UNIVERSITY OF CAPE COAST

CORPORATE TAX RATE, INTERNATIONAL FINANCIAL REPORTING

STANDARDS ADOPTION AND FOREIGN DIRECT INVESTMENT IN

SUB-SAHARAN AFRICA

DOREEN NTIRIWAA AMOANING

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SUB-SAHARAN AFRICA

BY

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's signature…………………………   Date………………………

Name: Doreen Ntiriwaa Amoaning

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's signature…………………………   Date………………………

Name: Dr. Samuel Kwaku Agyei

ABSTRACT

The role that foreign direct investment plays in an economy cannot be overlooked. Governments in the quest to attract foreign investors have implemented various policies. Among these investment pulling strategies, corporate taxation and financial reporting reforms have been actively used. The effectiveness of these strategies has been continuously debated as there has been inconsistency in the various findings. Using tax as a pull factor might lead to loss of tax revenue while IFRS adoption may increase cost considering the transitioning from local GAAPs to international standards. This thesis builds on already existing literature by examining these two factors jointly but not in isolation as has been done in previous studies. Using the two-step system GMM, the combined effect of corporate tax rate and IFRS adoption on FDI was analysed. Data on 24 selected countries in sub-Saharan Africa from the year 2004 to 2017 were obtained from different sources. The eclectic theory was used as the theoretical model for the study. Results from the study showed that at average corporate tax rate, adopting IFRS directly increased FDI by 5.89 percent more compared to not adopting IFRS. When corporate tax rate is increased by 100 percent, FDI will fall by 15.8 percent in countries that have adopted IFRS while countries that have not adopted will experience a 195 percent fall in FDI. Investigating the threshold effect of corporate tax rate on FDI, the study found a U-shape showing the optimum corporate tax rate to FDI of 29.89 percent. The granger causality test showed a unidirectional relationship from corporate tax rate to FDI and not vice versa. It was recommended that countries should adopt IFRS. In countries where IFRS have been adopted, corporate tax rate should be increased to maximize revenue. Also, to attract FDI, corporate tax rate should not exceed 29.89 percent.
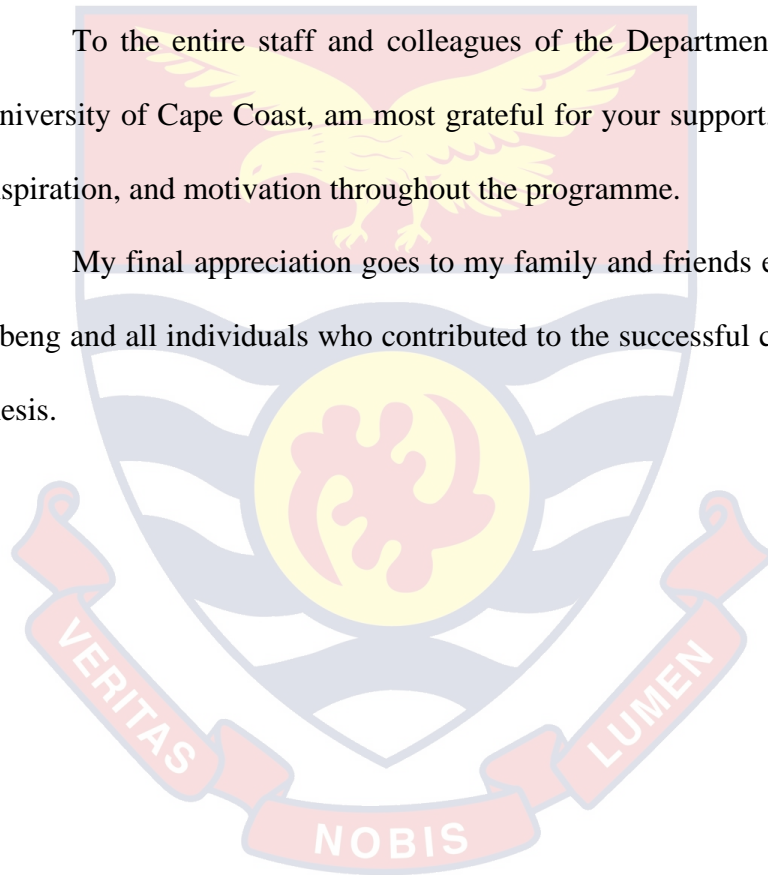
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DEDICATION

To my nephews: Emmanuel, Gerald, and Horlali

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ADOPT	IFRS Adoption
AfDB	African Development Bank
AIC	Akaike Information Criterion
AID	Foreign Aid
CIT	Corporate Tax Rate
CORRUPT	Control of Corruption
EU	European Union
FDI	Foreign Direct Investment
FPE	Final Predictor Error
GDPG	Gross Domestic Product Growth Rate
GDPPC	Gross Domestic Product Per Capita
GMM	Generalised Moments Method
GOEFF	Government Effectiveness
HDI	Human Development Index
HQ	Hannan-Quinn Information Criterion
IFAC	International Federation of Accountants
ILO	International Labour Organisation
INFL	Inflation
INSTI	Institutional Factor
INSTIAVE	Institutional Factor Average
ISOCO	International Federation of Securities Commission
LAW	Rule of Law
NATRES	Natural Resources

