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Foreign Direct Investment and poverty in Sub-Saharan African countries: the role of host absorptive capacity

Sodiq Arogundade, Mduduzi Biyase and Hinaunye Eita

Abstract

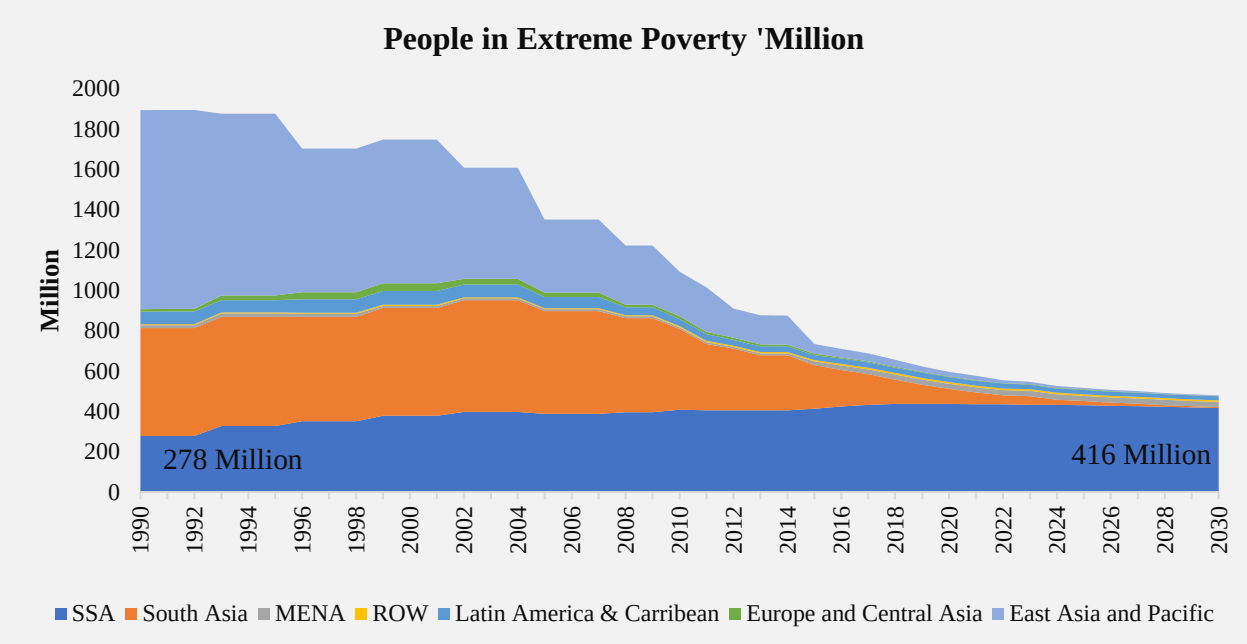
Emerging literatures on foreign direct investment (FDI) now suggest FDI's positive spillovers in alleviating poverty depend on the absorptive capacities of host economies. Prime to these capacities includes the level of human capital development and institutional quality. This study examines how host absorptive capacity can facilitate the benefit FDI can offer. In achieving this, a panel of 28 Sub-Saharan African (SSA) countries from 1996-2018 was explored using instrumental regression. Findings from this study suggest that FDI has a positive and significant relationship with all the poverty indicators in SSA. This suggests that the impact of FDI is contingent on the conditions of the local economy. The study further reveals that FDI will alleviate poverty conditions if interacted with human capital and institutional quality at a given threshold. This implies that the more host nations improve their institutional quality and human capital, the more they reap the benefit of FDI in terms of job creation, technological spillovers, and poverty alleviation. Conclusion emanating from this paper is that policies aimed at attracting FDI without improving conditions of the local economy is effort in futility. Furthermore, SSA countries need to further liberalize, privatize, and securitize critical sectors in their economies in order to provide needed liquidity for investment in human capital as well as institutional reform.

JEL classification: F23; I30; E24; E02
Keywords*:* Poverty, Foreign Direct Investment, Absorptive capacity, Instrumental regression and Sub-Saharan African countries

1. Introduction

Foreign direct investment (FDI) has become one of the most important external sources of finance in developing countries, particularly in Sub-Saharan Africa (SSA) in the last couple of decades. The importance of this source of external finance is evident in the efforts of many SSA countries in attracting FDI through the adoption of FDI-friendly policies. In 2017, about 65 economies in the world adopted at least 126 investment policy measures and reforms, some of which include the establishment of new special economic zones (SEZs), simplifying administrative investment procedures, privatization of state-owned assets, and liberalization of domestic markets (see World Investment Report, 2018 for a detailed account of these measures). This has tremendously improved the flow of FDI to SSA, from an average of $36.03 billion in 1990 to $610.54 billion in 2018 (UNCTAD, 2019). However, despite an appreciable increase in FDI inward stock, poverty conditions in the region continue to deteriorate, as the number of extremely poor population rose from 278 million in 1990 to 437 million in 2018 (World Bank, 2018). The World Bank also predicted that by 2030, approximately 9 out of 10 extremely poor people will live in SSA. The question this study seeks to address is, why has the rise in the flow of FDI not been able to alleviate poverty conditions in the region, and can it be that host countries do not have enough absorptive capacity to exploit the benefit FDI can offer?

FIGURE 1: POVERTY IN SUB-SAHARAN AFRICA



Source: World Bank, 2018.

Although several attempts have been documented on the relationship between FDI and poverty, empirical literature is filled with varying results. While (Lazrag & Zouari, 2018; Bharadwaj, 2014; Fowowe & Shuaibu, 2014; Soumare, 2015; Ucal, 2014) support the argument of FDI-poverty reduction hypothesis. (Rye, 2016; Arabyat, 2017; Adu, 2018; Gohou & Soumare, 2012) dismisses poverty reduction hypothesis. However, much less attention if any has been devoted to investigating the degree at which host economies can absorb the benefits FDI can offer. It has also been adjudged from empirical enquiry that the host nations should have the appropriate absorptive capacity to benefit from the positive spillovers of FDI, and this depends on various factors such as natural resources (Tsaurai, 2018) and growth and inequality (Nagou, 2017). This study contributes to existing literature by identifying the degree to which absorptive capacity of the host countries can enhance the benefits of FDI. This paper focuses on another critical and less studied link in the literature, which is the role of human capital and institutional quality in altering the FDI-poverty relationship. In addition to this, the study also estimates the absorptive capacity threshold for FDI to alleviate poverty (number of poor people, severity, and magnitude of poverty). Furthermore, unlike previous studies, this study accounts for both endogeneity and heterogeneity that may pose any statistical limitations from the model.

The rest of this paper is structured as follows: The first section provides the background of the subject matter, and the stylized facts on FDI issues in the region. Section 2 briefly discusses the related literature on FDI and poverty. The discussion on the methodology and the estimation techniques is discussed in section 3. Section 4 presents and discusses the empirical estimation, while section 5 concludes and provides the key policy implications.

1.1 Stylized fact

Despite the significant improvement in the flow of FDI in SSA in recent decades, the region remains largely marginalized in terms of financial globalization. One sign of this is that the region captures only 1.89 % of global foreign direct investment in 2018 (UNCTAD, 2019). In addressing this quagmire, many governments in SSA have adopted a series of reforms and policies to attract FDI to leverage the potential positive externalities and to close the huge investment and technology gaps. The savings-investment gap in SSA between the period of 2010-2018 was -1.51% of GDP (World Bank, 2019)[1]. Many African countries have also considered FDI to be a driver of economic development, as this is one of the principal objectives for establishing the New Partnership for Africa's Development (NEPAD).

The flow of FDI to the region has been unevenly distributed among few resource-intensive countries. These countries have been able to attract a significant proportion of FDI inflows at the expense of countries with limited resources. As shown in Table 1.0, in 2018 the top 10 FDI recipients received 72.39 % of the total FDI inflows to SSA. Four African countries, namely: South Africa, Nigeria, Mozambique, and Ghana accounted for 50 % of the total FDI inflows to the region.

TABLE I: TOP 10 FDI RECIPIENTS IN SSA, 2010, 2015, AND 2018

2010	%	2015	%	2018	%
South Africa	43.54	South Africa	24.59	South Africa	21.10
Nigeria	14.63	Nigeria	17.41	Nigeria	16.33
Angola	7.87	Angola	6.27	Mozambique	6.66
Liberia	2.47	Mozambique	5.68	Ghana	5.92
Ghana	2.44	Ghana	5.12	Congo	4.19
Tanzania	2.35	Congo DR	3.88	Congo DR	3.93
Eq. Guinea	2.28	Tanzania	3.45	Angola	3.88
Condo DR	2.27	Zambia	3.20	Ethiopia	3.64
Congo	2.25	Congo	2.96	Tanzania	3.39
Zambia	1.80	Eq. Guinea	2.59	Zambia	3.35
Total	81.91		75.13		72.39

Source: Authors' computation from the UNCTAD database (2019)

The flow of investment to SSA has traditionally been concentrated in the extractive sectors, such as oil and gas, and mining. However, this trend is gradually evolving with a rising share of FDI targeted at the non-extractive sector, such as manufacturing and services (UNCTAD, 2018)[2]. Several studies have also argued that the effect of FDI on growth and poverty depends on the sector (Alfaro, 2003; Alfaro & Charlton, 2007).

