THE EFFECT OF FOREIGN DIRECT INVESTMENT ON PRODUCTIVITY: A COMPARATIVE ANALYSIS BETWEEN CENTRAL AND EASTERN AFRICA

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DECLARATION

I declare that this research project is my original project and has not been submitted for examination and award of a degree in any other university or institution.

Aksanti Bahati Joseph

Signature Date

…… ……..……

This research project has been submitted with my approval, as University Supervisor:

Dr. Lucia Mary Mbithi

Signature Date

…… ……

DEDICATION

To the families of Bahati and Kabeke.

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I take this opportunity to appreciate God for His amazing grace that has taken me from this far. I am also taking this opportunity to appreciate those who have been steadfast in assisting me on this critical journey. First let me appreciate my project supervisor Dr. Lucia Mary Mbithi, for her invaluable supervision and I also want to acknowledge Professor Anthony Wambugu. His intellectual guidance and consultancy were pivotal throughout the journey. My regards also to the M.A Economics class of 2018-2020.

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ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AfDB	The African Development Bank
ARDL	Autoregressive Distributed Lag
ASEAN	The Association of South-East Asian Nations
CA	Central Africa
CADF	Cross-sectional Augmented Dickey-Fuller
DFE	Dynamic Fixed Effect
EA	Eastern Africa
FDI	Foreign Direct Investment
FGLS	Feasible Generalized Least Squares
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GMM	Generalized Method of Moments
IMF	The International Monetary Fund
LAC	The Latin America and the Caribbean
LM test	Langrage Multiplier test
OECD	The Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PMG	Pooled Mean-Group
SEA	South-East Asia
SEE	South-East Europe
SSA	Sub-Saharan Africa
TFP	Total Productivity
UK	The United Kingdom
UNCTAD	The United Nations Conference on Trade and Development
WDI	World Development Indicators
WLS	Weighted Least Squares

LIST OF FIGURES

Figure 1: FDI flows Trends in LAC, SSA Figure 2:FDI flows Trends in Central and Eastern Africa 2
Figure 3:Contribution of FDI in LAC, SSA Figure 4: FDI contribution in Central and Eastern Africa 3

LIST OF TABLES

Table 1: Variable Descriptions and Measurement for determinant of FDI 20
Table 2: Variable Description and Measurement for the effect of FDI on TFP 22
Table 3: Descriptive Statistics 29
Table 4: Correlation matrix for FDI determinants 30
Table 5: Correlation matrix for the effect of FDI on TFP 30
Table 6: LM adj test for Cross-sectional dependence 30
Table 7: Results of the CADF Panel unit-root test 31
Table 8: Results for the Pedroni cointegration test for determinants of FDI 32
Table 9: Results for Pedroni cointegration test for the effect of FDI on TFP 32
Table 10: Results for Panel ARDL (PMG estimates): determinants of FDI 33
Table 11: Panel ARDL Results (DFE estmates): Effect of FDI on TFP 36

TABLE OF CONTENTS

DECLARATION i
DEDICATION ii
ACKNOWLEDGEMENT iii
ACRONYMS AND ABBREVIATIONS iv
LIST OF FIGURES v
LIST OF TABLES vi
TABLE OF CONTENTS vii
ABSTRACT ix
CHAPTER ONE INTRODUCTION 1
I.1. Background of the Study 1
I.2. The overview of Macroeconomic Performance in Eastern and Central Africa 3
I.3. Statement of the problem 4
1.4. Research Questions 5
1.5. Research Objectives 5
1.6. Significance of study 6
1.7. Limitation of the study 6
1.8. Organization of study 6
CHAPTER TWO LITERATURE REVIEW 7
2.1. Introduction 7
2.2. Theoretical literature 7
2.2.1. Exogenous growth theory 7
2.2.2. Neoclassical Investment Theory 7
2.2.3. Endogenous growth theory 8
2.2.4. Internalization Theory 9
2.2.5. Eclectic paradigm theory 9
2.3. Empirical literature 9
2.4. Overview of literature 16

CHAPTER THREE METHODOLOGY 18
3.1. Introduction 18
3.2. Theoretical framework 18
3.2.1 The FDI Determinants 18
3.2.2 The relationship between FDI and TFP 18
3.3. Empirical models 20
3.3.1 Empirical model for estimating determinants of FDI 20
3.3.2 Empirical model for estimating effect of FDI on TFP 21
3.4. Estimation method 21
3.5. Data Types and Sources 27
CHAPTER FOUR EMPIRICAL FINDINGS AND DISCUSSIONS 28
4.1. Introduction 28
4.2. Descriptive statistics 28
4.3. Correlation analysis 29
4.4. Cross-sectional Dependency (LM_{adj}) Test Result 30
4.5. Panel unit root test 30
4.6. Cointegration analysis 31
4.7. FDI Determinants 32
4.8. Hausman Test 35
4.9. The effect of FDI on TFP 35
CHAPTER FIVE CONCLUSION 38
5.1. Introduction 38
5.2. Study findings summary 38
5.3. Conclusions 38
5.4. Policy recommendations 39
5.5. Areas of further research 40
Reference 41

ABSTRACT

Most countries have been taking advantage of the contribution of the inflows from FDI to improve the state of their economic performance. However, FDI inflows in Central and Eastern African regions are still low as compared with the aggregate in other regions. Nonetheless, Eastern African nations have, on average, attracted higher FDI inflows in recent decades when compared to Central Africa nations. This particular research aims at investigating drivers of FDI, as well as its effects on prodcutivity in both regions. We used panel data sourced from WDI and UNCTAD spanning from the year 1990 to 2018. The study also adopted the Panel ARDL model based on PMG and the DFE estimations to capture short-run as well as long-run relationships amongst variables. Overall, the study found that in long run, infrastructure quality, trade openness, and market size, drive inflows of FDI in the two regions. In the short-run, infrastructure quality is negatively statistically related with FDI. Comparing the two regions, results indicated that in Central Africa, FDI is determined by trade openness and natural resource rents. But resource curse hypothesis has been found since the increase in resource rents decreases the attraction of FDI inflows. In short-run, the infrastructure quality has a significant but negative impact on the attraction of FDI. However, in Eastern Africa, infrastructure quality and the market size are determinants of FDI attraction. Following these results, we concluded that factors that determine FDI attraction differ across the two regions. Besides, results revealed that overall; FDI and natural resource endowment positively and significantly affect TFP both in CA and EA. In comparing the two regions, the study found that natural resource rents improve TFP in CA and that the FDI has positive but not significant impact on TFP, while in EA, results showcased that FDI has a significant positive effect on TFP, implying that FDI improves TFP in the Eastern African region but not in Central Africa. The study suggested that policy makers should implement policies that improve productivity (GDP, capital and labour) and promote cooperation among countries by increasing the levels of trade and removing barriers to trade, reduce the cost of doing business and invest in infrastructures, and promote entrepreneurship activities.

CHAPTER ONE

INTRODUCTION

I.1. Background of the Study

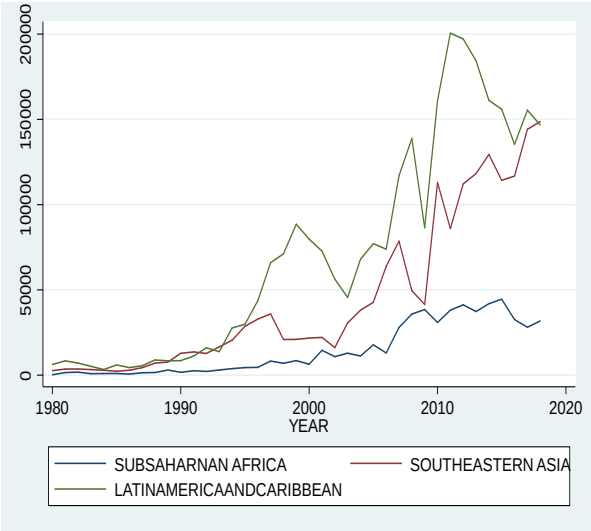
Neoclassical growth theory suggests that nations' differences in GDP per-capita are as a result of their variations in capital accumulation, leading to variance in their savings capacity (Koopmans, 1963; Solow, 1956), expressed in the lack of financial resources to finance investments. Because of poverty, exponential growth in population, high rates of unemployment, low per-capita income, low levels of savings, and accumulation of capital, many developing countries experience a gap in savings and investment, which adversely impacts their economic growth and development (Sabir, 2019). For these countries to plug this savings-investment deficit, they resort to promoting and encouraging the attraction of foreign capital inflows, such as foreign direct investment (Sabir, 2018).

Besides, FDI is not only a vital source of capital accumulation, skills improvement, knowledge transmission, creation of employment, opportunities in trade and technological transfer (Lipsey, 2001) but also a critical factor in the improvement of productivity (Chenaf-Nicet and Rougier, 2016). FDI, therefore, serves as a channel via which workers and companies develop their skills, knowledge, and productivity in their host economy. In this regard, Wooster and Diebel (2010) stated that FDI inflows help host countries to diversify their economies, indirectly by enhancing domestic firms' productivity, and boosting economic activities, which significantly contribute to the host countries' economic development. As a result, developing economies came up with diverse incentives and policies (World Bank, 2014) so that they can fully benefit from spillovers of FDI. They enrolled in many programs such as structural adjustment programs, economic partnership agreements, and economic recovery programs to attract more FDI inflows (Asamoah et al., 2016).