OECD	Organisation of Economic Co-operation and Development
OHADA	Organisation for the Harmonisation of Corporate Law in Africa
OLI	Ownership Location and Internalisation theory
OLS	Ordinary Least Square
OLR	Ordinary Logistic Regression
POLS	Pooled Ordinary Least Square
POSTA	Political Stability
REQ	Regulatory Quality
ROSC	Report on the Observation of Standards and Codes
SC	Schwarz Information Criterion
SDGs	Sustainable Development Goals
UNEM	Unemployment
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
VOACC	Voice and Accountability
WDI	World Development Indicator

CHAPTER ONE

INTRODUCTION

As countries strive for development, it is essential to identify and analyse factors that will help drive these countries into achieving their objectives. Foreign direct investment (FDI) is seen as a factor that can help promote growth, create employment, generate revenue for the host country government among other benefits it presents. With the desire to attract foreign capital inflows, policymakers have embarked on various strategies. Strategies ranging from fiscal policies to improvement in the institutional environment to pull foreign investors.

Although various policies have been implemented to draw foreign capital, it is important to assess whether these policies have been effective in terms of achieving its purpose. While researchers continue to explore how foreign direct capital inflows can be maximized in their jurisdictions, this work seeks to analyse how government policies specifically, corporate tax rate and financial reporting requirements (IFRS adoption) jointly influence the ability of sub-Saharan Africa countries in attracting multinational firms. Further analysis is done to estimate the optimum point where if corporate tax rate exceeds will be detrimental to FDI. Also, a granger causality analysis is done to identify the direction of causality.

Background to the Study

One major aim of every government is to maximise its citizenry's welfare: thus, meeting basic needs and demands like creating jobs, stabilising prices, ensuring economic, political, and cultural stability, economic recovery, improving the balance of payment deficit and others. For the state to be able to

achieve these, require sufficient financial resources. Most times, Government and domestic capital are insufficient in meeting these needs, hence, requires policymakers to implement policies that will help attract foreign direct investors to partake in its economic activities.

FDI has been defined as a cross-border financial flow that comes in a special form (Devereux, Griffith & Klemm, 2002). FDI is said to be an investment relationship where there exists a long-term controlling interest by a person or entity residing in a different country (United Nations Conference on Trade and Development [UNCTAD], 2007).

FDI is important to developed and developing countries. The benefits host countries receive from FDI are enormous. Wang, Gu, Tse, and Yim, (2013) identified the benefits of foreign capital to include: addition to the production capacity of the host country; fosters skills and technology transfer; creates employment opportunities; generates tax revenues as well as helps alleviate poverty. FDI also increases market accessibility, stimulates competition which leads to an increase in productivity, promotes market integration which enables firms to operate at a lower production cost due to economies of scale (Cleeve, 2008). FDI can be considered as a great tool for improving the social welfare of the populace of the recipient country as well as help boost its economic growth.

Sub-Saharan Africa has most of its countries classified among the least developed economies. The region has twenty-seven of its countries classified as least developed (UNCTAD, 2019). This calls for the need to initiate policies that can help boost the economic growth of the region. FDI is considered as a factor that can drive economic growth (Esso, 2010).

FDI is important for every country that seeks economic growth. Foreign capital inflow helps drive emerging economies into achieving sustainable growth, hence, there is the need to initiate policies that will help attract and retain capital inflows into an economy.

Many African countries have adopted various fiscal policies with the intent of attracting foreign investors. These policies range from both tax and non-tax incentives (Obeng, 2014). These incentives go a long way to improve upon the competitiveness of the recipient firms as more investors are attracted to such locations. Multinational firms engage in foreign direct operations with the motive of seeking: natural resources, efficiency, and strategic asset (Dunning, 1982; 2001). Government policies can influence the locational decision of Multinational enterprises as these policies can help these enterprises in achieving their objectives.

Taxation is one of the major government fiscal policies. Tax is regarded as a payment for social life costs. Government falls on tax revenues to finance public services and enhance social welfare. In meeting the demands of the citizenry, there is the need to generate funds and by so doing, results in the imposition of taxes.

The amount of foreign capital investment inflows into a particular jurisdiction is influenced by its tax policy (Boly, Coulibaly & Kere, 2020). Soekro and Widodo (2015) assert that FDI is sensitive to economic factors such as the tax rate. Projections of the benefits an investor seeks to gain influence the choice of location. According to Bellak and Leibrecht (2009), multinational firms undertake FDI intending to maximize profits. The profitability of cross-border investments increases with a reduction in certain

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factors such as cost of energy, taxes, labour costs among others. Thus, investors are motivated to shift their capital to locations with relatively lower tax rates.

Globalization and the removal of trade barriers led to the need to adopt a uniform financial reporting standard (IFRS). Globalization has made it possible for people to transact business across borders. Enhancing the free flow of international transactions, there is a need for comparability of financial statements.