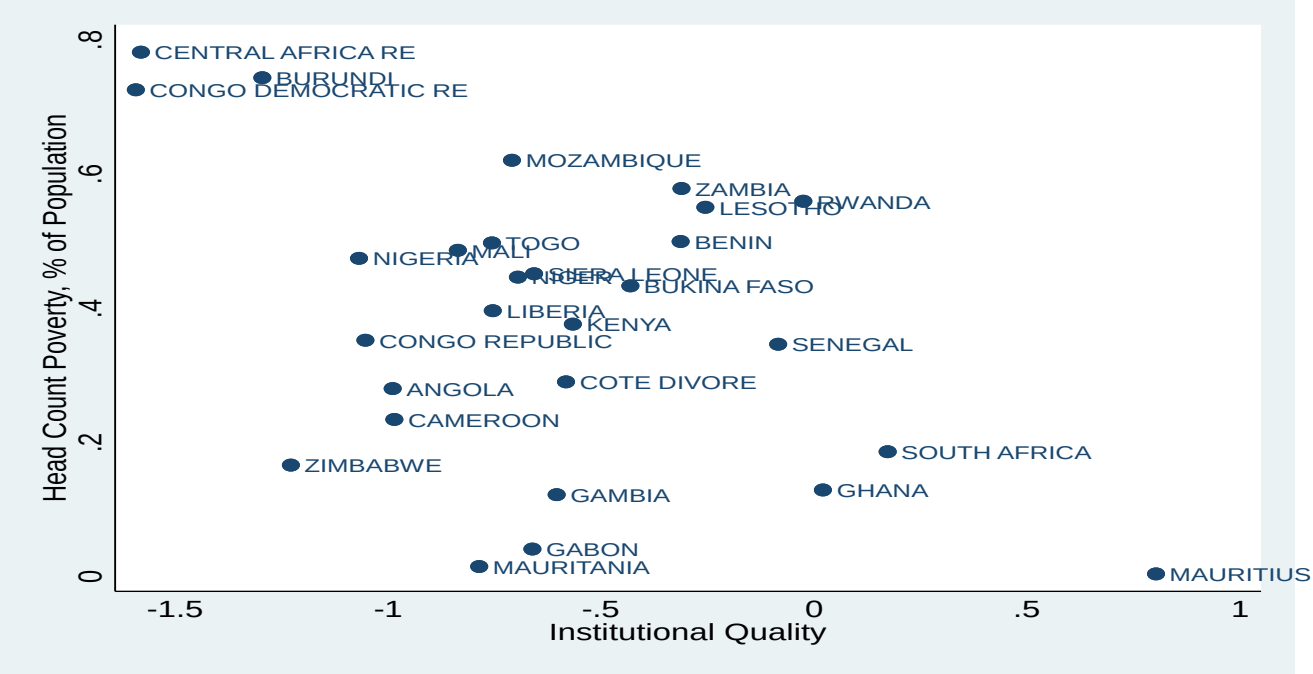
[1] Savings gap is calculated by subtracting investment as a percentage of GDP $\frac{I}{Y}$ from savings as a percentage of GDP. $\frac{S}{Y}$

[2] According to UNCTAD, the total announced greenfield FDI projects in the primary sector (mining, petroleum, and quarrying) was $10.57 billion compared to manufacturing and services, which was $74.731billion in 2017.

Figure 2 shows a scatter plot of poverty rate[3] and quality of institution[4]. It is very evident that countries (Central Africa, Burundi, Congo Democratic Republic, Nigeria, and Mozambique) with relatively high poverty rates tend to have poor institutional quality. Whereas, countries (Mauritius, South Africa, and Ghana) with strong institutional quality are associated with a relatively low poverty rate. The level of institutional quality is strongly correlated with performance of economies, i.e. countries with sound institutions like efficient and good governance, low corruption, rule of law, and property rights, tend to enhance the process of technology spillovers to local firms. However, countries with poor institutions may deny domestic firms from taking advantage of knowledge spillovers from MNCs (Agbloyor *et al*., 2016;Brahim & Rachidi, 2014).

Therefore, it is anticipated that the impact of FDI on poverty reduction would differ across countries and regions with heterogeneous levels of quality institutions. The descriptive evidence also corroborates with (Edinaldo & Ramesh, 2010; Chong & Calderon, 2000; Sanjeev, 2017; Perera & Lee, 2013) that institutional quality plays a vital role in poverty alleviation.

FIGURE 2: POVERTY AND INSTITUTIONAL QUALITY IN SSA



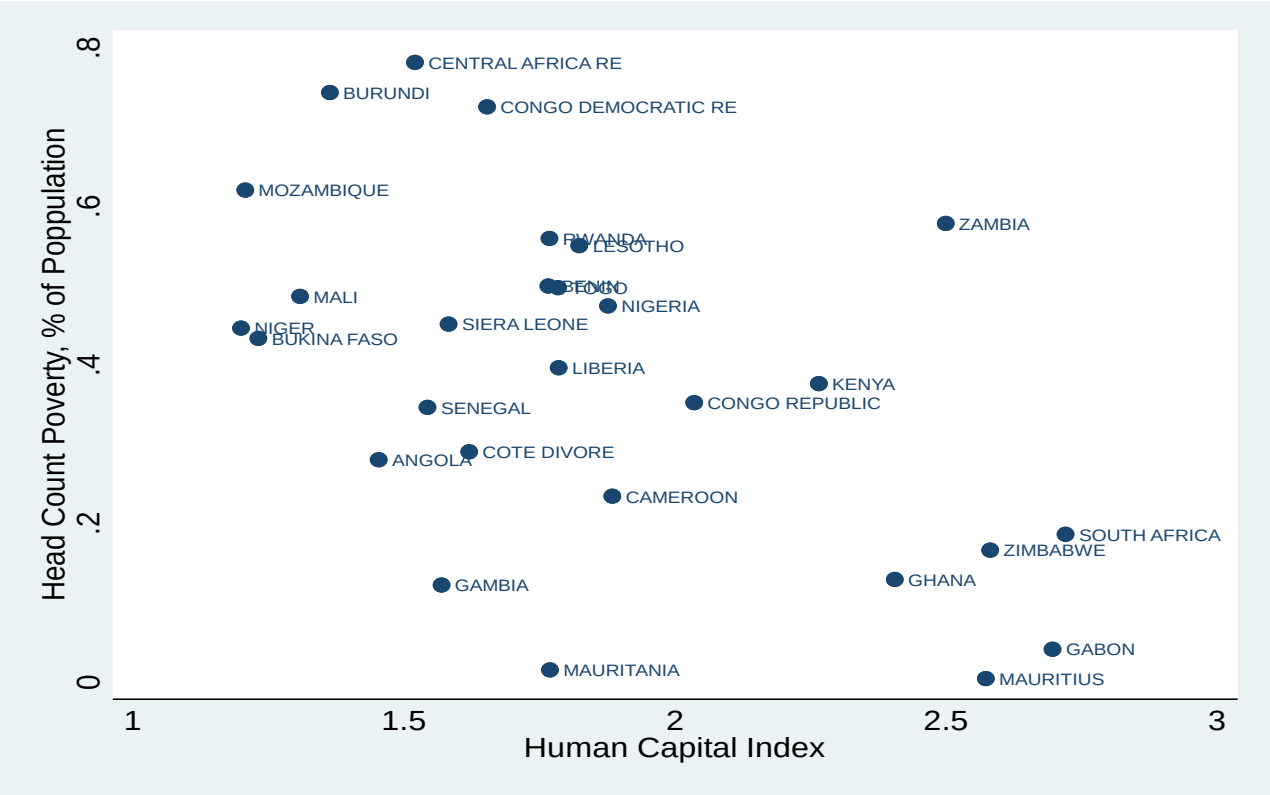
Source: Authors' computation based on WGI and World Bank Povcal database (2019).
Note: The average of both institutional quality and headcount index were calculated for each country in the last five years.

Figure 3 shows a scatter plot of poverty rate[5] and human capital[6] . Countries (*Mozambique, Mali, Niger, and Burkina Faso*) that are associated with very low human capital development have a relatively high poverty rate. While countries (Ghana, Mauritius, and South Africa) with high human capital development have low level of poverty. Empirical evidence has also been

[3] measured by head count poverty as a percentage of population
[4] measured by the average of the six dimensions of institutional quality
[5] measured by head count poverty as percentage of population
[6] measured by the Baro-lee human capital index

documented on the importance of human capital development in the economy (Ogundari & Awokuse, 2018; Obialor, 2017). Given the emerging concerns on general development issues in SSA, a fastidious empirical study that examines the channels of FDI-poverty nexus is important.

FIGURE 3: POVERTY AND HUMAN CAPITAL DEVELOPMENT IN SSA



Source: Authors' computation based on World Bank Povcal Database and Penn World Table PWT (2019)
Note: The average of both human capita and headcount index were calculated for each country in the last five years.