Since 1980, inflows of FDI to developing economies have been on an upward trajectory. For instance, according to UNCTAD (2019), from the year 1990 to the year 2018, the inflows of FDI in Africa expanded by over US$ 45.6 billion. The SSA region has also realized a similar trend in the inflows of FDI. On average, they increased from approximately USD 248 million in the year 1980 to over USD 31.7 billion in the year 2018. However, it is still low when compared with other regions like the Caribbean and Latin American region, which attained USD 147 billion in

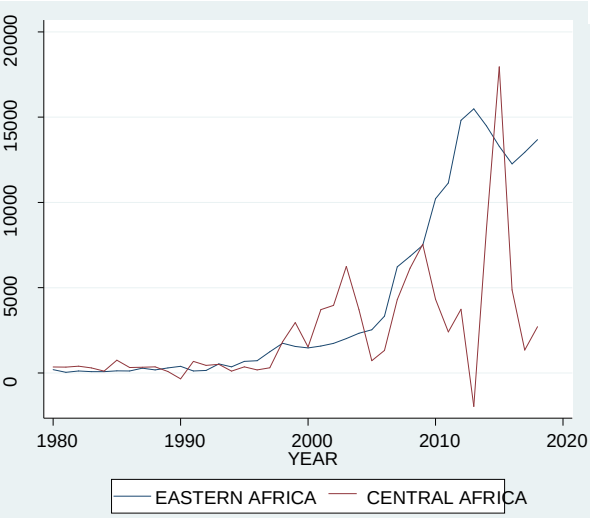
FDI inflows in 2018, and the Southeast Asia region which gained over USD148.6 billion in FDI inflows within a similar period, as shown in Figure 1. On this note, it can be observed that Asia is doing better than other regions. For instance it attracted FDI inflows worth USD 512 billion in the year 2018, which made the region the biggest recipient in FDI, accounting for over 39% of global FDI inflows (UNCTAD, 2019). The African continent, particularly Eastern and Central Africa need to do more in order to attract more FDI inflows in their regions. Even with a surge in FDI inflows into the Eastern and Central African regions, it has been discovered that in recent decades, Eastern Africa tends to attract more FDI inflow when compared with the Central African region, while this trend was different in the 1990s as indicated by Figure 2.

Figure 1: FDI flows Trends in LAC, SSA, and SEA regions 1980-2018(In millions US$)



Source: The UNCTAD

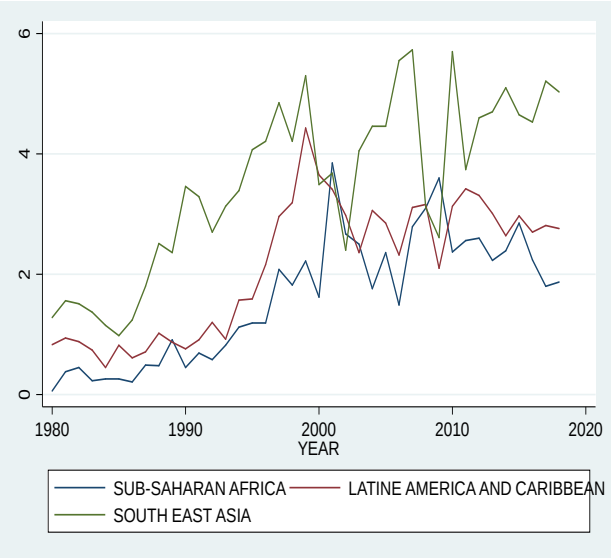
Figure 2: FDI flows Trends in CA and EA 1980-2018 (in millions US$)



Source: The UNCTAD

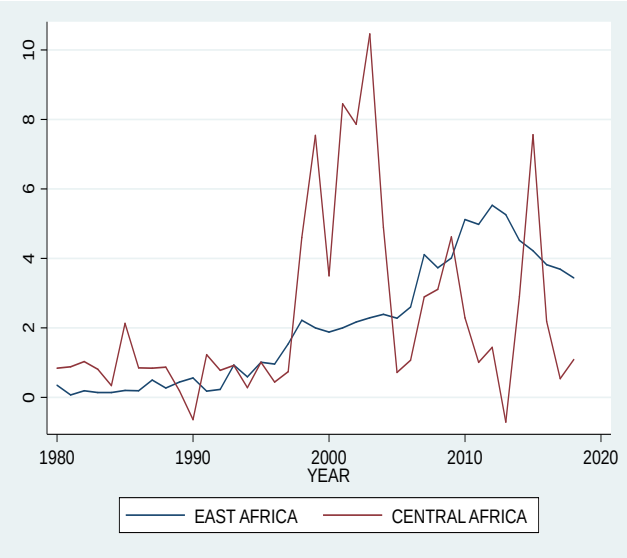
Furthermore, there exists a notable advancement of the contribution of FDI to the GDP growth of Sub-Saharan African (SSA) region. However, it is still low compared to that of LAC and SEA as indicated in Figure 3. In the recent decades, FDI inflows have notably contributed to GDP growth in Eastern African zone, while in the Central African region it is on the decline as shown in Figure 4.

Figure 3: FDI Contribution in LAC, SEA and SSA as % of GDP (1980-2018)



Source: The UNCTAD

Figure 4: FDI contribution in Central and Eastern Africa as % of GDP(1980-2018)



Source: The UNCTAD

The increment in FDI inflows plays a remarkable role in growing the economy. Hence, it increases competition among the prospective host nations. Case in point, on average, from the year 2000 to the year 2013, over 56 developing nations instituted over 1440 regulatory investment amendments to their regimes. According to UNCTAD (2013), over 80% of these regulatory amendments were particularly designed to provide significant incentives for a favorable business environment. Likewise, after the year 1990, UNCTAD (2014) stated that more than 3140 complementing legislative changes and bilateral treaties have been enacted in this regard.

I.2. The overview of Macroeconomic Performance in Eastern and Central Africa

Traditionally, the drivers of macroeconomic performance in a nation's economic growth have been unemployment, current account, and inflation. For instance, in Central Africa, the real growth rate in GDP increased from 1.1% in 2017 to 2.1% in 2018, which was beneath the average rate of growth in Africa (3.5%), while in the Eastern African region, it decreased from 5.9% in the year 2017 to 5.7% in 2018, the highest in Africa. However, in Central Africa, real growth in GDP did improve in the year 2018, it was way below the 5.0% mark realized between the 2011 to 2013 period and faintly less than a 5.2% rate of Eastern Africa region and 5.3% of

West Africa in a similar time period. The extrapolated rate of growth was 3.6% in the year 2019 and 3.5% in the year 2020. According to AfDB (2019), in the Eastern Africa region, it is forecasted to reach 6.1% in 2020, a slight increment from 5.9% in 2019.

Often, the Central Africa region's economic recovery is driven by the improvement in commodity prices (minerals and oil), agricultural production, and an increase in exports of these commodities. The current account, as a result, became a surplus of 1.0% in the year 2019 and is forecasted to reach 1.3% by the year 2020. The regions' external deficit reduced to 2.0% in the year 2018 from a high of 9.3% in the year 2016. The regions' rate of unemployment was 4.7% in the year 2018. Nevertheless, in the Eastern Africa region, it was estimated that the deficit in current account was 4.9 % of GDP in the year 2018. Fiscal deficit reduced from 4.1% of GDP in the year 2018 to 3.7 % in 2019 and projected to attain 3.5 % in the year 2020, according to AfDB (2019).

Eastern and Central African nations are expected to gain from the improvements brought about by global economic growth due to growth in natural resources, macroeconomic reforms, the enhanced export of primary commodities, and commodity price improvements. Nonetheless, we can make two observations. First is that the terms of trade can be inversely affected by a decline in prices of the commodity globally. Secondly, the high economic growth realized in these regions is a result of high foreign investments that are above the domestic savings.

In this research, the Central African region refers to Cameroon, Central African Republic and Chad. The Eastern Africa region refers to Kenya, Tanzania and Rwanda.

I.3. Statement of the problem

AfDB (2019) states that both Eastern and Central African countries, as in most of developing nations, are distinguished by their little per-capita income, a high poverty level, exponential growth in population, high rates of unemployment, and low savings levels, expressed by the inadequacy of financial resources to fund investment projects. As such, Sabir et al. (2019) assert that these countries resort to attracting FDI inflows to fill their savings-investment gap.

Global trends showcase that FDI inflows increased from the US $54.4 billion in the year 1980 to over US$1.3 trillion in the year 2018, out of which US$707 billion went to developing

economies (that represents about 55% of global FDI inflows) in the same time-period (UNCTAD, 2019). A similar trend has been detected in Eastern and Central Africa regions. UNCTAD (2019) states that in Central Africa, the inflows of FDI increased from US$353 million to US$2.7 billion over the year 1980-2018, while in the Eastern Africa region, they increased from US$197 million to US$13.7 billion between 1980 and 2018.

Although Eastern Africa attracts more FDI inflows in comparison with Central Africa, empirical evidence on to what explains this difference in FDI attraction is lacking. On the other hand, total factor productivity has been recognized as a relevant source of countries' incomes and welfare improvements, whereas the existing literature suggests that FDI positively impact TFP (Woo, 2009; Bekaert, 2011; Alfaro, 2013; Okada, 2014; and Li & Tanna, 2019). However, from the reviewed literature, there is lack of a specific empirical study investigating the link between FDI and TFP in Central and Eastern Africa. To close the gap, this research seeks to investigate factors which drive FDI inflows, as well as compare the effect that FDI would have on TFP for the regions in question. The choice of the regions considered for this study is informed by fact that no empirical research that exclusively compares and examines the impact of FDI on TFP has been done in both regions.

1.4. Research Questions

I. Do factors that enhance FDI vary across the Eastern and Central African regions?
II. How does FDI affect TFP in both Eastern and Central African regions?

1.5. Research Objectives

This research aims at conducting a comparative analysis of how FDI inflows affect the TFP in both Eastern and Central Africa in a period spanning 1990 to 2018.

The research will;

1. Determine drivers of FDI in Eastern as well as in Central Africa.
2. Compare and analyze FDI's effect on TFP in Central and Eastern Africa over the period spanning 1990 to 2018.
3. Propose the appropriate policies.

1.6. Significance of study

This study is unique in that it participates in the scientific debate on a prime economic subject of FDI and productivity. It links the two concepts by comparing two SSA regions, that is, Central and Eastern Africa, to tackle potential differences in attracting FDI and analyzing FDI's effect on TFP. At the end, the study hopes to not only explain the differences in FDI attraction but also analyze and compare its effect on TFP since no research has been done to investigate such issues in the two regions. The reason behind the comparison of Eastern Africa and Central Africa is that the study presumes a learning effect from the economies of one region to the other, which is expected to help them to attract more inflows in FDI, as well as improve the TFP, which ultimately enhance economic growth. Hence, the results are crucial for policymakers.

1.7. Limitation of the study

By conducting this comparative analysis between Central and Eastern African regions, the ideal was to include all the countries of Central Africa as well as those of Eastern Africa. However, due to data limitations for many countries over the years, it was not possible. Nevertheless, we believe that countries selected in Central and in Eastern Africa represent well the two regions, and results can be generalized.