IFRS adoption according to Oppong and Aga (2019), is important to the economic development of developing countries as compared to developed countries. In sub-Saharan Africa, where most of the countries are now developing, it is important to assess the benefits of adopting IFRS in order to enable policymakers to make informed decisions as to the economic benefits of accounting standards harmonization.

IFRS adoption beings about improvement in quality, transparency and comparability of financial reports. Li and Shroff (2010) states that one's ability to critically assess the viability of an investment opportunity will result in an increased flow of capital which will translate into economic growth.

In the bid to attract FDI, governments are induced to reduce their corporate tax rate as well as adopt IFRS. However, the influence of these variables on FDI has received mixed responses from some researchers. While some argue that they are insignificant in explaining FDI, others are of the view that they are significant. Some scholars have even found the adoption of IFRS to negatively influence FDI.

This study focuses on the combined effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa using data from twenty-four selected countries in the region from the year 2004 to 2017. An optimum tax rate that will maximize the inflow of foreign capital into the region is also determined and recommended.

Statement of the Problem

Sub-Saharan Africa has been facing difficulties in attracting foreign direct investments as compared to other regions. According to UNCTAD (2018)**,** in 2017, FDI that flowed to Africa reduced to $42 billion, recording a 21% fall from 2016. Specifically, sub-Saharan Africa declined by 28%, North Africa experienced a 4% decline, Central Africa decreased by 22% and that of West Africa fell by 11%. In 2018, FDI inflows to the continent (Africa) increased by 11%: sub-Saharan Africa increased by 13%; West Africa fell by 15% which is said to be the lowest level since 2006, whilst inflows to East and Central Africa remain stagnant in 2018 (UNCTAD, 2019). However, in 2019 sub-Saharan Africa recorded a decline of 10% in inflows as compared to the year 2018.

Although FDI inflows to Africa has increased, the increment is below the previous decade's annual average (UNCTAD, 2019). FDI inflows to Africa and other developing countries have been relatively lower as compared to other regions especially after the 2008 global financial crisis (African Development Bank [AfDB], 2015). Rodriguez-Pose and Cols (2017) argue that although sub-Saharan Africa as a whole has seen an increase in FDI inflows over the past twenty years, in terms of global inflows, averagely, it receives less than two percent (2%) of global FDI.

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Sub-Saharan African countries are faced with various socio-economic challenges. The percentage of unemployed labour of the total labour force in , in 2019 was 6.113% (International Labour Organisation [ILO], 2019). Out of the 28 countries that are considered to be the poorest in the world, 27 are from the sub-Saharan Africa region (World Bank, 2019). These countries are said to have poverty rates above 30%. The region is thus, faced with high poverty and unemployment rate which according to Wang, Gu, Tse, and Yim, (2013) FDI inflows can help resolve. The sustainable development goals (SDGs) 1, 8, and 9 which seeks to: end poverty; promote sustainable economic growth, productive and full employment; promote sustain industrialisation and foster innovation respectively by the end of the year 2030 (United Nations [UN], 2015) can be achieved if there is an increment in FDI.

The desire for an increase in FDI calls for the need to devise policies that will help enhance its inflow in the region. Corporate taxation has been considered as a factor that influences FDI. Africa's policy on taxation demands a critical review. A report from Tax Foundation shows, on average, Africa's corporate tax rate stands at 28.81%, making it the second continent with the highest corporate tax rate (Tax Foundation, 2018). This calls for the need to determine the optimum point where the corporate tax rate should not exceed in other to attract and retain FDI in the region.

Corporate tax rate and IFRS adoption are seen as a means of attracting FDI. IFRS adoption serves as a means of improving the quality of the accounting system which results in improving the institutional environment or the level of corporate transparency of the country. However, the question remains, will foreign investors choose countries that have adopted IFRS as an

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investment destination even if such jurisdictions have a high tax rate? Will foreign investors opt for corporate transparency over taxation? Will the adoption of IFRS affect how the tax system influences FDI and if so, what is the magnitude of the combined effect? Answers to these questions are what this work seeks to find.

This will help policymakers decide whether the adoption of IFRS and corporate taxation strategies will be able to yield the expected results in attracting FDI as well as the extent to which corporate income tax rates should be reduced if IFRS is adopted to save government tax revenue at the same time attract the needed FDI into the region as taxation is a major source of government revenue in the region (Feger, 2014).

Although some researchers have examined how corporate tax rate and other variables jointly influence FDI, to the best of my knowledge, none has assessed the combined effect of IFRS adoption and corporate income tax rate on FDI. Researchers such as Azémar, Desbordes, and Wooton (2015) examine how market size moderates the effect of the corporate tax rate on FDI. They reported that countries with larger markets impose higher corporate tax rates relative to smaller countries in competing for FDI.

Görg, Molana, and Momtagna (2009) examined the interaction effect of social expenditure and corporate taxation on FDI in OECD member countries. They concluded that the provision of economy-boosting public goods offset corporate tax burden making the latter ineffective in preventing FDI inflows.

Kottaridi, Giakoulas, and Manolopoulos (2019) examine the moderating role of the institutional environment on corporate taxation and

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FDI. They reported that high taxation is overlooked by investors when there exists a quality regulatory environment.