2. Literature review

The theoretical nexus between FDI and poverty can be explained within the foundation of neoclassical or endogenous growth theory (Kaulihowa, 2017). The theory argues that an increase in productivity and economic growth will alleviate poverty and welfare. The proponents of this view posit that a rise in national income has the tendency of benefitting the poorest population, especially for countries with low income inequality (Solow, 1956; Koopmans, 1965; Lucas, 1988; Romer, 1990). In addition to the traditional growth theories, the proponents of international trade theories (Dunning, 1977; Findlay, 1978; Mankiw *et al*., 1992; World Bank, 1993; Hansen & Rand, 2006) also offer various channels which FDI affect poverty and welfare. They argue that the impact of FDI on welfare can either be direct or indirect: the direct impact of FDI could be through human capital development and employment generation. The indirect linkage is through increased economic activities and productivity.

Similarly, the eclectic paradigm theory posits that the impact of FDI depends on the strategies (resource seeking, market or efficiency) of multinational corporations (MNCs). The theory further argues that FDI impact is conditional on the ability of host economies to take advantage of MNC activities (Dunning, 1977). Efficiency-seeking FDI through technology transfers, research and

development, and export diversification has the potential of increasing labour productivity and employment generation (Fruman, 2016; Dunning, 1992). This form of FDI has the potential of helping SSA countries to improve their deteriorating welfare conditions. However, since the major objective of resource-seeking FDI is to have access to natural resources, the impact of FDI on the host economies will be minimal. The activities of resource-seeking MNCs may likely crowd out domestic firms. Thus, a welfare improvement hypothesis may not suffice (Hymer, 1968; Moran, 1999). The conservative and liberal perspectives on poverty also explain the theoretical linkage between FDI and welfare. The conservative theory argues that alleviation of poverty is the sole responsibility of policy makers using funds collected through taxes and aid from MNCs. The theory further argues that MNCs only exist to make profit, hence the FDI – poverty reduction hypothesis may not hold (Friedman, 1962; Ollong, 2015). The liberal theory on the other hand was influenced by the failure of government in eradicating poverty (George, 2006) and by the rise in the influence businesses (Korten, 1995). This theory argues that since the MNCs have control over resources, they are expected to place priority on the society (through corporate social responsibility) over their profit-making objectives (Ollong, 2015).

2.1 Theoretical framework of host absorptive capacity on FDI- poverty nexus

Current empirical literatures in developing countries have now begun to pay attention to certain factors that may condition the positive spillovers effect of FDI (Colen et al., 2008). The impact of FDI can be conditional, i.e. the impact of FDI is non-linear and depends on absorptive capacity of the host country) and unconditional, when FDI's impact on the economy and welfare is direct (Krogstrup & Matar, 2005). This section evaluates the theoretical underpinning of institutional quality and human capital in defining the FDI-poverty nexus.

2.1.1 Institutional channel

The channel which quality of institution influence the FDI-Poverty nexus can be summarized in to three channels. The first channel is through knowledge spillovers; the spillover occurs through competition, mobility of skilled labour, and imitation of technology demonstrated by the MNC (Crespo & Fontoura, 2007). Healthy competition can be promoted between domestic and foreign firms when there is sound institutions like the rule of law, efficient good government, regulatory quality, and low level of corruption. The second channel through which sound institutions influence the FDI-poverty nexus is by enhancing competition. Foreign investment increases competition, which leads to innovation and efficiency in the industry (Driffield & Love, 2007). Brahim and Rachdi (2014) also argued that quality institution gives incentives for competition in the market, as well as knowledge spillovers. The third channel is through accumulation of capital, while some studies (Rye, 2016; Arabyat, 2017; Gohou & Soumare, 2012; Quiñonez *et al*., 2018) argue that FDI has a crowd out effect, as it has no significant impact on welfare. Others have argued that sound institutional quality would attract foreign investors as well as capital accumulation.

2.1.2 Human capital channel

The human capital channel of this paper relies on the endogenous growth theory, which was developed by Lucas (1988) and Romer (1986). The theory argues that human capital stock determines the rate of economic growth and development, thus investment in education and training are critical contributors to productive stock of labour and economic growth. Lucas (1988) argues that an increase in human capital has both internal and external effects on production. The

internal effect is through improvement in skills and efficiency of labour, while the external effect is through learning by doing (also known as the spillover effect). Romer's (1990) argument on human capital is based on research, development and innovation. He argues that human capital is one of the determinants of innovation. A well-educated individual could develop necessary and needed technological changes in the economy. Given the impact of human capital on aggregate production and welfare, it is anticipated that the positive spillovers of FDI would differ across countries and regions with varying levels of human capital (Blomstrom *et al*., 1996; Borensztein *et al*., 1989; Bonga Bonga and Phume, 2018; Li and Liu, 2005).

In tandem with the arguments above. This study expects the FDI-poverty relationship to be conditional on the quality of institutions and human capital development in the host country. Better human capital development and quality institutions are expected to contribute to the FDI- poverty reduction nexus through technological spillovers, accumulation of capital, and competition.

2.2 Empirical review

Several attempts have been made in examining the impact of FDI on poverty, however there is limited literature on the channels of the FDI-poverty nexus. Some studies support the FDI-poverty reduction hypothesis, while others reject it. Studies that found a positive impact of FDI on poverty reduction include (Lazrag & Zouari, 2018; Bharadwaj, 2014; Soumare, 2015; Fowowe & Shuaibu, 2014; Ucal, 2014). Lazrag and Zouari (2018) assessed the relationship between FDI, poverty reduction and environmental sustainability in Tunisia during the period of 1985 to 2015. Using fully modified ordinary least square (FMOLS), the study discovers that foreign direct investment has a significant impact on poverty alleviation. Similarly, Bharadwaj (2014) examined the effect of FDI on poverty in a sample of 35 developing countries from 1990 to 2004. The study concludes that FDI is beneficial to poverty reduction in the sample countries. Soumare (2015) examined the impact of FDI on welfare of Northern African countries during the period of 1900-2011. The study explored a dynamic panel regression and concludes that FDI is beneficial to welfare improvement in the region. With a sample of 26 developing countries between 1990 to 2009, Ucal (2014) analyzed the effect of FDI on poverty. The study confirms the significance of FDI in reducing poverty in these selected countries. In addition to this, Fowowe and Shuaibu (2014) used generalized methods of moments (GMM) to investigate the impact of FDI on the poor. The study also confirms the beneficial impact of FDI on the poor. Uttama (2015) examined the impact of FDI on poverty among the ASEAN countries. Using a spatial panel data model from 1995 to 2011, the study confirms the positive relationship between FDI and poverty reduction. The findings provide similar results even when spatial interactions are considered.

However, apart from studies that support FDI-poverty reduction hypothesis, there are also a few studies that have found that FDI does not significantly influence poverty. These studies include, (Rye, 2016; Arabyat, 2017; Gohou & Soumare, 2012; Quiñonez *et al*., 2018). Rye (2016) explored the effect of foreign direct investment on poverty using a sample of 134 countries in the world. The study used instrumental regression and two-stage least squares, it was discovered that FDI does not significantly influence poverty. Similarly, Arabyat (2017) examined the impact of FDI on poverty reduction in developing countries using a panel error correction model. Conclusion from this study suggests that FDI does not significantly influence poverty and unemployment in developing countries. The study attributes this to profit repatriation of foreign firms, crowd out effect of foreign investment on domestic capital, and low level of human capital. Gohou and

Soumare (2012) used two-stage least squares regressions to assess the impact of FDI on poverty. Using a sample of 52 countries in African between 1990 to 2007, the study found that FDI's impact on poverty is insignificant in the Northern and Southern region of Africa. In similar vein, Quiñonez *et al*. (2018) examined the impact of FDI on poverty incidence in Latin America. The study considers a panel data analysis and 13 economies from 2000-2014. The study concludes that FDI does not significantly reduce poverty in Latin America.

Some studies also looked at the channels of FDI-poverty nexus. These includes, (Tsaurai, 2018; Nagou, 2017). Tsaurai (2018) examined the role of natural resources on the impact of foreign direct investment on poverty alleviation efforts in Africa. Using fixed effect and GMM, with data spanning from 2002 to 2012, the study concludes that the interaction between FDI and natural resources reduced poverty levels in the selected African countries. Furthermore, Nagou (2017) analyzed the effect of foreign capital on poverty in West Africa. The study utilized a panel data of ten West African countries for the period 2000 to 2014. The simultaneous equation results suggest that foreign capital reduces poverty through growth and inequality.

Several studies have been documented on the relationship between FDI and poverty, majority of these studies are in support of the FDI-poverty reduction hypothesis, although a few studies have concluded that the relationship is either insignificant or negative . This study fills the glaring lacuna in the literature by identifying the impact of the host country's absorptive capacity on FDI-poverty nexus in SSA, the study also determines the absorptive capacity threshold for FDI to be effective in alleviating poverty. In addition to this, three measures of poverty were used, headcount (number of people poor), poverty-gap (depth/severity of poverty) and squared poverty gap all at $1.90/day.

