent with the nonlinear, or the "In-Out-In Again" pattern of the GVC participation (Lee, et al., 2018). The idea was that at the initial stage of growth by a latecomer, increased participation in GVC is necessary to learn foreign knowledge and production skills. In the functional upgrade at the middle-income stage, effort must shift to seek separation and independence from existing foreign-dominated GVCs so as to increase domestic value-added. Finally, after establishing their local value chains, latecomer firms and economies may have to seek reintegration into the GVCs, which emphasises the transient separation from GVC at the middle-income stages so as to increase domestic value-added and to develop technological capabilities.

The third factor would be macroeconomic policies, in particular in relation to exchange rates, to facilitate the export orientation of resource sectors. This factor is related to the question of why it is so difficult to expand manufacturing and manufactured exports in resource-rich developing countries. This is referred to as the barrier of the resource curse and associated vicious cycles. First proposed in Ramanayake & Lee (2018), this barrier arises due to the negative effect of undervaluation on the dollar-based earnings from primary exports. The problem is that the more a currency is undervalued in countries that are highly dependent on natural resource exports, the less is their earnings in dollars, while exports of natural resources are not much responding to the changes in exchange rates (given their low elasticity). This finding underscores a policy dilemma for resource-rich countries aiming to diversify into manufacturing. While they need undervaluation of local currency to promote manufactured exports, undervaluation has an immediate negative effect on economic growth through its negative effect on earnings from natural resource exports. While dual exchange rates may be one obvious way to overcome this dilemma, other solutions can also be explored, such as a bold policy move to adopt the non-exchange rate linked, asymmetric support for the resource sector, e.g. preferential loans, entry controls (licensing), and subsidies.

Following the exploration of the three enabling conditions for resource-based development, section 2 of the paper provides some discussion of the related literature on growth strategies in the South, with some focus on resource-based development. The following sections discuss each of the three issues raised above. In other words, section 3 discusses the issue of macroeconomic issues in promoting the resource sector as an export-oriented industry. Section 4 discusses the importance of local ownership as the necessary conditions for success with resource-based development. Section 5 discusses the role of industrial policy in boosting the resource-based sector, especially in the context of regional

developmentalism. Finally, Section 6 concludes the paper with a summary and some policy discussions for Africa in a post-COVID context.

## 2. Debates on development trajectories: primacy of manufacturing vs. alternatives

Most of the literature emphasises the primacy of manufacturing in catching-up, stressing that no country has reached a high-income status without first developing manufacturing. However, our view is that the manufacturing to service sequence is just one of the options for latecomers (Malerba & Lee, 2021). There exist alternatives, including leapfrogging into newly emerging sectors (new IT services), advanced resource-based sectors, a combination of services and manufacturing taking advantage of the technologies of the new millennium, and green technologies, to name a few. This flexible approach is consistent with an evolutionary economics perspective which considers economic catch-up not deterministic but a dynamically evolving process, always seeking new niches and taking advantage of new windows of opportunity associated with not only hard-core innovations but also new business models (Malerba & Lee, 2021).

Africa has struggled with developing its manufacturing sector for several reasons. The continent is characterised by weak manufacturing, premature tertiarisation leading to a high presence of micro-enterprises, and weak export bases (African Export-Import Bank, 2017: p. 14-34). Such difficulties must be caused by a combination of several factors or unfavourable initial conditions, such as colonial experiences, frequent civil wars and political instability, or food shortage and hunger. Regarding financial markets, the high policy rates prevailing in Africa for controlling inflation or sterilisation purposes has led to de facto crowded-out loans to SMEs. High transaction costs and fragmented financial markets have also kept interest spreads between deposit and loan rates very high (Nissanke, 2019).

Thus, the cost of obtaining bank credits and loans are often prohibitively high for most domestic firms in African countries; for example, lending (nominal) interest rates were very high at 19.8% in 2018 in Uganda, at 32.3% in Malawi, and at 26.7% in Congo (Democratic Republic) according to the World Bank data.[7] Typical commercial banks tended to charge interest rates of as high as 30% (Seibel, 2002). This is very high even in terms of real interest rates,[8] in view of the tolerable inflation rates and low-interest rates applied to savings deposited into banks in some countries like Uganda (Lee, 2019: ch. 7). This situation is unfavourable for private investment and reflects the asymmetric power and dominance of the lender over the borrower and of the banking sector, owned by foreign MNCs, over the manufacturing sector. If both sides have equal power, then interest rates for savings should also be high. In other words, financial markets are oligopolistic and imbalanced in terms of the power of supply and demand and may be in a state of market failure. Such a situation may justify government intervention, including the regulation of interest rates. The fact that the banking sector is earning extra rents associated with oligopoly is the opposite of

[7] The source is the World Bank data on Lending interest rate (%) in Sub-Saharan Africa available at: https://data.worldbank.org/indicator/FR.INR.lend?locations=ZF. Accessed January 2021.
[8] The same World Bank data show the following ranges of real interests rates: 21.0% in Democratic Congo (2019), 24.0% in Malawi (2018), 14.6% in Uganda (2018).

the desirable state of a productive sector enjoying rents. This is the opposite to the situation in the past in Germany, Japan, or Korea where the banking sector "served" the real (manufacturing) sector by providing a stable supply of so-called "growth money," at affordable rates so that the economy may realise structural transformation with the manufacturing as the pillar sector (Lee, 2019: ch. 7; Nissanke, 2019).

