Determinants of FDI flows to Sub- Saharan Africa: *Does economic development play a role?*

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by

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Abstract

There is a disparity in the trends of Foreign Direct Investment (FDI) flows to Sub- Saharan Africa (SSA) across nations at different stages of economic development, thereby indicating that economic development could play a role in attracting FDI to the region. This study assesses whether economic development plays a key role in attracting FDI to SSA, and examines whether the determinants of FDI differs across nations at different stages of economic development. The study constructs a panel dataset consisting of twenty-seven Sub- Saharan African (SSA(n)) nations, separated into higher and lower income nations, for the period 2000-2019. Both static and dynamic panel regression analysis is conducted, where the dynamic model is estimated using a system of Generalised Method of Moments (GMM) procedure, whereas static panel analysis is conducted using fixed effects and random effects models. A dummy variable is included to represent economic development. The dummy was created by assessing each nations country classification by income level, according to the World Bank, in each year included in the analysis, and not by taking a nations classification at the end-point of the analysis, as end-point classification is likely to lead to a misclassification of nations that have transitioned from lower to higher income nations throughout the period under investigation. The full sample regression results found the dummy variable to be strongly significant, thereby supporting the claim that economic development does play a role in attracting FDI to SSA. Additional factors identified to be key drivers of FDI to SSA include inflation, FDI flows in the previous period, and trade openness. A comparison of the determinants of FDI across lower and higher income SSA(n) nations indicates that the determinants of FDI differs across nations at different stages of economic development. The factors that attract FDI to higher income SSA(n) nations are inflation, and government effectiveness, whereas the factors that attract FDI to lower income SSA(n) nations are lagged FDI flows, inflation, and trade openness.

Keywords: Determinants of FDI, Panel data analysis, Sub- Saharan Africa.

JEL classifications: O11,O4, O43, O57,C33.

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Declaration

I, Mukosa Chakufyali, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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List of Acronyms

BRICS	Brazil, Russia, India, China, and South Africa
FD	Financial Development
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
MNC's	Multi-national Corporations
PMG	Pooled Mean Group
SSA	Sub- Saharan Africa
SSA(n)	Sub- Saharan African
WDI	World Development Indicators
WGI	World Governance Indicators

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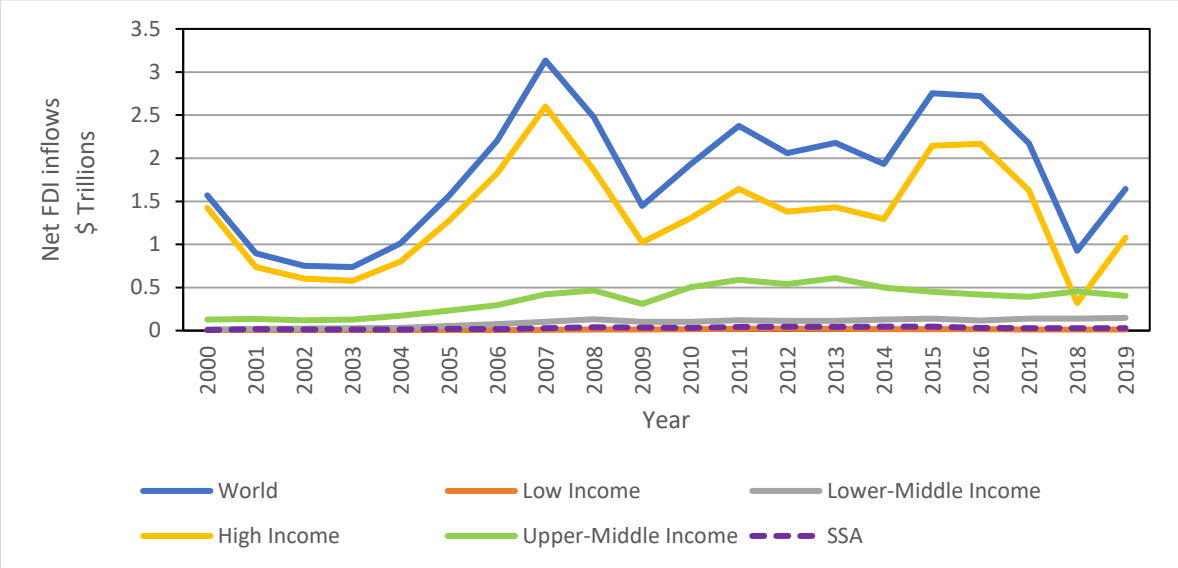
1. Introduction

Foreign Direct Investment (FDI) is seen as a key driver of economic development, particularly in nations that lack adequate domestic capital to meet their investment needs (Ahmeti & Kukaj, 2016). Various developing nations have taken measures to increase the magnitude of capital inflows into their respective countries. Increased capital inflows, primarily in the form of FDI, generally promotes economic growth which enhances the standard of living of the nation's citizens (Jaiblai & Shenai, 2019). Additionally, FDI often brings in efficient technologies, contributes to tax revenue of the host nation, provides employment for locals, and invests in human capital development through skills training programs (Jaiblai & Shenai, 2019). As a result, various nations have opted to develop policies that promote cross-border investment, hoping that their citizens accrue the associated benefits of FDI (Jaiblai & Shenai, 2019).

As of 2019, global FDI flows were reported to be at $1.54 trillion, representing a 3% annual increase in global FDI flows (UNCTAD, 2020). The observed increase in FDI flows was attributed to increased FDI flows to developed nations. FDI flows to developed nations increased by 5% to $800 billion, which was enough to offset the 2% decline in FDI flows to developing nations (UNCTAD, 2020). The difference in FDI flows to developed and developing nations over a 20 year period is illustrated in figure 1 below. Notably, the trend in global FDI flows is heavily influenced by the trend in FDI flows to high income nations. Additionally, FDI flows to developed nations (high income and upper-middle income nations) account for the majority of global flows, whereas developing nations (low income and lower-middle income nations) are seen to attract very little FDI. The dashed line on figure 1 represents FDI flows to Sub- Saharan Africa (SSA), which represents the region this study will focus on. Most Sub- Saharan African (SSA(n)) nations are classified as low and lower-middle income nations by the World Bank, hence it is unsurprising that the line lies between those of low and lower-middle income nations, with a trend similar to the respective groups. This figure further shows a significant difference in the size of FDI flows to SSA in comparison to global FDI flows as well as flows to high income and upper-middle income nations. Notably, we also observe that the trend in FDI flows to SSA differs from the aforementioned groups. These differences are what has led us to further examine what the determinants of FDI to SSA are, and whether they differ across nations at different stages of economic development – considering the clear difference between FDI to advanced and less advanced nations as illustrated in figure 1.

Figure 1: Disaggregated Global FDI flows for the period 2000-2019.



Source: Author's Compilations using data from World Bank, 2021

Numerous papers have attempted to explain why we observe differences in FDI flows to developed and developing nations. To explain these differences, researchers focus on identifying the key drivers of FDI to these respective group of nations (Saini & Singhania, 2018; Sabir, Rafique, & Abbas, 2019; Dellis, Sondermann, & Vansteenkiste, 2020). By comparing the drivers of FDI flows to the respective groups, numerous papers show that FDI flows tend to be driven by different factors, thereby implying that the level of economic development may alter the main drivers of FDI (Saini & Singhania, 2018; Sabir, Rafique, & Abbas, 2019; Dellis, Sondermann, & Vansteenkiste, 2020). These papers indicate that the quality of institutions and economic structures play a big role in attracting FDI to advanced nations, whereas FDI to developing nations is generally driven by resource seeking investors, who also consider the stability of the macroeconomic and political environment (Rogmans & Ebbers, 2013; Boga, 2019; Cleeve, 2012).

Asiedu (2002) notes that determinants of FDI to non-SSA developing nations and SSA developing nations are different. Infrastructure development was found to have a positive impact on FDI flows to non-SSA developing nations, but no impact on FDI flows to SSA. Additionally, Asiedu (2002) found that trade openness is likely to attract more FDI to non-SSA developing nations than to SSA nations. Aseidu's (2002) findings imply that papers that primarily focus on non-SSA developing nations may have misleading implications for policy makers in SSA. This a noteworthy result because the majority of the studies that opt to include SSA(n) nations, tend to focus on South Africa (e.g., Saini & Singhania, 2018; Boga, 2019).

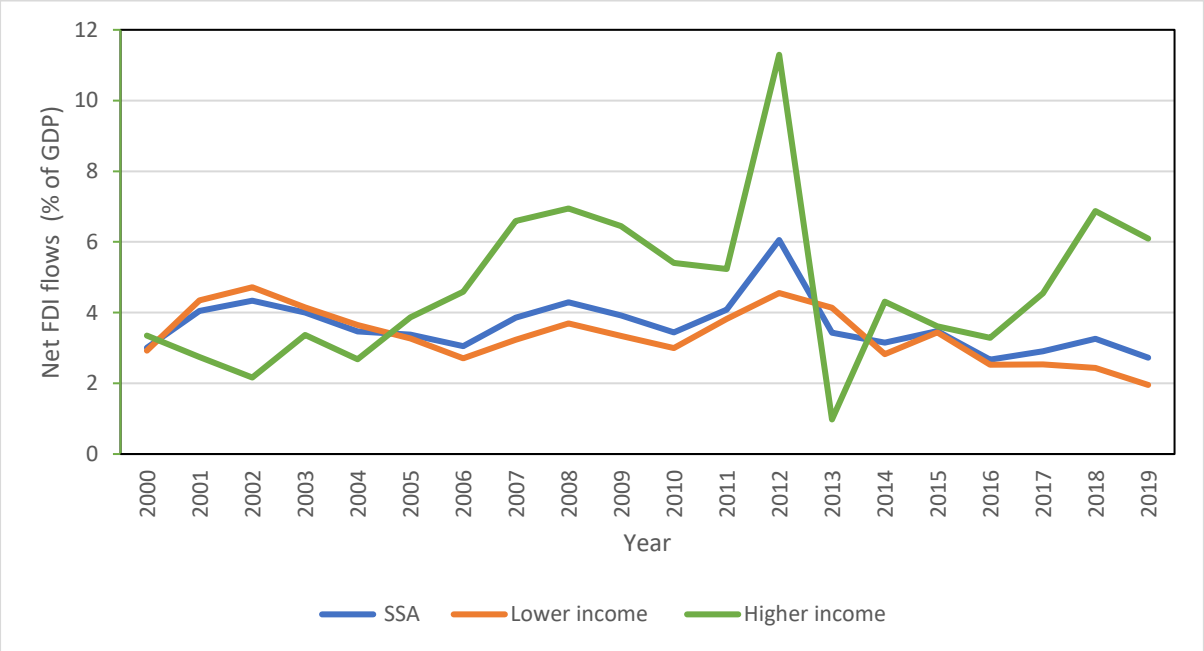
South Africa tends to be the African country of choice due to easily accessible data on various economic variables as well as a greater frequency of reported data, which allows for flexibility in the choice of empirical methods, and time periods used for analysis. However, South Africa may not serve as a good representative for all SSA(n) nations, particularly in studies providing insight on capital flow dynamics in SSA. This is because the South African economy and financial system are substantially more developed than the majority of SSA(n) nations, which is the likely driver of significant capital flow discrepancies between South Africa and other SSA(n) nations. This implies that examining capital flow dynamics in developing nations using only South Africa as a case study may not give an accurate description of these dynamics in other SSA(n) nations.