This work determines the interaction effect of IFRS adoption and Corporate income tax rate on FDI in sub-Saharan Africa.

Eshghi, Eshighi, and Li (2016) in their empirical study investigated the impact of the corporate tax rate on FDI inflows from 2000 to 2012. Using the statutory or forward-looking corporate tax rate as tax burden measurement, they argued that the corporate tax rate adversely impacts FDI inflows. Bellak and Leibrecht (2009) in their study on whether low corporate income tax rates attract FDI confirmed the findings of Eshghi, et al. (2016). Using the bilateral effective average tax rate, their results indicated that governments who lower their taxes attracted foreign capital inflows. Thus, the tax-lowering strategy plays a pivotal role in influencing the locational decisions of entities.

Obeng (2014) in his empirical study argued that corporate tax rate influences FDI and that governments should reduce corporate income tax to attract or increase its inflows. Abdioglu, Binis, and Arslan (2016) found an adverse relationship between corporate tax rate and FDI inflows. Conducting a panel study by using the GMM and fixed effect panel estimation techniques, they reported that the level of FDI rises significantly after the corporate tax rate reduces at a univariate level.

Jensen (2012) reported that there exists no relationship between corporate income tax rates and FDI. Jensen's finding contradicts that of Bellak and Leibrecht (2009), Eshghi et al. (2016), Obeng (2014) Abdioglu et al. (2016). Hunady and Orviska (2014) in their research found corporate taxation not having any significant effect on FDI. They came out with this finding after

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conducting an empirical study using panel data from twenty-six (26) EU member countries.

The inconsistency in empirical findings calls for the need for further investigations. The cause of the difference in findings has been argued to be a result of the measure of corporate taxation (Eshghi et al., 2016). Eshghi et al. argue that the statutory tax rate is forward-looking while the effective tax rates which are extracted from the firm's financial statements are backward-looking. Egger, Loretz, Pfaffermayr, and Winner (2009) explains that the effective tax rate (backward-looking tax rates) includes statutory tax rates and tax base allowances (such as depreciation, investment allowances, and inventory valuation) hence, results in biased estimates of the corporate tax burden as they are dependent on firm's tax planning and management activities hence, this work adopts the average statutory corporate income tax rate as a measure of corporate taxation.

Almost all studies conducted in this area establish relationships between taxes and FDI but are silent as to at what level if corporate tax rate exceeds would be detrimental or impede the flow of FDI into the host country as Africa has been classified as the second continent with the highest average tax rate. This study fills this gap by determining the turning point of the corporate tax rate to FDI inflows.

Various researches have been done on how IFRS adoption influences foreign capital inflows. Gordon, Loeb, and Zhu (2012) researched how IFRS adoption impacts FDI. They reported that the adoption of IFRS increases FDI inflows. On the other hand, they argue that developing economies benefits from the adoption in terms of FDI inflows than developed economies.

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Research conducted by Akpomi and Nnadi (2017) confirms that of Gordon et al. (2012). Using the fixed effect model to assess the effect of IFRS adoption on FDI in Africa, they found that the adoption of IFRS has a favourable effect on FDI inflows. Lungu, Caraiani, and Dascalu (2017) came out with similar findings as they investigated the association between FDI and IFRS adoption. They concluded that countries that have adopted IFRS will benefit from an increase in foreign capital inflows as compared to non-adopters.

Nnadi and Soobaroyen (2015) researched how IFRS adoption impacts FDI in Africa. Using panel data on thirty-four countries in Africa for 20 years, they found that IFRS adoption negatively impacts FDI. Their findings contradict that of Lungu et al. (2017) and Gordon et al. (2012) who found IFRS adoption to have a positive association with FDI.

A study conducted by Owusu, Saat, Suppiah, and Hook (2017) examined the effect of IFRS adoption on FDI. Using a sample of 116 developing countries, they found that the adoption of IFRS is insignificantly in influencing FDI. They concluded that IFRS alone is not enough in attracting FDI to developing countries. Odo (2018) confirms the findings of Owusu et al. (2017). Odo found that the value of inward FDI did not significantly rise after the adoption of IFRS.

With these inconsistent empirical findings, there is the need to investigate how effective IFRS is in attracting FDI, whether the relationship between IFRS adoption and FDI is negative or positive, and the significance of the relationship. This work contributes to literature by analysing the effect of IFRS adoption on FDI if countries in sub-Saharan Africa reduce their corporate tax rate.

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Purpose of the study

The main objective of the study is to explore the combined effect of corporate tax rate and IFRS adoption on foreign direct investment in sub-Saharan African countries.

Research Objectives

1. Analyse the combined effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa.

2. Determine the threshold effect of corporate tax rate on FDI in sub-Saharan Africa.

3. Determine the bi-causal relationship between corporate tax rate on FDI in sub-Saharan Africa.

Research Hypotheses

In investigating the relationship between corporate tax rate, IFRS adoption, and FDI, the study tested the following hypotheses:

H_o: Corporate tax rate does not affect foreign direct investments if sub-Saharan Africa countries adopt IFRS.

H_1: Corporate tax rate affects FDI if sub-Saharan Africa countries adopt IFRS.