Further, in many African countries, exports are unresponsive despite competitive exchange rates (undervaluation). This situation is expected because competitive exchange rates work to boost exports only in an economy with a strong manufacturing basis. Moreover, Ramanayake & Lee (2018) found a negative effect of undervaluation on growth in mineral-exporting groups; if the currency is undervalued in countries that depend substantially on natural resource exports, then less income is earned in terms of dollars because natural resource exports are often insensitive or inelastic to exchange rates.

In sum, the typical conditions of already-free capital mobility and already-privatised banking sectors in Africa indicate that promoting manufacturing is difficult. Given the liberalised financial system, undervaluation of currency leads to capital flight and thus to decrease of domestic savings available for investment. Control of interest rates to boost investment in industrial sectors is also not that feasible under the private (or foreign) dominance of commercial banking. The situation of Kenya, which recently implemented an interest ceiling, shows such a dilemma (Lee, 2019: ch. 7).

If domestic effort to promote exports is limited, then foreign direct investment (FDI) is certainly an option. However, attracting FDI in the manufacturing sector has not been easy either in many African countries, except in a few (e.g. Ethiopia) that receive FDI flow from Asia, including China. Further, the COVID-19 has weakened FDI in Africa.[9] In this case, a radical or innovative idea for a country, such as Uganda, might be to leapfrog into IT services or smart agriculture and bypass the manufacturing stage (Lee, et al., 2014). A preceding case of leapfrogging happened in India, which bypassed manufacturing to leapfrog into IT service as its engine of growth (Lee, 2019: ch. 5.7). Agriculture is increasingly being recognised no longer as a traditional industry but rather as a high-technology sector that belongs to the so-called "sixth industry," a combination of primary, secondary, and tertiary industries.[10] The sixth industry is combined with IT or digital technologies as it braces for the benefits of new innovations that have been associated in recent years with the 4IR (Fourth Industrial Revolution). Broadly, not only agriculture but also other resource-based activities may be a more attractive sector to FDI than manufacturing in several African economies in terms of comparative advantages.

Furthermore, even some success in FDI-based manufacturing tends to remain in low-valued-added activities, which is eventually subject to a growth slow-down or middle-income trap

[9] On the general effect of COVID-19 on FDI, see the UNCTAD report at https://unctad.org/press-material/impact-coronavirus-outbreak-global-fdi. Specifically in Africa, some information is available at: https://www.tralac.org/blog/article/14720-covid-19-to-curtail-fdi-flows-to-africa-in-2020-how-to-mitigate-the-effects-in-the-long-term.html#:~:text=The%20coronavirus%20(COVID%2D19),to%2040%20percent%20in%202020

[10] As one of the many sources of the term 'sixth industry', please refer to: https://japancrops.com/en/prefectures/tokyo/sixth-industry/

situation (Lee & Ramanayake 2018). Even manufacturing in Malaysia, Thailand, and Mexico is not safe from the middle-income trap symptoms (Lee, 2019), although these economies have been considered to achieve some success benefiting from participation at the GVC (Baldwin, 2016: p. 250-254). As discussed in Lebdioui, et al. (2020), the IT industry in Malaysia is only a mixed success in terms of upgrading, although it used to be the dominant export sector. The mixed success of IT manufacturing can be attributed to a combination of a lack of explicit industrial policy and of a critical mass of locally owned firms vis-à-vis continuing dominance of MNCs in the sector. Again, the dominance of MNCs implies less room for state intervention and less interest in building local capabilities, local suppliers, and local linkages. In the IT manufacturing sector in Malaysia, the government adopted a rather 'minimalist' approach, mainly providing basic infrastructure and government services and promoting FDI by offering tax incentives and low wages (Rasiah, 2017).

The initial outcome was the successful growth of low value-added labour-intensive FDI-led manufacturing. However, the long term sustainability of such a strategy was not certain because Malaysia also faced rising wage rates, while other neighbouring countries offered lower wages to attract FDI. In other words, the IT sector in Malaysia was not innovative enough to compete against high-wage innovators from the top economies, and, at the same time, their wages were already too high to compete against low-wage manufacturers. This is the typical symptom of the middle-income trap (World Bank, 2012), and some studies discussed such a possibility with regard to Malaysia (Rasiah, 2006; Yusuf & Nabeshima, 2009). Malaysia's shares in global high-tech exports have decreased in the past decade, and Malaysia is losing its labour cost advantage to neighbouring countries (e.g. Vietnam). In the meantime, technology diffusion and domestic linkages have remained constrained by the lack of technology transfer by MNCs in Malaysia (Cherif & Hasanov, 2015; Raj-Reichert, 2019). Some countries in Africa would also be subject to this risk of the middle-income trap, such as South Africa and Mauritius (Lee, et al., 2021).