3. Data and methodology

3.1 Data

This study explores a panel dataset of 28 countries in SSA, with an annual data over the period of 1996-2018. The choice of countries and period were contingent on data availability. Furthermore, regional analysis[7] was conducted to understand regional differences on the impact of FDI. Data for all the variables were sourced from POVCALNET, World Bank World Development Indicator (WDI, 2019), United Nations Conference on Trade and Development (UNCTAD, 2019), Penn World Table Version 9.1 (PWT), United Nations Development Programme (UNDP database, 2019) and World Governance Indicator (WGI, 2019). In the analysis of this study, FDI as a ratio of gross capital formation was used as a measure of FDI. Control of corruption (COC) and political stability (PS) were used as measures of institutional quality. This governance variable ranges from –2.5 (weak) to 2.5 (strong). Gross domestic product per capita is used as a proxy for per capita income (PCI). The Baro-lee human capital index[8] was used as a proxy for level of human capital development (HUC). Credit to private sector (CPS) as a ratio of gross domestic product was used as a proxy for financial development. Labour force (L)is measured by active labour force divided

[7]**West Africa**: Benin, Burkina Faso, Cote'divore, Gambia, Ghana, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Siera Leone, Togo.
Southern Africa: Angola, Lesotho, South Africa, Zambia, Zimbabwe.
East Africa: Burundi, Kenya, Mauritius, Mozambique, Rwanda.
Central Africa: Cameroon, Central African Republic, Congo Democratic Republic, Congo Republic, Gabon.
[8] This index leans on the (Barro & Lee, 2013) measurement of average years of schooling, and a Mincer's equation estimates which assumed a presumed rate of return to education (Psacharopoulos, 1994).

by total population. The overall human development indicator (HDI)is measured by average achievement of a nation in three fundamental dimensions, namely: health and long life, knowledge, and basic living standard. Poverty[9] (Pov) in this study were measured by three indicators, which includes headcount ratio, poverty gap and poverty gap square all at $1.90 per day.

3.2 Methodology

In addressing the problem of endogeneity, this study leans on pooled instrumental two-stage least squares (IV-2SLS) as the baseline method, while the fixed effect instrumental variable regression model (FE-IV) is used as a robustness check and to cater for heterogeneity in the model. Since the objective of this study is to identify the impact of FDI on poverty using IV estimation, the study relies on a proper exclusion restriction. The instrumental variables of financial development (CPS) and lagged FDI[10] must meet two conditions to be a valid instrument. The first condition is the instrument relevance condition (*see equation 1.0*), while the second condition is the instrument exogeneity condition (*see equation 1.1*). These two conditions posit that the instrument used in this estimation must be highly correlated with the endogenous regressor (FDI), but that it must not be correlated with any other determinants of the dependent variable. The exogeneity condition is also known as the exclusion restriction in IV regression. The IV estimator will be bias just like the OLS estimator if the latter condition does not hold, and it also appears that the instruments are correlated with the error terms in our second-stage equation.

The assumption of this study is that lagged FDI and CPS affect outcome variables through the first-stage estimations. The compact form is expressed thus as:

$$cov(CPS, FDI_{it-n}, FDI_{it}) = 0 \quad 1.0$$

$$cov(CPS, FDI_{it-n}, \varepsilon_{it}\ ) = 0 \quad 1.1$$

The general equation used for OLS estimation:

$$y^{11}{}_{it} = \rho + \omega_1 FDI^{12}{}_{it} + X_{it}^{13*}\gamma + \mu_i + \varphi_t + \varepsilon_{it} \quad 2.0$$

$$FDI_{it} = \emptyset + \alpha_1 FDI_{it-n} + \alpha_2 CPS + X_{it}^{*}\gamma + \mu_i + \varphi_t + v_{it} \quad 3.0$$

Equation 3.0 is the first stage of the IV-2SLS model, while equation 2.0 is the second stage. Sargan and Hansen tests were used to determine the appropriateness of the instruments used, while the Durbin Hausman test was used to determine endogeneity.

In estimating the impact of FDI on poverty. This study adapts the studies of (Lazrag & Zouari, 2018; Soumare, 2015; Arabyat, 2017; Fowowe & Shuaibu, 2014; Ucal, 2014; Rye, 2016). The poverty model is written as:

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[9] The only source that has cross-country comprehensive data on poverty is the World Bank, POVCALNET. However, the data have some missing figures in some years. In addressing this challenge, the author adopted a linear interpolation approach in filling the missing figures.

[10]According to Peres *et al*., (2018)**,** there is strong evidence that past FDI flows are critical drivers of current or expected flow of investments by MNCs. Multinationals are attracted by countries that already have substantial inflows of investments. Studies like (Alfaro & Charlton, 2007; Tarsalewska, 2008; Esiyok, 2015) have also adopted the lagged value of FDI as instruments.

[11] Dependent variables, which includes headcount ratio, poverty gap and squared poverty gap

[12] The major variable of interest, FDI as a proportion of gross capital formation

[13] Vector of control variables

$$Pov = \beta_0 + \beta_1 FDI_{it} + \beta_2 PCI_{it_{it}} + \beta_3 HDI_{it} + \beta_4 INST_{it} + \beta_5 L_{it} + \beta_6 Pov_{it-1} + \mu_{it} \quad 3.1$$

The theoretical linkage between economic growth and poverty reduction relies on the postulation that economic growth enhances productive capacity of economies, as well as job creations (Ravallion, 1995; Ravallion & Square, 1998; Vijayakumar, 2013). Hence, GDP per capita is expected to reduce poverty. Similarly, human development as outlined by the Millennium Development Goals is expected to alleviate poverty. According to Colen *et al*., (2008), labor force is expected to reduce poverty through employment channel. Similarly, Rodrick *et al*., (2004) argued that institutional quality promotes sound management of the economy and helps improve welfare of the people. Therefore, a strong governance indicator is anticipated to reduce poverty.

The Pooled IV-2SLS and FE-IV for FDI-poverty model is extended to include an interactive term, which includes institutional quality (*political stability and control of corruption*) and human capital development. This implies estimating the effect of FDI on poverty through absorptive interaction. The model is illustrated as follows following (Tsaurai, 2018; Nagou, 2017).

$$Pov_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 FDI^* ABS_{it} + \beta_3 X_{it} + \mu_{it} \quad 3.2$$

From equation 3.5 above, three possible results can be obtained in terms of the role of host absorptive capacity on the impact of FDI on poverty. If the β_1 and β_2 both have positive (negative) sign in the poverty equation, then FDI inflows have an unequivocal positive (negative) effect on poverty; If β_1 is negative, but β_2 is positive, then FDI inflows have a negative effect on poverty, and this effect reduces with the improvements in the host country's absorptive factors; If β_1 is positive[14] and β_2 is negative, then this means that the host economy has to achieve a certain threshold (in terms of absorptive capacity) for FDI inflows to alleviate poverty. The threshold is determined by differentiating all the poverty measures (Pov_{it}) with respect to foreign direct investment (FDI_{it}) and setting the resulting derivative as below. Equation 3.4 is the absorptive capacity threshold point of host country for FDI to alleviate poverty.

$$\frac{\partial Pov_{it}}{\partial FDI_{it}} = \beta_1 + \beta_2 ABS = 0 \quad 3.3$$

By dividing equation 3.3 by ABS gives the following equation:

$$ABS = \frac{-\beta_1}{\beta_2} \quad 3.4$$

4. Empirical results and discussions

4.1 Descriptive analysis

This section discusses descriptive statistics characteristics of the variables used in the model over the period of 1996-2018. Among the statistics examined are the averages, maximum, and minimum values of the pooled sample. The descriptive outcomes in table 2 shows that the average values for poverty head count from 1996 to 2018, and across the 28 countries stood at 46%, poverty gap was 20% and 11% for squared poverty gap. Mauritius has the minimum level of headcount,

[14] Caveat: it is still possible for β_1 to be negative for host country to achieve a certain threshold level. This hold if measurement of the absorptive variable has a negative scale, which is the case for Control of corruption and Political stability index.

poverty gap and squared poverty gap rate, with 0.3%, 0.1% and 0.02% respectively of their population.

Variable(s)	Obs.	Mean	Min	Max
FDI stock inward ($, Billion)	644	9.01	-0.316	179.56
Labour Force, % of pop.	644	38.9	26.1	50.4
Credit to Private Sector,% of GDP	642	27.62	0.491	2,564
Human Development Index	643	0.459	0.236	0.796
Per Capita Income ($)	644	1,744	210.8	11,938
Human Capital Development	617	1.701	1.053	2.809
Control of Corruption	644	-0.683	-1.723	0.762
Political Stability	644	-0.594	-2.845	1.118
Headcount Poverty, % of pop.	644	46.0	0.343	96.4
Poverty gap, % of pop.	644	19.9	0.059	66.0
Squared Poverty Gap, % of pop.	644	11.3	0.015	49.6

TABLE II: DESCRIPTIVE STATISTICS

Source: Authors' computation based on WDI Database, WGI, UNDP, UNCTAD and PWT (2019)

This country has been able to achieve this feat due to the implementation of series of programmes[15] and policies aimed at making education accessible for all, free health services, relative political stability, and welfare transfer. However, countries with highest poverty rate (headcount, poverty gap and squared poverty gap) are Liberia and Congo Democratic Republic. The poverty incidence in Liberia was as a result of the lagged impact of the first civil war which started in 1989 until 1997, while that of Congo Democratic Republic also coincided with the second civil war, which started in 1998 till 2003. The average value of FDI inward stock in the review period was $9.01 billion. Gabon has the lowest, with an outflow of $316.49 million. This period coincides with the first Ebola hemorrhagic fever pandemic in the country. However, South Africa has the highest FDI inward stock, with a value of $179.56 billion in 2010.