H_o: IFRS adoption does not affect FDI if sub-Saharan Africa countries reduce their corporate tax rate.

H_1: IFRS adoption affects FDI if sub-Saharan Africa countries reduce their corporate tax rate.

H_o: There is no inverse U-shape relationship between corporate tax rate and FDI in sub-Saharan Africa countries.

H_1: There is an inverse U-shape relationship between corporate tax rate and FDI in sub-Saharan Africa countries.

H_0: Corporate tax rate does not granger-cause FDI in sub-Saharan Africa countries.

H_1: Corporate tax rate granger-causes FDI in sub-Saharan Africa countries.

Significance of the Study

The study analysis the interaction effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa. It gives policymakers the marginal effect on FDI assuming there is a percentage change in corporate taxes and IFRS adoption. By estimating the monotonicity of the relation, the study further predicts the optimal point. This will help policymakers to be circumspect in imposing tax rates as well as aid in deciding on which financial reporting standards to adopt or employ.

Additionally, this study will be of benefit to academia by contributing to the literature. The study will also benefit future researchers who based on findings and limitations to conduct further studies on FDI, tax, and IFRS adoption.

Delimitations

This study analysis the interaction effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa from the period 2004 to 2017 by taken into consideration 24 countries in the region. Variables that have been empirically proven to influence the dependent variable (FDI) were controlled for in the study. Variables which captures the market, labour, economic development level (purchasing power), price or macroeconomic stability (inflation), resource availability and the institutional environment (governance indicators) were controlled for.

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Limitations of the Study

The main limitation of the study which is typical to developing countries was data availability. This resulted in considering countries that had adequate data to enable its use for statistical purposes. The study used corporate statutory tax rate as a measure of corporate tax rate. This measure is said to not truly depict the tax burden of corporate entities as they (corporate firms) take advantage of the tax system to reduce their tax base hence pays a lesser percentage as compared to the statutory tax rate. Also, country policies that are intended to promote businesses result in a lower taxable amount. Tax incentives such as tax holidays, rebates among others reduce the tax burden of firms. This results in firms paying a lesser percentage of the profits as tax as compared to the statutory corporate tax rate.

IFRS adoption status was measured using only two categories thus, adopted and not adopted. This does not take into consideration the compliance level and extent of IFRS adoption by the various jurisdictions. Data used for this study were solely secondary sources hence, this study is vulnerable to the biases of the report writers as it may represent the interpretations of those who produced them, rather than offer an objective overview.

However, some variables that determine FDI such as exchange rate, population, GDP and others were omitted in the model. These omitted variables entered into the model through the error term, these omitted variables can bias the estimated parameters.

Organization of the Study

This study is structured into five main chapters with appropriate subsections. Chapter One gives an overall introduction to the whole study. It covers the background which leads to the research problem and objectives of the study. The justification for the research, the structure, and the organisation of the study are all outlined in this chapter.

Chapter Two contains a review of relevant literature (both theoretical and empirical literature) on the subject. Chapter Three describes the research methods adopted. Analysis of data, results, and discussions are presented in Chapter Four. The final Chapter thus, Chapter Five contains the major findings, conclusions, and recommendations.

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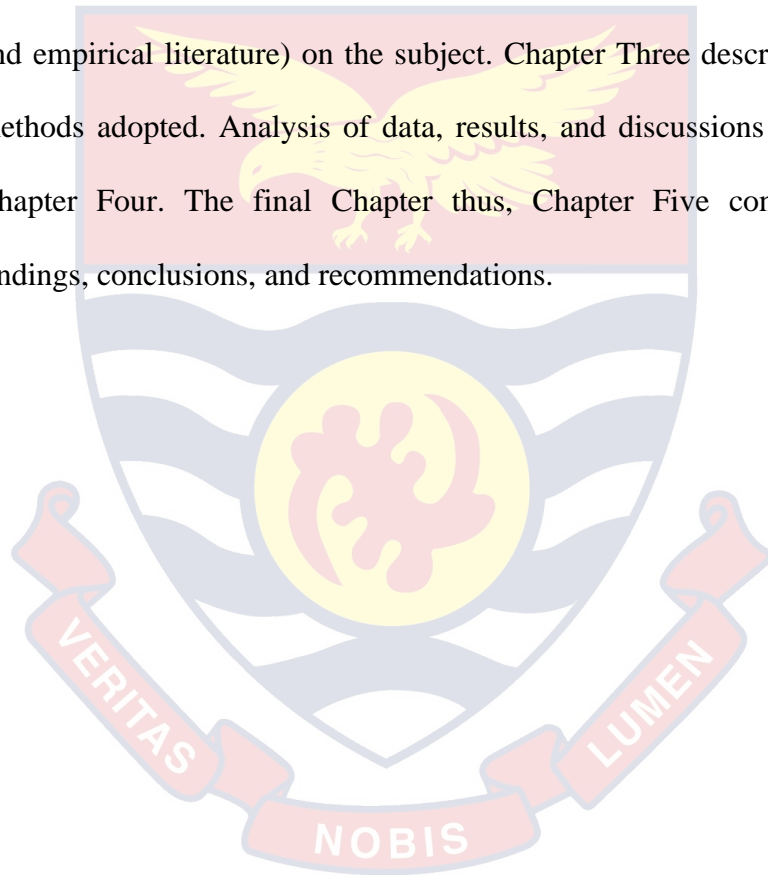
CHAPTER TWO