Given this background, we are now set to explore the possibility of resource-based development.

## 3. Overcoming the double resource curse

Over time, many developing countries have become increasingly reliant on export revenues from minerals as their primary source of foreign exchange earnings. Table 1 (below) lists the twenty countries with the highest mineral-export contributions as a percentage of total merchandise exports in 2010, also reporting this share for these countries in 1996 and 2005. It can be noted that almost half of them are from Africa. Many of these countries have low human development index (HDI) scores, drawing attention to the potential for earnings from the mining sector to contribute to poverty reduction. In particular, in Chile, Ghana, and Brazil, mining businesses contribute to poverty reduction and improve social development indicators more than non-mining ones (International Council on Mining and Metals (ICMM) 2012). The ICMM suggests that the mining sector's contribution is important for sustaining development, especially in developing countries. According to the ICMM report in 2012, the

nominal value of world mineral production was nearly four times higher than it was in 2002, which implied more earnings from the same amount of production.

Table 1: Reliance on export of metallic minerals.

| Rank by country (2010) | Mineral export contribution as % of total merchandise exports in 1996 | Mineral export contribution as % of total merchandise exports in 2005 | Mineral export contribution as % of total merchandise exports in 2010 |
|---|---|---|---|
| 1 Botswana | 58.70% | 86.50% | 83.70% |
| 2 Zambia | 79.40% | 64.00% | 83.60% |
| 3 Dem. Rep. of the Congo | 72.40% | 70.20% | 78.30% |
| 4 Mongolia | 60.30% | 70.10% | 77.60% |
| 5 Suriname | 68.00% | 64.30% | 75.40% |
| 6 French Polynesia | 69.20% | 55.30% | 67.10% |
| 7 Chile | 47.70% | 56.50% | 65.90% |
| 8 Guinea | 77.10% | 84.00% | 65.20% |
| 9 Peru | 48.30% | 57.90% | 62.70% |
| 10 Mauritania | 36.10% | 49.30% | 60.40% |
| 11 Northern Mariana Islands | 3.30% | 4.50% | 58.90% |
| 12 Mozambique | 6.10% | 66.90% | 57.00% |
| 13 Mali | 8.50% | 37.20% | 54.80% |
| 14 Sierra Leone | 30.60% | 58.20% | 54.30% |
| 15 Papua New Guinea | 24.50% | 39.20% | 54.00% |
| 16 Namibia | 36.20% | 41.20% | 53.40% |
| 17 Nauru | 73.10% | 25.20% | 50.80% |
| 18 Armenia | 23.90% | 39.80% | 50.60% |
| 19 Jamaica | 49.70% | 68.50% | 49.60% |
| 20 Cuba | 15.10% | 39.20% | 47.70% |

Source: Reproduced from ICMM (2012); Mineral (non-fuel) exports in 2010 as a percentage of total merchandise exports (UNCTAD data); from Ramanayake & Lee (2018). African countries highlighted.

Given the large contribution of natural resource exports for many developing countries, examining the effect of currency undervaluation or overvaluation on mineral exports is

important. UNCTAD (2005) highlights the fact that the real exchange rate reflects the underlying relative movement of prices at home and abroad. Generally, currency undervaluation, depreciation, or devaluation increases the competitiveness of exports and makes imports more expensive. Currency overvaluation or appreciation makes imports cheaper and exports more expensive. Rodrik (2008) found that currency undervaluation stimulates economic growth and export expansion, particularly in developing countries.[11] Actually, the currencies of developing countries tend to be undervalued in terms of the estimation approach of Rodrik (2008). By enhancing the sector's profitability in such a situation, undervaluation works as a second-best policy that compensates for the negative effects of these distortions. High profitability promotes investment in tradable sectors, which subsequently expand and promote economic growth. Setterfield (2010) asserted that developing countries obtain significant growth benefits by maintaining a low value of their currencies relative to competing developing countries. Yeyati & Sturzenegger (2007) claimed that an undervalued currency boosts output and productivity growth. Korinek & Servén (2010) also asserted that currency undervaluation can raise growth through learning-by-doing externalities in tradable sectors.

Nevertheless, the 'undervaluation is good' growth argument has also been criticised (Aguirre & Calderon 2005; Williamson 2012).[12] Aguirre & Calderon (2005) explained that although small or moderate undervaluation enhances growth, large undervaluation hurts growth. Haddad & Pancaro (2010) claimed that undervaluation causes high and destabilising liquidity growth and inflation, which leads to financial instability, with undervaluation working for low-income countries only in the medium term. Therefore, whether undervaluation is beneficial or harmful to growth remains debatable.