There are papers that have directly assessed the key determinants of FDI flows to SSA (Boga, 2019; Cleeve, 2012; Asiedu, 2002; Jaiblai & Shenai, 2019). Jaiblai & Shenai, (2019) conducted a panel study investigating the determinants of FDI to SSA. However, their paper primarily focused on West Africa, as all nations included in their study belonged to this sub-region. As of 2019, FDI flows to West Africa fell by as much as 21%. This value was significantly larger than the 9% and 7% declines observed in East Africa and Central Africa respectively (UNCTAD, 2020). Therefore, focusing the analysis on a sub-region may not give a clear picture of dynamics across SSA. Boga (2019) conducted a panel study with a more representative dataset, which comprised of 23 different SSA(n) nations. The results of this study could be of more relevance to a larger set of nations. However, the omission of institutional variables may have negatively affected Boga's (2019) results. Cleeve (2012) and Asiedu (2002) showed that institutional variables are likely to have a large influence in driving FDI flows to SSA. These variables are considered important as SSA(n) nations are often considered to have poor institutions which disincentivises investment.

Furthermore, trends in FDI flows to SSA across nations at different stages of economic development differ. This is illustrated in figure 2 below. For the purpose of this figure, high and upper-middle income nations are classified as "higher income nations", and low and lower-middle income nations are classified as "lower income nations". The trend in FDI flows to lower income nations closely follows that of the entire region, this is because most nations in the region are considered to be lower income nations. However, as illustrated in the figure, FDI flows to higher income nations differs from those of lower income nations. Notably, there was a sharp decline in FDI flows to higher income nations in 2013, and this was due to a change in Angola's classification from a lower-middle income nation to an upper-middle income nation.

This period coincided with net divestment from Angola, which was driven by unsustainable (and substantial) investments made in 2008 and 2009(UNTCAD, 2011; UNTCAD, 2013). There are periods where the trends in FDI flows across the respective groups move in opposing directions, as well as periods where the trends move in the same direction. However, during the periods in which FDI flows to both groups are increasing, we do note that the magnitude of the increase in FDI flows to higher income nations is larger than the increase to lower income nations. This paper aims to explain reasons for these differences.

Figure 2: Trends in FDI flows to SSA for the period 2000-2019.



Source: Author's Compilations using data from World Bank, 2021

As noted in the preceding paragraph, there is a clear disparity in the trends observed across nations classified as higher income nations and those classified as lower income nations. Despite there being various papers assessing the determinants of FDI to SSA, no paper has attempted to assess whether the level of economic development plays a role in attracting FDI to SSA. This serves as a research gap that this study intends to fill.

This study aims to assess whether economic development plays a key role in attracting FDI to SSA, and to provide further insight into how the determinants of FDI differ across nations at different stages of economic development. An understanding of the different determinants of FDI across nations at different stages of economic development allows policymakers in SSA to adopt policies that are better suited towards dealing with current capital flow dynamics in their respective economies.

We use annual data from twenty-seven SSA(n) nations[1] between 2000-2019. The study uses a balanced panel dataset; hence the choice of nations was informed by data availability on each of the variables across the time period specified. The nations were classified into 2 groups: higher income (which include high and upper-middle income nations), and lower income SSA(n) nations (which include low and lower-middle income nations). This classification is based on the World Bank's country classification by income level.[2]

The study conducts dynamic panel data analysis, where the Generalised Method of Moments (GMM) procedure was used to identify the key drivers of FDI to SSA. This enables the study to assess how the drivers of FDI differ across the two groups of nations. Dynamic models are preferred to traditional static models as they do not assume that current FDI flows are independent of previous FDI flows, however, the inclusion of lagged dependant variable introduces an endogenous variable to the system. The GMM procedure appropriately deals with endogeneity, hence it is considered superior to other methods (Saini & Singhania, 2017). However, the study conducts static panel analysis to confirm the robustness of the results obtained from the GMM procedure. The results of the study indicate that economic development plays a role in attracting FDI to SSA, and the key determinants of FDI to SSA differs across nations at different stages of economic development.

The remainder of this study is structured as follows: Section 2 provides a discussion on the theories of FDI and a review of the empirical literature on the topic. Section 3 presents the data, and methods. Section 4 discusses the empirical results, and the study is concluded in section 5 where key findings are restated, policy recommendations are provided, and areas for further research are discussed.

2. **Literature Review**

2.1.Theoretical Background

Various theories have been used to explain the determinants of FDI. These theories aim to explain the following: why companies/individuals in a home country choose to invest in another country, and why they prefer direct investment as opposed to export and license

[1]The countries selected for the study include Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Chad, Cote d'Ivoire, Gabon, The Gambia, Ghana, Kenya, Madagascar, Mali, Mauritania, Mauritius, ,Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia.

[2] The World bank assigns global economies into 4 income groups, namely low-income, lower-middle income, upper-middle income and high-income nations. These classifications are updated annually and are based the previous year's GNI per capita in current USD (using the Atlas method exchange rates).

agreements that could still provide the benefit of access to a foreign market, as is the case with FDI (Boga, 2019). Ideally, an understanding of these theories should help explain observed trends in FDI, and aid model specification for empirical studies.

FDI can be defined as an investment made by a foreign investor which gives them direct control of a company. This can be done by either acquiring a firm in a host country, purchasing a controlling stake in an existing local company, or establishing a new firm in the local market (Khachoo & Khan, 2012). There are three different types of FDI namely, efficiency seeking, market seeking and resource seeking (Boga, 2019). The factors considered by investors vary according to the type of investment they seek. For example, resource seeking FDI occurs when firms invest in a foreign nation to gain easy access to natural resources. According to Boga (2019) MNC's in the manufacturing sector tend to cite factor endowments as a factor that incentivises them to invest in a foreign country. Secondly, efficiency seeking FDI occurs when firms aim to benefit from efficiency gains accrued from establishing operations in a foreign country (Boga, 2019). The gains could arise from the presence of a better skilled population, and easy access to better technology in the foreign market which could aid production. Additionally, by establishing operations in areas close to the source of natural resources, manufacturing firms would be able to save on transport costs, as well as reduce the lead time of the production process. Lastly, market seeking FDI occurs when firms invest in a nation to gain access to their local markets as well as regional markets. In this case, export impediments, market size and economic growth prospects tend to be factors that attract investment (Boga, 2019).

David Ricardo's (1821) theory of comparative advantage serves as one of the first attempts to explain what drives FDI. Ricardo's (1821) theory stipulates that nations will opt to produce goods that are relatively cheaper for them to produce. Applying Ricardo's (1821) theory to FDI implies that MNC's will be incentivised to invest in nations that have a comparative advantage in producing the product that the MNC intends to provide. However, given the highly restrictive assumptions of Ricardo's model i.e., two countries, two products and perfect mobility of production functions, applying this model to understand regional FDI trends would be a futile attempt to explain FDI flows to SSA (Denisia, 2010). It would be difficult to prove that Ricardo's assumption of perfect mobility of production functions holds for SSA(n) nations. This is because most SSA(n) nations are plagued with high levels of structural unemployment indicating that citizens may not have adequate skills to meet the labour market demands, therefore, the current workforce may not be able to meet the nations labour requirements for

specialisation. Secondly, due to strict immigration and labour laws, labour cannot easily move between SSA(n) nations, thereby making it difficult for nations to specialise in the production of a particular product. In fact, specialisation in this case would increase the levels of structural unemployment, as employees with skills required for the production of the product no longer produced may find it difficult to transition into the firms still operating. Another early theory coined "Oligopolistic reaction" postulates that firms' cross border investment decisions are driven by a reaction of firms to competing firms that have invested in another country (Knickerbocker, 1973). This theory is difficult to justify in the case of SSA, as various SSA(n) nations belong to various regional trade blocs. Therefore, firms may not deem it necessary to react to competitors that invest in markets that they have access to via the regional trade agreements signed by the host nations.

More commonly identified theories include Hymer's (1976) " Industrial organisation theory" and Buckley & Casson's (1976) "Internalisation theory". The industrial organisation theory posits that Multi-national Corporations (MNC's) will choose to invest in nations where they have a competitive edge over local firms. Some of the factors said to give MNC's a competitive edge are managerial skills, well-known brand names, patent protection, and access to cheap finance (Khachoo & Khan, 2012). On the other hand, the internalisation theory indicates that FDI results from firms choosing to invest in nations that give them direct access to the factor and product markets required for their production processes. This ensures that the firms are not susceptible to market disruptions in the nations where they source their production inputs (Khachoo & Khan, 2012). The applicability of the "internalisation theory" to a majority of nations in SSA is questionable, as the manufacturing sectors in most resource abundant SSA(n) nations are underdeveloped and have failed to attract significant investment, hence we question whether investors in these nations are in fact driven by proximity to factors of production.

The most widely mentioned theory of FDI is termed the "Eclectic theory" (Dunning, 1977). The eclectic theory stipulates that FDI should only be made if there exists; ownership advantages, location specific advantages and internalisation advantages. Dunning (1977) indicates that all three advantages should be realised for an investor/MNC to invest in a foreign nation. Ownership advantages refer to advantages realised by investors that offer protection to their firms and give them a platform to compete favourably in foreign markets (Boga, 2019). Location specific advantages, are benefits to investors resulting from operating in a specific country. These advantages tend to influence the profitability positively, which tends to incentivise investment (Boga, 2019). Lastly, internalisation advantages are the advantages that

arise from MNC's being incentivised to invest in foreign markets to shield against market imperfections in factor and product markets (Khachoo & Khan, 2012). The eclectic theory indicates that cross border investments are primarily driven by factors that are likely to help firms earn more profit. In a later paper, Dunning (1998) extends the concept of locational advantage to include both institutional and economic factors. Dunning (1998) argues that firms will choose to invest in nations that offer the best economic and institutional facilities.

