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Human Capital, Governance and Foreign Direct Investments: Evidence from Sub Saharan Africa.

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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ABSTRACT

Developing economies in Sub Saharan Africa have become increasingly integrated into the global economy in the recent past. As such, this region has experienced a surge in inward Foreign Direct Investments (FDI). It is expected, that this increase in FDI should lead to better economic performance, hence increased economic growth. However, this effect is determined by the absorptive capacities of the host countries such as governance and human capital. This study provides empirical evidence of the impact of foreign direct investments (FDI) on total factor productivity (TFP) growth, while dependent on the level of governance and human capital of the host country. This analysis was conducted using cross country data for 19 countries in Sub Saharan Africa (SSA) for the period 2007 - 2017. The empirical analysis was conducted using the System Generalised Method of Moments approach, accompanied by the Fischer's unit root and the Sargan tests to check for stationarity and over-identifying restrictions respectively. The results suggest a positive non-linear effect of FDI on TFP growth (albeit statistically insignificant). However, the paper also finds that this effect is dependent on human capital as well as governance. The effect is positive with respect to human capital and negative with respect to the latter. This hence implies that efforts should made in increasing the human capital in SSA countries. However, the government systems need to be significantly changed in order to realise gains in TFP growth from inward FDI. Further research can be conducted to determine the effect of other absorptive capacities such as trade openness and financial development on the FDI-growth nexus in SSA.

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List of Abbreviations

FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IDP	Investment Development Path
SSA	Sub Saharan Africa
TFP	Total Factor Productivity
PCA	Principal Component Analysis
GMM	Generalised Method of Moments

Chapter One: Introduction

1.1 Background Information

1.1.1 Trend of Foreign Direct Investment in Sub Saharan Africa

An investment that is made by a firm or individual towards another country is known as a Foreign Direct Investment (FDI). It can be inward, which is with respect to a host country, or outward, from the source country. For many developing countries, Foreign Direct Investment has become a large source of external finance, surpassing official development assistance, remittances or portfolio investment flows. As of 2016, 40% of the global inflows attributed to FDI were directed to developing countries, providing them with much needed capital (UNCTAD, 2017). The impact of FDI on developing countries through the accrual of investment funds, transfer of technological know-how and improvement of labour standards is often seen as a huge benefit resulting from globalisation (Farla & Verspagen, 2016).

There has been a decline in the flow of foreign direct investments around the world but Africa is an outlier in this trend. As of 2018, it received foreign flows worth 46 billion dollars, an increase of 11% from the previous year (UNCTAD, 2019). The section of Africa that has received the largest share of these flows is Sub Saharan Africa (SSA). The FDI flowing to this area rose by 13% to 32 billion dollars. This rise comes as no surprise, as the level of FDI flowing to Sub Saharan has on average been increasing since the 1990s. It should be noted, that with this trend of increased FDI there has also been a change in the source of FDIs. More foreign investments are coming from the East as opposed to the West. Hence, the issue is no longer just about host countries competing for FDI, but also includes the source countries competing to be sources of outward FDI. The nature and composition of FDI is also changing. For instance, there has been more focus on developing infrastructure particularly from Chinese FDI. A benefit that arises from this is that, as Renard (2011) put it, Chinese FDI

is "made with the intention of establishing long-term relationships with governments". Hence, with this change in the trend, source and composition of FDI, there has been more optimism in the rate of economic development arising from it. However, as the FDI-growth nexus is dependent on absorptive capacities, the countries of SSA should be cognisant of this.

1.1.2 Sub Saharan Africa and Absorptive Capacities

There are a number of absorptive capacities that have an effect on the FDI-growth nexus. These include; human capital, trade openness, financial development and governance. Literature based on this relationship suggests that the FDI-growth nexus in developing countries is highly contingent on the level of human capital in the host country. Human capital constitutes human skills and knowledge embodied in human labour that adds value to an economy. This form of capital is able to absorb the new knowledge and technology from FDI through an educated and skilled workforce. According to The World Bank (2019), the indicators of human capital in SSA depict that the region has human capital levels that are in a dire state. Africa is the only region in the world where the number of adolescents out of school has risen due to rapid increase in population. Consequently, SSA has one of the highest rates of stunting children in the world (The World Bank, 2018). What this implies is that stunted children tend to miss learning opportunities, leading to poor school performance rendering them economically disadvantaged.

The implementation of policies that ensure responsiveness, accountability, stability, transparency, rule of law and equity are the key depictions of governance in a country. According to Li and Tanna (2019), good governance also plays an important role in the FDI-growth nexus. Countries that have controlled corruption, appropriate rule of law and stable political institutions have a better chance at benefiting from the returns of foreign direct investments. SSA countries lag behind other countries in terms of governance due to a weak perception of corruption (IMF, 2019). Since the 1990s, these

countries have experienced political transformations whereby regime changes have even occurred. In fact, despite regressions in countries like Zimbabwe and Ethiopia, SSA has become more politically open. However, even with such political transformations, many political systems are still characterized by neopatrimonialism. Deficits in governance still persist in many parts of the region and additional effort is required by the SSA countries in addressing such issues (IMF, 2019).

1.1.3 Economic Growth and Total Factor Productivity

The aim of this study was to determine the significance and role of human capital and governance in the relationship between FDI and total factor productivity (TFP) growth. Total factor productivity represents the portion of economic output that is not explained by inputs of labour and capital. It however measures the efficiency of these inputs in their contribution to economic growth. There is a superior importance of using TFP growth as a measure of economic growth, as opposed to using output (Gross Domestic Product) growth. This is based on the argument that total factor productivity is found to enhance economic growth more, as compared to the latter. This however, is a controversial topic in theory. For instance, neoclassical revivals such as Mankiw (1995) argued that the difference in economic output across countries is not because of differences in technological knowledge but instead due to differences in factor accumulation, specifically human capital. The research argues that virtually all income is attributable to capital, both human and non-human. However, subsequent literature has disputed this argument. Nakamura and Kaihatsu (2018) conducted a research in Japan on productivity improvement and economic growth. Their findings imply that the reason for the slowdown of economic growth in Japan is due to a slowdown in the total factor productivity. Indeed, just as Wu, Li, Nie and Chen (2017) highlighted in their research, current economic development should focus on total factor productivity so as to grow the economy.

1.2 Problem Statement

FDI led growth hypothesis stipulates that ideally, FDI should lead to economic growth. Various studies such as research done by Nistor (2014) as well as Fadhil and Almsafir (2015) have been conducted confirming this hypothesis. However, there has been no clear consensus on this relationship. This can be attributed to the fact that this relationship is dependent on absorptive capacities, which are subjective to each host country. For example, FDI may have no effect on economic growth due to a poor governance regime in the host country, hence placing constraints on the ability to absorb the positive FDI spill overs.

Some of the key absorptive capacities include indicators of governance and human capital (Morrissey & Udomkerdmongkol, 2012) (Borensztein, Gregorio, & Lee, 1998). According to the World Bank (2019) and IMF (2019), majority of Sub Saharan countries are characterised by weak governance and low human capital which count as absorptive capacities that influence the FDI-growth nexus. Through identifying the significance of these two absorptive capacities, countries implement policies that lead to economic growth from FDI. Several studies have proved that this is indeed true such as research done by Li and Tanna (2019). Their research is carried out across 46 developing countries from 1984-2010 and their findings suggest that the FDI-led growth nexus is dependent on human capital and institutions. In their research, institutions represent the quality of governance in a country. This study however differs from that of Li and Tanna (2019), in that it narrows its focus to the countries of Sub Saharan Africa. While contributing to the literature that emphasizes on the absorptive capacities in the FDI-growth nexus, the aim of this study was to project this emphasis to SSA and determine if it holds. This is particularly important since SSA has seen an increase in FDI over the past years (UNCTAD, 2019), and has been characterized by poor governance and low human capital. With such indicators of absorptive capacities, the aim of the study was to determine if there is economic growth from FDI.

1.3 Research Objectives

The overall objective of this research was to determine the relationship between governance, human capital and foreign direct investments in Sub Saharan Africa.

The specific objectives of this research were to:

(i) Determine the effect of foreign direct investment on total factor productivity growth in Sub Saharan Africa.

(ii) Determine the nonlinear effect of FDI on TFP growth using governance and human capital as the contingent factors.