Given this background, it is worthwhile delving deeper into the effects of undervaluation on economic growth in mineral exporting countries. Currencies have been increasingly undervalued rather than overvalued in most mineral-exporting countries such as Botswana, Guinea, Mauritania, Papua New Guinea, and Peru, countries with shares of mineral exports in total exports of more than 40% (Ramanayake & Lee, 2018). Thus, examining whether currency undervaluation is truly responsible for declining growth in these mineral-exporting countries is meaningful. But, the findings of Ramanayake & Lee (2018) indicate that undervaluation hurts economic growth in mineral-exporting countries.[13] This study compared two different samples of countries: manufacturing-exporting countries and natural-resource-exporting countries.[14] The results suggest that while the degree of undervaluation has a positive but insignificant impact on growth in manufacturing

[11] Countries with per capita income below $2,500.
[12] Williamson (2012) demonstrated that undervalued currencies are likely to improve the current account surplus, stimulating capital flows out of the country instead of in, thus impeding investment from entrepreneurs and, ultimately, economic growth.
[13] This study uses cross-country panel data with data averaged over five-year periods from 1986 to 2012. The samples of manufacturing- and natural-resource-exporting countries are pooled together in the analysis, with dummy variables for manufacturing and natural resource exporters (along with their interactions with the main explanatory variables) included to allow for different effects across the two samples.
[14] The natural-resource-exporting sample consists of only mineral-exporting countries (excluding giant oil exporters) that have a share of mineral exports in total exports of 40% or more in 2010. The manufacturing-export sample includes countries where manufacturing exports constitute at least 70% of their total goods exports (in at least one of the two years, 1999 or 2001). The global average of this percentage corresponds to an average of 68% over 1999–2003, as reported by UNCTAD (2005).

exporters, the effect in natural resource exporters is negative and significant.[15] The results indicate that currency overvaluation may be beneficial for economic growth in mineral-exporting countries. The interpretation was that undervaluation exerts significant effects only in the presence of a strong manufacturing base and an adequate level of capabilities. This finding is consistent with the fact that if a currency is more undervalued in countries that are highly dependent on natural resource exports, then they earn less income in terms of dollars, given that natural resource exports are inelastic to changes in exchange rates.

This finding underscores a policy dilemma for resource-rich countries aiming to eventually diversify into manufacturing. While they need undervaluation to promote manufactured exports, such a policy stance has immediate adverse effects on economic growth through its negative effect on dollar-based earnings from natural resource exports. In countries with no such capacity in manufacturing but relying primarily on mineral exports, crisis-driven devaluation does not boot up exports sufficiently and thus, recovery tends to be slow or prolonged, with the countries ending up with more foreign debts, which is consistent with the situation of the so-called middle-income trap (Bresser-Pereira, et al. 2020; World Bank, 2012).

No significant effects of undervaluation underscore the difficulties facing economic growth in mineral-exporting economies and thus the dilemma of the so-called resource-based development model. Countries get caught up in a vicious cycle, and the means to stop the cycle remain unclear. It can be called the 'double resource curse' in the sense that these countries face not only the original curse of low growth but also the curse of not being able to promote manufacturing even by the undervaluation of local currencies.

It then implies that managing exchange rates alone is not a solution for the long-term growth in these countries. One way out of this vicious circle is to make their resources more processed rather than to export unprocessed resources, which make them high value-added or even manufactured goods, e.g. wines rather than grapes. That is what happened in the resource-based export sector in Chile and Malaysia (Lebdioui, et al. 2020); Chile exports wines rather than grapes, processed vegetables and fruits, and furniture rather than woods, whereas Malaysia export condoms rather than rubber, palm oils rather than palms, and refined oils and products than crude oils. The prices of these processed products are more sensitive to exchange rates, with a higher elasticity to prices than unprocessed materials. Then, undervaluation or deprecation to more export linkage can be established.

Such transformation, of course, requires the development of technological capabilities, a more pressing concern (Lee, et al., 2014; Lee & Mathews, 2012). Broadly, regarding this barrier of the double resource curse, one possible means of exiting such a bad equilibrium would be for a big push or leapfrogging, which can be combined with a bold policy move to adopt non-exchange-rate-linked, asymmetric support for the manufacturing sector, such as preferential loans, entry controls (licensing), and tariffs. Again, Malaysia may offer an example.

[15] This positive but insignificant effect is consistent with Ramanayake & Lee (2015), who found that undervaluation significantly affects growth in high-income countries but not in middle- or low-income countries.

Interestingly, Malaysia's efforts to stimulate resource-based exports (e.g. palm oils) were met with counter-attacks from the incumbent firms (Lebdioui, et al., 2020). For instance, Malaysia's exports of processed palm oil in the 1970s were blocked by the European common market, which practised tariff escalation to ensure that refining capacity would remain in Europe. In order to counter the EU import duty structure, the Malaysian government had initially decided to introduce an export duty on crude palm oil production. After further tariffs escalation in the EU in the 1990s, from about 100% in the 1970s to more than 200% in the 1990s (Gopal, 2001), most market deals for Malaysian processed palm oil were signed through government-to-government partnerships under so-called barter arrangements.[16] As a result of this barter trade that enabled securing export markets, palm oil refining activities in Malaysia considerably increased and became the most competitive internationally within ten years, achieving both economies of scale and scope. Another incentive for processed palm oil against crude oil was higher export taxes on crude oil and lower taxes for more processed oil, which made domestic prices of crude and processed oil deviate from the international market prices (Oikawa, 2016).