Despite the aforementioned theories being described as steps towards developing a systematic framework of FDI, they fail to serve as a general theory of FDI. This is because the theories fail to provide a composite explanation of the different forms of FDI, i.e., country-level, firm-level, and industry-level (Khachoo & Khan, 2012). Additionally, these theories offer no insight as to whether investors consider a nation's level of development, prior to making investment decisions. However, these theories still offer a sufficient explanation of the determinants of FDI. Most papers opt to justify model and variable selection through the results of various empirical studies on the topic, where most papers include efficiency related variables, market-seeking related variables, and resource-seeking related variables. Additionally, Dunning (1998) indicates the importance of both macroeconomic factors; which encompasses the aforementioned variables, and institutional factors, where the combination of the two is likely to have a large impact on firms profitability. As a result, empirical studies tend to also include both macroeconomic and institutional factors. Examples of such will be explored in more detail in the next section.

2.2.Empirical Evidence

Various empirical studies have investigated the determinants of FDI to assess whether theories of FDI are consistent with what is currently observed globally. These studies have been done for both advanced and developing nations. They include various independent variables, and range from single-country studies that deploy time-series techniques to multi-country studies that deploy panel data techniques to conduct their analyses (Asiedu 2002; Khachoo & Khan, 2012; Ang, 2008; Saini & Singhania, 2018; Sabir, Rafique, & Abbas, 2019; Dellis, Sondermann, & Vansteenkiste, 2020). This section explores empirical studies on the topic, to gain insight into possible models, methods, and variables that could be used assess the differences in the determinants of FDI for nations at different stages of economic development.

Market size and market potential are considered to be relatively more important determinants of FDI inflows to advanced economies, than to developing economies, which tend to attract

more resource and efficiency seeking FDI (Dellis et al., 2020). Furthermore, Dellis et al., (2020) indicate that economic structures and the quality of institutions play a big role in attracting FDI to advanced nations. This was corroborated by Sabir, Rafique & Abbas (2019), who found that institutional variables play a bigger role in attracting FDI to developed countries, than to developing nations.

Saini & Singhania's (2018) paper offered a further comparison of the determinants of FDI for developed and developing nations. They deployed both static and dynamic panel data techniques on a sample consisting of 20 countries; 11 developed and 9 developing, to aid their analysis. Their findings indicate that FDI to developed countries is primarily driven by policy related determinants whereas FDI to developing countries was driven by efficiency seeking variables. Additionally, trade openness and gross fixed capital formation were found to drive FDI flows to developing nations (Saini & Singhania, 2017). This suggests that the key determinants of FDI to developed and developing nations differ, which supports the idea that the level of economic development could play a key role in determining which factors attract FDI to nations at different stages of economic development, thus justifying the importance of this study.

There exists a multitude of literature investigating the determinants of FDI flows to emerging nations (Vijayakumar, Sridharan, & Rao, 2010; Asongu, Akpan, & Isihak, 2018; Hayakawa, Kimura, & Lee, 2013). Vijayakumar et al (2010) conducted a panel study to investigate the drivers of FDI inflows in BRICS countries. Their study found markets size, infrastructure facilities, cost of labour, currency value, gross capital formation to be significant determinants of FDI flows to BRICS nations. Their findings further suggest that growth prospects, economic stability, and trade openness are insignificant determinants of FDI to BRICS economies. Further analysis on BRICS economies by Asongu et al. (2018) contradicted Vijayakumar et al.'s (2010) results, as they found trade openness to be a significant determinant of FDI for BRICS economies. The discrepancies in results could be explained by the different explanatory variables included in the respective studies, as well as different time frames used for analysis, where Vijayakumar et al.'s (2010) study was conducted for the period 1975-2007 and Asongu et al. (2018) for the period 2001-2011.

The role of institutional, economic, and political factors in attracting FDI to BRICS economies was explored by Jadhav (2012), and Jadhav & Katti (2012). Jhadav (2012) conducted a panel analysis on BRICS economies for the period 2000-2009. Jhadav's (2012) findings indicate that

market size, trade openness and rule of law are positive significant determinants of FDI for BRICS economies, whereas natural resource availability was found to be a deterrent. On the other hand, Jadhav & Katti (2012) indicated that the quality of the regulatory systems and effective governance were positive and significant determinants of FDI, whereas political stability was found to have negative effects on FDI flows to BRICS economies. A similar study by Hayakawa et al. (2013) investigated the impact of political and financial risk on FDI for 89 developing nations for the period 1985 – 2007. Their findings indicate that corruption, bureaucracy, internal conflict, and military politics had a significant negative impact on FDI flows (Hayakawa et al., 2013). These studies indicate that institutional factors play a significant role in supporting or deterring FDI flows to developing nations, which justifies the importance of including institutional variables. The findings of studies investigating the determinants of FDI to BRICS nations provides insight into the key drivers of FDI to emerging economies. However, focusing only on BRICS economies, limits ones analysis to 5 nations, particularly fast-growing developing nations and are not representative of most developing nations, hence the applicability of these results to most developing nations is questionable.

Khachoo & Khan (2012) incorporated more developing nations in their analysis. They conducted a panel analysis on 32 developing countries for the period 1982 – 2008. Their paper modelled FDI inflows as a function of infrastructure, cost of labour, market size, total reserves, and trade openness, where total reserves is considered a proxy for economic stability (Khachoo & Khan, 2012). Khachoo & Khan's (2012) findings indicate that all the aforementioned explanatory variables except trade openness are key determinants of FDI. By incorporating more developing nations into their study, their results offer a more balanced view of the key drivers of FDI to the developing world. Essentially, this discussion indicates the importance of including as many nations as possible to conduct this study.

Various empirical studies assessing the determinants of FDI to Africa have included a natural resource variable. (Asiedu, 2006; Basu & Srinivasan, 2002; Asiedu & Lien, 2011, Rogmans & Ebbers, 2013). This is expected, due to the abundance of natural resources observed on the African continent. Studies assessing the impacts of natural resource endowments provide contradictory results (Asiedu , 2006; Basu & Srinivasan, 2002; Asiedu & Lien, 2011; Rogmans & Ebbers, 2013). Asiedu (2006) found natural resource endowments, and the size of the domestic market to be key drivers of FDI inflows to Africa. This is corroborated by Basu & Srinivasan's (2002) paper which indicates that for some countries in Africa, the following is required for foreign investment: natural resources, the provision of a conducive business

environment and image development campaigns attract. However, Asiedu & Lien (2011) found that natural resource abundance negatively impacts FDI inflows, this is supported by Rogmans & Ebbers's (2013) paper which examined the determinants of FDI to the Middle East and North Africa, where they observed that natural resource endowment served as a deterrent to FDI inflows. To explain this result Rogmans & Ebbers (2013) indicated that nations that have an abundance of natural resources tend to have protectionist policies which restricts potential FDI flows from resource seeking firms (Rogmans & Ebbers, 2013).

To gain a better understanding of which determinants of FDI flows are considered to be important for SSA, this empirical review shifts its focus to empirical evidence from papers which primarily focusses on SSA(n) nations. Asiedu (2002) provided a comparison of the determinants of FDI to non-SSA(n) developing nations and SSA(n) nations. This study was driven by the observed minimal impact of economic reforms in increasing FDI flows to SSA. Therefore, Asiedu (2002) sought to evaluate whether the determinants of FDI in developing countries in other regions differed from those in SSA. Asiedu (2002) employed a panel of 71 developing countries of which 32 were located in SSA. The results of the study indicate the following: infrastructure development was found to a significant determinant of FDI for non-SSA(n) nations, however, it was found to be an insignificant determinant for SSA(n) nations, trade openness was found to be a key determinant for both SSA(n) and non-SSA(n) nations, and a higher return on capital had no significant impact on FDI flows to SSA (Asiedu, 2002). Given the disparities in the determinants of FDI across the two groups of nations, Asiedu's (2002) paper validates the concerns raised earlier which indicate that studies focusing on assessing determinants of FDI to developing nations that fail to include multiple SSA(n) may not give a good indication of the factors that determine FDI to SSA.

Various papers include market and efficiency related variables. Market related variables assess whether the market seeking hypothesis holds. Findings on market size are mixed with papers such as Jaiblai & Shenai's (2019) indicating that FDI flows to SSA prefer a smaller market (i.e. a negative coefficient observed) which is contrary to the market seeking hypothesis, and papers such as Pose & Cols (2017) that suggest that investors are attracted to larger markets. Another variable commonly included in papers assessing the determinants of FDI SSA is trade openness. Most papers find trade openness to be a significant determinant of FDI flows to SSA, which indicates that investors opt to invest in nations that have access to other markets (Asiedu, 2002; Boga 2019). Given that multiple SSA nations belong to various regional trade blocs,

assessing this variable indicates whether this is beneficial to SSA(n) nations, particularly in attracting foreign capital.

Various African nations have embarked on ambitious infrastructure development programmes in an attempt to make their economies attract more investment, hence assessing whether infrastructure development attracts FDI is important for researchers and policymakers. Multiple papers assessing the determinants of FDI to SSA have opted to include a variable to represent infrastructure development (Jaiblai & Shenai's, 2019; Boga, 2019; Asiedu, 2002). The results are mixed, with papers such as Jaiblai & Shenai's (2019), Boga (2019) and Asiedu, (2002) finding a positive relationship between FDI flows and infrastructure development, and Asiedu, (2002) who found infrastructure development to have no significant impact on FDI flows to SSA.

Some studies also include variables that represent macroeconomic stability. The findings from these studies generally show a negative response to inflationary pressure, which indicates that investors will opt invest in areas with a stable macroeconomic environment (Okafor, Piesse & Webster, 2015; Jaiblai & Shenai's, 2019; Asongu et al., 2018). Jaiblai & Shenai (2019) assessed the key determinants of FDI to SSA, with a sample consisting of ten SSA(n) nations from 1990 – 2017. They found the relationship between inflation and FDI flows to SSA to be insignificant, implying that investors are not concerned with macroeconomic stability. On the other hand, Okafor, Piesse & Webster, (2015) found the relationship between FDI and inflation to be negative and significant, indicating that macroeconomic stability is considered when investment decisions are being made. Often investors are interested in assessing whether the domestic economy is stable, as uncertainty has an adverse effect on expected returns. Therefore, it is important to assess whether this holds for SSA(n) nations.