1.4 Research Questions

This study purposed to address the following research questions:

(i) What is the effect of foreign direct investment and total factor productivity growth in Sub Saharan Africa?

(ii) What is the nonlinear effect of foreign direct investment on total factor productivity growth using governance and human capital as the contingent factors?

1.5 Scope of the Study

The aim of the study was to determine the influence of governance and human capital on the relationship between FDI and TFP growth across SSA. However, as majority of these countries are poorly developed, data on certain aspects of governance and human capital was difficult to acquire due to poorly developed systems and databases. As a result, the sample was reduced from a full SSA sample to 19 countries due to data availability. The countries used were; Kenya, Burundi, Chad, Ethiopia, Ghana, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Rwanda, Nigeria, Niger, Senegal, Seychelles, South Africa, Sao Tome and Cape Verde. The study was conducted across 10 years, from 2007-2017.

1.6 Significance of the Study

One of the key objectives of a country is to grow its economy. This can be achieved through policy makers coming up with clear and sound strategies that would benefit the economy. By showing the significance of governance and human capital in the FDI-growth nexus, the implications of this study can be used by policy makers in host countries to address these absorptive capacities. This can be done through enactment of regulations that reinforce political stability, control of corruption as well as public participation of the citizens in governing the country. Through efficient and sound governance in a country, different sectors of the economy will be regulated properly and this is bound to attract foreign investors. Through a sound financial system that is well governed, capital flows will be directed to appropriate investments, which promote economic growth.

To add on to that, policymakers can formulate and implement strategies which promote nationwide access to proper education. For example, ensuring free access to education at all levels, or subsidizing school fees, at rates which favour the economically strained segment of the economy. Increasing the portion of the educated workforce will lead to more skilled labour available to employers thus promoting economic growth through efficient and effective production processes that lead to increased output. The private sector can also contribute to the development of human capital through creating training programs within respective corporations that increase the skill set of workers. Collaborations can also be done with campaigns and programs that address poverty and health of a nation. Majority of the school drop outs in the SSA countries are due to lack of access to proper food and health facilities. Hence, stronger policies should be enacted to ensure proper allocation of funds to programs that provide the appropriate aid to the demographics that are economically strained.

Chapter 2: Literature Review

2.1 Introduction

This chapter expounds on the theoretical literature behind this topic. It also explains the models used in explaining the FDI-growth nexus as well as the disadvantages and advantages of the models.

2.2 Theoretical Review

There are various theories that have been used to explain Foreign Direct Investments as well as economic growth. It is from these theories that many studies have evolved, concentrating on the sources, impact and relationship of FDI with other economic factors.

2.21 Investment Development Path Theory

This theory was developed by Dunning (1981) . It revolves around the idea that there is an association between a country's level of development (GDP) and its international investment position (which can be denoted by FDI). It is based on two key assumptions. The first assumption is that there is a bidirectional relationship between FDI (inward and outward) and economic structure as a country changes through time. The second assumption is that the government has the ability to influence a country's conditions by producing public goods which can be used to enhance competition.

The Investment Development Path (IDP) theory hypothesizes that a country goes through five stages of development, through which there is a dynamic relationship between economic structure and FDI.

The first stage is associated with pre-industrialization. In this stage, a country is characterized by poor infrastructure, underdevelopment in legal frameworks, poorly educated labour force and small domestic markets, hence there is negligible presence of FDI.

The second stage stipulates that there is an emerging presence of inward investments in order to capitalize on the growing domestic markets. However, the outward investments are minimal as the domestic firms do not have ownership advantages. Ownership advantages are competitive advantages that arise from a firm owning valuable assets, and they can be used to penetrate foreign markets through FDI.

In the third stage, the rate of inward direct investments begins to slow down, being overtaken by the outward FDI. As a result, the net FDI stock will increase despite remaining negative for some time. This is due to established domestic firms and stronger ownership advantages. As a result, these stronger domestic firms will be more competitive in domestic markets, employing asset-seeking investment strategies in the developed countries while partaking in resource seeking investments in less developed countries.

In the fourth stage, firms' ownership advantages of geographically displaced assets become more important than those based on a country's specific characteristics. At this stage, intra-industry production and trade is common.

This last stage corresponds to the characteristics of the developed countries of today. There is high inward and outward FDI, hence the net FDI stock revolves around zero, depending on a country's economic cycles and short-term evolution of exchange rates.

This theory, however, is subject to two main limitations. Firstly, the information on statistical series of FDI is inadequate, hence making it difficult to empirically test the notion of each country or industry having an individual IDP position. Secondly, the large interaction between the variables of FDI (inward and outward) and GDP growth limit the scope for secure conclusions.

2.2.2 Neoclassical Growth Theory

The National Bureau of Research attribute the development of this theory to Solow (1956) and Swan (1957). It states that the output in an economy is based on three inputs; labour, capital and technology. The relationship between

labour and capital is what determines the economic output of an economy where technology plays the role of increasing the productive capacity of labour. As a result, it is based on the following production function:

$Y = A F (K, L)$

Where:

Y: Gross Domestic Product

A: Level of technology

K: Share of capital

L: Amount of unskilled labour in an economy.

However, due to the relationship between labour and technology, the production function of an economy is written as:

$Y = F (K, AL)$

As a result, this theory implies that, while an economy has limited capabilities of capital and labour, the contribution from technology is boundless. This technology is what enhances the efficiency of the capital and labour inputs and as such, can also be considered as the total factor productivity. The theory forms the foundation upon which this study achieved an estimate of the total factor productivity growth, as this value is estimated using the Solow (1956) model.

2.3 Empirical Review

This section will examine past literature on the impact of foreign direct investment on economic growth as well as the influence of absorptive capacities on this relationship.

Foreign direct investment is fundamental in spurring economic growth in developing countries. This is through being a source of capital, investment, employment, managerial skills as well as improved technology (Mello, 1997).

There is vast literature suggesting a catalyst effect of FDI on economic growth. For instance, Nistor (2014) conducted a study in Romania with the specific aim of determining if there exists a positive relationship between FDI and GDP growth. The study was conducted across a period of 18 years from 1995 to 2012 and the overall results concluded there is indeed a positive effect of FDI on economic growth. To add on to that, Fadhil and Almsafir (2015) come to the same conclusion of there being a positive effect of FDI on economic growth through a study conducted in Malaysia. However, majority of the recent studies imply that this relationship is dependent upon the absorptive capacities of the host country. One specific paper which underpins most subsequent studies of this notion is that of Borensztein, Gregorio, and Lee (1998). They carried out a research across 69 developing countries testing the effect of FDI on economic growth. The results from their findings suggest that in order for a country to benefit from inward FDI, there should be a minimum threshold of human capital. Consequently, more recently, Tang and Zhang (2016) found that human capital, research and development as well as infrastructure all count as absorptive capacities in assimilating the benefits of FDI into China. Other studies suggest other factors such as institutions, trade openness, financial development, governance and corruption as contingency factors in determining the effect of FDI on economic growth (Ketteni & Kottaridi, 2019) (Solomon, 2011) (Iamsiraroj, 2016) (Iamsiraroj & Ulubaşoğlu, 2015) (Rahman, Romli, Ismail, Romaiha, & Roseli, 2015). Conversely, researchers such as Sahraou, Belmokaddem, Guellil and Ghoulali (2015) find that in fact, the relationship between FDI and TFP is a direct causal relationship without taking into the consideration the non- linear effect brought about by the absorptive capacities.

Most of the studies that depict the presence of a non-linear relationship between FDI and economic growth are based on the fact that there exists a relationship between the two macroeconomic variables in the first place. However, there is still vast literature that questions the presence of any relationship between the inward flow of FDI and the growth of the economy.

Bermejo and Wenner (2018) fall among this group of researchers who argue that there is no long run relationship between FDI and economic growth. They conduct a study in Spain from 1984 to 2010, testing whether the favourable economic conditions of the country have any effect on the FDI-growth nexus. Their results yielded no evidence for the economic conditions for FDI to stimulate economic growth. Consequently, Belloumi (2014) conducted a research in Tunisia, examining the effects of FDI and trade openness on economic growth from 1970 to 2009. Using Granger causality tests, their results indicate no causal relationship between FDI and economic growth.