Then, the eventual solution was that Malaysia executed a hostile takeover of three British palm oil and rubber plantation conglomerates listed in the London stock exchange by Malaysian public capital in 1981 (Oikawa, 2016). While we will deal with this issue of ownership in the next section, it can be said that such upgrading into exporting processed palm oil, rather than crude oil, would not have been possible if there was no change of ownership from foreign to local. In the following sections, we will turn more to these two issues, namely local ownership and industrial policy.

## 4. Local ownership as an eventual requisite for upgrading in GVCs

This section deals with one of the most delicate issues in development, namely the role of foreign vs. domestic ownership in upgrading through the GVC participation. Our proposition is that the eventual emergence of locally controlled firms plus local ownership of resources may also be an important ingredient for long-term success with RBD, although the sources of initial learning importantly included foreign actors and FDI. This is consistent with early insight by Amsden (1989) that foreign investments and MNCs can be important channels to access foreign knowledge but tend to interfere with the eventual growth of indigenous technological capabilities.

Such a view is also consistent with the recent finding of the "In-Out-In Again" pattern of the GVC participation in Lee, et al. (2018). The idea was that at the initial stage of growth by a latecomer, increased participation in GVC is necessary to learn foreign knowledge and production skills. In the functional upgrade at the middle-income stage, effort must shift to seek separation and independence from existing foreign-dominated GVCs so as to increase domestic value-added. Finally, after establishing their local value chains, latecomer firms and economies may have to seek reintegration into the GVC, which emphasises the

[16] Barter grade is a system of trade in which participants in a transaction directly exchange goods or services for other goods and services of equivalent value without the use of money.

transient separation from GVCs at the middle-income stages so as to increase domestic value-added and to develop technological capabilities.

The case of resource sectors in Malaysia may offer some lessons about the importance of local ownership. In both the rubber and palm oil sector in Malaysia, the plantations were all foreign-owned in the early days going back to the colonial period, and there was no interest in increasing domestic value-added compared to foreign value-added. The largely European-controlled plantation companies preferred to export crude palm oil and did not see many gains in relocating their vegetable oil processing facilities in Malaysia. After the initial entry point into the foreign-dominated GVCs during colonial times, Malaysia broke up those foreign-led GVCs through the nationalisation of ownership as it executed a hostile takeover of three British palm oil and rubber plantation conglomerates listed in the London stock exchange by Malaysian public capital in 1981 (Lebdioui, 2019b; Oikawa, 2016). The interest in processing palm oil and natural rubber locally has increased since then. In addition, in the rubber sector, a large difference in purchasing behaviour can be noted between domestic and foreign firms. Foreign-owned firms have fewer forward and backward linkages to other manufacturers in the Malaysian economy than domestically owned firms.

The petroleum sector of Malaysia was initially dominated by multinational oil companies, which remained the main providers of upstream technology in the early periods of resource exploitation, especially given the context of Malaysia's technology-demanding offshore and deep-water fields. To overcome such a situation, the government of Malaysia established a state-owned enterprise, Petronas, in 1974, which became possible by proclamation of the Petroleum Development Act (PDA) and the associated Production-Sharing Contracts (PSC). The objective of the PDA was to gain greater national control over petroleum resources, to provide affordable petroleum resources to the local market to form the basis for capital and energy-intensive industries and to encourage production linkages in both upstream and downstream activities (Nordas, et al., 2003). Petronas, the state-owned oil corporation, has also gradually developed capabilities and upgraded into higher-value activities.

The government also initiated a holistic approach to industrial policy combining local content requirements, tax incentives, skills transfer (through technical and specialised universities), state-led investments and opportunities for learning by doing (Lebdioui, 2019a). These tools have been successful in enhancing the industrial capabilities of local suppliers by allowing local firms to benefit from more stable intra-industry relationships, exposure to best practices, quality standards, as well as marketing capabilities. This holistic approach led to the accumulation of the capabilities needed for knowledge-intensive activities along the petroleum value chain.

Petronas was an essential vehicle for such industrial policy drive as it ran a program like the Petronas Vendor Development Program to bring up local suppliers. Petronas' partners are required to pay Petronas an annual research contribution, the "Research Cess", to promote joint R&D (PSC, Arts 9.1 and 9.2). Thus, the growth of local companies followed that of Petronas, and 74% of the total value of contracts in upstream activities in the petroleum sector was granted to local companies by 1995 (Tordo & Anouti, 2013). Given the key role in

promoting production linkages through several initiatives, it is doubtful whether similar value addition results would have been achieved if international oil corporations controlled the sector. Petronas itself has grown into a fully integrated international oil and gas company, which operates in over 30 countries. It is now on the list of the global Fortune 500 companies.

The role of ownership can also be discussed in terms of the upgrading path from OEM – ODM and OBM, in that along these three stages, ownership increase from simple ownership of production equipment and facility (OEM: own equipment manufacturing) to ownership of (product) design (ODM; own design manufacturing) and finally to own brand (OBM: own brand manufacturing).