The role of institutions and political stability in attracting FDI to SSA has been examined by Cleeve (2012). Cleeve's (2012) results indicate that nations with a democratic system and good socio-economic conditions tend to have a positive impact on FDI flows. Cleeve (2012) indicates that resource rich areas are generally viewed as areas where investors may generate high returns, these returns are enough to attract investors despite the risks associated with political stability and corruption. Cleeve (2012) indicates that in the case of various SSA(n) nations, corruption can be seen as a way for investors to escape regulations and government bureaucracy, hence implying that corruption could be seen to aid FDI inflows. Given that SSA is plagued with poor institutions, regulatory quality, high levels of corruption, particularly in

the public sector, it is necessary to assess whether this will have an impact on FDI flows to the region.

In summary, there is no consensus on which determinants of FDI flows serve as the key drivers of FDI to SSA. This can be attributed to the various methods, periods under investigation and nations included in the respective studies. These factors further contribute to the variation in results, making it difficult to ascertain which explanatory variables are relevant to this study. Despite there being a wide variation of explanatory variables used in empirical studies on the topic, some explanatory variables are consistently used (Rogmans & Ebbers, 2013; Boga, 2019; Cleeve, 2012). These variables tend to be used regardless of the nation, region, and trade bloc under investigation. Examples of these independent variables include market size (where the growth rate of real GDP is often used a proxy), the level of trade openness, inflation, infrastructure availability, natural resource availability, and variables that capture political risk and institutional strength (Jadhav, 2012; Rogmans & Ebbers, 2013). These variables are included in empirical studies conducted on both developed and developing nations (Vijayakumar et al., 2010; Asongu et al., 2018; Boga, 2019).

Researchers use various methods to investigate the determinants of FDI. These include static regressions, where researchers use various estimation techniques, namely, pooled OLS, fixed and random effects models, as well as the generalised method of moments (GMM) procedure (Torres-Reyna, 2007; Okafor et al., 2015; Saini & Singhania, 2018). Torres-Reyna, (2007) and Kimino, Saal & Driffield, (2007) suggest that pooled OLS is inappropriate, and will lead to unreliable results because it does not control unobserved heterogeneity, country specific differences, and other time invariant characteristics. Therefore, static panel analysis (i.e. fixed and random effects models) is deemed superior, as it deals with the aforementioned problems.

However, static panel analysis does not consider that FDI flows in previous periods could influence current FDI flows, which is deemed to be far from reality previous FDI flows may signal to new investors the existence of potential investment opportunities in nation (Saini & Singhania, 2018). Therefore, dynamic panel analysis is suggested, where fixed and random effects models are said to be inferior to the GMM procedure, as fixed and random effects models do not deal with endogeneity that arises when a dynamic model is specified. The GMM procedure is preferred as it appropriately deals with endogeneity (Saini & Singhania, 2018). However, most papers conduct their analysis with more than one model, which allows researchers to assess the robustness of their results (Okafor et al., 2015; Saini & Singhania,

2018). Therefore, this study will be conducted in a similar manner, and use multiple estimation techniques, where the GMM procedure is the primary model, and the fixed and random effects models are robustness checks.

As observed in the literature, the specification of models used to assess the determinants of FDI entails expressing FDI inflows as a function of its key determinants. Given the discussion above, the study identifies the key determinants of FDI to SSA to be the following: market size (MS), natural resource abundance (NRA), economic stability (ES), infrastructure (INF), trade openness (TO), Control of Corruption (C), Political Stability (PS), regulatory quality (RQ), rule of law (ROL), government effectiveness (GE), and voice and accountability (VA). The selection of data used to measure the variables included in the study is informed by various studies on the topic (Asiedu 2002; Saini & Singhania, 2018; Boga, 2019; Jaiblai & Shenai, 2019; Khachoo & Khan, 2012). The study proceeds to specify FDI to SSA as a function of:

$$FDI = \mathrm{f}(MS, \mathrm{NRA}, \mathrm{ES}, \mathrm{INF}, \mathrm{TO}, \mathrm{C}, PS, RQ, ROL, GE, VA) \quad (1)$$

3. **Data and Methods**

3.1.Data

To estimate the model specified in the preceding section, the study uses annual data from twenty-seven SSA(n) nations. The dataset consists of annual observations of all the variables included, for the period 2000 – 2019. A balanced panel dataset is constructed, therefore, only nations with data on each of the variables across the entire period were included. Given that the study aims to investigate the determinants of FDI across SSA(n) nations at different stages of economic development, finding a suitable income classification technique is imperative. The classification technique used in the study is based on the World Bank's country classification by Income level, where high and upper-middle income SSA(n) nations are grouped as higher income nations, and low and lower-middle income nations are grouped as lower income nations. In a similar study, Sabir, Rafique & Abbas (2019) used the World Bank's income classification thresholds that corresponded to the end-point of their analysis, to classify the different nations included in their study. However, end-point classification is likely to lead to a misclassification of nations that have transitioned from lower to higher income nations throughout the period under investigation. For example Angola was classified as a higher income country from 2012-2015, and a lower income country in each of the other years. Therefore, to ensure that each nation is correctly classified in each period, this study compares each nations GNI per capita to the threshold specified by the World Bank in each respective

year. To the best of our knowledge, this paper is the first attempt to map income classification yearly throughout the data period, rather than at the end point of the data. The World Bank's income classification thresholds, and each nations classification throughout the period covered by the study, are shown in Tables 1 and 2 in the appendix.

The data used to conduct this study was sourced from the World bank's World Development Indicators (WDI) and World Governance Indicators (WGI) databases (World Bank, 2021). Data on market size, natural resource abundance, economic stability, infrastructure and trade openness, was sourced from the World Bank's WDI database, whereas the institutional variables were sourced from the WGI database. Firstly, the dependent variable is net FDI inflows expressed as a percentage of GDP, which is the most widely used dependant variable in literature (Asiedu 2002; Saini & Singhania, 2018). Market size is measured by the natural log of real GDP, natural resource abundance is measured by total natural resource rents (as a % of GDP), and economic stability is measured by the annual inflation rate based on the consumer price index (Jaiblai & Shenai, 2019; Boga, 2019). Furthermore, infrastructure is measured by fixed telephone subscriptions (per 100 people), which is commonly used a proxy for efficiency related economic determinants (Asiedu 2002), and trade openness is measured by total trade (exports + imports) expressed as a percentage of GDP (Boga, 2019; Jaiblai & Shenai, 2019; Khachoo & Khan, 2012). The WGI database contains estimates for the following institutional variable: Control of Corruption (C), Political Stability (PS), regulatory quality (RQ), rule of law (ROL), government effectiveness (GE), and voice and accountability (VA). The WGI indicators are indices measured on a scale of -2.5 to 2.5, where a smaller estimate indicates that nations are less likely to have effective institutions (Kaufmann, Kraay & Mastruzzi, 2010).

The study anticipates market size to have a positive impact on FDI inflows (Asongu et al., 2018). This is because the prospect of having access to a larger market is likely to incentivise investment into foreign markets. FDI to SSA has primarily been described as resource seeking, therefore, a positive relationship between natural resource abundance and FDI is anticipated (Boga, 2019). The study further expects a positive relationship between infrastructure development and FDI, this is because access to good infrastructure is likely to reduce costs for MNC's, thereby enhancing their potential profits (Vijayakumar et al., 2010). MNC's seek a stable macroeconomic environment because it reduces uncertainty over expected returns. Therefore, the study expects inflation to be negatively related to FDI (Asongu et al., 2018). Lastly, trade openness implies that the nation has access to foreign markets. We anticipate trade

openness to attract market seeking FDI, therefore, the coefficient on trade openness is expected to be positive (Cleeve, 2012).

All the institutional variables are expected to have a positive impact on FDI (Asiedu, 2006). Good quality institutions, are likely to improve investors' outlook of the domestic economy, which is likely to drive FDI into the nation (Asiedu, 2006). Quality institutions eliminate uncertainty, which is an important factor in an investors long term decision making. However, Cleeve (2012) suggested that factors such as corruption and political instability could drive FDI flows into developing economies. This is because these factors allow business owners to get past the bureaucratic red tape they would face prior to making their investments. Sabir, Rafique & Abbas (2019) found institutional quality to play a big role in attracting FDI to developed economies, and a minor role in attracting FDI to developing nations. However, this study opts to include these variables to assess whether they are significant determinants of FDI to SSA.

3.2.Methods

3.2.1. Dynamic panel analysis

To investigate the determinants of FDI in SSA, the study uses dynamic panel regressions. This method is preferred to the traditional static regressions which assume that the explanatory variables are completely independent of previous values of the FDI inflows. This assumption is unrealistic because it is highly likely that FDI flows from previous periods have an influence on current FDI flows. Therefore, by not including FDI flows in the previous period, the model could potentially suffer from endogeneity, which leads to biased estimates (Saini & Singhania, 2017). Researchers have opted to specify dynamic models to ensure that that they do not obtain biased estimates (Saini & Singhania, 2017). Equation (2) illustrates how equation (1) can be expressed as a dynamic panel model.

$$FDI_{it} = \propto_0 + \gamma FDI_{it-1} + \propto_1 MS_{it} + \propto_2 NRA_{it} + \propto_3 ES_{it} + \propto_4 INF_{it} + \propto_5 TO_{it} + \propto_6 C_{it} + \propto_7 PS_{it} + \propto_8 RQ_{it} + \propto_9 ROL_{it} + \propto_{10} GE_{it} + \propto_{11} VA_{it} + \varepsilon_{it} \quad (2)$$

Where $\varepsilon_{it} = v_i + u_{it}$

Equation (2) includes the lagged value of the dependant variable, FDI_{it-1}, as an additional explanatory variable. ε_{it} is a disturbance term with unobserved country-specific effects which is computed by adding $v_i \; and \; u_{it}$ which are idiosyncratic errors.

The inclusion of the lagged dependant variable in the dynamic model renders fixed effects models sub-optimal. Therefore, the study deploys the GMM estimation technique to obtain estimates from dynamic model specified in equation (2) (Saini & Singhania, 2017). The advantages of the GMM technique are as follows: it addresses the endogeneity problem that arose after the inclusion of the lagged dependant variable, its estimates are obtained from a model that corrects for unobservable heteroskedasticity in the underlying time trend, and its estimates are obtained from a model that solves a misspecification problem in static models, particularly, the omission of a lagged dependant variable. Additionally, the GMM estimator is more efficient than the instrumental variable estimator in the presence of heteroskedasticity, and is asymptotically more efficient than the instrumental variable estimator in the absence of heteroskedasticity. (Blundell & Bond, 1998).