1.8. Organization of study

The remainder of this research is presented as follows; chapter two that discusses literature review, Chapter three entails the methodological framework. It includes the theoretical as well as the empirical framework, model estimation, variables description and measurements, the approach, tests, data type, and its sources, chapter four present the outcome of the study and discussions, and the fifth Chapter gives the study's conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This particular chapter reviews both the theoretical and the empirical literature touching on FDI on TFP. It also presents an overview of them.

2.2. Theoretical literature

2.2.1. Exogenous growth theory

This theory was advanced by Robert Solow in 1956, where it presumes that growth of an economy was driven by accumulation of factors of production. The factors mainly consist of exogenously determined inputs of labour, capital, and change in technology. More so, the production factors' accumulation is subjected to diminishing marginal returns law. The theory also posits that only for a short period does the production factor accumulation sustain the growth of the economy. However, the diminishing marginal rates of returns leads to a steady-state in our course of analysis. Hence, in long-run, the growth of the economy can only be experienced via population increment or total factor productivity or both increase (Mankiw, Romer & Weil, 1992; Solow, 1956: 1957).

2.2.2. Neoclassical Investment Theory

Henry (2007) posits from a perspective of neoclassical theory that capital account opening aids in the effective allocation of cross-border funds. In this approach, investors in developed economies have ample capital but low capital returns. Hence they are more than willing to transfer their capital to developing nations that have higher returns on capital. Such nations (developing ones) are scarce in capital, but very high capital returns if invested. That leads to a decline in cost associated with capital flows as a result of these developed economies' having financial resources in developing nations. Via convergence process acceleration, developing nations experience a temporary increment in investment and growth of their economy, which leads to permanent advancement in the standards of living (Obstfeld, 1998; Rogoff, 1999; Summers, 2000).

Nevertheless, since the steady-state remains unaffected, that impact is short-lived. Bonfiglioli (2008) stated that in emerging and developing economies, enacting financial liberalization makes

TFP an important medium via which the steady-state can be attained more willingly than taking into account only the capital accumulation acceleration. That is why Henry (2007) opines that emerging and developing economies encourage capital inflows via FDI because there are potential advantages to be made by integrating the neoclassical arguments with economic policies. The capital liberalization, consequently, promotes the specialization of financial services via FDI inflows, which, according to Bonfiglioli (2008), successively leads to the economic performance improvements in developing nations.

2.2.3. Endogenous growth theory

According to the theory, TFP is regarded as an endogenous component that is influenced by human capital and economic systems (Haddad, 1993; Kokko, 1994; Liu, 2003; Miller, 2000; Romer, 1986; Yanikkaya, 2003). This theory posits that FDI not only enhances TFP by enhancing the advanced technical know-how, which eventually accentuates economic growth (Findlay, 1978; Girma,2007; Hale & Long, 2007; Lichtenberg & De la Potterie, 1996; Lai, 2006; Liu, 2008; Pessoa, 2005), but it is also pivotal in the technological transfer process via capital accumulation (Blomstrom, 1996; Borensztein, 1998) and the transfer of knowledge from foreign to domestic firms via training (De Mello Jr., 1999). As such, there is generation of benefits, either directly or indirectly from FDI and the growth in human capital stock (Ramirez, 2006; Van, 1997). Hence, endogenous growth theory turns over the productivity enhancement to directly be determined by the investment in human capital, which fosters innovation from the private sector and the government.

Moreover, FDI, via the transfer of technology, not only enhances the productivity of domestic firms by introducing effective modern technologies, but it also enhances competition by forcing the local firms to become efficient (Barro, 1990; Grossman & Helpman, 1991; Findlay, 1978; Kokko, 1994; Rebelo, 1991; Romer, 1990;). Nevertheless, although FDI enhances productivity at the firm level, it may harm local firms in case they have inferior technology as compared to foreign firms. When local firms fail to adjust to the increasing competition by modernizing their production process to favorably compete with foreign firms, they will be driven out of market, and that negatively impacts the local economy, according to Findlay (1978).

2.2.4. Internalization Theory

Buckley (1976), Calvet (1981), Hennart (1982), and Teece (1981) came up with this theory. The internalization theory states that the Multinational Enterprises (MNEs) transfer their technological knowledge, develop and utilize their internal hierarchy of organization where the external markets are inexistent or the intra-firm transactions tends to be less costly than the external market transactions. Hence, these MNEs coordinate and utilize such technological know-how in their intra-firm ventures in order to maximize and control their returns through FDI. Moreover, as Dunning (1973) & Parry (1975) showcased, FDI is basically an internalization reaction by the MNEs to barriers of trade such as tariffs. That is because such barriers represent market imperfections. Where trade barriers are stiff hence costly to do trade, MNEs bring their FDI inflows to the host nation(s).

2.2.5. Eclectic paradigm theory

This theory was put forward by Dunning (1977 and 1980), which brings out an argument on how foreign investors benefit upon their decision to invest in host countries. Some of the three critical reasons described as OLI include ownership, location as well as international advantages. Basing on the ownership element, the firm is mandated with an opportunity to control the flow of resources, for example, natural and patents, as well as trademarks. The firm can also access financial capital as well as technology. It is essential to discover that the local advantages result from the operational costs, receives some political support from the government. Firms could step up for the foreign production and operation being aided by the internalization characteristic. The Eclectic paradigm theory indicates that OLI variables vary across different companies depending on the socio-political and economic characteristics of host nations.

2.3. Empirical literature

This section discusses empirical literature on FDI and TFP. We review micro-level (firm-level) and macro-level empirical evidences. For micro-level, Liu et al. (2000) utilized firm-level data in 48 industries in a period spanning 1991 to 1995 to analyze the horizontal industries that link FDI to TFP in the UK. They utilized the OLS estimation technique to estimate the Olley-Pakes method. The results show that the positive spillovers of FDI do improve firms' productivity in the UK. Likewise, Kimura and Kiyota (2006) did analyze how do FDI and exports affect firms' productivity in Japan by applying longitudinal panel information in a period spanning 1994 to 2000. They estimated Cox's proportional hazard model and discovered that exports and FDI

improve productivity in Japanese firms. Moreover, Bitzer and Görg (2009) utilized the FGLS technique to estimate effects of the outward and inward FDI on TFP by using data extracted from 17 OECD nations from the year 1973 to the year 2001. The outcome showcase that the inward FDI positively impacts TFP, while the outward FDI has a negative effect on TFP in these economies.

Aitken & Harrison (1999) utilized a panel data of over 4000 firms for a period spanning 1976 to 1989 to estimate FDI's effect on a firm's productivity in Venezuela. By utilizing WLS estimation method, they discovered that any FDI increment in firms that had 50 or fewer employees increased the firm's productivity in a positive way and that firms gain from FDI in the form of enhanced productivity. However, for firms owned by locals, the study found that FDI has a negative impact on their productivity. Similar results were replicated in Liu (2008), who examined the effect of FDI the productivity of domestic firms in China. The study employed a panel analysis of whose data was drawn from 17,675 manufacturing firms for the period 1995-1999. The research estimated the fixed-effect model and discovered that in the short run, any increment in FDI harms domestic firm's productivity growth. However, in the long run, it positively impacts the domestic firm's productivity via vertical linkages.

In establishing the link between inward FDI, trade liberalization, and productivity growth, Turnbull (2016) utilized two-digit time-series data from the manufacturing sector in Australia, for period spanning between 1988 and 2012 to estimate the joint equation. The results revealed that trade liberalization enhances the productivity of local firms. Nevertheless, the research did not get evidence linking inward FDI with the productivity in the manufacturing sector with inward FDI.

Suyanto et al. (2009) utilized panel data from 6278 pharmaceutical and chemical firms emanating from Indonesia to scrutinize FDI's influence on TFP growth in a period spanning 1988 to 2000 using generalized Malmquist productivity index and the stochastic frontier approach. They discovered that FDI positively impacts on TFP of domestic firms and the growth in pharmaceutical and chemical industries. The outcome also showcased that the spillover gains to the domestic firms are linked to R&D. Hence the research suggested that the FDI spillovers have a positive and noteworthy relationship with technological progress rather than efficiency and technical changes.

Wang (2010) used a panel of 80 Canadian manufacturing industries from 1970-1990 to scrutinize FDI's effect on the TFP growth via inter-industry linkages. The study applied a two-stage least squares technique and discovered that FDI produces a positive and significant effect on the growth of productivity through forward and backward inter-industry linkages and raises the industry's absorptive capacity through R&D. The study suggested that imports are an essential source of TFP growth.

Hale & Long (2007) utilized cross-section World Bank data in 2001 to examine spillover impacts of FDI inflows on Chinese firms' productivity by estimating linear regression and applying a bivariate probit model. Contrary to the intuitive expectation of the outcome of a positive relationship between FDI and TFP, the results revealed less investment in innovation for local firms compared the foreign owned. Also, domestic firms were associated with a passive role globally in divisions of labour.

At the macro-level, Woo (2009) made use of panel data from 92 underdeveloped and developed economies to investigate how FDI impacts TFP growth in a period spanning 1970 to the year 2000. They applied the OLS estimation and fixed-effect model. The findings showcased a positive FDI's influence on the growth of TFP. Similarly, Baltabaev (2014) utilized a panel data of 49 nations from 1974 to 2008 to scrutinize the influence of FDI on the GDP growth of a country and its impacts on TFP. The study applied the GMM system estimation, and discovered that FDI positively and significantly impacts productivity.

Adnan (2019) examined the impact of FDI on the TFP in South Asian region. While utilizing time-series data to estimate VEC model and the Johansen connecting method. The outcome confirmed that FDI has a positive impact on TFP in these nations. Furthermore, in long run, inflation, trade openness, and public expenditure positively affect TFP. In contrast, the researchers discovered that human capital negatively affects TFP in Sri Lanka and Bangladesh.

By employing the two step GMM method, Ssozi and Asongu (2016) examined the benefits of external financial inflows on TFP in SSA countries from the year 1980 to the year 2010. They discovered existence of a positive link between inflows in FDI and TFP in SSA countries. However, the interaction term of human capital and FDI has a negative impact on TFP. The research concluded that human capital could enhance FDI in SSA countries, but it is incapable of being considered a source of technological advancement.