The debate on the impact of FDI on poverty remains unsettled in empirical literature. This study tries to unravel the actual impact in Sub-Saharan Africa, in contributing to the body of knowledge. Table 1 presents the baseline results on the direct impact of FDI on poverty in SSA. The results suggest that the impact of FDI on all the selected poverty indicators is positive. Estimates of the pooled regression is insignificant. However, after accounting for cross-country heterogeneity, the impact of FDI was significant. This result is consistent with (Rye, 2016; Arabyat, 2017; Gohou and Soumare, 2012; Quiñonez *et al.*, 2018) that attributes profit repatriation of multinational companies, crowd out effect of foreign investment on domestic capital and low level of host absorptive capacity as the factors responsible for FDI increase poverty in the region.

[15]Elaboration of an action plan on poverty alleviation, introduction of a mandatory corporate social responsibility (CSR), creation of national empowerment programme, establishment of a dedicated ministry of social integration and economic empowerment, and the introduction of a social register.

TABLE III: ESTIMATING THE DIRECT IMPACT OF FDI ON POVERTY IN SUB-SAHARA AFRICA

	IV-2SLS			FE-2SLS		
Variable(s)	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap
FDI	0.0002	0.00003	0.0001	0.0025**	0.0010*	0.0034*
	(0.0003)	(0.0002)	(0.0003)	(0.0011)	(0.0006)	(0.0019)
L	0.0568***	0.0297***	0.0203**	-0.0048	0.1078	0.1548
	(0.0194)	(0.0122)	(0.0090)	(0.1204)	(0.0720)	(0.1018)
COC	-0.0074***	-0.0039***	-0.0021**	-0.0101	-0.0070**	0.0109
	(0.0022)	(0.0013)	(0.0001)	(0.0064)	(0.0038)	(0.0072)
PCI	-0.0001	-0.0015	-0.0012	-0.0497***	-0.0416***	-0.0354***
	(0.0024)	(0.0015)	(0.0011)	(0.0136)	(0.0081)	(0.1167)
HDI	0.0014	0.0108	0.0095*	-0.0106	0.0281**	0.0320**
	(0.0109)	(0.0067)	(0.0050)	(0.0241)	(0.0139)	(0.0162)
POV(-1)	0.9853***	0.9723***	0.9662***	0.8904***	0.8873***	0.8123***
	(0.0075)	(0.0071)	(0.0070)	(0.0197)	(0.0168)	(0.0604)
Constant	-0.0276	0.0049	0.0065	0.3690***	0.2780***	0.2268**
	(0.0277)	(0.0170)	(0.0129)	(0.1172)	(0.0687)	(0.0963)
Wald χ^2	43824.13	34037.73	29244.51	199649.82	95378.03	14039.22
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.98	0.98	0.98	0.97	0.94	0.85
W-Haus (p-value)	0.0008	0.0010	0.8297			
Sargan test (p-value)	0.6258	0.7993	0.8112			
No of Countries	28	28	28	28	28	28
Observations	446	446	446	418	418	418

Source: Authors' computation based on UNCTAD, WDI, WGI and Penn World table database

Note: Standard errors in parentheses, *** denotes significance at 1 %, ** at 5 % and * at 10%. Instruments in this model includes CPS, which is a measure of Financial development and lag of FDI. The null hypothesis for the endogeneity test is that variables are exogenous. The null hypothesis for Sargan Identification test is that is that the instruments are valid instruments, i.e., uncorrelated with the error term

Furthermore, active labour force was found to have a positive relationship with poverty in SSA. The coefficients of active labour showed that rising labour force has the potential of increasing the number of the poor and severity of poor. This is possible because SSA's labour force is predominantly made up of youth with significant proportion of unemployment. This finding is consistent with Ahlburg, *et al*. (1996) who affirmed a positive relationship between population and poverty. The coefficient of control of corruption which is a measure of institutional quality suggests a significant and negative relationship with all the measures of poverty. The results reveal that countries with robust systems of institutional quality can promote economic growth, minimize income distribution conflicts, and reduce poverty. This is in tandem with the study of (Edinaldo & Ramesh, 2010; Chong & Calderon, 2000; Sanjeev 2017; Perera & Lee, 2013). The level of income is also pivotal to poverty reduction, as suggested by the estimates, per capita income has a negative effect on poverty incidence in SSA, the result was not significant in the pool regression. However, after accounting for individual characteristics, the result was significant. This is in conformity with the study of (Son & Kakwani, 2004; Skare & Družeta, 2016) that increase in economic activity through increase in aggregate demand, factor productivity, and reduction in unemployment rates is capable of alleviating poverty level in the region.

Except for headcount poverty under fixed effect model, the estimates of human development index suggest a positive relationship with all the poverty measures. This is consistent with the findings of (Balamurali *et al*., 2015; Caselli, *et al*., 2005) that educational and health attainment does not necessitate increase in economic growth or poverty reduction. The significance of lagged poverty indicators across models and poverty measures signifies the importance of initial poverty

conditions as one of the key drivers of current poverty in the region. This is consistent with the study of (Son & Kakwani, 2004) that the initial levels of economic development really matter. A battery of diagnostic tests were conducted. This includes the R-squared results (*with an average of 0.9)* which measure the goodness of the models. Furthermore, the Wald chi-square test which indicates overall significance of the model suggest that the model is jointly significant. The null hypothesis (*H_o: FDI is exogenous*) of the Wu-Hausman is also rejected. Lastly, the null hypothesis of the identification test (Ho: Instruments are valid instruments) is also accepted, indicating the validity of the instruments used.

Since the baseline model clearly established that FDI does not have direct impact on poverty reduction in SSA. The objective of this study is to investigate the channels through which FDI may contribute to poverty alleviation in Sub-Saharan African countries. In particular, the study investigates whether each of the two channels – quality of institutions and human capital development – do combine with FDI to reduce poverty in the region. Table 4 reveals the results of the panel estimation of poverty equation in equation 3.5, each including an interactive term between FDI and institutional quality and human capital development.

The main parameters of interest are the estimated coefficients of FDI and the interaction term. The both pooled-2SLS and FE-2SLS regressions suggest that the conditions for host absorptive capacity hold for human capital interactions. This suggests that improvement in human capital has a positive and significant effect on the nexus between FDI and poverty reduction nexus in SSA. This finding is consistent with the study of (Blomstrom *et al*., 1996; Borensztein *et al*., 1989; Bonga-Bonga & Phume, 2018; Li and Liu, 2005) that countries must attain an estimated threshold of human capital for FDI to be effective in alleviating poverty.