Two GMM procedures can be used to obtain estimates. These procedures are the GMM one-step procedure and the GMM two-step procedure. The one-step procedure assumes the error terms to be homoskedastic and independent across country and time, whereas the two-step procedure relaxes these assumptions, and is considered more asymptotically efficient than the one-step estimator (Saini & Singhania, 2017). The two-step procedure uses the residuals of the first step to estimate the variance-covariance matrix (Saini & Singhania, 2017). However, if the variance-covariance matrix obtained at the first step is not full rank, the two-step procedure cannot be used. Therefore, the study uses the two-step GMM procedure, and in the cases where the variance covariance matrix of the first step is not found to be full rank, the study deploys the one-step GMM procedure. This approach is similar to Saini & Singhania (2017).

After obtaining the GMM estimates, the following diagnostic tests are used to evaluate the results: First and second-order serial correlation tests are used to test for serial correlation in the first and second difference. According to Arellano & Bond, (1991) the residuals obtained from the GMM estimation technique may be correlated in the first difference but not in the second difference. The second diagnostic test used is the Sargan test. The Sargan test is used to assess whether the system is over-identified thus confirming whether all instruments used are valid (Saini & Singhania, 2017).

3.2.2. Static panel analysis

The two models used to conduct the static regression analysis are the fixed and random effects models. This is consistent with similar studies that have conducted both dynamic and static regression analysis (Vijayakumar et al., 2010; Saini & Singhania, 2017). Fixed effects models

control for unobserved heterogeneity, country specific features, and other time- invariant characteristics, hence they cannot be biased if time-invariant characteristics are omitted (Torres-Reyna, 2007). Additionally, fixed effects models assume that the intercept term for each country differs. On the other hand, the random effects models assume that variation across nations is random and uncorrelated with both the explained and explanatory variables (Torres-Reyna, 2007). Contrary to the fixed effects model the random effects model assumes that each country differs in its error term.

The fixed effects models are expected to work well with a balanced panel dataset, as in this instance, whereas an unbalanced panel dataset suits the specification of a random effects model. However, the Hausman Specification test is regularly used to assess which of the two models appropriate (Vijayakumar et al., 2010).

Equations (3), (5) and (6) below illustrate how equation (1) is modelled under both the fixed effects and random effects model specifications. This specification is in line with Vijayakumar et al., (2010). Equation (3) shows the fixed effects model specification, and equations (5) and (6) illustrate the random effects model specification.

$$FDI_{it} = \propto_i + + \propto_1 MS_{it} + \propto_2 NRA_{it} + \propto_3 ES_{it} + \propto_4 INF_{it} + \propto_5 TO_{it} + \propto_6 C_{it} + \propto_7 PS_{it} + \propto_8 RQ_{it} + \propto_9 ROL_{it} + \propto_{10} GE_{it} + \propto_{11} VA_{it} + \varepsilon_{it} \quad (3)$$

The random-effects model treats the constants for each section as random parameters. Therefore, by allowing for variability in the intercept term. Therefore, the intercept term is expressed as follows:

$$\propto_i = \propto + u_i \quad (4)$$

Where u_i is a random variable that follows the following distribution: u_i ~N(0, σ^2).

By substituting (4) into (3), equation (5) is obtained, where the term representing cross country variability (u_i) is included in the model.

$$FDI_{it} = (\propto + u_i) + \propto_1 MS_{it} + \propto_2 NRA_{it} + \propto_3 ES_{it} + \propto_4 INF_{it} + \propto_5 TO_{it} + \propto_6 C_{it} + \propto_7 PS_{it} + \propto_8 RQ_{it} + \propto_9 ROL_{it} + \propto_{10} GE_{it} + \propto_{11} VA_{it} + \varepsilon_{it} \quad (5)$$

By rearranging equation (5), we obtain equation (6) which illustrates that each country differs in its error term, as is expected in a random-effects model. Moreover, equation (6) illustrates how equation (1) is specified under the random-effects model.

$$FDI_{it} = \propto + + \propto_1 MS_{it} + \propto_2 NRA_{it} + \propto_3 ES_{it} + \propto_4 INF_{it} + \propto_5 TO_{it} + \propto_6 C_{it} + \propto_7 PS_{it} + \propto_8 RQ_{it} + \propto_9 ROL_{it} + \propto_{10} GE_{it} + \propto_{11} VA_{it} + (u_i + \varepsilon_{it}) \quad (6)$$

4. Empirical Analysis

4.1. Descriptive Statistics

Table 3 below illustrates the summary statistics for the entire sample. The table illustrates that the mean value of Net FDI (% of GDP) to SSA for the period under investigation was 3.628%. Additionally, the mean values for inflation, natural resource abundance, and trade openness were 7.859%, 9.734%, and 67.098% respectively. Furthermore, the mean values for fixed telephone subscriptions, and the natural log of real GDP were found to be 3.942 (per 100 people) and 23.333. The mean values of the institutional variables were all found to be negative. As mentioned earlier, the WGI indicators are measured on a scale of -2.5 to 2.5 (Kaufmann, Kraay & Mastruzzi, 2010). Therefore, the smaller the estimate, the less likely a nation has quality governing institutions. Given that the study obtains negative mean values for the institutional variables, we can infer that SSA(n) nations have poor quality institutions.

Table 3: Descriptive Statistics (Full Sample)

Variable	Obs	Mean	Min	Max
Net FDI inflows (% of GDP)	540	3.628	-11.199	57.838
Fixed Telephone Subscriptions	540	3.942	0.041	36.128
Inflation (annual %)	540	7.859	-8.975	324.997
Natural Resources (% of GDP)	540	9.734	0.001	55.852
Trade Openness (% of GDP)	540	67.098	1.219	225.023
Natural log of real GDP	540	23.333	20.504	26.944
Control of Corruption	540	-0.050	-1.528	1.217
Government Effectiveness	540	-0.055	-1.626	1.057
Political Stability	540	-0.418	-2.665	1.282
Regulatory Quality	540	-0.433	-1.799	1.127
Rule of Law	540	-0.496	-1.663	1.077
Voice and Accountability	540	-0.412	-1.851	0.983

Note: All values are rounded off to 3 decimal places
Source: Constructed by author with data sourced from the World Bank's World Development Indicators (2021) and World Governance Indicators (2021) databases.

Summary statistics on the respective group of nations are provided in table 4 below. A comparison of summary statistics across the two groups provides an indication of possible reasons for differences in FDI inflows to the respective groups. Firstly, on average, higher income nations attract more FDI into their nations. On average, net FDI inflows (% of GDP) to higher income nations is 4.758%, whereas the mean value of net FDI inflows on lower income nations was 3.362%. Inflation in higher income nations (5.040%) is lower than in lower income nations (8.524%), which is expected. Given that the study uses inflation to measure economic stability, this result indicates that higher income nations have more stable economies than lower income nations. The means of the institutional variable estimates used to measure regulatory quality and political stability indicates that higher income nations are more stable than lower income nations. The differences in economic stability, regulatory quality and political stability could possibly explain the differences in FDI flows across the two groups of nations factors. However, this will be investigated in the next section.

Further statistics illustrate that, on average, total natural resource rent expressed as a percentage of GDP is 8.167% for higher income SSA(n) economies, and 10.103% for lower income economies. The lower average for higher income countries is because two of the five nations classified as higher income nations are not natural resource reliant. The mean of trade openness (% of GDP) is 58.120% for lower income SSA(n) economies, and 105.193% for higher income economies. The high mean value for trade openness observed for higher income nations can be explained by the composition of the group, particularly the inclusion of Seychelles. Despite, Seychelles being characterised as a high-income nation by the World Bank, it is considered a very small nation both by size; in terms of population and land mass, and by productive capacity. Therefore, the nation imports heavily to meet their domestic needs. As of 2019, imports as a share of GDP was reported to be 101%, whereas the nation's exports as a share of GDP was reported to be 91.4% (World Bank, 2021). Lastly, fixed telephone subscriptions (per 100 people) are higher in higher income economies than in lower income economies, indicating a better infrastructure base for higher income nations.

Table 4: Descriptive Statistics (Higher vs Lower Income Nations)

	Lower Income Nations			
Variable	Obs	Mean	Min	Max
Net FDI inflows (% of GDP)	437	3.362	-11.199	46.275

Fixed Telephone subscriptions	437	1.592	0.041	15.939
Inflation (annual %)	437	8.524	-8.975	324.997
Natural Resources (% of GDP)	437	10.103	0.314	55.852
Trade Openness (% of GDP)	437	58.120	1.219	152.547
Natural log of real GDP	437	23.318	20.555	26.944
Control of Corruption	437	-0.660	-1.528	0.951
Government Effectiveness	437	-0.724	-1.626	0.354
Political Stability	437	-0.640	-2.665	1.219
Regulatory Quality	437	-0.562	-1.799	0.339
Rule of Law Estimate	437	-0.659	-1.663	0.782
Voice and Accountability	437	-0.555	-1.851	0.979
Higher Income Nations				
Net FDI inflows (% of GDP)	103	4.758	-5.208	57.838
Fixed Telephone Subscriptions	103	13.910	0.826	36.128
Inflation (annual %)	103	5.040	-2.405	36.965
Natural Resources (% of GDP)	103	8.167	0.001	45.482
Trade Openness (% of GDP)	103	105.193	45.644	225.023
Natural log of real GDP	103	23.395	20.504	26.606
Control of Corruption	103	0.163	-1.444	1.217
Government Effectiveness	103	0.198	-1.224	1.057
Political Stability	103	0.522	-0.501	1.282
Regulatory Quality	103	0.117	-1.054	1.127
Rule of Law Estimate	103	0.194	-1.269	1.077
Voice and Accountability	103	0.198	-1.177	0.983

Note: All values are rounded off to 3 decimal places.
Source: Constructed by author with data sourced from the World Bank's World Development Indicators (2021) and World Governance Indicators (2021) databases.

4.2. Preliminary analysis

We begin the analysis by conducting unit root tests on each variable to assess whether they are stationary at level (I(0)) and 1st difference (I(1)). It is customary to assess the stationarity of variables that vary over time to avoid the problem of spurious regressions (Werkmann, 2012).

For the full sample, the study uses the Levin, Lin, and Chu (2002) (LLC), and Im, Pearson, and Shin (2003) (IPS) tests. These tests perform better when the panel dataset is strongly balanced (Hanck, 2013). According to Westerlund (2009) the IPS is considered to be more powerful than the LLC test, therefore the results from the IPS test are prioritised. The results indicate the following, for the full sample, net FDI flows, inflation, natural resources, political stability and voice and accountability, are I(0), whereas all the remaining variables are I(1).