Collectively, from a macro-level perspective, there is a mixed consensus on the relationship between FDI and economic growth as well as the influence of absorptive capacities in this relationship. Hence, this research aims to contribute to this body of literature by determining the non-linear effect of FDI on economic growth using human capital and governance as contingency factors.

Recent studies such as that by Shakar and Aslam (2015), indicate that FDI may stimulate economic growth through technology transfers and spill-over efficiencies. However, for this benefits to be realized, there is a threshold level of human capital that should be achieved. Human capital is able to absorb the new knowledge and technology from FDI inflows through an educated and skilled workforce. The absorbed FDI spill-overs can then be incorporated into the existing skills of the workforce, so as to propel productivity. It is for this reason that an educated workforce is necessary in driving productivity through embedded benefits of FDI inflows. Hence, this study deemed it necessary to determine the mediating effect of human capital in the FDI-growth nexus.

Also to be considered, is the role of governance in driving productivity growth through its interaction with FDI. As Li and Tanna (2019) highlighted, foreign direct investments may be considered essential in promoting economic growth in developing countries, but corruption or political stability can

increase the risks of returns to investment not being attained. Good governance however, may be able to mitigate this through implementations such as the rule of law and control of corruption. In exploring the impact of trade openness on labour force participation rates through interaction with political institutions in Sub Saharan countries, Cooray, Dutta and Mallick (2017) found that countries with relatively strong political institutions benefit more from trade openness which leads to increased economic activity. Drawing from this literature, this study incorporates the effect of governance on the FDI-growth nexus through the use of governance indicators.

2.4 Research Gap

Focusing on the relationship between FDI and TFP growth, this study entails an analysis on the effect of absorptive capacities on the relationship. To be specific, the primary conditions examined were human capital and governance. The study contributes to existing literature through determining the nonlinear effect of FDI on TFP growth using governance and human capital as the contingent factors. The results add to the limited evidence of this topic, especially across Sub Saharan Africa. Many studies on this topic use GDP as a measure of economic growth. However, as established by recent studies of Nakamura and Kaihatsu (2018) as well as Wu et al. (2017), TFP is a better measure of economic growth. Hence this research adds on to the limited evidence focusing on TFP growth. While Li and Tanna (2019) found that TFP growth resulting from FDI is contingent upon human capital and institutions (which is measured through government indicators), across 46 global developing countries, this study narrowed down the research to SSA. This region receives a large amount of FDI and the aim of the study was to determine whether its' state of governance or human capital has an effect on the FDI-growth nexus.

2.5 Conceptual Framework

This study examined the impact of foreign direct investment on total factor productivity in Sub Saharan Africa. The main assumption that has been implied by past studies is that inward FDI leads to an increase in economic growth. However, it should be noted that this benefit is contingent upon absorptive capacities. As there are other determinants of economic growth, they should be incorporated in the model. According to Vedia-Jerez and Chasco (2016), trade openness, external debt and financial development are macroeconomic factors that contribute to economic growth. Consequently, inflation has an effect on the economic growth rate. There is a certain threshold upon which any value above it yields a negative effect and a positive effect below it (Hung, 2017).

As a result, this study has empirically tested the effect of human capital and governance as absorptive capacities, in the FDI-growth nexus using the following variables.

Dependent Variable: TFP growth (Total Factor Productivity)

Independent Variables: Trade openness, FDI (Foreign Direct Investment), TFP lag (Total Factor Productivity in the previous period), Inflation, Financial Development, External Debt, Human Capital, Governance (control of corruption, government effectiveness, regulatory quality and rule of law), FDI*Human Capital and FDI*Governance.

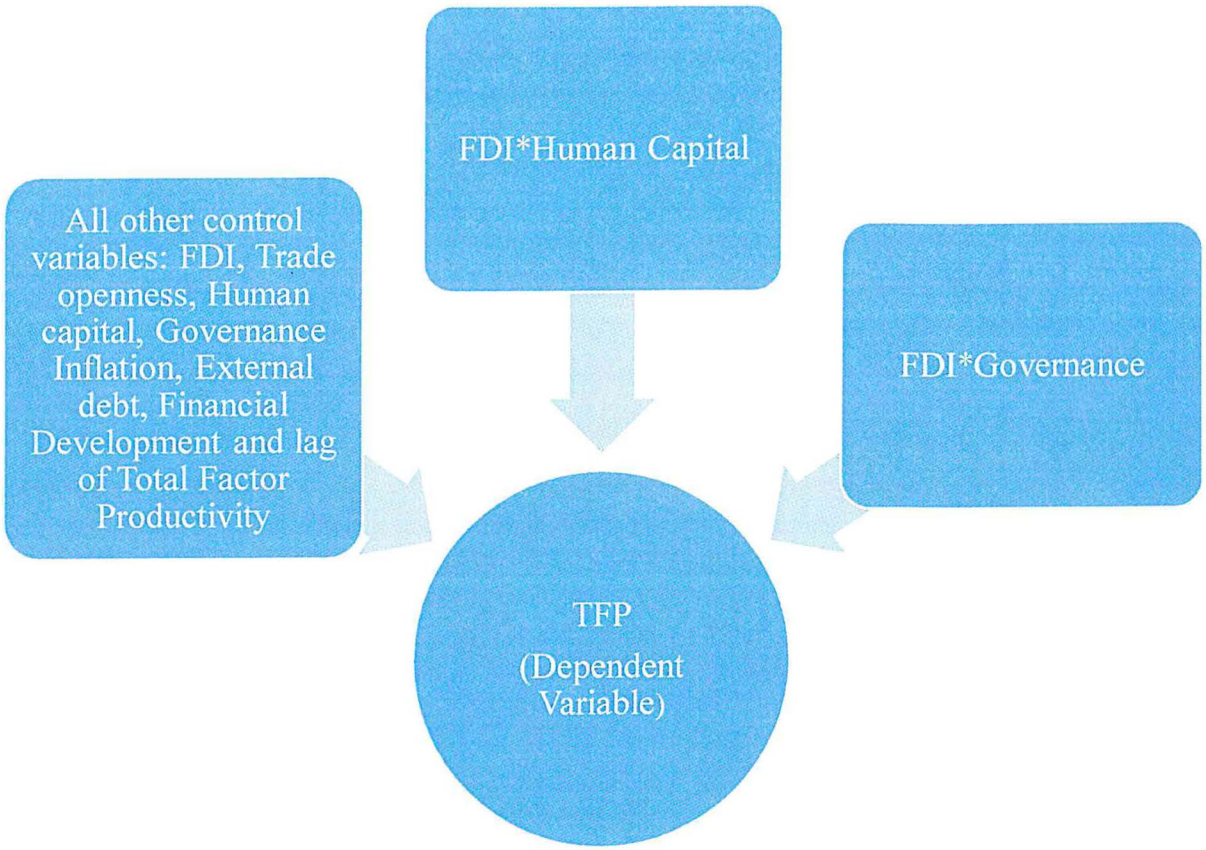

Figure 1: Conceptual Model

Chapter 3: Methodology

3.1 Introduction

This chapter outlines the research approach used in the study. It highlights the research design as well as the methods of estimating the mediating effect of human capital and governance in the FDI-growth nexus. The estimation method applied for testing the mediating effects was the system generalized methods of moments. As for estimating the TFP measures, the Solow Growth Model as well as the perpetual inventory method were applied.

3.2 Research Design

This study executed a longitudinal design. A longitudinal design usually involves repeated observations of the same variables across time. As such, this study examined observations of human capital and governance as absorptive capacities in the FDI-growth nexus using the same countries across time. Consequently, the study established the direction of the relationship between FDI and economic growth through the mentioned contingency factors, which is a function that is similar to one of the general objectives of longitudinal designs.

3.3 Population and Sampling

The research was carried out across a sample of 19 countries which represented the SSA population. The countries included: Kenya, Burundi, Chad, Ethiopia, Ghana, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Rwanda, Nigeria, Niger, Senegal, Seychelles, South Africa, Sao Tome and Cape Verde. These countries were selected as they had sufficient databases to conduct the study as compared to the other countries. Hence, the sample used would be appropriate for this study.