LITERATURE REVIEW

Introduction

The concept of FDI has gained a lot of research attention as most countries continue to search for efficient ways of attracting such investment. The benefits the host country derives from these investments have necessitated the need for various governments to enact policies with the hope of increasing its inflows. A policy's effectiveness is measured by its ability to influence a predetermined target in the manner and intensity intended. This chapter reviews various theories of foreign direct investment as well as empirical works. The chapter is segmented into the theoretical review and empirical review. The empirical works are segmented into themes specifically; the importance of FDI, corporate tax rate and FDI, IFRS adoption and FDI, causality: IFRS and FDI and interaction effect: corporate tax rate, IFRS adoption, and FDI.

Theoretical Review

Internationalization has become a very prominent business activity as more firms are engaging in international production. This has led to some scholars propounding theories with the intent of explaining these internationalization activities of multinational firms. This section reviews some of the mainstream theories of foreign direct investments such as monopolistic advantage theory, product life cycle theory, internalization theory, and the eclectic paradigm of international production.

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Monopolistic advantage theory

Early theories of the international capital movement were based on Heckscker's international trade theory and Ohlin's factor endowment theory. These theories explained international capital movements premised on the neoclassical financial theory of portfolio flows (Dunning & Rugman, 1985). The early international capital flow theories were based on the assumption of the existence of a perfectly competitive market. In a perfectly competitive market, the transaction cost is zero hence the only factor that influences international capital inflow is the rate of return on the investment thus, capital flow is volatile to changes in the rate of return (Iversen, 1936).

These early theories assumed capital was transacted between independent buyers and sellers with multinational firms playing no role in international capital movement (Dunning & Rugman, 1985). Hymer (1976) questioned the credibility of these early theories in explaining international production. Assuming an imperfect market, Hymer formed the monopolistic advantage theory which seeks to explain multinational enterprises' FDI operations.

The monopolistic advantage theory assumes that two factors influence multinational enterprises' involvement in international production. These are firm-specific (monopolistic) advantages that multinational enterprises possess in an imperfect market and the desire to remove conflicts in the foreign market (Hymer,1976).

The firm-specific advantages are factors that are unique to a particular firm and not available to other firms located in other countries. Hymer argues that firms will only engage in FDI if it can earn higher profits in the host

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country than at home; and if it can earn higher profits than firms in the host country operating within the same industry (Miller & Weigel,1972). He identified multinational firms' monopolistic advantages to include: intangible assets (such as management and organisational skills, patent and marketing skills), access to raw materials, economies of scale, efficiency in production and differentiation of products, cost, and financial advantages.

In situations where multinational firms possess such competitive advantages over other firms in the industry, it is motivated to engage in international production. Multinational enterprises' ability to control the use of its assets transferred offshore, will enable them to minimize risks and to achieve monopolistic power. Engaging in international production comes along with its associated cost hence multinational enterprises possessing these monopolistic advantages will enable them to compete with the already existing domestic firms profitably.

Hymer viewed licensing as a not profitable means of entering foreign markets relative to direct production (Letto-Gillies, 2007). Adopting licensing as a strategy for new market entry, multinational firms stand the risk of a reduction in product quality and the loss of monopolistic power over particular technology and knowledge.

Hymer (1976) identifies the removal of conflicts in foreign markets as the second determinant of multinational enterprises' FDI operations. In situations where there exist several already operating firms in the foreign market, or several firms trying to enter the market, conflicts are likely to occur. Multinational firms remove the conflict by colluding with rivals in the sharing of markets or acquire direct control of offshore production. In trying to

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remove competition or reduce conflicts, multinational enterprises acquire control of foreign enterprises (subsidiaries). This strategy removes and or reduces competition between the foreign enterprise and enterprises in other countries as well as enables the multinational enterprise to utilize fully the benefits or gains from skills and abilities they may specifically possess.

Hymer (1976) was of the view that before engaging in offshore production, there should be the existence of market imperfections which results in advantages and conflicts. Multinational firms reduce conflicts by undertaking direct production whiles making maximum use of its monopolistic advantages.

The two main determinants of Hymer's monopolistic advantage theory are linked to each other. A firm having sole control (competitive advantage) over a particular resource leads to market imperfections which results in conflicts. On the other hand, having a competitive advantage reduces and or removes conflicts through the acquisition of control over the foreign enterprise. Hence, the existence of market imperfections leads to the enhancement of a firm's market power resulting in an increment in profits.

Although Hymer (1976) has been praised for his contribution towards explaining multinational enterprises' FDI operations, it has received some criticisms. Dunning and Rugman (1985) argue that Hymer failed to distinguish between structural and transaction cost market imperfections. According to Dunning and Rugman, Hymers' entire analysis was premised on structural imperfections which are Bain-type advantages to increase the monopolistic power of multinational enterprises. Bain-type advantages which include: product diversification, distribution networks, economies of scale, knowledge

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advantages, and credit ratings enable multinational firms to reduce competition and increase its market power.