Despite the effectiveness of OEM as a method of catching up at the early stage of economic growth, this mode is a somewhat uncertain long-term strategy because foreign vendor firms may move their production orders to other low-wage production sites (Lee & Mathews, 2012).

Currently, a similar trend is underway among flower producers in East Africa because foreign vendor firms buy flowers not only from Kenya but also from neighbouring countries that are catching up with Kenya. In this respect, OEM firms should prepare long-term plans in their transition to original design manufacturing (ODM) and finally to original brand manufacturing (OBM). ODM firms carry out most of the detailed product design, and their customer firms continue with marketing functions. Meanwhile, OBM firms undertake to manufacture, design new products, R&D for materials, processing of products, and sales and distribution for their own brands. The path from OEM to ODM to OBM has become the standard upgrade process for latecomer firms (Lee, 2019: ch 7).

The transition to OBM is difficult and rare even in East Asia (Lee, 2019: ch. 4.4). However, a successful case can be found in Uganda in Africa. Good African Coffee, a coffee company established in 2013 by an entrepreneur from Uganda named Rugasira, has been successful in the global market with its brands and sales network in Europe and North America. This case is very unusual and exceptional in Africa because this company exports not crude or unprocessed coffee but high-valued processed branded coffee. However, an interesting aspect of this case is that the company skipped the OEM stage and attempted OBM from the beginning. In a sense, this is a case of leapfrogging that bypassed the earlier stage of OEM. Actually, the company started by selling its own brand of coffee in retail supermarkets in foreign countries with packing performed abroad. Only after several years had the company gained the capacity of packaging in Uganda. This case is similar to several Korean companies, such as Hyundai Motors, which started selling cars with its own brands but with foreign-made engines and transmission and only later progressed to localising production of engines and transmission. This case may imply that the agro-food industry and processing segment of the primary sector industry can also be a compelling option for industrial development in Africa.

Modified examples of such upgrading in African flower firms include producing long-lasting flowers with specific scents and using a small number of pesticides, which require

innovation. A transition to OBM in the flower industry will require African firms to enter into marketing and to set up their own outlets with their own brands in Europe. Such a transition to ODM or OBM is difficult but serves as a narrow path to the middle- or even high-income status. In a sense, Botswana is attempting to find a niche by targeting the middle-level quality of diamond cutting and polishing, which lies above that of the small stones produced in China and India and below that of the highly specialised stones produced in Belgium and Israel (Morris, et al., 2012).

In this stage, public policy should focus on two kinds of upgrading: entry into new industries and upgrading to high-valued segments in existing industries, which involves upgrading the overall industrial structure (Lee, 2019: ch. 7). Short-cycle technology-based sectors are candidate niches for latecomers. The main issue is determining how to break into medium short-cycle technology-based products or the high-valued segment of existing sectors. Effective targets for such import substitution entry are the products that these countries used to import at high prices because of the oligopolistic market structure dominated by incumbent exporting countries or firms. A compelling example is China's telephone switch development in the 1980s and 1990s (Lee, et al., 2012). These lessons have implications for African countries, such as Nigeria, which produce oil without refining and export mostly as crude oil. These countries can build additional oil refineries, which are sectors corresponding to mature or medium short-cycle technologies. This task is possible because the technology required to build oil refineries is old, mature, and easily available at a cost. The process resembles Korea's entry into steel making through a state-owned enterprise in the early 1970s.

The above-mentioned technological development models share the common element of involving access to foreign knowledge through diverse channels. Foreign knowledge is critical because latecomers' catching-up effort frequently becomes risky, time-consuming, and costly without it. The diverse channels of knowledge, access, and learning generally include such modes as training in foreign firms and institutes, OEM, licensing, joint ventures, co-development with foreign specialised R&D firms, hiring of individual scientists or engineers, reverse brain drain, overseas R&D centres, strategic alliances, and international mergers and acquisitions (Lee, 2013). Successful technological development by latecomers involves government support, access to foreign knowledge, and private firms' effort. The weights and specific roles of the three elements differ by sector and level or stage of economic development.

## 5. Breaking the vicious circle/equilibrium by industrial policy

The discussion in the preceding section suggests that the issue of local ownership and room for industrial policy are closely intertwined in the sense that it is not easy to impose such intervention on foreign-owned firms, which are dominant in resource sectors in Africa. While that is an important aspect, the role of industrial policy goes beyond that, as it can break the 'bad' equilibrium. An example is the diamond sector in Botswana.

The diamond sector has been the key sector contributing to the rise of Botswana from a low-income to a middle-income country. An important trigger was the special deal between the Botswana government and the foreign actor (in this case, an MNC) by which local firms had been able to evolve from being simple commodity producers to diamond cutting and polishing processors since the 1980s (Lee, 2019: ch 7). The path for such an upgrade was not smooth but took a long time. A change came in 2005 when De Beers, a global diamond jewellery company, and the Botswanian government entered into a big deal to promote local processing industries (Morris, et al., 2012). The government took advantage of its bargaining power in the specific year of 2005 when the 25-year mining license of De Beers was due for renewal. The government persuaded the multinational jewellery company to help Botswana create a viable cutting and polishing industry. It was a condition for the license to be renewed for another 25 years (Morris, et al., 2012). Until then, De Beers used to say that Botswana had no comparative advantage in the processing sector compared to those in India (ibid.).