3.3.1 Data Collection

The data used was panel data, collected across the 19 countries in SSA, from the period 2007-2017, with an annual frequency. The study focused on this period because on average, there has been a steady increase of FDI to this region since the 1990s. To be specific, the change in trend, source and composition of FDI has been witnessed from the 2000s. As a result, this period was used to account for these changes that have occurred in the recent past. The data collection was focused on less developed countries (lower middle income according to the World Bank ranking) since traditionally, developing countries are known to heavily rely on FDI in order to promote economic growth.

Table 1 shows the data collected and the associated variables that were used.

Table 1: List of variables and expected relationships.

Variable	Description	Source	Expected sign
TFP growth	It represents the productivity of the economy as a whole. It is calculated as shown in the methodology. The data used in calculation of the variable include; annual Gross Domestic Product, Investments and Population.	World Bank	Dependent variable
Trade Openness	Represents merchandise trade which is a ratio of total exports and imports to GDP	World Bank	+
FDI	Represents the ratio of inward FDI to total GDP.	World Bank	+/-
Inflation	Represents the percentage increase in price in an economy.	World Bank	-

	Measured as the annual change in the Consumer Price Index.		
Human Capital	Represents the education level in an economy's population. It is measured using school enrolment statistics.	World Bank	+
External Debt	Represents the level at which the host country is indebted. It is measured as a ratio of total external debt to GDP.	UNCTAD	-
Governance	Represents an index that constitutes a total of five key governance indicators.	World Bank	+/-
Financial Development	Represents the level of development of financial systems in specific countries.	World Bank	+

	Measured as M2, which stands for the quasi money (money in circulation outside of banks) as a fraction of GDP and ratio of private credit to GDP.		

3.4 Data Analysis

The analysis of this study was centred on regressions. These regressions were be estimated using the System Generalized Method of Moments Approach.

3.4.1 Measuring Total Factor Productivity growth

The starting point of estimating TFP was to apply the Cobb-Douglas production function. In this method, GDP is produced using two inputs; physical capital and labour. There are two ways that can be used to estimate this production function as stipulated by The World Bank (2000).

One is to estimate the production function through the econometric approach. In this method, one can regress output growth on input growth and the residual is taken to be TFP growth. While it can be used across countries that have changing (decreasing or increasing) returns to scale, it suffers from problems of endogeneity. The residual in this case would be correlated with the variables representing the inputs. This is because theoretically, growth in TFP and growth in inputs are positively correlated.

The other method is based on the Solow growth model (1956), which assumes constant returns to scale and perfect competition. From this, it is then possible to view the share of capital as 1 minus the share of wages.

The measurement of Total Factor Productivity (TFP) growth was based on the standard neoclassical Cobb Douglas function as stated below:

$$Y_i = A_i K_i^{\alpha} L_i^{1-\alpha}$$

Y - Aggregate output in a country i.

A – Total Factor Productivity in country i.

K - Physical capital of country i.

L – Labour in country i.

α - The proportion of income attributed to physical capital.

And $(1- \alpha)$ is the proportion of income attributed to labour.

The aim was to determine the growth of TFP, hence the Solow Growth Model (Solow, 1956) was applied. This is because the Solow Growth Model estimates the change in output resulting from demographic changes over time.

The above equation was divided by labour (L) to get per capita values. This was followed by converting it into logarithmic form to get the time derivatives. The steps were as follows:

Dividing both sides by labour yielded the following equation:

$$y = Ak^{\alpha}$$

Where:

$$y = (Y/L)$$

$$k = (K/L)^{\alpha}$$

Taking the logarithmic function obtained:

$\ln y = A + \alpha \ln k$

Making TFP the subject, the equation resulted to:

$A = \ln y - \alpha \ln k$

α was assumed to be 0.3 for all countries. Since the Solow growth model is based on an assumption of constant returns to scale, it is common to assume values of capital share that range from 0.3 to 0.5 (The World Bank, 2000). This assumption may be criticised as all the countries may not have the same capital share. However due to lack of capital share data, numerous studies such as (Bekaert, R.Harvey, & Lundblad, 2011) (Kose, Prasad, Rogoff, & Wei, 2009) have used it widely as a standard measure confirming that it is a realistic measure.

This resulted to the following equation:

$A = \ln y - 0.3 \ln k$

In order to calculate the growth in the capital labour ratio, the perpetual inventory method was applied. This resulted in the following equation.

$k_{t+1} = k_t + I_{t+1} - \delta k_t$

k_{t+1} - Capital-labour ratio in time t+1.

k_t - Capital labour ratio in time t .

I_{t+1} - Investments at time t+1.

δk_t - Amount of depreciated capital at time t.

This method was used due to the inadequate availability of data on physical capital, hence, data on available investment was used. This raised the question of how to calculate the initial capital at time t. There are numerous methods,

as demonstrated by (Nehru & Dhareshwar, 1993), with the simplest being to assume that the initial capital is 0. However, this was a very restrictive assumption as it would be unrealistic to assume that all countries had no physical initial capital. Hence, a more popular approach, as initiated by Harberger (1988) was used, which assumes that the capital to labour ratio was constant in the initial year, implying that the growth rates of capital and labour were equal.

Using this approach, the above equation became:

$g = (k_{i,t+1} - k_{i,t})/k_{i,t}$ which is the same as $I_{i,t+1}/(k_{i,t} - \delta)$

Where

$k_{i,t} = I_{i,t+1}/ (\delta+g)$

3.4.2 Regression model of the impact of FDI on TFP growth

The impact of FDI on TFP growth was estimated through the regression model below which depicts that TFP is influenced by its lag, FDI, a set of control variables and a set of country specific effects.

$$TFP_{i,t} = \beta_0 TFP_{i,t-1} + \beta_1 FDI_{i,t} + \beta_2 Inflation_{i,t} + \beta_3 Trade\ openness_{i,t} + \beta_4 External\ debt_{i,t} + \beta_5 Financial\ development_{i,t} + \beta_6 Human\ capital_{i,t} + \beta_7 Gov_{i,t} + \beta_8 FDI * human\ capital_{i,t} + \beta_9 FDI * gov_{i,t} + \eta_{i,t} + \varepsilon_{i,t}$$

$(i = 1, 2, 3, 4 \dots 19) \qquad (t = 2007, 2008, 2009 \dots 2017)$

$\eta_{i,t} \sim iid(0, \sigma^2)$, $\varepsilon_{i,t} \sim (0, \sigma^2)$

Where:

β- Coefficients to be estimated.

$TFP_{i,t}$ - Total factor productivity growth of country i at time t.

$TFP_{i,t-1}$ - Lag of Total Factor Productivity growth for country i at time t-1.

$FDI_{i,t}$ - Foreign Direct Investment entering country i at time t.

$Inflation_{i,t}$ – Inflation in country i at time t.

$Trade\ openness_{i,t}$ – Trade openness in country i at time t.

$Financial\ devt_{i,t}$ – Level of financial development in country i at time t.

$External\ debt_{i,t}$ – External debt in country i at time t.

$Human\ capital_{i,t}$ – Level of human capital in country i at time t.

$Gov_{i,t}$ - Set of governance indicators of country i at time t.

$FDI*human\ capital_{i,t}$ – Interaction term showing the mediating effect of human capital in country i at time t.

$FDI*gov_{i,t}$ – Interaction term showing the mediating effect of governance in country i at time t.

$\eta_{i,t}$ - Unobserved country specific effects.

$\varepsilon_{i,t}$ - Error term.

The set of control variables included; human capital, inflation, financial development, external debt, trade openness and a set of governance indicators. In determining the indirect effect of FDI on TFP, there was inclusion of two interaction terms between human capital and governance respectively (FDI*human capital) (FDI*governance). The signs of these interaction terms as a result were used to determine the influence of these absorptive capacities on the FDI-growth nexus.