TABLE IV: ROLE OF HOST ABSORPTIVE CAPACITY ON THE IMPACT OF FDI ON POVERTY IN SUB-SAHARA AFRICA

Variable(s)	Pooled-2SLS			FE-2SLS			Pooled-2SLS			FE-2SLS		
	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap
FDI	0.0046	0.0045**	0.0038**	0.0335*	0.0308**	0.0256**	-0.0057***	-0.0031***	-0.0018***	-0.0055**	-0.0053*	-0.0044*
	(0.0032)	(0.0021)	(0.0016)	(0.0182)	(0.0142)	(0.0111)	(0.0008)	(0.0005)	(0.0004)	(0.0027)	(0.0031)	(0.0022)
L	0.0571***	0.0321**	0.0205**	0.4723	0.5389**	0.4685**	0.0358**	0.0190	0.0128	0.0186	0.1193*	0.1005**
	(0.0188)	(0.0133)	(0.0102)	(0.3027)	(0.2344)	(0.1858)	(0.0183)	(0.0116)	(0.0084)	(0.1077)	(0.0659)	(0.0483)
COC	-0.0072***	-0.0049***	-0.0034***	-0.0169	-0.0148*	-0.0124**						
	(0.0020)	(0.0014)	(0.0011)	(0.0114)	(0.0088)	(0.0070)						
PCI	-0.0022	-0.0037***	-0.0034***	-0.0279*	-0.0208*	-0.0144	-0.0009	-0.0021	-0.0017**	-0.0304**	-0.0328**	-0.0187***
	(0.0020)	(0.0013)	(0.0010)	(0.0146)	(0.0113)	(0.0090)	(0.0024)	(0.0014)	(0.0010)	(0.0131)	(0.0099)	(0.0072)
HDI	0.0150	0.0282***	0.0266***	0.0331	0.0496**	0.0472**	0.0128	0.0163**	0.0134**	-0.0103	0.0264**	0.0330***
	(0.0101)	(0.0088)	(0.0053)	(0.0304)	(0.0239)	(0.0183)	(0.0105)	(0.0066)	(0.0047)	(0.0209)	(0.0127)	(0.0090)
POV(-1)	0.9791***	0.9706***	0.9668***	0.9235***	0.9170***	0.9164***	0.9902***	0.9753***	0.9677***	0.9082***	0.9143***	0.9282
	(0.0067)	(0.0071)	(0.0074)	(0.0229)	(0.0263)	(0.0280)	(0.0071)	(0.0069)	(0.0069)	(0.0189)	(0.0185)	(0.0165)
FDI*HUC	-0.0035*	-0.0034**	-0.0029**	-0.0240*	-0.0221**	-0.0184**						
	(0.0019)	(0.0013)	(0.0010)	(0.0129)	(0.0100)	(0.0079)						
FDI*COC							-0.0069***	-0.0036***	-0.0021***	-0.0062***	-0.0053**	-0.0039**
							(0.0009)	(0.0005)	(0.0004)	(0.0020)	(0.0023)	(0.0017)
Threshold	**1.33**	**1.30**	**1.30**	**1.40**	**1.39**	**1.39**	**-0.83**	**-0.85**	**-0.88**	**-0.89**	**-1.01**	**-1.11**
Constant	0.0051	0.0360**	0.0369***	0.0686	0.0092	0.0348	-0.0006	0.0201	0.0183	0.2314**	0.1627**	0.1236**
	(0.0230)	(0.0156)	(0.0119)	(0.1768)	(0.1346)	(0.1070)	(0.0263)	(0.0164)	(0.0119)	(0.1110)	(0.0787)	(0.0571)
Wald χ^2	57361.59	38878.87	30886.95	115402.75	34302.99	17623.03	48657.24	36710.06	30688.98	234464.54	107457.57	62999.46
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W-Haus(p-value)	0.0004	0.0000	0.0000				0.0017	0.0053	0.0189			
Sargan (p-value)	0.1307	0.1098	0.1191				0.4005	0.8375	0.9391			
R-squared	0.99	0.98	0.98	0.95	0.90	0.85	0.99	0.99	0.99	0.98	0.97	0.96
No. of Countries	28	28	28	28	28	28	28	28	28	28	28	
Observations	560	560	560	560	560	560	560	446	446	446	446	446

Source: Author's computation based on WDI, UNCTAD, WGI and Penn World table database

Note: Standard errors in parentheses, *** denotes significance at 1 %, ** at 5 % and * at 10%. Instruments in this model includes CPS, which is a measure of financial development and lag of FDI. The null hypothesis for the endogeneity test is that variables are exogenous. The null hypothesis for Sargan identification test is that is that the instruments are valid instruments, i.e., uncorrelated with the error term

Furthermore, the absorptive capacity threshold points of human capital development for FDI to alleviate poverty ranges **1.35%**[16]. The findings of this study show that if human capital accumulates at an annual rate of 1.35%, FDI will alleviate poverty in the region. As shown in the figure 4[17], it important to know that about ten countries are below this threshold. In validating this result, a robustness analysis was done (*See Appendix 1*). This includes sample of countries[18] with human capital above/within the estimated threshold. This analysis suggests that FDI significantly reduces poverty within this sample. This buttress our argument that human capital really matters on the nexus between FDI and poverty reduction in SSA.

The Pooled-2SLS and FE-2SLS estimates of the interactive term of institutional quality measured by control of corruption has a negative and statistically significant impact on all measures of poverty. This suggest that an improvement in quality of institution has a positive and significant effect on the nexus between FDI and poverty reduction nexus in SSA. This finding is in conformity with the findings of (Jilenga & Helian, 2017; Agbloyor *et al*., 2016; Hayat, 2019) that countries with strong institutional quality have the potential of exploring the FDI-poverty reduction nexus through the enhancement of spillovers, promoting healthy competition and capital accumulation. However, weak institutions may prevent domestic firms from optimizing the benefits of the technology spillover from the MNCs. Therefore, the same level of FDI could likely to exert different level of impact on poverty alleviation in different countries with varying levels of institutional quality. Furthermore, the absorptive capacity threshold points of institutional quality (Control of corruption) for FDI to alleviate poverty is **-0.92**. This suggests that if the quality of institutions is kept at an annual rate of -0.92, FDI will have a positive effect on poverty reduction in the region.

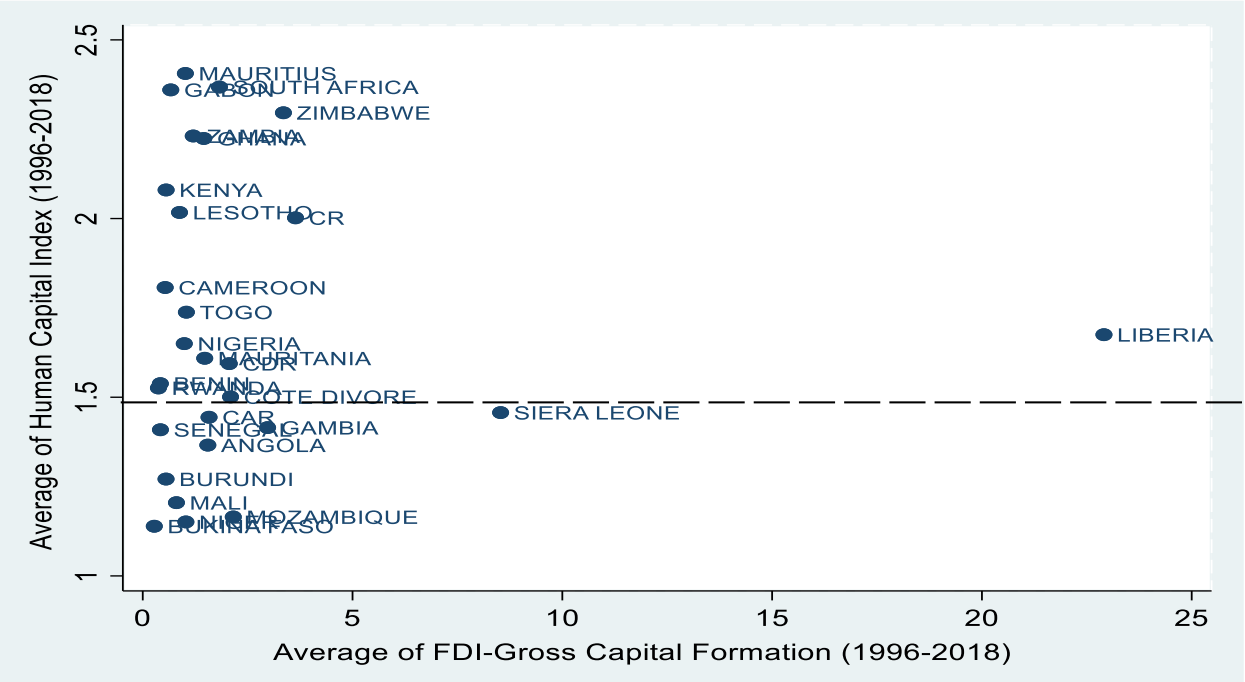
As shown in the figure 5, 10/28 countries (*Angola, Kenya, Burundi, Nigeria, Cameroon, Kenya, Liberia, Zimbabwe Congo Democratic Republic, Congo Republic*) are below the estimated threshold of control of corruption.

[16] This is derived by calculating the average thresholds of pooled-IV and FE-IV

[17] The level of human capital for each country on the average for the entire sample 1996-2018 is plotted on the vertical-axis, while the average FDI-Gross Capital formation is plotted on the horizontal-axis

[18] Benin, Cameroon, Congo Democratic and Congo republic, Cote Divore, Gabon, Liberia, Ghana, Kenya, Lesotho, Mauritania, Mauritius, Nigeria, Rwanda, Togo, South Africa, Zambia, and Zimbabwe.

FIGURE 4: HUMAN CAPITAL THRESHOLD FROM THE REGRESSIONS



Source: Authors' computation from the human capital interaction model

A battery of robustness checks was also conducted to validate this result. This includes, using political stability as alternative measure of institutional quality, and conducting the analysis for sample of countries with institutional quality index[19] above the threshold. The political stability index when interacted with FDI (*See Appendix 2*) also exhibited similar characteristics with control of corruption index. The results show that stable political environment facilitates the spillover of FDI in alleviating in SSA. The estimated threshold is **-0.397[20].** Only these countries[21] are above the threshold. The second robustness check, which includes sample of countries[22] above the estimated threshold of control of corruption index suggests that FDI significantly reduces poverty within this sample. This buttress our argument that the quality of the institution is pertinent in reaping the benefit FDI can offer.