However, Hymer has been critiqued on the fact that he paid less attention to cognitive imperfections or Williamson-type transaction costs. Dunning and Rugman argue that these transaction costs are exogenous or arise naturally to multinational enterprises hence they (multinational enterprises) respond to transaction costs by creating an internal market which results in an ownership advantage. This ownership advantage is similar to a Bain-type asset power advantage which according to Dunning and Rugman it is very important to distinguish between the source of the advantage which they argue Hymer failed to do.

Teece (1985) critiqued Hymer's work on the fact that he did not consider institutional efficiency. According to Teece, Hymer emphasizing on market power instead of efficiency in understanding intermediate organizational forms is misleading.

Vernon's product life cycle theory

Vernon (1966) developed the product life cycle theory based on a study he conducted on the internationalization of U.S. manufacturing firms from the period 1950 to 1960. Vernon was of the view that Hymer was somehow static in his monopolistic advantage theory analysis. Vernon argues that the monopolistic advantage theory did not explain how enterprises will choose between export and direct production as a strategy for entering into new markets. Combining enterprises' monopolistic advantage, product life cycle, and location, Vernon investigated the firm's offshore operation from a dynamic perspective.

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Vernon was of the view that the socio-economic environment of a country with a high per capita income and technology (capital) gives avenues for the development of new products. Being the first mover or firm to develop and introduce the product, the firm gains a monopolistic advantage. An increase in competition by firms both at home and in other developed and developing countries gradually removes the advantage the firm enjoys as the first mover making the firm lose its monopolistic position.

According to Vernon (1966), a product has three (3) life cycles: the new product stage, the maturing product stage, and the standardized product stage.

The new product stage

Vernon (1966) explains that industrialized countries invest more in product development as compared to lower developing countries (LDCs). Products developed by firms located in these industrialised countries develop and produces labour-saving products (machines). The initial manufacturing of such a product is undertaken in the home country. The product is then introduced to new markets through exports.

The maturing stage

Advancement in technology and the entrance of foreign and new firms into the market increases competition. At the maturing stage, product standardization begins to set in. This increases the price elasticity of the product. Firms respond to the increase in competition by resorting to strategies aimed at reducing their production cost. Thus, production cost becomes an important factor in trying to stay ahead of the competition. Investing in other advanced countries is deemed more beneficial during this stage than exporting

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as firms strive to achieve: a lower production cost, economies of scale as well as increase its product's competitiveness in the market.

The standardized product stage

During the product standardization stage, the products and their techniques of production become standardized. Firms, therefore, shift production to less-developed economies with a lower cost of production. to reduce its production cost.

Dunning (1993) describes Vernon's work to be comprehensive as it combines the life cycle of a product (the demand for the product), the competitive advantage of the firm with its location.

Vernon's product life cycle theory has received a lot of support from fellow researchers. Knickerbocker (1973) have supported the product life cycle theory and have extended it to FDI in an oligopolistic market setting. Although the theory has received some support, it has also been critiqued. Vernon (1979) critiqued his work. Vernon (1979) was of the view that due to changes in certain factors that used to exist during the study period, the product cycle may be of less help in explaining FDI. According to him, leading multinational firms now have created a network of subsidiaries all over the globe.

Vernon (1979) argues further that the US market which was the geographical location of his previous study has lost its uniqueness among other national markets in terms of size or cost of factors of production. Cantwell (1995) has also critiqued Vernon's product life cycle theory. According to Cantwell, Vernon's theory does not adequately explain or define the innovative activities of firms. Cantwell argues that the firm's learning

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process, growth in demand, and new technologies interact to create innovation and that innovation is not driven by demand alone as claimed by Vernon (1966).

Internalization Theory

Buckley and Casson (1976) basing on Coase's (1937) transaction cost theory, conducted a study to explain why companies adopt direct production (internalization) as oppose to export or licensing as a strategy for entering into new markets or countries. Assuming an imperfect market as adopted by Hymer (1976) and Vernon (1966), Buckley and Casson sought answers for the reason why multinational enterprises' activities were mostly concentrated in industries with high levels of expenditure on research, development, and advertisement as well as a highly-skilled labour force.

The internalization theory explains that firms due to market imperfections and transaction costs, desire to maintain their monopolistic advantage. Thus, firms take advantage of external market imperfections to capitalize on. Market imperfections are seen as the primary reason why firms will opt to internalize their operations. The imperfections in the intermediate market make it difficult for firms in evaluating the prices of intermediate products when transacting in the external market. Intermediate products comprise of knowledge and expertise (patent, trademark, and reputation).

Difficulty in evaluating prices will result in uncertainty in the market and a high transaction cost. Hence, during the internalization process, specifically, the allocation and transfer of knowledge stage, multinational enterprises will opt for the mechanism of administrative fiat instead of

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external market transactions to maximize their profits on intermediate products and reduce transaction costs.