Unit root tests are also conducted on the sub-sample dataset, however, given the classification technique used, this dataset was not strongly balanced,[3] therefore the tests conducted on the full sample perform poorly. As a result, the Phillips Perron (PP) and Augmented Dickey Fuller (ADF) tests were used for the sub-samples, as they perform well with unbalanced datasets (Werkmann, 2012). The PP test was preferred to ADF because the model performs better when we suspect autocorrelation in the error terms.(Halkos & Kevork, 2005). The results were as follows, for higher income nations, net FDI flows, inflation, natural resources, and political stability were I(0) and the remaining variables I(1), whereas, for lower income nations, net FDI flows, inflation, natural resources, political stability, government effectiveness, and regulatory quality were I(0). All the variables found to be I(1) were differenced prior to their inclusion in the regressions. The results of all unit root tests are reported in tables 5,6, and 7 in the appendix.

4.3.Empirical Results

The discussion on the summary statistics indicates that institutional factors and economic stability may justify differences in FDI flows across lower and higher income SSA(n) nations. To further investigate the determinants of FDI to SSA, this study conducts both the dynamic and static panel analysis. This study begins by running regressions on the full sample, which provide an indication of the key drivers of FDI inflows to the entire region. These regressions include a dummy variable that reflects each nations income classification. A significant dummy variable supports the notion that investors consider a nations level of economic development, when deciding to invest in a nation. The results of the static and dynamic regressions are presented in table 8.

[3] The classification technique used by the study is what contributed to us observing unbalanced sub-samples. The classification technique led to 4 annual observations from Angola being omitted from the sample of lower income nations and being included in the sample of higher income nations, and 1 annual observation from Botswana being omitted from the sample of higher income nations and being included in the sample of lower income nations.

To conduct the dynamic panel analysis, the study deployed the two-step GMM procedure. The results from the analysis found lagged FDI flows to be a significant determinant of FDI flows to SSA. Its significance can be explained by investors disbursing funds in the next period to complete unfinished projects, and flows in the previous period could also serve as a signal to potential investors on the existence of investment opportunities in different nations, thereby making them more attractive investment destinations. Saini & Singhania (2017) indicate that the significance of the lagged dependant variable justifies the specification of the dynamic model.

Secondly, the results indicate that inflation and trade openness, have a positive impact on FDI flows to SSA. These results, with the exception of that of inflation conform to prior expectations and are similar to those of Asongu et al., (2018); and Asiedu, (2006). Inflation was found to have positive impact on FDI flows, which goes against prior expectations. This result contradicts those of similar studies on this topic (Okafor, Piesse & Webster, 2015; Jaiblai & Shenai's, 2019; Asongu et al., 2018). A possible explanation for the observed result is that a positive coefficient on the inflation variable indicates that investors are attracted by a nation's economic growth prospects. This is based on the notion that inflation may occur as the economy is entering a boom period. Trade openness allows MNC's to access surrounding markets, hence giving MNC's the opportunity to increase their customer base and possibly increase profits, which incentivises MNC's to invest in foreign nations. This has been the case of multiple firms that have invested in South Africa, as this gives them an opportunity to benefit from their regional trade agreements that enable them to easily sell their products in other African markets. This finding is similar to that of Asiedu, (2002), Boga (2019) and Cleeve (2012) who all found evidence supporting the notion that trade openness is a key driver of FDI flows.

Natural resource abundance, fixed telephone subscriptions, which represents infrastructure development, and political stability, are significant deterrents of FDI flows to SSA. These results are against prior expectations, as the resource seeking hypothesis stipulates that FDI is primary driven by investors seeking access to natural resources, and we expect investors to refrain from investing in economies with unstable political environments. Given that multiple SSA(n) nations are resource dependent, the study expected the resource seeking hypothesis to hold. However, Rogmans & Ebbers (2013) also found a negative association between FDI and natural resource abundance in the Middle East and North Africa. They state that protectionist policies in nations with abundant natural resources are likely to restrict potential FDI flows

from resource seeking firms. Additionally, this result stresses the importance for SSA(n) nations to reduce their reliance on their natural resources, and take steps to diversify their economies.

The negative association between political stability and FDI inflows can be explained by investors hoping to take advantage of political disruptions. Disruptions allow them to extract resources easily, and(or) prey on lower income nations' fortunes to gain favourable investment terms. This is evident by China's strategy of providing additional finance to heavily indebted countries (Ofosu & Sarpong, 2022). Lastly, the income dummy variable is strongly significant with GMM. This is a novel result which supports the claim that economic development plays a role in driving FDI to SSA. Following this result, further analysis is conducted to assess whether the key drivers of FDI, for nations at different stages of economic development differ.

The results of the diagnostics tests strongly support the use of the dynamic model. The Sargan test indicates that the instruments used are valid, and first and second-order tests for serial correlation confirm that the residuals are not correlated at second difference. Therefore, the paper places more emphasis on the full sample results obtained from the GMM model. However, for robustness purposes, the results of the static models are discussed below.

Table 8: Full Sample Regression Results

	GMM		Random Effects		Fixed Effects	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
$Net\ FDI_{t-1}$	0.359***	0.000	-	-	-	-
	(0.020)					
ΔFixed	-2.076***	0.000	-1.744***	0.000	-1.723***	0.000
Telephone	(0.224)		(0.260)		(0.259)	
Subscriptions						
ΔNatural log of	-1.568	0.696	24.751***	0.000	26.174***	0.000
real GDP	(4.019)		(5.075)		(5.081)	
Inflation (annual	0.105***	0.000	0.158***	0.000	0.159***	0.000
%)	(0.021)		(0.019)		(0.019)	
Natural	-0.098***	0.000	-0.140***	0.000	-0.170***	0.000
Resources (% of	(0.021)		(0.032)		(0.037)	
GDP)						

ΔTrade	0.107***	0.000	0.117***	0.000	0.116***	0.000
Openness (% of	(0.016)		(0.021)		(0.021)	
GDP)						
ΔControl of	-1.956	0.276	-2.616	0.151	-2.768	0.127
Corruption	(1.797)		(1.795)		(1.809)	
ΔGovernment	0.661	0.768	2.022	0.248	2.096	0.228
Effectiveness	(2.243)		(1.751)		(1.736)	
Political	-1.369*	0.089	-0.288	0.479	-0.798	0.102
Stability	(0.805)		(0.406)		(0.487)	
ΔRegulatory	2.422	0.378	-0.230	0.883	-0.095	0.951
Quality	(2.749)		(1.558)		(1.546)	
ΔRule of Law	-2.982	0.122	-1.743	0.402	-1.494	0.470
	(1.930)		(2.078)		(2.064)	
Voice and	-9.606	0.132	-1.878	0.298	-1.706	0.339
Accountability	(6.374)		(1.796)		(1.784)	
Income	4.336***	0.001	2.092*	0.070	1.629	0.412
(Dummy)	(1.323)		(1.153)		(1.983)	
Constant	0.825*	0.087	2.264***	0.001	2.364***	0.000
	(0.482)		(0.702)		(0.663)	
AR (1)	-2.084**	0.037				
AR (2)	-0.900	0.368				
Sargan Test	13.916	1.000				

Note: Countries included in the full sample are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Chad, Cote d'Ivoire, Gabon, The Gambia, Ghana, Kenya, Madagascar, Mali, Mauritania, Mauritius, Nigeria, Rwanda, Senegal, Seychelles, South Africa Sudan, Tanzania, Togo, Uganda, Zambia. *, **, *** denote significance at a 10%, 5%, and 1% level respectively, whereas Δ indicates that a differenced variable (1st level).

The static regression results from both models suggest that inflation, market size and trade openness are significant drivers of FDI flows to SSA, whereas natural resource abundance, and infrastructure development are significant deterrents of FDI flows to the region. The results from the random effects model further suggest that economic development plays a key role in attracting FDI to SSA. We note that this result is similar to that observed from the GMM model but differs from the results obtained from the fixed effects model.

Hausman's (1978) specification test is often used to assess the applicability of the fixed effects model, over the random effects model. The null hypothesis of Hausman's (1978) test indicates that the model should be specified by a random-effects model. Therefore, a rejection of this null hypothesis suggests that the fixed model is appropriate. The results of the test are included in table 9, in the appendix. For the full sample a p-value of 0.399 is reported providing strong evidence supporting the random effects model as the preferred mode of inference. We note that the results from the random effects model conform with those observed under GMM. This provides strong evidence suggesting that economic development is important for attracting FDI to SSA.

For comparison with Sabir, Rafique & Abbas (2019), the study attempts to replicate the analysis when each nations specification is based on their income classification at the endpoint (2019) of the analysis The results are included in table 10 in the appendix. We note that the full sample analysis could only be estimated using the GMM one-step procedure. Additionally, the income dummy used to represent economic development was omitted in both the GMM and fixed effects models. Given that the one-step GMM procedure was used we could not conduct the tests for serial correlation, and the Sargan test statistic could not be computed given the omission of the income dummy variable. The Hausman specification tests does suggest that the random effects model is the primary static model The results from this regression illustrates that misclassifying the nations included in the study has a negative impact on the performance of the primary model, and does not aid in answering the research question.

To conduct the dynamic panel analysis on the sample of higher income nations the study deployed the one-step GMM procedure. Notably, this sub-sample could not be estimated by the two-step estimator. This is because the variance-covariance matrix of the residuals found after the first step was not full rank. The use of the one-step GMM procedure for the analysis was informed by Saini & Singhania (2017) whose dynamic panel analysis on developed and developing nations adopted similar strategy, when a sub-sample could not be estimated by the two-step procedure.

The study observes that the key drivers of FDI to higher income SSA(n) nations are inflation and government effectiveness, whereas infrastructure development was found to be a significant deterrent. Notably, all three models found the same drivers and deterrents of FDI flows to higher income SSA(n) nations. The Sargan test suggests that the use of the dynamic model is appropriate, and results from the Hausman specification test indicate that the random

effects model should be preferred to the fixed effects model. The results observed from this sub-sample should be evaluated with caution considering its small sample size.