The set of governance indicators used were; control of corruption, political stability, government effectiveness, regulatory quality and rule of law. All of these measures were indices extracted from The World Bank database, with scales ranging from -2.5 to 2.5 (The World Bank, 2018). Due to the ordinal nature of these variables, an index was constructed using the respective

measures. The governance variable was Gov and Gov = (control of corruption + political stability + regulatory quality + rule of law + government effectiveness). The variable was constructed using the Principal Component Analysis (PCA) method. The PCA method falls under a group of statistical models known as Factor Models. Factor models are types of econometric models which are employed as dimensionality reduction techniques in situations where there are closely related variables. There are two types of factor models; economic factor models and mathematical factor models (Brooks, 2013). PCA method is a mathematical factor model which applies the reduction dimension technique, strictly towards a set of measurements that are either quantitative or have an ordinal scale. In this study, the variable used to represent governance is composed of different measurements that were all ordinal in nature, and strongly correlated. The PCA method usually constructs an index through creating linear combinations of the original set of measures. Each linear combination is known as a component. The component that explains the maximum amount of variation is known as the first principal component (Abeyasekera, 2003). In this study, the first principal obtained was used as the governance index.

3.5 Empirical tests

Before using the regression model, it was first necessary to determine if the data was stationary. Consequently, it was necessary to confirm the appropriateness of the regression model used. In order to test for stationarity, this paper employed the use of unit root tests. To determine the appropriateness of the regression method, the Sargan test was employed.

Based off of a comparative analysis conducted by (Maddala & Wu, 1999), there are numerous tests that can be used to check for stationarity in panel data. Some of these include, Levin-Lin Test, Im-Pesaran Shin Test and Fisher's Test. However, (Maddala & Wu, 1999) concluded that the Fisher's Test, is

considered the most appropriate. This is due to three main reasons. To begin with, it is easier to work with using soft wares such as STATA. Secondly, unlike the Im-Pesaran Shin Test, it is not restricted to working with balanced panel data. Lastly, different lag lengths for the individual Augmented Dickey Fuller (ADF) regression can be used.

The regression method used in this paper was the system geneneralised method of moments (Blundell & Bond, 1998). This method is a type of method of moments estimator where there are over-identified restrictions, which are used as instruments in the model. As a result, specification tests are used to determine if the instruments are valid. The specification test used to test for over-identifying restrictions was the Sargan test. Unlike the Fischer's Type unit root test, the Sargan test is usually employed after the model has been estimated. Since GMM uses instruments that are meant to replace the endogenous variables, the Sargan test checks if the instruments are actually valid, in order to give appropriate results. Hence, this test can only be employed after the GMM regression.

3.5.1 Fisher's Unit Root Test

This test works through combining the individual p_i values for each cross section i.

It can be estimated using the following formula:

$P = -2\sum^{N}_{i=1} \ln p_i, \qquad (T_i \rightarrow \infty, \text{ for finite N})$

This test is an asymptotically chi squared distribution with 2N degrees of freedom. N represents the number of observations.

In this case, the sum of logs of the p values for the observation is compared against a chi squared distribution with 2N degrees of freedom.

In testing for unit roots, the following null and alternative hypotheses were used.

H_0: All panels contain a unit root.

H_1: Some time series are stationary while others are not.

3.6 Method of Estimation

Since the data being used was dynamic panel data where the cross sections exceed the time period, the estimation approach that would be considered appropriate was the System Generalised Method of Moments (GMM). The pooled Ordinary Least Squares (OLS) would not be applicable, as it would lead to endogeneity, due to the presence of a lagged dependent variable appearing as an independent variable. Consequently, there would also be a high possibility of reverse causality, where increased TFP would attract more FDIs. Hence, to address these issues, a dynamic panel data estimator such as the system GMM would be appropriate by applying sufficient instruments. Consequently, this method is appropriate for unbalanced panel data (Blundell & Bond, 1998). The method was employed through three main steps.

The first step was to remove the unobserved heterogeneity that is usually common in panel data sets. This was removed through using forward orthogonal deviations. What this entails is subtracting the average of all the future values from the value of a specific variable at time t. This process as a result eradicates any unobserved heterogeneity.

Consequently, the next stage entailed controlling for endogeneity through the use of instrumental variables which should be relevant and valid. The instruments used could either be lagged levels or lagged differences of the endogeneous variables.

The final stage involved conducting a regression using the Generalised Method of Moments (GMM) estimator.

3.7 Sargan Over-identification Test

The Sargan Test is a statistical test used to check for over-identifying restrictions. One of the characteristics of a good instrumental variable is that it should be independent of the errors. In order to ensure this, the GMM method has over-identifying restrictions which exhibit orthogonal properties, implying statistical independence. Hence, the Sargan test determines the appropriateness of the over-identified restrictions that as a result imply whether the instruments used are valid.

This test uses the residuals from the instrumental variable regression in the GMM model to construct a quadratic variable based on the cross product of residuals and exogeneous variables. This quadratic test statistic is then compared against a critical value obtained from a chi distribution with M - K degrees of freedom. M refers to the number of instruments and K represents the number of exogeneous variables. The following hypotheses are usually used:

H_0: Over-identifying restrictions (instruments) are valid.

H_1: Over-identifying restrictions (instruments) are not valid.

Chapter 4: Results and Analysis

4.1 Introduction

This chapter presents a detailed analysis of the results obtained using the methodology discussed in the previous chapter. The chapter entails brief interpretations of the summary statistics, stationarity tests, stylised facts, as well as the linear and non – linear relationship effect of FDI on TFP growth.

4.2 Summary statistics

Table 2: Summary statistics of the data used.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
TFP	209	1.788	0.171	1.453	2.144
TFP_{t-1}	209	1.780	0.175	1.450	2.137
FDI	209	5.339	6.566	-4.852	57.838
Inflation	207	7.599	7.349	-8.975	44.357
Trade openness	209	57.824	29.277	17.010	156.830
External debt	209	-1085.799	5248.904	-21280.020	29150.290
Financial development	198	44.833	42.795	9.680	289.361
Human capital	186	51.031	25.758	10.599	109.444
Governance	209	-0.004	1.000	-2.108	2.453
FDI*governance	209	0.741	6.453	-23.568	40.184
FDI*human capital	186	295.833	453.478	-111.795	4702.436

Table 2 reports the summary statistics. FDI inflows (as a percentage of GDP) were found to average around 5.335% while varying considerably from -4.852% in Chad (2014) to 57.838% in Seychelles (2012). The level of TFP growth displayed an average of 1.780% with a range across the sample of 0.690% (starting from 1.453% in Burundi in 2007 to 2.144% in Seychelles in 2017). Other variables which displayed high variation across the sample (where the standard deviations exceed the mean) were External debt, Governance, FDI*governance and FDI*human capital. As for External debt, the variable

displayed a mean of -1085.799, with the minimum value, -21280.020 being experienced in South Africa (2013) and the maximum value, 29150.290 in Nigeria 2008. Governance on the other hand, displayed an average value of -0.004. Chad had the lowest value (-2.108) of governance indicators in the year 2008, while Mauritius had the highest value (2.453) of governance indicators in the same year. The rate of inflation displayed an average of 7.599% with Chad experiencing the lowest rate of inflation (-8.975%) in the year 2008, and Ethiopia the highest (44.357%) in the same year. One distinct feature that can be noted is that, around the same period (2007), Chad also experienced the lowest level of financial development, as compared to countries like Mauritania, which had the highest level of financial development in the year 2009. One of the main reasons for deflation, as experienced by Chad (2008), is reduced money supply due to an economic crunch, which can be characterised by low financial development. Hence, the study statistics could be used to determine the economic status of Chad during that period. As for Trade openness, the variable portrayed a mean of 57.825, with values ranging from 29.277 in Nigeria (2017), to 156.83 in Seychelles (2008).

The total number of observations used was 209 with 19 cross-sections. According to Table 2, the dataset used was unbalanced. This is due to the missing values in variables such as Human capital, Financial development and Inflation.

4.3 Stationarity tests

Table 3: Results of the Fischer's Type unit root test.

Variable	Difference	Test statistic	P value	Stationarity
TFP	1	180.132	0.000	Stationary
TFP_{t-1}	1	117.000	0.000	Stationary
FDI	0	96.374	0.000	Stationary
Inflation	0	80.007	0.000	Stationary
Trade openness	0	76.481	0.000	Stationary
External debt	0	57.816	0.021	Stationary
Financial development	0	59.738	0.014	Stationary
Human capital	0	54.802	0.038	Stationary
Governance	1	196.425	0.000	Stationary
FDI*governance	0	172.530	0.000	Stationary
FDI*human capital	0	100.262	0.000	Stationary

Table 3 indicates that majority of the variables used were stationary at their level forms. The exceptional variables were the dependent variable (TFP), the lag of the dependent variable, and Governance. The aforementioned variables however, became stationary upon taking the first differences. It should be noted that all the variables except for the governance index and external debt were represented in natural logarithmic form. An index by itself represents values as a portion, hence obtaining the logarithm of the index would lead to challenges in interpretation. As for the variable labelled External debt, majority of the values obtained were negative. Performing the logarithmic transformation of these variables would prove troublesome, since the natural logarithm of a negative number is undefined.