Malikane and Chitambara (2017) utilized panel data from WDI and UNCTAD in 45 nations in Africa. They used fixed-effect model and the two-step GMM method to examine the impact of inflows in FDI on the productivity growth in a period spanning 1980 to 2012. They found out a positive and insignificant impact of FDI on TFP growth in the countries under study, which could be elucidated by a limited absorption capacity of African nations as a result of a failure in adopting modern foreign technologies.

Likewise, Li and Tanna (2019) utilized cross-country data in 51 developing economies and analyzed the effect of FDI on TFP's growth from 1984-2010. The study estimated the Dynamic Panel Data model and adopted a systemic GMM technique. They found a direct but inconsequential FDI's impact on TFP growth. The outcome indicated that higher educational attainment, which is considered as the human-capital stock, had a positive impact on TFP growth.

Ng (2007) also utilized data of 14 SSA nations in a period spanning 1970 to 2000 from UNCTAD to examine the link between FDI and Productivity using the Vector Autoregressive model in addition to Granger causality test. The research discovered that there is limited evidence showing that inflows in FDI contribute to higher TFP growth. The outcome also indicated that FDI does not contribute to the technical change. Furthermore, the research also suggested that if nations want to benefit from FDI'S spillover effects in full, they must narrow down more on the quality and type of FDI that is attracted and ensure that they possess the prerequisite skilled labor-force that can quickly spread and assimilate gains from FDI.

Adejumo (2016) used an error correction model in his research to investigate the factors that determine TFP growth from 1970 to 2009 in Nigeria. He discovered that in short run, FDI has a negative impact on TFP, but positive in the long run. Also, the outcome found that in short-run as well as in long-run, there exists a notable negative of human capital, inflation and trade openness on the Nigerian TFP growth. The outcome indicated that policies that improve human capital via education, reduce unemployment and inflation rates, are likely to enhance the growth of TFP in Nigeria.

Aljarallah and Angus (2020) employed the ARDL model to examine resource rents' short and long-run effect on institutional quality, human capital, the GDP per-capita, and productivity in Kuwait, using data from 1984 to 2014. Results revealed that resource rents jark up GDP per-

capita in short-run. But, they deteriorate human capital, productivity, and institutional quality in long-run. In Kuwait, natural resource overreliance has been detrimental over the long-run. The research suggested that there is need for improvements in human capital and institutional quality enhancement to attain sustainable development. In the same line, Badeeb and Lean (2017) applied the ARDL model and used time-series data spanning 1980 to 2012 to analyze whether banking development can mitigate the curse in the link between productivity and natural resources in Yemen. The study revealed that dependence on natural resources is inversely linked to productivity, and that the relationship depends on development levels in banking sector. The study suggested that in order to reduce the negative consequences of the natural resource curse, policy makers should increase the level of banking development.

Additionally, previous studies have shown that many factors set the TFP determinants. Case in point, Miller & Upadhyay (2000) investigated what drives TFP by utilizing time-series pooled time-series and cross-section datasets from a sample size of 83 nations from 1960 to 1989. The research measured fixed-effect model and discovered that trade openness had a positive influence on the TFP. Nevertheless, human capital was found to negatively affect TFP in developed nations, but positively in the middle-income nations. Furthermore, the outcome also suggested that through trade improvement, investment spillovers enhance TFP in low-income nations.

Azman-Saini, et al., (2010), examined the link between GDP and FDI growth by utilizing cross-national observations of over 91 economies spanning 1975 to 2005. They estimated the threshold model and discovered that financial stability is crucial to the growth of economy via FDI. Alfaro (2004) likewise utilized 20 OECD nations and 51 non-OECD nations from 1975 to 1995 to scrutinize how financial development affects economic growth and FDI. They discovered financial development is an essential tool in attracting FDI in an economy. Correspondingly, utilizing time-series data spanning 1970 to 2004 in Thailand, Ang (2009) found out that financial development is an prerequisite element in enhancing FDI inflows to Thailand's economy.

While analyzing the role of market size and how it determines FDI in Western-Balkans nations, Petrović-Ranđelović et al (2017) used a time series and estimated a multiregression model. The findings showed that market size has a positive and significant effect on the FDI inflows in these economies. However, estimate coefficient for trade openness was statistically insignificant, and

hence no effect on FDI. Ezeoha and Cattaneo (2012) utilized panel data from 38 nations in SSA by applying a dynamic system GMM model to investigate interactive and individual effects of financial development, FDI flows and institutional quality from natural resource endowed countries. The study discovered that the quality of infrastructure, governance and legal structures were crucial for the financial systems to buttress inflows in FDI. The research proposed that the level of endowment in natural resources and market size are pivotal channels that can support FDI inflows to improve the infrastructure quality.

Similarly, Henri and Larissa (2018) utilized a systemic GMM estimation technique to investigate the link amongst governance, FDI and the economic growth in 51 African nations from the year 1998 to the year 2015. They discovered that good governance is essential for both economic growth and FDI. Hence, they advised that African economies ought to enhance their governance structures so as to attract more FDI, which will help them to attain better outcomes in terms of economic growth enhancement. Mottaleb and Kalirajan (2010) also estimated random-effect model to examine factors that determine FDI. They used a panel of 68 low-income and low-middle income nations in a period that spans 2005 to the year 2007. The outcomes showcased that nations with large economies, trade openness and with a good business climate tend to attract more FDI inflows.

Wako (2018) using a dynamic panel studied the link between economic growth, FDI, the quality of institutions, and the value they add in manufacturing sector in SSA. From the study it was shown that SSA countries highly endowed in natural resources, those with higher economic growth level, and better institutional quality attracted large FDI inflows. Also, the research realized that the economic growth enhancement is a symbol of improvement in institutional quality, while FDI inflows tend to undermine the accountability to the rule of law by exacerbating corruption. The research also indicated that in case the inflows in FDI are resource-seeking, it does not accentuate industrialization but the natural resource curse. The only exemption is when it is non-resource-seeking. Hence, the study suggested that SSA nations should be specific on the type and nature of FDI that they require in order to balance between FDI that enhances the growth of the economy with the one that exacerbates deindustrialization creating adverse institutional effects.

Hayat (2018) while investigating the relationship between FDI and economic growth, employed the dynamic panel-data model and adopted the GMM, controlling for the natural resources' role in 104 high, middle, and low-income nations from 1996 to 2015. The outcome like in similar other studies confirmed a positive and significant effect of FDI on the economic growth of these nations. In contrast, the study shows natural resources had a marginally strong adverse effect on growth of economy in nations that attracted a mean level of FDI inflows. As such, it is conclusive that abundance in natural resources directs foreign investments favoring those sectors with large resource-endowed and hindering growth in lowly endowed sector.

Asamoah et al (2016) analyzed macroeconomic volatility and FDI and how institutional quality affects them in 40 SSA nations from the year 1996 to the year 2011. The research used the Engle GARCH and Dynamic Panel data models. They discovered that institutional quality is a pivotal element in attracting FDI in SSA economies, although, macroeconomic uncertainties were found to harm FDI. Likewise, Zeneli (2014) discovered that the levels of institutional quality enhance FDI inflows in SEE nations. The outcome showcased that nations with a friendly climate for doing business, a large market size, high level of trade openness, and a strategic location do greatly benefit from FDI inflows. Hence countries should enhance these qualities so as to benefit from FDI spillovers by engaging in reforms in the market trade, security, finance, and enterprise, in addition to the non-market reforms. Also, the research discovered that human capital stock (representing population's education level and cost of labor), insignificantly affects the attraction of FDI. Nevertheless, Borensztein (1998) used cross-country time series data of 69 nations, for the period between 1970 and 1989. With the objective being an investigation of whether or not a link exists between FDI and the economic growth, the study suggested that host nations should have specific threshold of human capital levels to gain from spillovers of FDI.

Jaiblai and Shenai (2019) utilized cross-sectional data from 10 SSA nations to investigate factors that determine FDI attraction from the year 1990 to the year 2017 using the ARDL estimation technique. They discovered that nations with smaller markets, great infrastructure networks, a depreciated exchange rate regime, low levels of income, and high openness to trade attracted more inflows of FDI. Likewise, Faroh and Shen (2015), in Sierra Leone, investigated the impact of interest rates on FDI, using multi-regression time-series data that spans 1985-2012.The research showcased that the high levels of trade openness and a stable exchange rate have a

significant robust effect on attracting FDI while interest rates does not affect FDI inflows. Inflation rate was found to negatively affect FDI attraction.

Asiedu (2002), examined cross-section data in 71 economies during a period spanning 1988 to 1997 by applying OLS estimations to investigate whether factors that influence FDI in other developing nations apply to SSA nations. The outcomes showcased that trade openness does attract FDI in SSA as well as in other developing regions. But, the marginal returns from openness levels are lesser in SSA region as compared to the other developing nations. Although, good economic returns and infrastructure networks boosts FDI in other developing economies, such factors barely attract FDI in SSA. Therefore, it was concluded that SSA economies ail from the unfavorable regional effects due to their geographical location.

2.4. Overview of literature

According to the reviewed literature, we can observe that there is an increasing interest among researchers on studying GDP growth and FDI in developing nations and the causality between them, if any. This is necessitated by the fact that FDI enhances the productivity of such economies (Dinh, 2019; Malikane & Chitambara, 2017; Mahembe & Odhiambo, 2014). More so, three observations can be extracted from the existing literature. First, there is lack of consensus to draw the unified framework model expounding on the effects of FDI. Secondly, most scholars examining the effects of FDI on economic performance of host country tend to narrow down often on the linkage connecting FDI and GDP growth, forgetting that such a relationship is bidirectional. If we consider FDI as an economic growth channel via the spillover effects, then such an effect should be seen on the host nation's TFP. A case in point, Borensztein et al. (1998) put forward that it is way better to encapsulate the effects of FDI via TFP rather than utilizing GDP growth. Sadly, many studies that analyze productivity and FDI focus more on the micro (firm) level evidence (Kimura, 2006; Liu & Wang, 2003; Singh, 2017; Suyanto, 2009; Tomiura, 2007; Turnbull, 2016). Thirdly, lion's share of the studies that analyze FDI and its effect on TFP are found in Latin America and Southeast Asia regions. It is only recently that substantive studies have been conducted in SSA on the topic (see for example Ng, 2007; Adams, 2009; Senbeta, 2009; Ezeoha and Cattaneo, 2012; Asamoah, 2016; Ssozi, 2016 and Jaiblai, 2019).