Table 11: Regression Results for Higher income SSA(n) nations

	GMM		Random Effects		Fixed Effects	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
$Net\ FDI_{t-1}$	0.097 (0.094)	0.305	-	-	-	-
ΔFixed Telephone Subscriptions	-1.971*** (0.336)	0.000	-2.063*** (0.480)	0.000	-1.976*** (0.369)	0.000
ΔNatural log of real GDP	9.722 (15.140)	0.521	-6.073 (21.386)	0.776	11.153 (16.442)	0.500
Inflation (annual %)	0.294*** (0.111)	0.008	0.263* (0.145)	0.069	0.334*** (0.116)	0.005
Natural Resources (% of GDP)	-0.113 (0.103)	0.272	-0.035 (0.062)	0.571	-0.082 (0.119)	0.491
ΔTrade Openness (% of GDP)	0.090 (0.059)	0.126	0.095 (0.073)	0.193	0.061 (0.057)	0.292
ΔControl of Corruption	-2.271 (4.172)	0.586	-3.640 (6.022)	0.546	-1.865 (4.588)	0.685
ΔGovernment Effectiveness	12.806** (5.242)	0.017	13.941* (7.771)	0.073	11.766** (5.844)	0.047
Political Stability	-5.120. (3.525)	0.146	2.018 (1.547)	0.192	-5.352 (3.910)	0.175
ΔRegulatory Quality	-2.909 (3.062)	0.342	-2.360 (4.452)	0.596	-2.975 (3.353)	0.377
ΔRule of Law	4.063 (7.057)	0.565	-3.012 (10.242)	0.769	4.010 (7.740)	0.598
ΔVoice and Accountability	-12.380 (7.874)	0.116	-5.875 (11.040)	0.595	-13.440 (8.633)	0.123
Constant	6.019*** (1.913)	0.002	2.831 (1.756)	0.107	6.062*** (2.092)	0.005
AR (1)	-	-				
AR (2)	-	-				
Sargan Test	97.801	0.10				

Note: Countries included in the sub-sample are: South Africa, Botswana (excluding 2002), Mauritius, Seychelles, Gabon and Angola (2012 – 2015). *,**, ***, denotes significance at a 10%, 5%, and 1% level respectively, whereas Δ indicates that a differenced variable (1st level).

An investigation into the determinants of FDI for lower income SSA nations found inflation, and trade openness to be positively associated with FDI inflows, and a negative association between natural resource abundance and FDI inflows, all three models support this finding. The dynamic model further indicates that, in lower income SSA(n) nations, FDI flows in the preceding period is a key driver of current FDI flows. The Sargan test, and the tests for serial correlation suggest that the dynamic model is appropriately specified hence inference from this method is preferred.

The random effects and fixed effects models indicate that market size is an additional driver of FDI, whereas control of corruption, and political stability are found to have a negative association with FDI flows to lower income SSA(n) nations. When looking at the fixed effects model in isolation, regulatory quality and government effectiveness were found to be additional drivers of FDI flows to SSA. The Hausman specification test indicates that inference from the random effects model should be preferred to the fixed effects model.

Table 12: Regression Results for Lower income SSA(n) nations

	GMM		Random Effects		Fixed Effects	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
$Net\ FDI_{t-1}$	0.423*** (0.043)	0.000	-	-	-	-
ΔFixed Telephone Subscriptions	-0.119 (0.151)	0.430	-0.647 (0.573)	0.258	-0.747 (0.557)	0.181
ΔNatural log of real GDP	11.231 (8.33)	0.178	22.027*** (4.992)	0.000	21.742*** (4.94)	0.000
Inflation (annual %)	0.091*** (0.019)	0.000	0.119*** (0.018)	0.000	0.124*** (0.018)	0.000
Natural Resources (% of GDP)	-0.223*** (0.025)	0.000	-0.208*** (0.035)	0.000	-0.262*** (0.041)	0.000
Trade Openness (% of GDP)	0.113*** (0.017)	0.000	0.110*** (0.013)	0.000	0.138*** (0.017)	0.000
ΔControl of Corruption	1.542 (1.873)	0.410	-3.312* (1.733)	0.056	-3.203* (1.700)	0.060

Government Effectiveness	-1.128 (3.392)	0.739	1.226 (1.108)	0.268	2.637** (1.241)	0.034
Political Stability	2.531 (2.022)	0.211	-1.288*** (0.410)	0.002	-1.274*** (0.483)	0.009
Regulatory Quality	0.375 (2.693)	0.889	0.768 (1.177)	0.514	2.297* (1.309)	0.080
ΔRule of Law	-0.503 (1.519)	0.741	-2.057 (1.942)	0.290	-2.371 (1.894)	0.211
ΔVoice and Accountability	4.587 (3.929)	0.243	0.034 (1.663)	0.984	0.732 (1.626)	0.653
Constant	-2.650 (3.320)	0.425	-2.395** (0.974)	0.014	-1.569 (1.102)	0.155
AR (1)	-2.893***	0.004				
AR (2)	-0.413	0.679				
Sargan Test	7.975	1.000				

Note: Countries included in the sub-sample are: Angola (excluding 2012-2015), Benin, Botswana (2002), Burkina Faso, Burundi, Cabo Verde, Cameroon, Chad, Cote d'Ivoire, The Gambia, Ghana, Kenya, Madagascar, Mali, Mauritania, Nigeria, Rwanda, Senegal, Sudan, Tanzania, Togo, Uganda, Zambia. *, **, *** denotes significance at a 10%, 5%, and 1% level respectively, whereas Δ indicates that a differenced variable (1st level).

In summary, the analysis of the full sample indicates that economic development plays a role in driving FDI to SSA. A comparison of the results obtained from the regressions conducted on the two sub-samples further indicates that the determinants of FDI across the higher and lower income nations differs. For higher income nations, investors consider government effectiveness and inflation when deciding on where to invest, whereas investors interested in investing in lower income nations consider previous FDI flows, inflation, and trade openness. Infrastructure development was found to deter FDI flows to higher income nations, whereas natural resource abundance was found to be a deterrent of flows to lower income SSA(n) nations.

5. **Conclusion**

FDI is seen as a key driver of economic development, as a result various developing nations have taken measures to increase the magnitude of capital inflows. However, trends in global FDI flows illustrate that developed nations tend to attract more FDI than developing nations, this indicates that economic development could play a role in attracting FDI.

This study uncovers the key drivers of FDI flows to SSA, with a particular focus on establishing whether economic development plays a key role in attracting FDI to SSA. Furthermore, the

study assesses whether the determinants of FDI to higher and lower income SSA(n) nations differs. The study included twenty-seven SSA(n) nations, where the choice of nations was informed by data availability on each of variables included, over the period under investigation. Each nation was classified according to World Bank's country classification by Income level, where high and upper-middle income SSA(n) nations are grouped as "higher income" nations, and low and lower-middle income nations are grouped as "lower income nations". The study notes that using the nations classification at the endpoint of analysis would could lead to a misclassification of nations that have transitioned from lower to higher income nations throughout the period under investigation. To ensure that each nation was correctly classified in each year included in the analysis, the study compared each nations GNI per capita to the threshold specified by the World Bank in each respective year.The study deployed both static and dynamic panel data techniques, with the latter being deployed to cater for endogeneity. Both the two and one-step GMM procedures were used to obtain estimates for the dynamic model, whereas fixed and random effects models were used to obtain estimates for the static equation.

The study began by assessing the determinants of FDI flows to the entire region, where we identified the key drivers of FDI to be inflation, FDI flows in the previous period, and trade openness. However, natural resource abundance, infrastructure development, and political stability were found to be factors that deter FDI flows to the region. When conducting analysis on the full sample, a time invariant dummy variable, which represented each nations income classification was included. The results found the dummy variable to be significant at 1% level under the GMM procedure and a 10% level when using the random effects model, thereby providing strong evidence supporting the notion that economic development does play a role in attracting FDI to SSA. Dynamic and static regressions were run on the two sub-samples, where a comparison of results was used to establish whether the determinants of FDI across the two groups differ, as well as identify the key factors that drive FDI to the respective groups.

A comparison of the results observed across the two sub-samples indicated that the determinants of FDI flows across both groups are different. The determinants of FDI flows to higher income SSA(n) nations were inflation and government effectiveness, whereas the determinants of FDI to lower income SSA(n) nations were lagged FDI flows, inflation, and trade openness. The results further indicate that infrastructure development is deterrent of FDI higher income nations, whilst natural resource abundance was found deter FDI flows to lower income nations. The dynamic model passed all the diagnostic tests, therefore, it was the

preferred mode of inference, for both the full sample and sub- sample analysis. Additionally, the random effects model was found to be the preferred model for static panel analysis.

Following these results, the study recommends that lower income nations should refrain from simply copying policies adopted in higher income economies particularly in the short term, and aim to formulate policies that aid the key drivers identified for their respective group. Lower income economies should focus on implementing policies that enhance economic growth, facilitate trade, and take steps to diversify their economies. Higher income nations are also advised to ensure that their policies promote economic growth, and ensure that a high standard of governance is maintained.

The following factors are considered to be limitations of this study: Firstly, the paper had to omit some nations due to a lack of data on all the variables included in the analysis. Secondly, the results obtained from the sample of higher income nations should be evaluated with caution given its small sample size. Lastly, the study relies heavily on the World Bank's income classification which is based on GNI per capita, however, some of the nations classified as higher income nations are not necessarily more developed than some nations that are classified as lower income nations. For example, Seychelles is classified as a higher income nation, whereas Kenya is classified as a lower income nation. While there are weaknesses with the classification, it does perform better that the end point classification used by Sabir, Rafique & Abbas (2019).

The study recognises that there exists room for further research. Most papers on this topic opt to investigate the drivers of FDI to the entire region (Asiedu, 2002; Boga 2019; Cleeve, 2012). Therefore, there is scope for researchers to conduct comparative studies of the determinants across various sub-regions, different economic communities, as well as comparative study between SSA(n) nations with an abundance of natural resources and those without abundant natural resources.

6. **References**

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7. Appendix

Table 1: World Bank Country income classification thresholds (USD) for the period 2000-2019

Year	Lower income	Lower-middle income	Upper-middle income	High-income
2000	<=755	756-2995	2996-9265	>9265
2001	<=745	746-2975	2976-9205	>9205
2002	<=735	736-2935	2936-9075	>9075
2003	<=765	766-3035	3036-9385	>9385
2004	<=825	826-3255	3256-10065	>10065
2005	<=875	876-3465	3466-10725	>10725
2006	<=905	906-3595	3596-11115	>11115
2007	<=935	936-3705	3706-11455	>11455
2008	<=975	976-3855	3856-11905	>11905
2009	<=995	996-3945	3946-12195	>12195
2010	<=1005	1006-3975	3976-12275	>12275
2011	<=1025	1026-4035	4036-12475	>12475
2012	<=1035	1036-4085	4086-12615	>12615
2013	<=1045	1046-4125	4126-12745	>12745
2014	<=1045	1046-4125	4126-12735	>12735
2015	<=1025	1026-4035	4036-12475	>12475
2016	<=1005	1006-3955	3956-12235	>12235
2017	<=995	996-3895	3896-12055	>12055
2018	<=1025	1026-3995	3996-12375	>12375
2019	<=1035	1036-4045	4046-12535	>12535

Note: Compiled by author using published World Bank income classification thresholds. The thresholds are specified in USD.