TFP was expected to exhibit a nonstationary property because, on average, gross domestic product as well as TFP, which is considered to be a function of GDP, exhibits a trend over time. The trend can either be upward or downward, depending on the measures taken by the respective countries to grow the economy.

With regard to the nonstationary explanatory variables, it was expected that at least one of the regressors should be nonstationary, by virtue of the dependent variable being nonstationary. It would be inaccurate to explain a nonstationary variable using a model that only contains stationary regressors (Stock & Watson, 2011).

4.4 Stylised Facts

Before discussing the empirical results of the effect of FDI on TFP growth, this study presents a brief discussion around the FDI - TFP growth nexus using a simple graphical analysis. The aim of this section is to determine whether low and high levels of human capital and governance do have an effect on the relationship between FDI and TFP growth.

The dataset was first split into groups based on high levels and low levels of human capital. The reference point for high and low was the arithmetic mean of the human capital variable (51.058). Hence, all the countries that had human capital levels below the mean were clustered into one group and the second group had countries with higher levels of human capital. Similarly, the sample was split with respect to governance, using the mean (-0.00394) as the breaking point. A scatter plot diagram was then constructed to depict the relationship between FDI and TFP growth in each sub sample.

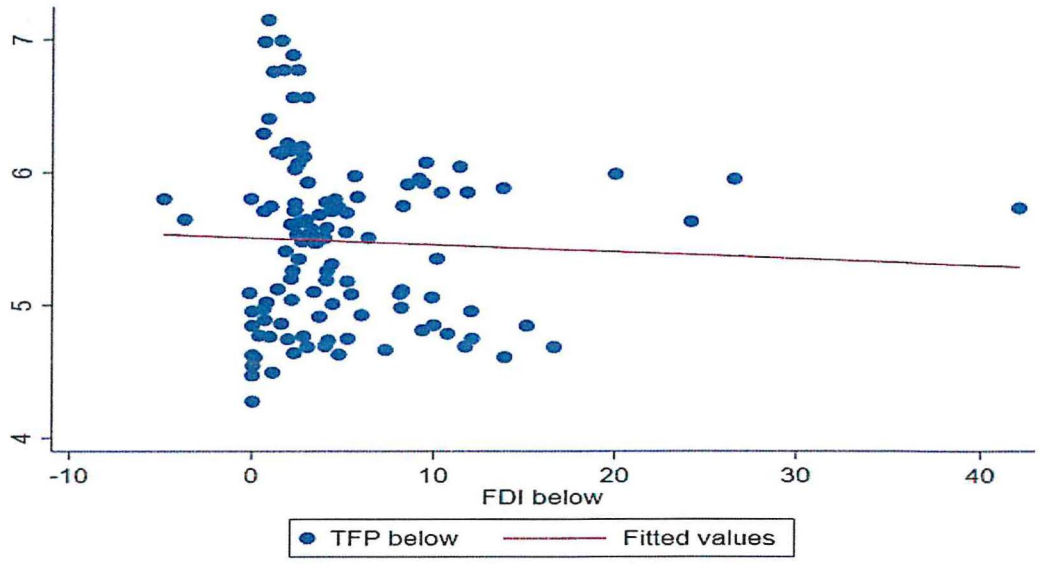

Figure 2: Scatterplot diagram representing FDI – TFP growth nexus using low levels of human capital.

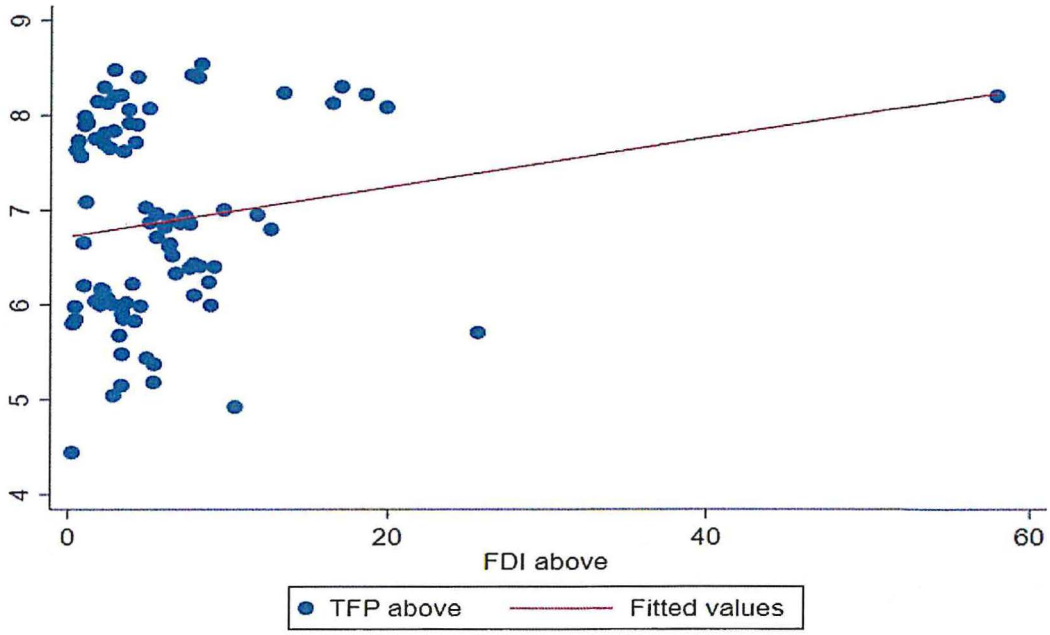

Figure 3: Scatterplot diagram representing FDI-TFP growth nexus using high levels of human capital.

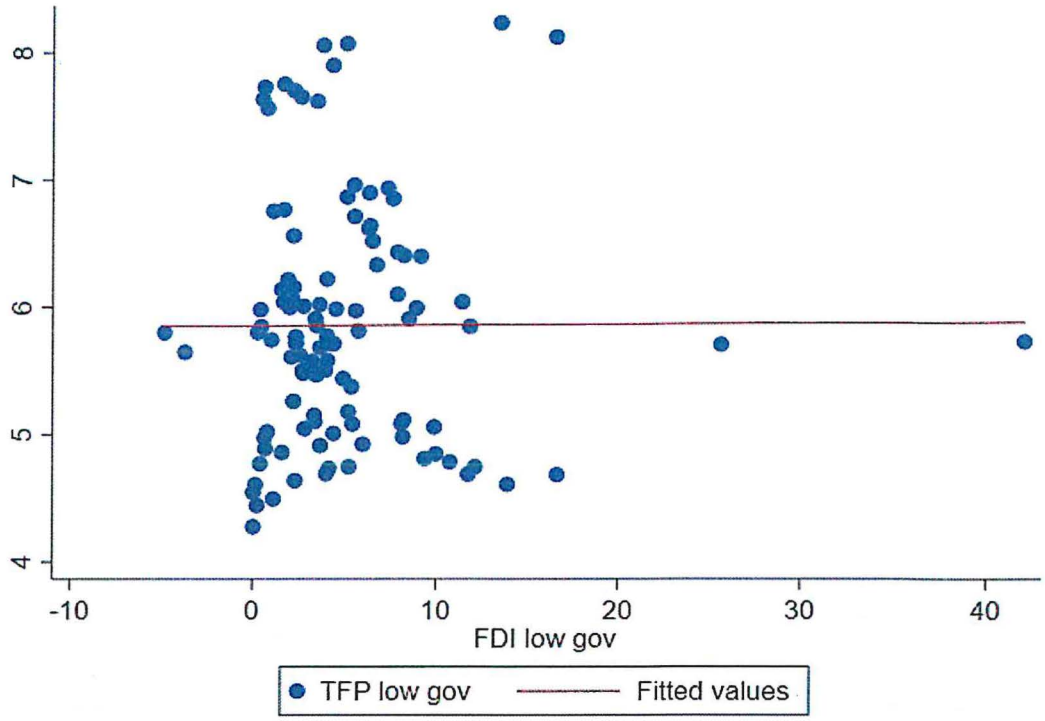

Figure 4: Scatterplot diagram representing FDI-TFP growth nexus using low levels of governance.