From the review of the literature, there is a concurrence built arguing that the impact of FDI on TFP is interesting worthy of exploration. The studies have also identified what drives FDI attraction in developing economies. They are, rapid economic growth, advancement in trade openness, a large GDP, market size, financial markets development, local institutions quality, the quality of local governance, the quality of local infrastructure, endowment in natural resources, ease of doing business, inflation, and stable exchange and interest rates. However, some of these previous studies provide perplexing outcome on the impact of human capital on inflows of FDI, where some support an inverse relationship (Alfaro, 2004) whiles others show no relationship between the two (Zeneli, 2014).

Generally, the micro and macro studies discovered that there is a positive impact of FDI on the TFP except for Aitken (1999), who discovered that FDI inversely affects TFP in Venezuelan domestic firms. However, with the lack of empirical evidence on the effect of FDI on TFP within the two regions of interest, this research aims at filling this gap. The study utilizes World Development Indicators data and UNCTAD's databases. The study estimates the P-ARDL model based on PMG and DFE estimators, respectively, to determine factors attracting FDI in CA and EA regions and also to investigate the effect of FDI on the TFP in these regions in a period spanning 1990 to 2018.

CHAPTER THREE

METHODOLOGY

3.1.Introduction

The section is split into four segments. The first segment entails theoretical framework. The subsequent section covers the empirical models, which showcase the link between independent and the dependent variables. The third section covers the estimation methods, technique and different tests used. The fourth section presents data sources and data types utilized in this study.

3.2. Theoretical framework

3.2.1 The FDI Determinants

In this study, Dunning's (1977, 1980) Eclectic paradigm theory is used for factors that attract FDI in Eastern and Central Africa. Following Mottaleb & Kalirajan (2010) and Jaiblai & Shenai (2019), FDI is a function of technological transfer, openness to trade, friendly environment of doing business, and per-capita GDP. In our research, we hypothesize that FDI is a function of infrastructure quality, trade openness, market size, and endowment in natural resources. We have;

$$\mathrm{FDI} = \mathrm{f(X)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

In our case: FDI denotes foreign direct investments; X represents a set of variables that influence FDI, such as natural resource endowment, market size, infrastructure quality and openness to trade.

3.2.2 The relationship between FDI and TFP

First and foremost, the study will estimate TFP. Englander (1988) opines that TFP is calculated by getting the country's or region's total production and divide it by the aggregate production inputs, *i.e.*, labor and capital. Following Malikane et al., (2017), we will utilize the aggregate Cobb-Douglas production function to estimate TFP based on the Solow's (1956) exogenous growth theory:

$$\mathrm{Y_t} = \mathrm{K_t^{\alpha} A_t L_t^{1-\alpha}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Whereby; Y denotes total production (GDP) while L, A, and K are labor, TFP and capital stocks respectively. α &$1-\alpha$ are shares of capital and labor. K_t^{α} and $L_t^{1-\alpha}$ are factor inputs in the

weighted aggregate. We rearrange equation (2) by making A_t the subject of the formula in order to estimate TFP as follows:

$$\mathrm{TFP_t} = \mathrm{A_t} = \frac{\mathrm{Y_t}}{\mathrm{K_t^{\alpha} L_t^{1-\alpha}}} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3)$$

In this case, TFP represents the total production increase, which emanates from the surplus produced after an increase of the inputs. Some factors, like education, technical change, R&D, are the factors that determine the change of TFP. α & $(1 - \alpha)$ denote elasticity of output relative to capital and labor. The challenge is that there exists few reliable output elasticity estimates from the econometric estimations. Hence, to solve this challenge, we follow the work by Li and Tanna (2019) and Beck (2000) by assuming that the capital share of the income is a constant for all the nations and it is equals to α=0.3, while the labor share of output,1-α=0.7. Hence, equation (3) can be rewritten as follows:

$$\mathrm{TFP_t} = \frac{\mathrm{Y_t}}{\mathrm{K_t^{0.3} L_t^{0.7}}} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (4)$$

Expressed into logarithm form, equation (4) becomes:

$$\ln(\mathrm{TFP}) = \ln\mathrm{A} = \ln\mathrm{Y}_t - (0.3\ln\mathrm{K}_t + 0.7\ln\mathrm{L}_t) \ldots \ldots \ldots \ldots \ldots \ldots \ldots (5)$$

Therefore, TFP level is calculated by deducting the contribution of production factors (capital and labor) from the output level. Where Y_t is real GDP, K_t is capital that is calculated using the GFCF, and L_t is labour estimated by the total number of workers, aged between 15 and 64 years.

Endogenous growth theory (Blomstrom et al., 1996; Barro 1990; Borensztein et al.,1998; Grossman & Helpman,1991; Rebelo, 1991; and Romer, 1986) hypothesizes that TFP can be improved via FDI. Following Malikane and Chitambara (2017) and Li and Tanna (2019), TFP is a function of FDI:

$$\mathrm{TFP} = \mathrm{f(FDI)} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (6)$$

Moreover, following the literature, TFP is not only a function of FDI but also a function of control variables such as natural resource endowment, and the levels of trade openness. In such a scenario, equation (6) will now be:

$$\mathrm{TFP}_{i,t} = f(\mathrm{FDI}_{i,t}, X_{i,t}) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (7)$$

With *i* & *t* specifying the region and time indices; *X* represents a set of factors already explained above.

3.3.Empirical models

3.3.1 Empirical model for estimating determinants of FDI

From the theoretical framework in the study, the estimation model of the factors attracting FDI will be;

$$\mathrm{FDI}_{it} = \beta_0 + \beta_1 \ln\mathrm{Infrqual}_{it} + \beta_2 \ln\mathrm{Trade}_{it} + \beta_3 \ln\mathrm{Marketsize}_{it} + \beta_4 \ln\mathrm{NatRes}_{it} + \vartheta_i + u_{it} \ldots (8)$$

Where; FDI is the dependent variable, Infrqual denotes quality of infrastructure, trade openness and market size, NatRes denotes natural resource endowments (all the independent variables are expressed in the natural logarithm form), β's denotes unknown parameters that will be estimated, ϑ_i represents the unobserved country specific characteristics, and u_{it} denotes the error term.

Table 1: Description of Variables and Measurement for determinant of FDI

Variables	**Variable descriptions and measurements**	**Data source**	**Expected sign**
Dependent variable			
FDI	The FDI will be net inflows (new investments minus disinvestments) measured as % of GDP.	UNCTAD	
Independent variables			
Trade openness (TO)	This is the total volume of trade estimated as summation of a nation's imports and exports as % share of GDP, a proxy for TO.	WDI	(+)
Natural resource endowments (NRE)	Ratio of the annual total natural resource rents to the GDP. It is a proxy for natural resource endowments and is estimated as a % of GDP	WDI	(+)

GDP per capita(Market size)	This metric measures the economic output per person. It is calculated by dividing GDP of a nation by its entire population. We use it as a proxy for Market size.	WDI	(+)
Infrastructure quality (IFQ)	It refers to the summation of the active number of subscriptions on voice over IP (VoIP), analog fixed telephone lines, subscription on fixed wireless local loops (WLL), equivalents in ISDN voice-channel and the fixed public-payphones. Proxied by the total tally of fixed telephone lines per one hundred people to estimate infrastructure quality.	WDI	(+)

3.3.2 Empirical model for estimating effect of FDI on TFP

The empirical model is stated as follows;

$$\ln TFP_{i,t} = \beta_0 + \beta_1 FDI_{i,t} + \beta_2 \ln Trade_{it} + \beta_3 \ln NatRes_{it} + \vartheta_i + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots (9)$$

Whereby; $TFP_{i,t}$ denotes the dependent variable expressed in natural logs form, FDI is foreign direct investment, Trade refers to trade openness (expressed in logarithm form), NatRes, is natural resource endowment (expressed in logarithm form); $\vartheta_i$is the unobserved country specific characteristics; $\varepsilon_{i,t}$ is the error term, while β's denotes the unknown parameters that will be evaluated, and *i* and *t* denote region and time index.

Table 2: Variable Description and Measurement for the effect of FDI on TFP

Variables	Variable descriptions and measurements	Data source	Expected signs
Dependent variable			
Total factor productivity (TFP)	This is the ratio of output-input (capital and labour). Output is calculated as real GDP at the current prices (US$). For total inputs, the capital stock is estimated by GFCF and laborforce (Number of workers aged 15 to 64 years).		
	Independent variables		
Foreign Direct Investment (FDI)	FDI will be net inflows (new investments minus disinvestments) is measured as % of GDP.	UNCTAD	Positive
Trade openness (TO)	The value of trade is estimated as the summation of a nation's exports and imports as a % of the nation's GDP (a proxy of TO).	WDI	Positive
Natural resource endowment (NRE)	This is the ratio of the natural resources rent measured as a % of GDP per annum.	WDI	Positive

The model equations to be estimated are specified in equations (8) and (9); their signs and magnitudes of the regressors will be interpreted.

3.4. Estimation Method

This particular research aims at investigating the impact of FDI on TFP and examining the factors that attract FDI in the Eastern and Central African regions. The study employs balanced panel data comprising of six nations (3 in Central Africa and 3 in Eastern Africa) over a period spanning 1990 to 2018.