Table 2: Country Classification According to World Bank income classification thresholds for the period 2000-2019.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Angola	L	L	L	L	LM	LM	LM	LM	LM	LM
Benin	L	L	L	L	L	L	L	L	LM	LM
Botswana	UM	UM	LM	UM	UM	UM	UM	UM	UM	UM
Burkina Faso	L	L	L	L	L	L	L	L	L	L
Burundi	L	L	L	L	L	L	L	L	L	L
Cabo Verde	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Cameroon	L	L	L	LM	LM	LM	LM	LM	LM	LM
Chad	L	L	L	L	L	L	L	L	L	L
Cote d'Ivoire	L	L	L	L	L	LM	LM	LM	LM	LM

Gabon	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Gambia, The	L	L	L	L	L	L	L	L	L	L
Ghana	L	L	L	L	L	L	L	L	LM	LM
Kenya	L	L	L	L	L	L	L	L	L	L
Madagascar	L	L	L	L	L	L	L	L	L	L
Mali	L	L	L	L	L	L	L	L	L	L
Mauritania	L	L	L	L	L	LM	LM	LM	LM	LM
Mauritius	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Nigeria	L	L	L	L	LM	LM	LM	LM	LM	LM
Rwanda	L	L	L	L	L	L	L	L	L	L
Senegal	L	L	L	L	LM	LM	LM	LM	LM	LM
Seychelles	UM	UM	UM	UM	UM	H	H	H	UM	UM
South Africa	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Sudan	L	L	L	L	L	LM	LM	LM	LM	LM
Tanzania	L	L	L	L	L	L	L	L	L	L
Togo	L	L	L	L	L	L	L	L	L	L
Uganda	L	L	L	L	L	L	L	L	L	L
Zambia	L	L	L	L	L	L	L	L	LM	LM

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Angola	LM	LM	UM	UM	UM	UM	LM	LM	LM	LM
Benin	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Botswana	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Burkina Faso	L	L	L	L	L	L	L	L	L	L
Burundi	L	L	L	L	L	L	L	L	L	L
Cabo Verde	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Cameroon	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Chad	L	L	L	L	L	L	L	L	L	L
Cote d'Ivoire	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Gabon	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Gambia, The	L	L	L	L	L	L	L	L	L	L
Ghana	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Kenya	L	L	LM	LM	LM	LM	LM	LM	LM	LM
Madagascar	L	L	L	L	L	L	L	L	L	L
Mali	L	L	L	L	L	L	L	L	L	L
Mauritania	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Mauritius	UM	UM	UM	UM	UM	UM	UM	UM	UM	H
Nigeria	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Rwanda	L	L	L	L	L	L	L	L	L	L
Senegal	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Seychelles	UM	UM	UM	UM	H	H	H	H	H	H
South Africa	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Sudan	LM	LM	LM	LM	LM	LM	LM	LM	L	L
Tanzania	L	L	L	L	L	L	L	L	LM	LM
Togo	L	L	L	L	L	L	L	L	L	L
Uganda	L	L	L	L	L	L	L	L	L	L

Zambia	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM

Note: L, LM, UM and H represent lower income, lower-middle income, upper-middle income, and high income. The years where we observe changes in a nation's classification have been highlighted.

Table 5: Unit root tests (Full sample)

Variable	Levin-lin-Chu		Im-Pearson-Shin		Conclusion (Based on IPS)
	I(0) (p-value)	I(1) (p-value)	I(0) (p-value)	I(1) (p-value)	
Net FDI inflows (% of GDP)	0.000***	-	0.000***	-	I(0)
Fixed Telephone Subscriptions	0.552	0.000***	0.931	0.000***	I(1)
Inflation (annual %)	0.000***	-	0.000***	-	I(0)
Natural Resources (% of GDP)	0.026**	-	0.030**	-	I(0)
Trade Openness (% of GDP)	0.116	0.000***	0.281	0.000***	I(1)
Natural log of real GDP	0.000***	-	1.000	0.000***	I(1)
Control of Corruption	0.019**	-	0.144	0.000***	I(1)
Government Effectiveness	0.004***	-	0.118	0.000***	I(1)
Political Stability	0.000***	-	0.018**	-	I(0)
Regulatory Quality	0.008***	-	0.132	0.000***	I(1)
Rule of Law	0.003***	-	0.311	0.000***	I(1)
Voice and Accountability	0.003***	-	0.060*	-	I(0)

Note *, **, and *** denotes significance at a 10% level, 5% and 1% level respectively.

Table 6: Unit root tests (Higher income nations)

Variable	ADF		Phillips Peron (preferred)		Conclusion (based on PP)
	I(0) (p-value)	I(1) (p-value)	I(0) (p-value)	I(1) (p-value)	
Net FDI inflows (% of GDP)	0.054*	-	0.000***	-	I(0)
Fixed Telephone Subscriptions	0.987	0.000***	0.879	0.000***	I(1)

Inflation (annual %)	0.006***	-	0.000***	-	I(0)
Natural Resources (% of GDP)	0.342	0.000***	0.083*	-	I(0)
Trade Openness (% of GDP)	0.758	0.000***	0.374	0.000***	I(1)
Natural log of real GDP	0.806	0.000***	0.338	0.000***	I(1)
Control of Corruption	0.403	0.000***	0.278	0.000***	I(1)
Government Effectiveness	0.183	0.000***	0.388	0.000***	I(1)
Political Stability	0.000***	-	0.000***	-	I(0)
Regulatory Quality	0.973	0.000***	0.642	0.000***	I(1)
Rule of Law	0.001***		0.673	0.000***	I(1)
Voice and Accountability	0.192	0.000***	0.141	0.000***	I(1)

Note *, **, and *** denotes significance at a 10% level, 5% and 1% level respectively.

Table 7: Unit root Tests (Lower income nations)

Variable	ADF		Phillips Peron (preferred)		Conclusion (based on PP)
	I(0) (p-value)	I(1) (p-value)	I(0) (p-value)	I(1) (p-value)	
Net FDI inflows (% of GDP)	0.003***	-	0.000***	-	I(0)
Fixed Telephone Subscriptions	0.845	0.000***	0.958	0.000***	I(1)
Inflation (annual %)	0.000***	-	0.000***	-	I(0)
Natural Resources (% of GDP)	0.020**	-	0.069**	-	I(0)
Trade Openness (% of GDP)	0.289	0.000***	0.099*	-	I(0)
Natural log of real GDP	0.999	0.000***	0.999	0.000***	I(1)
Control of Corruption	0.096*	-	0.227	0.000***	I(1)
Government Effectiveness	0.072*	-	0.028**	-	I(0)
Political Stability	0.089*	-	0.011**	-	I(0)

Regulatory Quality	0.022**	-	0.001***	-	I(0)
Rule of Law	0.270	0.000***	0.209	0.000***	I(1)
Voice and Accountability	0.132	0.000***	0.385	0.000***	I(1)

Note *, **, and *** denotes significance at a 10% level, 5% and 1% level respectively**.**

Table 9: Hausman Specification Tests.

	Full sample	**High Income**	**Lower Income**
Chi-square test value	12.595	2.813	-13.22
P-value	0.399	0.993	1.000

Note *, **, and *** denotes significance at a 10% level, 5% and 1% level respectively.

Table 10: Full Sample Regression Results (With endpoint classification)

	GMM		Random Effects		Fixed Effects	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
$Net\ FDI_{t-1}$	0.354***	0.000	-	-	-	-
	(0.041)					
ΔFixed	-1.794***	0.000	-1.726***	0.000	-1.707***	0.000
Telephone	(0.234)		(0.259)		(0.259)	
Subscriptions						
ΔNatural log of	5.078	0.330	25.064***	0.000	25.571***	0.000
real GDP	(5.212)		(5.091)		(5.122)	
Inflation (annual	0.141***	0.000	0.153***	0.000	0.154***	0.000
%)	(0.023)		(0.018)		(0.019)	
Natural	-0.129***	0.000	-0.153***	0.000	-0.175***	0.000
Resources (% of	(0.037)		(0.033)		(0.037)	
GDP)						
ΔTrade	0.134***	0.000	0.116***	0.000	0.115***	0.000
Openness (% of	(0.020)		(0.021)		(0.021)	
GDP)						
ΔControl of	-3.456	0.048	-2.883	0.108	-3.095*	0.085
Corruption	(1.748)		(1.796)		(1.794)	
ΔGovernment	4.016	0.012	1.940	0.264	1.844	0.289
Effectiveness	(1.601)		(1.736)		(1.737)	

Political Stability	-0.258* (0.778)	0.741	-0.310 (0.470)	0.510	-0.919* (0.527)	0.082
ΔRegulatory Quality	0.102 (1.449)	0.944	0.042 (1.530)	0.978	0.155 (1.527)	0.919
ΔRule of Law	-3.211 (1.848)	0.082	-2.331* (1.945)	0.231	-2.194 (1.949)	0.261
Voice and Accountability	0.005 (1.512)	0.998	-0.450 (0.756)	0.552	0.419 (1.027)	0.684
Income (Dummy)	-	-	2.659* (1.575)	0.091	-	-
Constant	2.258** (0.767)	0.767	2.118*** (0.813)	0.009	2.906*** (0.594)	0.000
AR (1)	-	-				
AR (2)	-	-				
Hausman specification test			-22.455	1.000		
Sargan Test	-	-				

Note: The income dummy variable is constructed using each nations classification at the endpoint of the analysis. The income dummy in the GMM and fixed effects models were omitted due to collinearity. Countries included the full sample are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Chad, Cote d'Ivoire, Gabon, The Gambia, Ghana, Kenya, Madagascar, Mali, Mauritania, Mauritius, Nigeria, Rwanda, Senegal, Seychelles, South Africa Sudan, Tanzania, Togo, Uganda, Zambia. *, **, *** denote significance at a 10%, 5%, and 1% level respectively, whereas Δ indicates that a differenced variable (1st level).