After the new contract was signed, the government encouraged leading cutting and polishing companies (16 in total) to establish factories in Botswana and to transfer required skills to local firms and workers. Now, a challenge for the next stage is to keep moving up the value chain from crude diamond production to cutting and polishing and then to polished dealing, jewellery manufacturing, and marketing and sales to reach the high value-added segment in the value chain.

Further, it can be argued that upgrading by resource sectors requires specific 'getting prices wrong' style industrial policy. In particular, research by Sato (2016) indicates the possibility of a different kind of resource curse, where a price boom for minerals reinforces the prevailing export of crude or unprocessed commodities (e.g. crude palm oil) but discourages the desired transition to exporting processed commodities. In this case, 'getting prices wrong' by taxes, subsidies or regulation may be necessary, like the successful manipulation of export taxes on crude vs. processed palm oil in Malaysia (Oikawa, 2016).

Another channel to promote the resource sector in Africa can be 'regional developmentalism,' proposed by Rudahindwa & Huellen (2020) and Rudahindwa (2018) and inspired by the new developmental state paradigm, which advocates for gradual rather than full-fledged trade liberalisation, and endorse more significant state intervention to steer productive capacity development and the establishment of regional value chains relying on regional, rather than international, markets. A rationale and motivation for regional developmentalism is the recognition that conventional trade liberalisation and indiscriminate economic integration, such as the Agreement to establish an African Continental Free Trade Area (AfCFTA), which aims to create a continental market for goods and services, has not led to trade diversification into higher value-added segments of supply chains, and thus the region continues to be heavily dependent on a primary commodity with devastating consequences for the balance of payment position of involved countries, in particular those in the ECOWAS (Economic Community of West African States) region.

Causes for such disappointing outcomes are not just slow progress in tariff reduction or often-cited supply-side bottlenecks but also fundamental asymmetry in global economic

power structures (Rudahindwa & Huellen, 2020). For instance, typical agri-food chains, including the global cocoa-chocolate or coffee chain, are characterised by a high concentration of buyer power in the hands of a few MNCs, which makes it difficult for newcomers to enter (Cramer, 1999; Gereffi, 1994; Gibbon, 2001; Talbot, 2009). Specifically, key players in the segments, such as grinders who process cocoa beans into intermediate products, branders who manufacture consumable end products and merchandise them, and large supermarket chains, are all highly concentrated, with a handful of MNCs holding more than 50%t of the global market share (Gilbert, 2007; TCC, 2010; UNECA, 2013). Further, many advanced countries impose tariffs with the rates increasing progressively with the degree of cocoa processing, posing an effective barrier to entry. Given these structural asymmetries, a radical response would be a takeover of oligopolistic MNC or FDI firms in the value chains by indigenous agency, as it happened in Malaysia (see the preceding section).

Or, one of the alternative routes for new entrants into a global value chain can be via regional markets (Nissanke, 2019; UNECA, 2013). Actually, the latest COVID-19 crisis has demonstrated the fragility of globally dispersed supply networks and reinvigorated interest in regional networks (Rudahindwa & Huellen, 2020). Regional markets can provide necessary linkages and niche markets for the infant industries to develop, whereby local firms are able to build up capabilities in regional markets that are less demanding in terms of standards and competition (Humphrey & Schmitz, 2004; Rudahindwa & Huellen 2020).[17] Specific infant industry protection measures may include tariffs, import quotas, and subsidised government loans. Rudahindwa (2018, p. 47) argue that these measures could be accommodated under the WTO Enabling Clause, which is designed to benefit regional trade agreements involving less developed countries, as well as GATT 94 article XVIII, which includes special measures for the protection and the nurturing of infant industries in poor developing countries.

Specific support for the coffee farmers by the Vietnamese government is pointed out as one of the factors for the rise of coffee sectors in Vietnam at the expense of market shares by coffee from Africa (Marsh, 2007).[18] While credits to farmers were offered at a very high rate of 15% in Africa, the State-owned development bank VBARD in Vietnam supplied farmers with credit in very favourable arrangements, including several clauses to protect farmers during difficult market conditions, such as an adjustment of loan repayment term or freezing of repayment for up to three years when the price of coffee drop (Marsh, 2007). One factor for the advance of the coffee sector in Vietnam and Brazil is a mix of governmental policies helping farmers and producers as well as new inventive ways such as

[17] However, as Rudahindwa & Huellen (2020) observe, despite West Africa being the single largest region to contribute to world cocoa bean supply (75% of the world's cocoa is produced in West Africa), only 2% of the $100 billion cocoa industry is generated in the region and cocoa beans are largely exported with no or little processing for value addition (TAFAC, 2019). Paradoxically, West Africa and the African continent in general are among the fastest growing markets for consumer chocolate and cocoa containing foodstuff, whereby the rising demand is satisfied in great parts through imports from outside the region (89% of chocolate imports originate from outside the region).