3.4.1 The biased-adjusted LM test for cross-sectional dependence

Prior to proceeding with the other steps, it is pivotal to do the cross-sectional dependence test. Otherwise, our results will be inconsistent and biased (Breusch & Pagan, 1980; Pesaran, 2004). That is why the potential existence of cross-sectional dependency in the series is analyzed among countries using the Breusch-Pagan (1980) Langrage Multiplier test (LM test) and the cointegration equation since our time-dimension supersedes cross-section dimension, that is, T>N. This test was improved by Pesaran (2004) in cases where time-dimension is greater than cross-section dimension and vice-versa. However, the test will be biased if the aggregate group is zero, but aggregate individuals differ from zero. According to Pesaran (2008), this can be corrected by adding variance to adjust the deviation. This results to LM test which is bias adjusted (LM_{adj}), that takes the form:

$$\mathrm{LM_{adj}} = \left(\frac{2}{\mathrm{N(N-1)}}\right)^{1/2} \sum_{\mathrm{i=1}}^{\mathrm{N-1}} \sum_{\mathrm{j=i+1}}^{\mathrm{N}} \left(\hat{\rho}_{\mathrm{ij}}^{2} \frac{(\mathrm{T-K-1})\hat{\rho}_{\mathrm{ij}} - \hat{\mu}_{\mathrm{Tij}}}{\upsilon_{\mathrm{Tij}}}\right) \sim \mathrm{N}(0,1) \ldots\ldots\ldots\ldots\ldots\ldots (10)$$

Whereby, $\hat{\mu}_{Tij}$ denotes average; υ_{Tij}, variance. The H_0 of LMadj test is that there is no cross-sectional dependency.

3.4.2 Panel unit-root test

After analyzing for cross-sectional dependence presence, we are going to apply panel unit tests to verify the stationarity properties of the study variables. In this case, the investigation is made to determine whether variables are either integrated of order zero, that is I(O); or of order one ,that is I(1); or mixed, as this will quickly help in the establishment of the notable long-run relationship among variables. However, the major issue in the panel unit-root test is to establish whether or not there is independence between panels. The tests are categorized into two generations, that is first and the second generation. Levin et al., (2002), Breitung (2005), Hadri (2000), Im et al., (2003), Maddala and Wu (1999), and Choi (2001) constitute panel unit-root tests of the first generation. If cross-sectional dependence is established among nations in the panel for variables utilized in this study (lnTFP, FDI, lnNRE, lnMktSize, lnInfrastQual, lnTradeOpen), we will analyze the stationarity of the series using the second-generation panel unit-root test, that is, the CADF test for unit root.

3.4.2.1. CADF unit-root test

It is a test performed for each cross-sectional unit in the series that forms a panel. The test can also be performed on each cross-section of the panel or for the overall panel. The hypothesis behind the test is that the effect of time on each specific nation is different from those of others. Given existence of spatial autocorrelation, the test is utilized in the cases where T>N as well as when N>T. Stationarity for an individual region is tested by comparing statistical values of the test with the Pesaran's CADF values in the critical table. If the critical value of the CADF > CADF statistical value, we reject the H_0 and conclude that there is stationarity. The test statistics for the CADF is estimated as follows;

$$Y_{i,t} = (1 - \emptyset_i)\mu_i + \emptyset_i y_{i,t-1} + u_{i,} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (11)$$

$i = 1,2, \dots, N \text{ and } t = 1,2, \dots, T$

$$u_{i,t} = \gamma_i f_t + \varepsilon_{i,t} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots . (12)$$

Where: f_t denotes the common unobservable effects of each particular region, $\varepsilon_{i,t}$is the individual-specific error term.

From equations (11) and (12), the unit root hypothesis is written as follows:

$$\Delta y_{it} = \alpha_i + \beta_i y_{i,t-1} + \gamma_i f_t + \varepsilon_{i,t} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots .. (13)$$

$i = 1, 2, \dots,$ N and $t = 1, 2, \dots,$ T

$H_0: \beta_i = 0$, for all i (series not stationary)

$H_1: \beta_i < 0,\ i = 1,2, \dots, \mathrm{N1};\ \beta_i = 0 \quad i = \mathrm{N}_1 + 1,\ \mathrm{N}_1 + 2, \dots, \mathrm{N}$ (series stationary)

3.4.3 Pedroni Cointegration test

After determining the order of integration using panel unit-root tests, we are verifying the existence of cointegration to establish long-run link between variables. We do so by carrying out the Pedroni test. This test as advocated for by Pedroni (2004), can be categorized in to two: the group's aggregate statistics that averages the results of individual nation's test statistics and the

panel statistics that pools statistics within-dimensions. The tests allow inclusion of common time dummies, which address the problem of cross-section dependency, as follows:

$$\bar{y}_l = \frac{1}{N}\sum_{i=1}^{N} y_{i,t} \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots (14)$$

All test statistics are residual-based tests with the residuals collected from the following regressions:

$$y_{i,t} = \alpha_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \cdots + \beta_{Mi}x_{Mi,t} + e_{i,t} \quad \ldots \ldots \ldots \ldots (15)$$

$$\Delta y_{i,t} = \sum_{m=1}^{M} \beta_{mi}\Delta x_{mi,t} + \eta_{i,t} \quad \ldots \ldots \ldots \ldots \ldots (16)$$

$$\hat{e}_{i,t} = \hat{\gamma}_i \hat{e}_{i,t-1} + \hat{\mu}_{i,t} \quad \ldots \ldots \ldots \ldots \ldots (17)$$

$$\hat{e}_{i,t} = \hat{\gamma}_i \hat{e}_{i,t-1} + \sum_{k=1}^{K} \hat{\gamma}_{i,k}\Delta\hat{e}_{i,t-k} + \hat{\mu}^*_{i,t} \quad \ldots \ldots \ldots \ldots (18)$$

Where *i* =1, 2,…, N represents number of individuals in panel, t =1, 2,... T is number of the time periods, m=1, 2,…, M is number of the regressors, while k=1, 2,...K is lags number in ADF regression.

3.4.4 Panel Autoregressive Distributed Lag Model and the Estimation of long-run coefficients

In examining the effect of FDI on TFP and determining factors that attract FDI both in Central and Eastern Africa, we may encounter the endogeneity problem where a covariate of the equation may be correlated with the error term and the response variable, *i.e.*, higher TFP may influence FDI. Also, we are using macro panels with long time dimension, and according to Baltagi (2015) we may face cross-section dependency and serial correlation issues. Furthermore, since our study employs macro panels, that is, the panel with a large number of time (T) relative to the cross-sections number (N), there is a possibility that variables may exhibit a long-run relation. Roodman (2009) opined that GMM estimators will produce spurious results in the case of large Ts and small Ns because of the following reasons: First, as T enlarges, the instruments

also increase, and that may subsequently trigger over-identification problem. Therefore, the H_0 of instruments exogeneity can unnecessarily be rejected, which leads to doubts on the validity of our estimates. Secondly, having small Ns leads to an autocorrelation test that is unreliable. Generally, applying the GMM estimator in this case might lead to unreliable and inconsistent results. We cannot either use the OLS estimation as it is inconsistent and biased results, which can lead to a provision of inefficient results for the small sample due to potential cross-section dependence, endogeneity, and serial correlation (Pedroni, 2001).

The suitable estimation method for such a panel setting is the Panel-ARDL model based on PMG & DFE estimators. Loayza and Ranciere (2004) and Samargandi (2015) suggested that dynamic heterogeneous panel can be incorporated into an Error-Correction-Model (ECM) based on ARDL (*p*,*q*) approach with *p* as lags of dependent variables and *q* as the regressors lags.

The regression is written as;

$$\Delta lnY_{i,t} = \sum_{j=1}^{p-1} \beta_j^i \Delta lnY_{i,t-j} + \sum_{j=0}^{q-1} \rho_j^i ln\Delta X_{i,t-j} + \delta^i \left[lnY_{i,t-1} - \left\{ \theta_0^i + \theta_1^i X_{i,t-1} \right\} \right] + \mu_{it} \dots \dots \dots \dots (19)$$

Whereby, Y is the dependent variable, X is a vector set of all the independent variables in the model, β & ρ are dynamic short-run coefficients of the lagged dependent and independent variables, θ denotes long-run coefficients, δ is the adjustment speed of coefficient to the equilibrium in long-run, *i* and *t* respectively denote region and time index, while μ denotes error term.

The entire term in square bracket denotes long-run regression, which is derived from;

$$\mathrm{lnY}_{i,t} = \theta_0^i + \theta_1^i X_{i,t} + \varepsilon_{i,t} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots .. (20)$$

Whereby, $\varepsilon_{i,t} \sim I\ (0)$.

Models to be estimated would use PMG and DFE estimators. The significant merit of the Panel-ARDL estimation methodology is that, it can be utilized with variables that have different orders of integration. Moreover, we can obtain short and long-run dynamics simultaneously with a Panel ARDL. Pesaran et al., (1999) stated that PMG and DFE estimators do generate consistent estimates and address the endogeneity by including the lags of the dependent variables and of the

independent variables into the model. Endogeneity might also be region, country or period specific. As a result, we will also include fixed effects for region, country and period in our analysis as done by Ashraf, et al., (2015) to address it.

Finally, in terms of efficiency and consistency, there is a need to compare and choose between DFE and PMG estimators. We therefore need to conduct the Hausman *h*-test, which is based on the panel-ARDL approach that estimates the consistency and efficiency of the estimates of DFE and PMG. Hence, this test will be conducted to choose the suitable estimator to analyzing the effect of FDI on TFP.

3.5. Data Types and Sources

This research employs secondary data extracted from UNCTAD's database for FDI and World Development Indicators database for Natural resource endowment, Quality of infrastructure, size of the market and trade openness. The study uses data for selected nations in Eastern Africa (Kenya, Rwanda and Tanzania) and in Central Africa (Cameroon, Central African Republic and Chad) in a period spanning 1990 to 2018.

CHAPTER FOUR

EMPIRICAL FINDINGS AND DISCUSSIONS

4.1. Introduction

This chapter, presents an empirical analysis of the study. The specific subsections include descriptive statistics, correlation matrix, and the ARDL model regression results. Based on PMG and DFE estimators, short and long-run relationships among the variables are determined.

4.2. Descriptive statistics

The estimation process started by the presentation of preliminary tests to verify the series' normality and make sure that there is no multicollinearity among the independent variables. Tables 3 provides the summary statistics on Net inflows of FDI, GDP per-capita, trade volume, the share of natural resource rents as % of GDP, and number of fixed telephone lines per 100 individuals. Table 3 indicates that on aggregate net FDI inflows contribute to approximately 2% to GDP, the proportion of natural resource rent to GDP is about 9.45%, while the ratio of trade openness to GDP is 48.77%. On average, about 1 fixed telephone line is used per 100 people, while 612.2$ are earned per person per year overall.