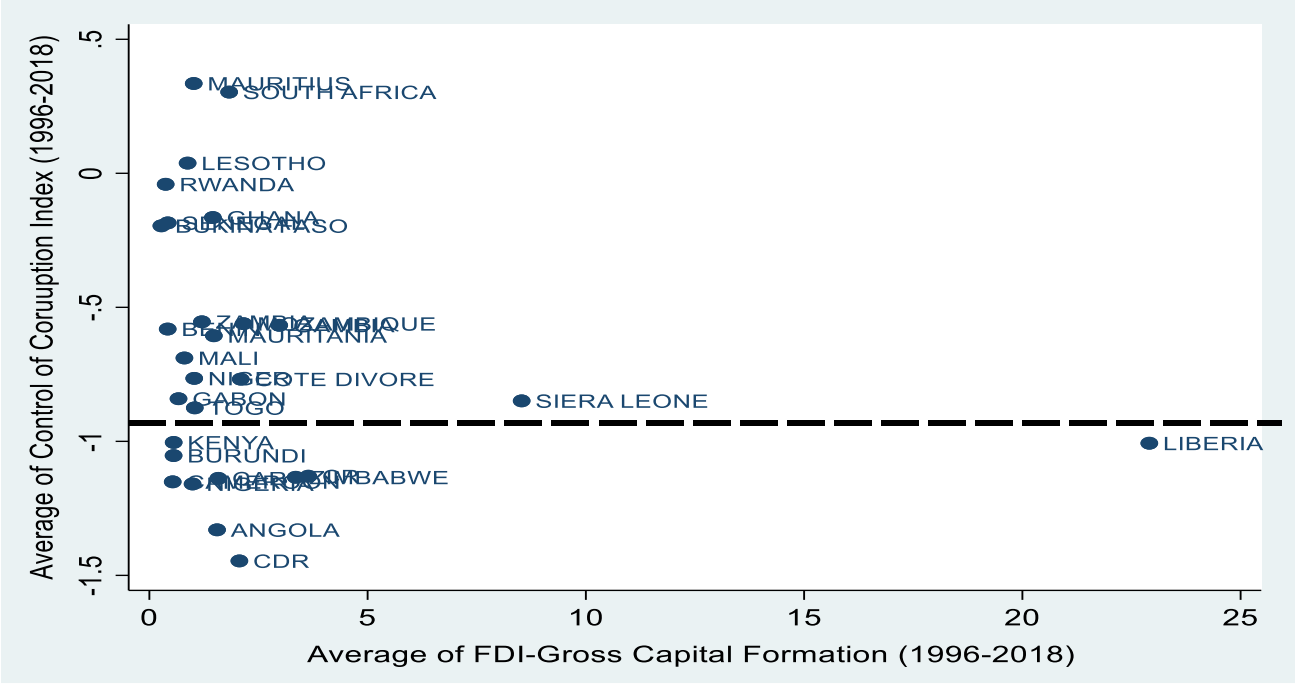
[19] Control of corruption index

[20] This is derived by calculating the average thresholds of pooled-IV and FE-IV in appendix 2

[21] See Appendix 3

[22] This includes Benin, Burkina Faso, Gabon, Gambia, Ghana, Lesotho, Mauritania, Mauritius, Mozambique, Senegal, South Africa and Zambia.

FIGURE 5: CONTROL OF CORRUPTION THRESHOLD FROM THE REGRESSIONS



Source: Authors' computation from the institutional quality interaction model (control of corruption)

Having examined the impact of FDI on poverty in SSA as a whole. This section goes further to understand regional characteristics in terms of the impact of FDI. This is to uncover whether regional characters play a role in the utilization of FDI spillover, and to also determine which region FDI could have the most impact. This study further seeks to know if the results of analysis involving the interconnections between FDI and host absorptive capacity are sensitive to regional categorization. The poverty indicator used is the poverty head count ratio since the policy action among development experts will be to reduce the total number of the poor. As shown in Table 5, it is interesting to note that the impact of FDI on poverty in all the four regions in SSA still remains positive, though the impact was not significant in eastern and central African region, this is due to insufficient flow of FDI to these regions.

This implies that the impact of FDI on poverty is not subject to regional classification. This result is consistent with the argument and empirical outcomes of (Gohou & Soumare, 2012) in west Africa and (Mahembe & Odhiambo, 2016) in southern Africa.

TABLE V: REGIONAL ANALYSIS ON THE IMPACT OF FDI ON POVERTY IN SUB-SAHARA AFRICA

Variable(s)	Central Africa			Eastern Africa			Southern Africa			Western Africa		
	Headcount Poverty											
FDI	0.0034	0.0451*	0.0177	0.0015	0.0031	-0.0363	0.0064***	0.0207	-0.0281	0.0195***	0.0588*	-0.0139***
	(0.0071)	(0.0262)	(0.0655)	(0.0011)	(0.0161)	(0.0935)	(0.0014)	(0.0346)	(0.0194)	(0.0079)	(0.0352)	(0.0047)
L	-0.4255**	0.2020	0.5571	-0.0654	0.1554	0.3679	-0.1258	0.0909	-0.3633	-0.5624	-0.1527	-0.1707
	(0.1814)	(0.3461)	(0.4374)	(0.1079)	(0.1554)	(1.0162)	(0.3475)	(0.0131)	(0.4529)	(0.4717)	(0.5783)	(0.3701)
COC	0.0638***	0.0386*		-0.0006	0.0024		-0.0006	0.0220		-0.0024	-0.0300**	
	(0.0189)	(0.0228)		(0.0039)	(0.0090)		(0.0187)	(0.0205)		(0.0180)	(0.0119)	
PCI	-0.1951**	-0.2584***	-0.2907***	-0.0252*	-0.0829***	-0.0350	-0.1249***	-0.1260**	-0.1309***	-0.0420	0.0130	-0.0282
	(0.0885)	(0.0501)	(0.0707)	(0.0130)	(0.0309)	(0.1551)	(0.0348)	(0.0623)	(0.0442)	(0.0352)	(0.0510)	(0.0273)
HDI	-0.1234*	-0.0698	-0.2488***	0.0375**	0.1727***	0.4160	0.1069*	0.1059	0.1983***	-0.1118	-0.0451	0.0696
	(0.0648)	(0.0562)	(0.0809)	(0.0186)	(0.0673)	(0.4462)	(0.0609)	(0.1172)	(0.0763)	(0.0877)	(0.0619)	(0.0608)
POV(-1)	0.7307***	0.5625***	0.3553***	0.9879***	0.9596***	0.9618***	0.7064***	0.5242***	0.8186***	0.8299***	0.8827***	0.9824***
	(0.1336)	(0.0892)	(0.1059)	(0.0509)	(0.1119)	(0.2366)	(0.0562)	(0.1864)	(0.0921)	(0.0563)	(0.0381)	(0.0394)
FDI*HUC		-0.0231*			-0.0013			-0.0062			-0.0387*	
		(0.0121)			(0.0128)			(0.0131)			(0.0235)	
FDI*COC			-0.0107			-0.0315			-0.0273*			-0.0101***
			(0.0509)			(0.0863)			(0.0149)			(0.0024)
Constant	1.6649**	2.0084***	2.0545***	0.2236***	0.6256**	0.3910	1.1756***	1.1720**	1.3650***	0.4019	-0.0369	0.3203
	(0.7409)	(0.8340)	(0.4369)	(0.0757)	(0.0673)	(1.1517)	(0.3699)	(0.4776)	(0.4599)	(0.3233)	(0.4944)	(0.2507)
Wald χ^2	60724.54	42840.24	47347.87	657103.14	429988.15	100404.99	47984.55	71705.00	32188.31	36020.34	58818.25	65063.06
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.96	0.89	0.96	0.99	0.99	0.96	0.85	0.80	0.83	0.71	0.90	0.96
No. countries	5	5	5	5	5	5	6	6	6	13	13	13
Observations	80	60	70	75	45	85	74	35	69	207	195	207

Source: Author's computation based on Fixed Effect Instrumental Regressions.

Note: Standard errors in parentheses, *** denotes significance at 1 %, ** at 5 % and * at 10%. Instruments in this model include CPS, which is a measure of Financial development and lag of FDI.

These studies argue that FDI has not been effective in stimulating growth, which is due to ambiguous policy framework in the regions, and low level of host absorptive capacity. Regional characteristics differ in terms of the channels which host countries can absorb the benefit FDI can offer in alleviating poverty. For instance, the absorptive capacity through human capital channels hold in all the four regions. However, this channel is not significant in eastern and southern Africa, as this may be due to low level of human capital in these regions. This finding is consistent with empirical argument of (Nyasulu, 2019) that human capital plays vital role in the relationship between FDI and economic development. In addition to this, institutional quality channel is valid in all the regions, though the channel is not significant in eastern and central Africa. This is due to high level of corruption in these regions.

5. Summary and conclusion

This study examined the role of host absorptive capacity on the impact of FDI on poverty in SSA. Using Pooled-2SLS and FE-2SLS to cater for heterogeneity, the results provide strong evidence of positive relationship between FDI and measures of poverty indicators explore. This is enough evidence to prove that the impact of FDI on poverty is not direct. The same empirical outcome was obtained when the analysis was done at a regional level. Since the impact is not direct, the study examines the channels which FDI would be effective in alleviating poverty. This is shown by the interaction of FDI with institutional quality and human capital development. The interaction variables are negative and significant in sign, which implies countries with higher level of absorptive capacity stand to benefit from increased FDI flows, whereas countries with low absorptive capacity tend to be hurt from increased FDI inflows.