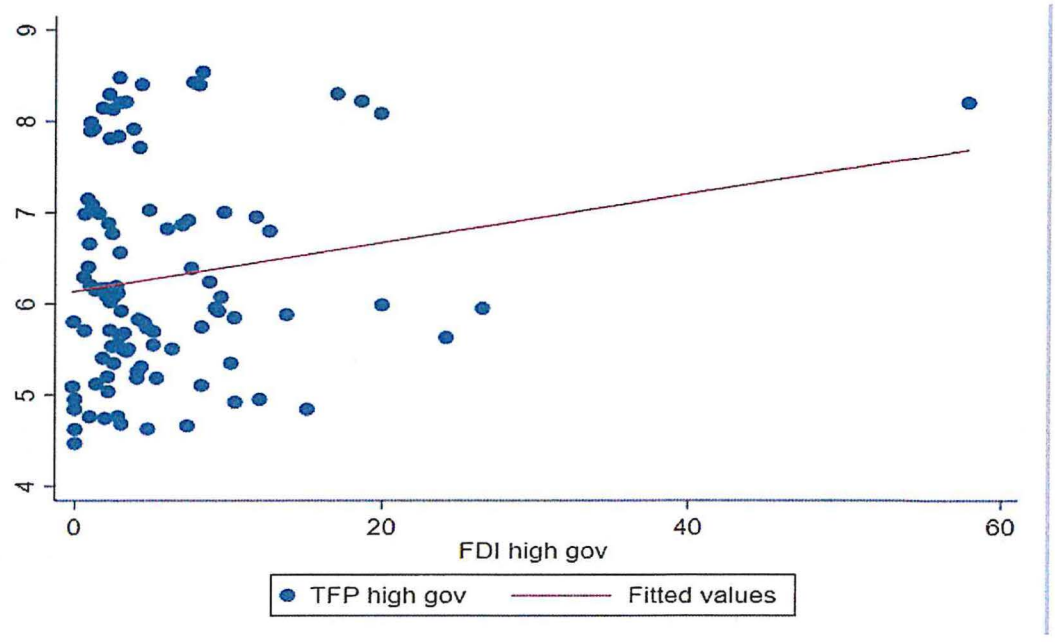

Figure 5: Scatterplot diagram representing FDI-TFP growth nexus using high levels of governance.

Figure 2 represents the FDI - TFP growth association using the low capital sub sample. The trend line confirms a negative correlation. Conversely, Figure 3 indicates a positive correlation, using the sub sample that contains high levels of human capital. A similar association emerged when using the sub samples for governance in Figures 4 and 5, which used low and high levels of governance respectively. While these correlations were simply based on course dis-aggregations of the data, they nevertheless indicated a non-monotonic relationship between FDI and TFP growth for different levels of governance and human capital. Such findings pre-empted the need to capture the inherent nonlinearity in the effects of governance and human capital on TFP growth.

4.5 Linear effect of FDI on TFP growth

Table 4: GMM results of the linear effect of FDI on TFP growth.

(d)TFP	Co-efficient	Standard error	T statistic	P > |t|
$(d)TFP_{t-1}$	0.077	0.211	0.370	0.719
FDI	-0.016	0.029	-0.560	0.584
Inflation	0.085	0.036	2.350	0.030**
Trade openness	0.084	0.129	0.660	0.520
External debt	3.60e-06	1.66e-06	2.170	0.044**
Financial development	-0.168	0.317	-0.530	0.604
Human capital	0.027	0.180	0.150	0.885
(d)Governance	-0.066	0.103	-0.640	0.529
Constant	0.180	0.737	0.240	0.810
F (8,16) = 17.110 Prob > F = 0.000				

***Statistical significance at the 1% level, **Statistical significance at the 5% level, *Statistical significance at the 10% level.

Table 4 depicts a representation of the direct effect of FDI on TFP growth, without taking into account the mediating effect of governance and human capital. With all the control variables incorporated, FDI was found to have a negative direct effect on TFP growth. A 1% increase in FDI would lead to a decrease in TFP growth by 0.016%, holding all other factors constant. This relationship however, was found to be statistically insignificant. As a matter of fact, the only statistically significant variables obtained were Inflation and External Debt, having p values of 0.030 and 0.044 respectively. Thus, holding other factors constant, a 1% increase in Inflation would lead to an increase in TFP growth by 0.084% and a unit change in External debt would lead to an increase in TFP growth by 3.60e-04%. The overall model however, was determined to be statistically significant (indicated by a p value of 0.000).

Human capital as well as governance were found to be statistically insignificant, having p values of 0.885 and 0.529 respectively. Similar to FDI, Governance was found to have a negative effect on TFP growth. Holding all other factors constant, a unit increase in the measurement indicators of governance would lead to a decrease TFP growth by 6.6%. Human capital however, was found to have a positive relationship with TFP growth. An increase in human capital by 1% would lead to an increase in TFP growth by 0.027%, holding all other factors constant.

This insignificance can be seen as supporting evidence that FDI, human capital and governance do not have a significant effect on TFP growth independently. Hence, further tests can be conducted to determine their joint effect on TFP growth. This strengthens the argument for the need to determine the non-linear effect of FDI on TFP growth with respect to human capital and governance.

The linear effect of FDI on TFP growth was found to be negative without taking into account the contingent effect of governance and human capital.

Table 5: Results of the Sargan test statistics.

Chi^2 Statistic	$P > \|X^2\|$
138.77	0.674

The results from Table 5 indicate a high p value, which imply that there was not enough evidence to reject the null hypothesis. The hypotheses used for the Sargan test were:

H_0: Over-identifying restrictions (instruments) are valid.

H_1: Over-identifying restrictions (instruments) are not valid.

Hence, the instruments obtained from the system GMM regression capturing the direct effect of FDI on TFP growth were valid.

4.6 Non-linear effect of FDI on TFP growth.

Table 6: GMM results of the non-linear effect of FDI on TFP growth.

(d)TFP	Co-efficient	Standard error	T statistic	P > |t|
$(d)TFP_{t-1}$	0.045	0.181	0.250	0.806
FDI	0.138	0.179	0.770	0.453
Inflation	0.082	0.042	1.950	0.067*
Trade openness	0.121	0.113	1.070	0.297
External debt	3.28e-06	1.69e-06	1.940	0.068*
Financial development	-0.209	0.301	-0.700	0.496
Human capital	0.113	0.155	0.730	0.475
(d)Governance	-0.010	0.090	-0.110	0.914
FDI*Human capital	0.024	0.052	0.460	0.648
FDI*Governance	-0.040	0.043	-0.930	0.364
Constant	-0.167	0.818	-0.200	0.841
F(10, 16) = 14.020 Prob > F = 0.000				

***Statistical significance at the 1% level, **Statistical significance at the 5% level, *Statistical significance at the 10% level.

Table 6 represents the results describing the non-linear effect of FDI on TFP growth. The non-linear effect is specific with regard to the interaction terms; FDI*Human capital and FDI*Governance. Similar to the linear regression, majority of the variables were found to be statistically insignificant. The only statistically significant values obtained were Inflation and External debt with p values of 0.067 and 0.068 respectively. Thus, holding all other factors constant, a 1% increase in Inflation would lead to an increase in TFP growth by 0.082%. Consequently, a unit increase in External debt would lead to an increase in TFP growth by 3.28e-04%, holding all other factors constant. The

reason for many variables being statistically insignificant could be attributed to the low statistical power of the model due to the relatively small number of data points. The overall model however, was found to be statistically significant, indicated by a p value of 0.000.