Table 3: Descriptive Statistics

		Overall			
Variable	**Obs**	Mean	**Std. Dev.**	**Min**	**Max**
FDI	174	2.023	4.2	-4.659	40.882
NRE	174	9.447	6.532	2.475	38.039
MarketSize	174	612.2	374.638	126.955	1710.51
InfrastQual	174	0.559	0.839	0.018	5.098
TradeOpen	174	48.775	15.913	19.684	126.351
		Central Africa			
FDI	87	2.322	5.716	-4.659	40.882
NRE	87	12.453	7.708	5.248	38.039
MarketSize	87	661.262	391.208	165.763	1540.568
InfrastQual	87	0.66	1.135	0.018	5.098
TradeOpen	87	52.858	17.74	26.453	126.351
		Eastern Africa			
FDI	87	1.724	1.625	0	5.725
NRE	87	6.441	2.851	2.475	16.235
MarketSize	87	563.137	352.739	126.955	1710.51
InfrastQual	87	0.458	0.327	0.103	1.624
TradeOpen	87	44.691	12.686	19.684	72.858

For Central and Eastern Africa respectively, on average net FDI inflows represent 2.32% of GDP in CA while in EA they contribute about 1.72% to GDP. The proportion of natural resource rents to GDP is 12.45% in CA while it is 6.44% in EA. The share of trade to GDP is 52.85% in CA where as it is 44.69% in EA on average. While on average 100 people use about 1 fixed telephone line in EA as well as in CA. An individual in Eastern Africa earns 563.14$ on average while in central Africa, the person earns 661.26$ per year.

4.3. Correlation analysis

Considering the absolute values' range (0.054-0.597) in Table 4 and (0.003-0.597) in Table 5, we can conclude that multicollinearity is not a problem amongst the explanatory variables since these values are below the benchmark of 0.8 (Prodan, 2013).

Table 4: Correlation matrix for FDI determinants

Variables	(1)	(2)	(3)	(4)
(1) NRE	1.000			
(2) MarketSize	-0.054	1.000		
(3) InfrastQual	-0.184	0.544	1.000	
(4) TradeOpen	0.597	0.091	0.064	1.000

Table 5: Correlation matrix for the effect of FDI on TFP

Variables	(1)	(2)	(3)
(1) FDI	1.000		
(2) NRE	-0.003	1.000	
(3) TradeOpen	0.367	0.597	1.000

4.4. Cross-sectional Dependency (LM_{adj}) Test Result

From Table 6, we deduce that, the H_0 of cross-section independence is rejected because there is cross-sectional dependence among nations of these two regions, indicated by p-values < 0.05. This implies that a shift of the series in one nation significantly affects the other nations. Therefore, when policymakers in these nations are setting the policies, they should consider other nations' policies as well as external contributors.

Table 6: LM adj test for Cross-sectional dependence

Variables	**Test Statistics**	**P-value**
lnTFP	72.890	0.000
FDI	13.100	0.000
lnInfrastQual	58.160	0.000
lnNRE	19.530	0.000
lnMktSize	69.010	0.000
lnTradeOpen	23.160	0.000

4.5. Panel unit root test

We have identified cross-sectional dependence presence amongst the nations in the panel for lnTFP, FDI, lnInfrastQual, lnNRE, lnMktSize, and lnTradeOpen, and tested for unit root. Also considering the number of years covered in the data, we did a cointegration tests to check for

long-run relationship amongst variables. Table 7 presents the results for these tests, where FDI is stationary at the level whereas, Total factor productivity, Infrastructure quality, natural resource endowment, GDP per capita (measuring market size), and trade openness, recorded stationarity after differencing the series once. Since the order of integration of the variables is a mixture of I(0) and I(1), this fits panel-ARDL estimators application and as such, cointegration test is justified.

Table 7: Results of the CADF Panel unit-root test

Variables	Levels	First difference	Critical Value
lnTFP	-1.750	-4.537	-2.570
FDI	-2.670	-	-2.570
lnInfrastQual	-0.951	-3.932	-2.570
lnNRE	-2.129	-5.143	-2.570
lnMktSize	-1.473	-4.716	-2.570
lnTradeOpen	-1.568	-5.150	-2.570

Note: Model with constant and trend for series lnTFP, FDI, lnInfrastQual, lnNRE, lnMktSize, and lnTradeOpen at 1% level of significance has been selected as the test model.

4.6. Cointegration analysis

The long-run relationship amongst variables is tested by employing Pedroni cointegration test, and the outcome is presented in Tables 8 and 9. We report in each Table the two types of residual test that Pedroni (1999) suggested. The first type contains the statistics of 4 sub-tests. The results are achieved by pooling the regression residuals within dimension of the panel, while the second type contains results of 3 sub-tests. Here, unlike in the first type, the regression residuals are pooled along the panel dimension. Since from the results in Table 8 and 9, five of the tests are significant for H_0 of no cointegration, we can deduce that long-run relation exists amongst the variables. The H_0 is rejected following Lee and Chang (2008) and Narayan et al., (2007) who advice that if four or more of the tests are statistically significant, cointegration exists. Pedroni (1999) also stated that in order for cointegration to exist, group ADF and panel ADF are to be considered because they have better properties for small samples. Therefore, they provide reliable estimates. Hence, in this study, as five of them out of seven statistics are statistically significant.

Table 8: Results Pedroni cointegration test for determinants of FDI

Test Statistics	Panel	Group
v	0.6979	.
rho	-0.4013	0.4637
t	-2.245	-2.171
adf	-1.952	-3.088

Note: All the test statistics are distributed N (0, 1).

Table 9: Results Pedroni cointegration test for the effect of FDI on TFP

Test Statistics	Panel	Group
v	0.7429	.
rho	-0.6889	0.3111
t	-2.283	-2.138
adf	-2.156	-2.602

Note: All the test statistics are distributed N (0, 1), and are under the H0: no cointegration, and they diverge to - ∞ (save for the panel v).

4.7. FDI's Determinants

The estimates of Panel ARDL model based on PMG estimation for which FDI is the dependent variable are presented in Table 10. The interpretation is based on the magnitude and signs of the coefficients. Overall, the PMG estimator results in Table 10 reveal that infrastructure quality, market size and trade openness are positive and significantly affect FDI in long-run in Central and Eastern Africa. The quality of infrastructure increases the attractiveness of a country or region and affects FDI's climate at the local level. For instance, a percentage enhancement in infrastructure quality increases FDI by 0.88% in long-run. Moreover, a percentage change in the levels of trade increases FDI inflows by 1.27%, while a percentage change in market size increases inflows of FDI by 2.32%. These results agree with the existing literature (see for example Jaiblai & Shenai, 2019; Faroh and Shen, 2015; Mottaleb and Kalirajan, 2010 and Petrović-Ranđelović, et al., 2017) in the case of Sub-Saharan African region, Sierra Leone, in Middle & low-income nations and Balkan nations). Thus, infrastructure quality, market size, and trade openness determine FDI inflows attraction in the two regions. The error-correction term, estimates the adjustment speed, is -0.715 (71.5%). That means long-run convergence amongst variables in this study will be sped at 71.5%. Furthermore, it confirms long-run relationship amongst the variables that were established earlier. However, in the short-run, infrastructure quality has a significantly negative impact on FDI inflows attraction. This means that the quality

of communication infrastructure do not play a major role in FDI attraction in the short-run in the two regions, implying that for countries of one region to attract more FDI, they should improve the quality of their infrastructures.

Table 10: Results for Panel ARDL (PMG estimates): determinants of FDI

	Overall		Central Africa(CA)		Eastern Africa(EA)	
Variables	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Long-run coefficients						
lnInfrastQual	0.884***	(0.19)	0.454	(0.33)	0.934***	(0.20)
lnNRE	-0.591	(0.54)	-2.097***	(0.76)	-0.428	(0.57)
lnMktSize	2.321***	(0.41)	-1.227	(0.76)	2.850***	(0.45)
lnTradeOpen	1.273*	(0.72)	2.585**	(1.21)	1.25	(0.76)
Error-correction Coeff.	-0.715***	(0.13)	-0.708*	(0.40)	-0.974***	(0.07)
Short-run coefficients						
ΔlnInfrastQual	-0.767**	(0.34)	-1.414***	(0.37)	-0.277	(0.34)
ΔlnNRE	-1.034	(2.15)	-1.829	(4.46)	0.515	(0.89)
ΔlnMktSize	0.0291	(1.16)	1.957	(1.40)	-0.0784	(1.90)
ΔlnTradeOpen	3.645	(4.23)	6.076	(8.78)	0.681	(1.82)
Intercept	39.38	(50.19)	-26.09	(61.13)	84.74	(59.39)
Country	6		3		3	
Observation	168		84		84	

Notes:
(i) FDI is the dependent variable
(ii) Standard errors in parentheses.
(iii) ***denotes p<0.01, ** denotes p<0.05, while * denotes p<0.1
(iv) Coefficients for time fixed effects are not reported.
(v) Δ is first difference operator.

Comparing these factors in the two regions, results indicate that in long-run: first, in Central Africa, natural resource endowment has a negative and statistically significant impact on FDI. For instance, a percentage change in the natural resource endowment decreases FDI inflows by about 2.1%. These results agree with the "resource curse argument" and studies by Kekic (2005), and Aseidu and Lien (2011), who showcases that while the abundance of natural resources is considered as a factor of FDI attraction, it lowers FDI inflows levels in the economy's non-resource sector, leading to a fall in the FDI inflows aggregate. Also, in the line of Poelhekke & Van der Ploeg (2013), who revealed that the abundance of natural resource alters a country's position on FDI inflows in favor of resource sector and reduces FDI inflows in non-resource sector, leading to more significant capital accumulation and an increment in resource exports in resource sector. The increase of activities in resource sector is due to FDI accumulation in this sector, which makes firms that are operating in non-resource sector uncompetitive (Sachs and Warner, 2001). Second, trade openness is positive and significantly related to FDI inflows attraction. A percentage change in the volume of trade increases FDI inflows by 2.6%. But in the short run, infrastructure quality has a significant but negative impact on the FDI attraction, meaning that the quality of infrastructure does not play a critical role in FDI attraction in CA in short-run. This result is plausible in that infrastructures (roads, communication, railways) are deteriorated. Thus, in Central Africa, trade openness and natural resource endowment are determinants of FDI attraction.