In conclusion, the findings from this study have produced various useful policy implications, governments of Sub-Saharan African countries battling with poverty can leverage on foreign direct investment as a tool for alleviating poverty in their respective countries. This can be done if they are able to give more attention to their local economic conditions, which include improving their human capital development and quality of their institutions. These countries need to further liberalize, privatize, and securitize critical sectors in their economies in order to provide needed capital for human capital investment, as well as institutional reform. SSA countries can also take a cue from Mauritius' success story. The country which was rank as low-income economy in the 1970s now has one of the highest per capita income in the region. This achievement was due to relative political stability, sound institutional framework, investment in human capital, favourable trade policies, sound regulatory environment and a low level of corruption existing in the country.

Note:

1. Future studies can consider other policy channels for enhancing the impact of FDI on poverty.
2. Though, the fixed effect instrumental regression can address cross-country heterogeneity challenges. However, country-specific studies are also worthwhile for more targeted policy implications.
3. The need for such country-specific studies is also motivated by the caveat that established thresholds are broad-based and not specific to countries.
4. The Hausman test which determine the choice of either fixed/random effect instrument regression is not reported in this study due to brevity. However, the report is available on request

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APPENDIX 1: ROBUSTNESS CHECK ON COUNTRIES ABOVE ESTIMATED THRESHOLD

	Countries above estimated HUC threshold			Countries above estimated COC threshold		
Variable(s)	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap
FDI	-0.0039***	-0.0039**	-0.0030***	-0.0198*	-0.0106**	-0.0068**
	(0.0011)	(0.0007)	(0.0005)	(0.0106)	(0.0052)	(0.0032)
L	0.1901	0.2453***	0.2014***	0.1207	0.1390	0.1165**
	(0.0965)	(0.0668)	(0.0504)	(0.1808)	(0.0874)	(0.0545)
COC	-0.0191***	-0.0154***	-0.0108***	-0.0360**	-0.0199***	-0.0130***
	(0.0071)	(0.0047)	(0.0034)	(0.0149)	(0.0070)	(0.0043)
PCI	-0.0049	0.0013	0.0013	0.0005	0.0069	-0.0078
	(0.0137)	(0.0086)	(0.0062)	(0.0255)	(0.0129)	(0.0082)
HDI	-0.0491***	-0.0161	0.0043	0.1022	0.0633**	0.0552***
	(0.0196)	(0.0137)	(0.0103)	(0.0632)	(0.0289)	(0.0168)
POV(-1)	0.9239***	0.9669***	0.9838***	0.9592***	0.8919***	0.9234***
	(0.1670)	(0.0205)	(0.0184)	(0.0349)	(0 .9143)	(0.0202)
Constant	-0.0513	-0.1155	0.0919*	0.0441	0.0567	0.0587
	(0.1247)	(0.0769)	(0.0556)	(0.2041)	(0.1035)	(0.0654)
Wald χ^2	155480.80	58512.52	34964.03	78170.75	48861.25	36238.18
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.98	0.96	0.95	0.98	0.97	0.97
Observations	377	377	377	286	286	286

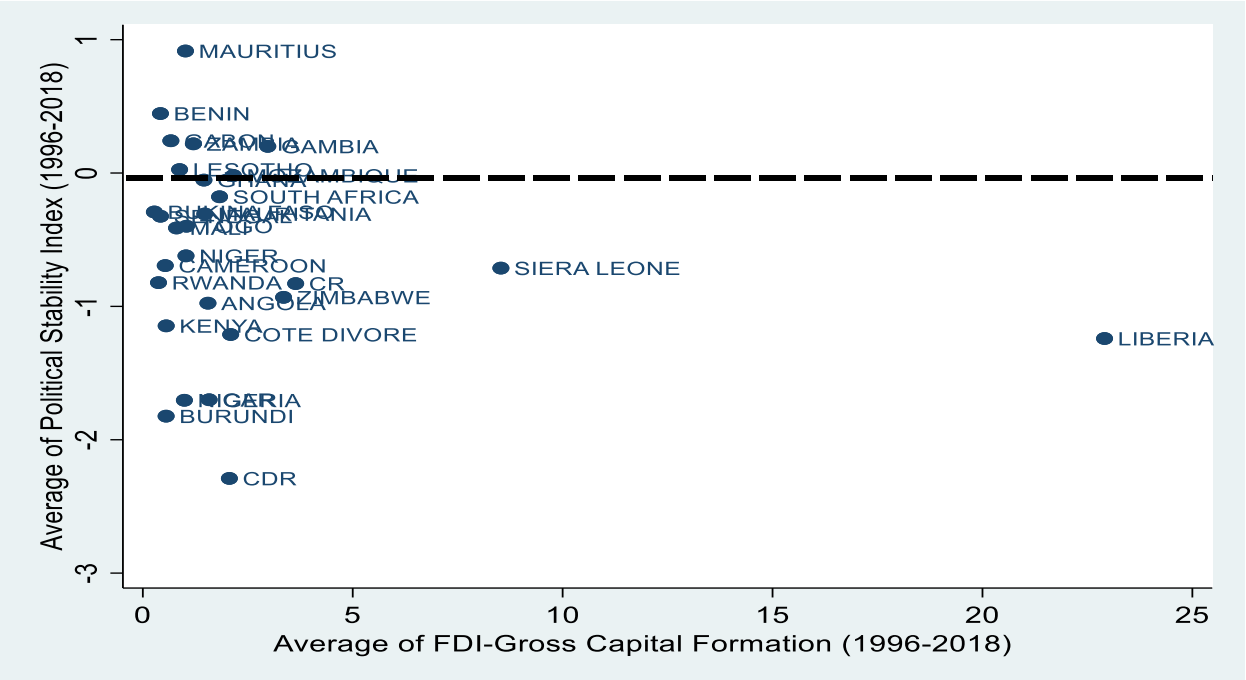
Note: Standard errors in parentheses, *** denotes significance at 1 %, ** at 5 % and * at 10%. Instruments in this model includes CPS and lag of FDI. The null hypothesis for the for endogeneity test is variables are exogenous. HUC is human capital, while COC is control of corruption. The pooled regressions is in similitude with the fixed effect regressions presented. The result is also available on request.

APPENDIX 2: ROBUSTNESS CHECK- ESTIMATING THE IMPACT OF FDI ON POVERTY: ROLE OF POLITICAL STABILITY

	Pooled-2SLS			FE-2SLS		
Variable(s)	Head Count	Poverty Gap	Squared Poverty Gap	Head Count	Poverty Gap	Squared Poverty Gap
FDI	-0.0024**	-0.0010***	-0.0009***	0.0003	-0.0002*	-0.0002
	(0.0010)	(0.0003)	(0.0002)	(0.0014)	(0.0009)	(0.0006)
L	0.0475**	0.0127	0.0192**	-0.0141	0.0903	0.0813**
	(0.0214)	(0.0115)	(0.0088)	(0.0995)	(0.0624)	(0.0459)
PCI	-0.0007	-0.0036***	-0.0014	-0.0341***	-0.0274***	-0.0204***
	(0.0026)	(0.0013)	(0.0010)	(0.0100)	(0.0063)	(0.0045)
HDI	0.0080	0.0190***	0.0119**	-0.0068	0.0244**	0.0308***
	(0.0117)	(0.0058)	(0.0051)	(0.0175)	(0.0110)	(0.0079)
POV(-1)	0.9853***	0.9765***	0.9630***	0.9194***	0.9304***	0.9470***
	(0.0078)	(0.0067)	(0.0073)	(0.0154)	(0.0140)	(0.0132)
FDI*PS	-0.0028**	-0.0002	-0.0011***	-0.0010**	-0.0007**	-0.0004*
	(0.0012)	(0.0002)	(0.0003)	(0.0005)	(0.0003)	(0.0002)
Threshold	**-0.85**	**-0.27**	**-0.85**	**0.28**	**-0.27**	**-0.42**
Constant	0.0081	0.0366**	0.0129	0.2640***	0.1822***	0.1361***
	(0.0299)	(0.0150)	(0.0125)	(0.0912)	(0.0565)	(0.0413)
Wald χ^2	43098.64	42241.66	27280.19	250575.67	112482.49	66805.87
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.99	0.98	0.98	0.98	0.97	0.96
Endogenous test	9.09	9.45	2.82			
Prob,	0.0009	0.0001	0.0604			
Sargan test	6.134	10.33	6.51			
Prob	0.1893	0.0352	0.1639			
Observations	558	558	418	502	502	502

Note: Standard errors in parentheses, *** denotes significance at 1 %, ** at 5 % and * at 10%. Instruments in this model includes CPS and lag of FDI. The null hypothesis for the for endogeneity test is variables are exogenous

APPENDIX 3: POLITICAL STABILITY THRESHOLD FROM THE REGRESSIONS



Source: Authors' computation from the institutional quality interaction model (political stability)