[18] After 1990, Africa's coffee production dropped by an average of 1.5% per year while the growth in the Asian market was 4.1% per year (Dube & Vargas, 2013).

the increased density of productive hybrid varieties, irrigation and improved mechanical harvesting, combined with proactive industry organisations (Technoserve, 2003).

In sum, targeted industrial policy in the context of the regional developmentalism paradigm may promote export-led and resource-based industrialisation by building up productive capacity and related regional value chains to reverse the adverse effects that the international economic order has on lower- and middle-income countries.

## 6. Summary and concluding remarks

Given the debate on the resource curse and resource-based development, this paper revisits this issue in the context of COVID-19 and prospects for the post-pandemic era. Disruption of GVCs in the post-pandemic era poses both additional difficulties and new opportunities for emerging countries seeking new modes of development and catch-up. Such a new mode can be something relying more on domestic resources for a more resilient pattern of development if it is possible. Successful catch-up by specialising in those resource-based sectors is consistent with Lee's (2013) argument that the latecomers should identify low-entry barrier sectors in the international division of labour; these resource-based sectors represented such low-entry barrier sectors for many resource-rich emerging economies.

In this sense, many resource-rich African countries can be said to have a certain advantage in resource-based activities, and the only problem is that they still tend to export unprocessed or raw materials. Such a situation is in contrast to the experiences of several countries in other continents that have managed to develop high-value-added, export-oriented, resource-based sectors, pursuing an RBD. This paper aims to be useful in suggesting the following generic lessons extracted from other countries' examples that can be useful for African countries, although these should be further tailored to the specificities of each country, taking into account the multi-dimensional unfolding of the impacts from the COVID-19 pandemic (e.g. weakening of FDI, closures of many local businesses, and limited ability for countries to use their exchange rates).

In general, this paper identifies the following three enabling conditions for resource-based development. First, upgrading by resource sectors requires specific 'getting prices wrong' style industrial policy. Second, the eventual emergence of locally controlled firms plus local ownership of resources may also be an important ingredient for long-term success with RBD, which is consistent with the early insight by Amsden (1989) and the recent observation about the "In-out-In Again" pattern of the GVC participation in Lee, et al. (2018). The third issue is how to overcome the 'double resource curse' that the developing countries face; not only the original curse of low growth but also the curse of not being able to promote manufacturing even by the undervaluation of local currencies.[19] One solution is to promote high value-added or processed products by bold policy moves to promote innovation-based

[19] As a matter of fact, despite the fact that the pandemic resulted in further depreciation of currencies of typical African countries, the situation is not helping any manufacturing in Africa, rather many local firms were closed down.

upgrading combined with non-exchange rate linked, asymmetric support for the resource sector, such as preferential loans, entry controls (licensing), and subsidies.

These strategies can be further refined and implemented in view of several structural barriers, such as prohibitively high-interest rates associated with an oligopolistic banking sector dominated by foreign banks, the concentration of high-end value chains by foreign MNCs, and high tariffs by advanced economies against processed foods and other commodities. Some of these are the consequences of the past liberalisation, and in this sense, African countries also suffer from the liberalisation-caused middle-income trap, like Latin American countries (Bresser-Pereira, et al., 2020). Such vicious circle or equilibrium may require an effort and interventions to break up the equilibrium, such as establishing indigenously owned banks (including development banks), hostile take-over of foreign-held high-end value chains (as happened in the palm oil sector in Malaysia), and 'getting prices wrong' type industrial policy to disrupt asymmetry in power relations.

Overall, this study implies that there can be several alternative ways to promote economic development in emerging economies, despite the initial dominance of FDI and MNCs (Malerba & Lee, 2021). The first, mainly experienced in East Asia (e.g. Taiwan, South Korea), is based on the idea of catching up by developing technological capabilities in short cycle technology manufacturing sectors (Lee, 2013).[20] The second option of specialisation for latecomers is not in manufacturing but in IT services, such as mobility, e-commerce, games, mobile payments, travel, music and entertainment, and other app-based services, with a prime example of success in India. As discussed in the context of Africa (Lee, et al., 2014), these are also low entry barrier sectors, given that these IT-related services are also short cycled, similarly to IT manufacturing. The third or resource-based option is what this paper has discussed, which is a gradual way to exercise consistent industrial policy to promote local capabilities – an option that focuses more on the technological capabilities around resource-based industries rather than resource rents alone. It strongly relies on a strong process of linkage development to get out of the middle-income trap. Our contribution to this debate is the analysis of this route with the example of the resource-based sectors in various countries.

[20] Lee (2019) points out that at the middle-income stages, Korea and Taiwan went through a different path by specialising in sectors with "short-cycle" technologies in contrast to advanced economies that specialise in "long-cycle" technology-based sectors (Lee, 2013). In sectors and activities that are based on short-cycle technologies, the extensive experience of firms in front-running countries is no longer considered an advantage because frontier technologies tend to be disrupted and change radically and frequently.

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