However, in Eastern Africa, the size of market as well as infrastructure quality have a significant positive relationship with inflows of FDI in the long-run. The results showcase that a percentage enhancement in the quality of infrastructure increases FDI inflows by 0.9%. Also, a percentage change in the market size increases the attraction of FDI inflows by 2.9%. The results are in agreement with studies highlighted above. Error-correction term, predicts the adjustment speed, is -0.708 (70.8%) in CA and -0.974 (97.4%) in EA. This indicates that the convergence of variables in the long-run is sped at 70.8% in CA and 97.4% in EA, hence presence of cointegration. Thus, infrastructure quality and market size are factors that determine the attraction of FDI inflows in Eastern Africa. Following these results, we can therefore conclude that factors that attract FDI inflows differ across Central and Eastern Africa regions and that the Eastern Africa is more attractive than Central Africa.

4.8. Hausman Test

To estimate the consistency and efficiency between the DFE and PMG estimators, we apply the Hausman (1978) test. We compare DFE and PMG estimators, and consequently reject reject null hypothesis if prob-value < 0.05. Since the Hausman test results show that Prob>chi2 = 0.7756, we fail to reject H_0. Hence, the model supports the Dynamic Fixed Effect estimator.

4.9. The effect of FDI on TFP

The Panel ARDL model results based on DFE estimates for which TFP is the dependent variable are presented in Table 11. We base our interpretation on the magnitude and signs of coefficients. The overall results showcase that, in long-run, FDI and natural resource endowment positively and significantly impact productivity in both Central and East Africa. Specifically, we find that a 1% increment in FDI increases TFP by 0.07% point. Also, a percentage change in the natural resource endowment increases TFP by 0.8% point. That is a common finding in the literature (see, for example, Baltabaev, 2014 and Adnan, 2019 in the case of South Asia). The error-correction term, estimates the adjustment speed is -0.105 (10.5%), which means long-run convergence amongst the variables in this study will be sped at 10.5%. However, in short-run, the results indicate that both FDI and the level of openness of the economy to trade negatively and significantly affect TFP.

Table 11: Panel ARDL Results (DFE estmates): Effect of FDI on TFP

	Overall		Central Africa(CA)		Eastern Africa(EA)	
Variables	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Long-run coefficients						
FDI	0.0688*	(0.04)	0.0495	(0.04)	0.0677**	(0.03)
lnNRE	0.797*	(0.44)	1.207**	(0.58)	0.201	(0.18)
lnTradeOpen	-0.393	(0.47)	-0.468	(0.61)	-0.359	(0.22)
Error-correction Coeff.	-0.105***	(0.03)	-0.139**	(0.05)	-0.245***	(0.06)
Short-run coefficients						
ΔFDI	-0.00873***	(0.00)	-0.00747**	(0.00)	-0.00365	(0.01)
ΔlnNRE	-0.0102	(0.04)	0.00679	(0.06)	-0.0915**	(0.04)
ΔlnTradeOpen	-0.346***	(0.06)	-0.336***	(0.10)	-0.257***	(0.06)
Intercept	-7.577***	(2.45)	-2.655	(3.32)	-16.84***	(4.10)
Country	6		3		3	
Observation	168		84		84	

Notes:
(i) lnTFP is the dependent variable
(ii) Standard errors are in parentheses.
(iii) ***denotes p<0.01, ** denotes p<0.05, while * denotes p<0.1
(iv) Coefficients for time fixed effects are not reported.
(v) Δ is first difference operator.

In comparison of CA and EA, results indicate a positive and statistically insignificant impact of FDI on TFP in CA in long run. The results agree with Li & Tanna, 2019; and Ssozi and Asongu, 2016 in the case of Africa and SSA region). Also, the study finds that natural resource rents improve TFP. For instance, a percentage change in resource rents increases TFP by 1.2% point in the long-run in CA. Thus, unlike in the case of determinants of FDI, natural resource curse hypothesis is not found. The findings disagree with the recent literature (see for example Aljarallah and Angus, 2020, and Badeeb and Lean, 2017 in the case of Kuwait and Yemen respectively). But in the short-run, the study shows that FDI and trade openness have a negative and significant impact on TFP.

On contrary, in EA, results showcase that in long-run, FDI had a significant positive impact on TFP in Eastern Africa because a 1% increment in inflows of FDI increases TFP by 0.07% point. The findings agree with Adnan, 2019, in the case of South Asia). However, in short-run, trade openness, and the natural resource rents have negative and statistically significant effect on TFP. In the long run however, the effect of trade openness on TFP is statistically insignificant. Our error-correction term measuring adjustment speed is -0.139 (13.9%) in CA, while it is -0.245 (24.5%) in EA, confirming long-run relationship existence amongst the variables.

CHAPTER FIVE

CONCLUSION

5.1. Introduction

The chapter summarizes the findings, provides recommendations, and suggests areas on which this study can be extended.

5.2. Study findings summary

This research established factors attracting FDI inflows in Central & Eastern Africa as well as the impact of these inflows of FDI on the TFP in both regions using data from WDI and UNCTAD databases from 1990 to 2018. This study employed the Biased-adjusted Langrage Multiplier test (Pesaran, 2008) to test for cross-section dependence. It rejected the H_0 of cross-sectional independence. The CADF test (Pesaran, 2006) to check for stationarity properties of variables has provided a different integration order of variables, which is I(0) & I(1). We have therefore used Panel-ARDL model, based on the PMG estimator, to examine factors that attract inflows in FDI in the two regions in short and long-run. In analyzing the effect of FDI on TFP, the results of Hausman test suggested that DFE estimator is consistent and efficient over the PMG estimator.

From the PMG estimation, findings reveal that overall, the infrastructure quality, market size and trade openness attract FDI inflows both in Central and in Eastern Africa. However, in Central Africa, trade openness and natural resource rents have been found to be factors attracting FDI inflows. Natural resource curse hypothesis has been found in this region since the increase in resource rents reduces FDI inflows. In Eastern Africa, infrastructure quality and market size are factors that attract FDI.

Based on DFE estimation outcomes, the research discovered that overall, both FDI and natural resource rents has a positive significant effect on TFP in CA and EA regions. However, while findings reveal that FDI had a positive impact on the TFP in the two regions, the relationship is not significant in CA but significant in EA.

5.3. Conclusions

Consistent with the findings, we can therefore conclude that overall trade openness, infrastructure quality and market size are significant and positively related to FDI. Thus, they are

determinants of FDI attraction both in CA and EA. Specifically; trade openness determines the attraction of FDI in CA, while natural resource rents decrease inflows of FDI, confirming the resource curse argument in CA. In EA, infrastructure quality and market size are factors that contribute to attracting FDI inflows. Following these results, we can conclude that factors that attract FDI differ across the two regions. Also, since infrastructure quality and market size measure country's or region's attractiveness, its investment's climate, and the income distribution, we can conclude that EA has a more favorable environment of investment and is more attractive than CA. Moreover, FDI and natural resource rent have a significant positive impact on TFP both in CA and EA. Specifically, FDI had a positive effect on the TFP in CA as well as in EA but not significant in CA and significant in EA, concluding that this impact differs across the two regions.

Finally, we can conclude that the outcome of this research supports the outcomes of other empirical research on significant effect of trade openness, market size, infrastructure quality, and natural resource endowment on FDI inflows. They also support findings of previous studies in regards to the positive impact of FDI on TFP respectively in CA and EA. Besides, the results obtained especially, emphasize that market size, trade openness, the infrastructure quality particularly and the natural resource endowments occupy a pivotal place amongst FDI inflows determinants and on that basis, achieve an enormous influence on investment decisions in multinational enterprises in Central and Eastern African countries. Also, these findings reveal that FDI and natural resource endowment play an important role in improving TFP in CA and EA.

5.4. Policy recommendations

Based on results, the research will make policy recommendations as follows. Because the hypothesis of natural resource curse has been found in Central Africa, governments should strengthen policies regarding natural resources because most of areas with natural resource abundance are controlled by militia and they do not follow rules and law enforcement. Given that investors are risk averse, they will hardly invest in such an environment. That is why governments should increase their foot-hold and control those areas so that they can bring peace and security, maintain law and order and promote dialogue and peace among communities. Most of countries endowed in natural resources export their resources in the raw form to developed countries where the cost of labour is higher than in developing countries, meaning that investors

incur high cost of production to process these raw materials. Central African countries should invest in infrastructures to reduce cost of doing business and build human capacity (health care and education) in order to gain value addition in terms of having skill-sets to reduce the cost of production and facilitate that raw materials are locally processed because of low labour cost. In regards to trade, Governments of Central African countries should promote the exports of processed goods that fetch higher prices in international market and promote importation of capital goods that will be used in production such as tractors and fertilizers. These countries should implement policies that suppress trade barriers in order to promote trade with each other.

In Eastern African countries, Governments should build and improve infrastructures in areas that have high transport and communication costs in order to lower the cost of production. Policy makers in EA should put in place policies that increase economic growth, health care and quality education since they enhance human resource development; hence increase in FDI and market size. They should implement policies that promote Micro, Small and Medium Enterprises (promoting entrepreneurship activities) because they create formal employment which increases income and consumption, leading to the improvement in people's purchasing power. Countries should remove barriers to trade with other in order to boost their markets so that businesses are able to easily expand their activities. In order to improve TFP in both CA and EA, governments should implement policies that enhance GDP, human resource development and capital inflows. In order to promote a learning-effect in these two regions, countries should promote knowledge and experience sharing in fields where they have advanced as well as mobility exchange programs that enable free mobility of labour.

5.5. Areas of further research

The study was limited to analyzing determinants of FDI attraction and impact of FDI on TFP in Central & Eastern Africa. The analysis was carried out on three countries in CA and three others in EA. Since all countries of the two regions were not included, this study can be extended by widening the geographic scope by including more countries. Future studies could also add other factors that determine the attraction of FDI inflows such as financial development, human capital, governance quality and institutional quality which were not able to be included in the analysis due to data limitations. Also, future studies may disaggregate FDI by analyzing its determinants focusing on sectors such as agriculture, manufacturing, pharmaceutical industry, etc.

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