An interesting distinction to be noted however, is the change in the relationship between FDI and TFP. Unlike the linear regression where FDI had a negative effect on TFP growth, a 1% increase in FDI would lead to an increase in TFP growth by 0.138%. Consequently, as noted from the co-efficient labelled FDI*Human capital, FDI and human capital have jointly positive effect on TFP growth. For a given level of human capital, a 1% increase in FDI would lead to an increase in TFP growth by (0.138 + 0.0.24*Human capital). Hence, hypothetically, using the average level of human capital of 51.058, a 1% increase in FDI would lead to an increase in TFP growth by (0.138 + 0.024*51.058 = 1.363) 1.363%. As for Governance, the variable has a jointly negative effect on TFP growth. For a given level of government measures, a 1% increase in FDI would lead to a decrease in TFP growth by (-0.010 - 0.040*Governance). Hence, if the governance for a specific country was indicated through the average measurement value of - 0.00394, a 1% increase in FDI would lead to a decrease in TFP growth by (-0.010 - 0.040*0.00394 = -0.010) 0.010%.

Table 7: Results of Sargan test statistics

Chi^2 Statistic	$P > \|X^2\|$
140.94	0.647

The results from Table 7 indicate a high p value, implying that, there was not enough evidence to reject the null hypothesis. The hypotheses for this test were as follows:

H_0: Over-identifying restrictions (instruments) are valid.

H_1: Over-identifying restrictions (instruments) are not valid.

Hence, the instruments obtained from the system GMM regression of the non-linear effect of FDI on TFP growth were valid.

Chapter 5: Discussion of Results

5.1 Introduction

This chapter presents a detailed discussion on the results obtained in Chapter 4 as well as their implications. The chapter entails discussions on the linear and non-linear effect of FDI on TFP growth, conclusion, recommendations, limitations of the study as well as areas for further research.

5.2 Discussion

The results in Table 6 indicate that while FDI has an effect on TFP growth, this effect is not solely direct, but is also influenced by human capital and governance. Hence there is a need to determine the implications of these relationships.

5.2.1 Direct Linear Relationship between FDI and TFP growth

The results in Table 5 indicate that, though not statistically significant, FDI has a negative effect on TFP growth. This is consistent with previous research carried out by Rafael, Ponce, & Iniguez (2017), indicating a negative and statistically insignificant effect of FDI on TFP growth in the developing countries of South America. This could be attributed to the low levels of technological capacities associated with under developed countries, which inhibit proper incorporation of FDI benefits into economic growth. This hypothesis has also been discussed widely by Liang (2017) who finds that economies associated with low indicators of development do not have sufficient technological absorptive capacities associated with foreign capital inflows in order to foster positive direct linkages with economic growth.

5.2.2 Non Linear Relationship between FDI and TFP growth

According to the results obtained in Table 6, FDI does not have a statistically significant non-linear effect on economic growth. This as explained earlier, could be due to the low statistical power from the relatively small sample size. The non-linear relationship was estimated through the use of interaction terms associated with human capital and governance. The effect with respect to human capital was found to be positive, while negative with respect to

governance. The positive and negative effects are similar to results obtained from previous research conducted by Li & Tanna (2019) and Morrissey, Oliver, Udomkerdmongkol & Manop (2012) respectively.

5.2.3 Influence of Human Capital

As observed from the results in Table 6, human capital has a positive influence on the FDI - TFP growth nexus. Furthermore, it has the effect of attenuating the direct effect of FDI on TFP growth. The previous direct effect of TFP on FDI growth was initially negative as depicted in Table 5, but becomes positive in Table 6.. Human capital and FDI act as complements which result in an additive effect towards economic growth. This results supports previous literature such as research done by Li and Tanna (2019) who suggest that FDI has a positive effect on economic growth conditional on high levels human capital in a country. Hence, higher educational attainment, by promoting the absorption of new technology associated with FDI, has the possibility of increasing economic growth.

5.2.4 Influence of Governance

The empirical results obtained in Table 6 use the index of governance to replace the individual effects the variable's components. The interaction term associated with governance indicates a negative effect on TFP growth. These findings are similar to that obtained by Morrissey & Udomkerdmongkol (2012), and can be attributed to low levels of governance indicated by high corruption, political instability and a lax system of rule of law in developing countries (Morrissey & Udomkerdmongkol, 2012). As a result, it can be concluded that in SSA, the indicators of governance are not sufficient enough to foster a positive effect from FDI towards economic growth.

5.3 Conclusion

The main purpose of this study was to determine the impact of FDI on TFP growth while taking into account the mediating effect of human capital and governance. As a result, the study involved two objectives; to determine the linear effect of FDI on TFP growth and to determine the non - linear effect of

FDI on TFP growth. These objectives were satisfied through implementing unit root tests, Sargan test as well System GMM regressions.

The empirical results obtained from the panel regressions indicate both a linear and non-linear effect of FDI on TFP growth (albeit not statistically significant). Importantly, the non-linear effect associated with human capital is positive while that associated with governance is negative. What this implies is that in SSA, factors associated with human capital such as education attainment, allow for the countries to take advantage of the new technology and knowledge associated with FDI by incorporating them into production methods so as to foster economic growth through increased TFP. The positive influence of human capital in the FDI-growth nexus has been well established in other studies such as work done by Bermejo & Wenner (2018), who emphasize on the need for high investment in human capital so as to foster economic growth through FDI in Tunisia.

Conversely, the governance associated with SSA is not appropriate to foster economic growth. What this implies is that the governance in the respective countries of Sub Saharan Africa does not offer a favourable environment with regard to FDI sustainability hence affecting the economic performance associated with it. This could be due to high levels of corruption, poor economic policies, government ineffectiveness and poor accountability. The findings from this study contribute to previous studies such as research done by Gil - Alana & Mudida (2018), which identify weak governance as the main factor for slow productivity growth in Kenya.

5.4 Recommendations

The study has established that human capital as well as governance do have an influence on economic growth although not statistically significant, attributed to the low statistical power of the model. As a result, the countries of SSA should have solid macroeconomic policies directed towards the education and labour sector. According to The World Bank (2019), the countries of SSA suffer from the highest rates of school drop outs due to

stunted growth which indicates that there is still a lot more that can be done in order to improve the human capital in the respective countries. Due to the co-dependence of different sectors of the economy, SSA countries should also focus on other sectors such as the health, agriculture and construction as these sectors are responsible for the facilities that enable adequate health for school attendees and proper utilities for the workforce respectively.

Consequently, the findings indicate that SSA has a long way to go with regard to ensuring an efficient government system. The negative influence of governance towards the FDI-growth nexus indicates that there is little the government is doing in order to promote this relationship. According to Freedom House (2015), high levels of corruption, government inefficiency and expensive tax regimes make Africa an un-accommodative environment for foreign investors to conduct business. This as a result not only inhibits inward FDI, but also prevents the proper functioning of the already existing FDI. As a result, regional economic communities such as the African Union should include efforts to strengthen democracy and governance in their economic development and integration strategies. Specifically, SSA has numerous countries that rank highly in terms of being the most corrupt regions in the world. As such a lot of effort should be put in fighting corruption as this not only hurts the functioning of the economy, but it also discourages developed countries from offering foreign aid. The respective countries should aim to create corruption fighting agencies as well as strengthen existing institutions.

5.5 Limitations of the study.

Data availability was one of the biggest challenges faced when conducting this study. Out of the 46 countries in SSA, only 19 were sampled due to data availability. Even though the number of observations was sufficient to meet standard econometric regression requirements, the number was still relatively small in terms of representation of the population. Consequently, the number

of data points could also be a reason for the low statistical power of the models which affected the significance of the variables.

The model used may have incorporated control variables, but there are still other factors that would have been incorporated. For example, the influence of sectoral dimensions of FDI inflows which are usually incorporated in micro-level studies, to investigate their effects on productivity at the industry level. This was due to lack of data on SSA countries. As a result, the model may have encountered omitted variable bias problem. However, the empirical analysis still complements micro-economic evidence that inward FDI would lead to significant gains in TFP once the host country conditions have been accounted for.

5.6 Areas for further research

This study could be improved by looking into other factors such as trade openness and financial development, which would act as absorptive capacities in the relationship between FDI and economic growth. According to Liargovas & Skandalis (2012), there exists a positive causality relationship between trade openness and FDI. It would thus be interesting to find out whether such a relationship has any effect on FDI-TFP growth nexus. Consequently, Laura, Selin and Sebnem (2009) suggest that in developed countries, FDI leads to increased growth given that the host country has well developed financial institutions. This relationship can be tested specifically using SSA countries. Research can also be done to determine the relative importance of each of these factors in influencing the effect of FDI on TFP growth in SSA.

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