Internalization theory posits that enterprises achieve efficiency resulting from a reduction or the avoidance of transaction costs by internalizing their operations (Letto-Gallies, 2007). Internalization enables multinational firms to retain their proprietary assets acquired through research and development. This enables the firm to maintain its monopolistic advantages.

Buckley and Casson (1976) have been critiqued by Dunning (1979). Dunning argues that the internalization theory did not explain the rationale for multinational enterprises in engaging in overseas production and the choice of country or location to invest.

The Eclectic Theory of International Production (O.L.I.)

The eclectic paradigm of international production was developed by Dunning where he seeks to explain the reasons why firms engage in international operations. Dunning developed this theory by integrating his personal views on locational advantages with that of other scholars such as Heckscher (1919) and Ohlin's (1933) theory of factor endowment; Coase's (1937) theory on transaction cost; monopolistic advantage theory propounded by Hymer (1960) as well as Buckley and Casson's (1976) internalization theory. Dunning's first presented his concept in his study titled; Trade, Location of Economic Activity, and the MNE: A Search for an Eclectic Approach, in 1976.

Dunning's eclectic (or OLI) paradigm has dominated the theories of FDI (Dunning, 2000). The OLI paradigm incorporates both firm-level and

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country-level factors into one framework that explains offshore investment decisions (Dunning, 1979).

According to Dunning, three factors determine a firms' decision to engage in international production. These determinants are locational advantages, ownership advantages, and internalization advantages (Dunning,1979). These three determinants or factors are said to answer the questions such as the where, why, and the when of international production.

Locational factors of international production

In explaining international production, Dunning explains that firms are faced with the decision as to where to locate its value-adding activity. One of the many questions that come to mind when the management of international firms decide to engage in international production is the place or location to site their new operations as they engage in foreign direct operations to seek; natural resources, market, efficiency, and strategic asset (Dunning, 1982; 2001).

Concluding on their locational decision, multinational firms analyse the benefits they may gain if they operate in a particular location as compared to other countries (country-specific advantages).

The motive of a firm is to produce goods and services for its customers in a profitable way. In providing these goods and services, firms engage in a production process where they transform raw materials (inputs) into outputs. These inputs are of two kinds; firstly, those which are available, to all firms in the same terms without considering their size or nationality, but are specific in terms of their origin to a particular location and have to be used in that location (location-specific resources). The second type of inputs is those

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resources which a business creates for itself (internally generated) (Dunning, 1980).

Location-specific resources include Ricardian-type endowments (natural resources), labour, market proximity, the legal and commercial environment in which the endowments are used, market structure and government legislation and policies, country's market size, income level, its educational system, and government's research and development policies (patent) (Dunning, 1988). Countries are heterogeneous in their factor endowments hence, enterprises originating from different countries may possess different advantages. Differences in the possession of these factors between countries explain the ability and willingness of firms to engage in international production.

Dunning (1988) identified government policies and legislation as a determinate of FDI location. Corporate tax as a government fiscal policy may influence the location of FDI. Devereux et al. (2002) assert that differences in fiscal policies especially low corporate tax rates may attract FDI. Many countries have adopted tax strategies to attract FDI (Loretz, 2008). Lower corporate tax rate helps efficiency-seeking multinational firms to achieve their objective of operating at a lower cost. A high corporate tax rate will thus serve as a disincentive to a multinational firm's locational decision.

Current additions to the theory have been the introduction of institutional infrastructure to the macroeconomic environment as a locational determinant of FDI inflows (Dunning, 2006). Kirkpatrick, Parker, and Zhang (2006) argue that institutional infrastructures are important in attracting FDI. Dunning (2009) emphasized the role institutional factors play in attracting

foreign capital inflows. Countries with good institutional infrastructures are viewed as good locations to invest. Accounting standards form part of the institutional infrastructure of a country (Gordon et al., 2012). Hence, a country's accounting system is capable of attracting FDI.

IFRS adoption reduces the cost of acquiring financial information and information asymmetry between users and managers who are responsible for the preparation of the financial statements. The adoption of IFRS enhances transparency, accountability, comparability, and quality of financial information which attracts more foreign investors (Ugwu, 2018). Multinational enterprises seek transparent and comparable financial information to enable them to make an informed financial decision at a minimum cost. Dunning (1988) asserts that the desire of firms to reduce or avoid negotiation and transaction cost affects their locational decisions.

IFRS improves the institutional environment of a country by ensuring transparency, high quality, and comparable financial information. Chipalkatti, Le, and Rishi (2007) assert that the quality of financial information reflects the country's level of corporate transparency. Foreign investors are attracted to countries with an impressive level of corporate transparency (Gelos & Wei, 2005). Hence, it is viewed that the adoption of IFRS may attract FDI.

Ownership advantages

Dunning further developed Hymer's monopolistic advantage theory into the eclectic paradigm which he (Dunning) referred to as the ownership advantages. The eclectic paradigm posits that enterprises will be motivated to engage in international production when they possess ownership advantages. Firms may create a certain type of input which will make it gain a competitive

advantage over other firms in the industry. These inputs may be internally made or purchased from other institutions, but the firm acquires sole (proprietary) rights in its usage (Dunning, 1980). These types of inputs are called firm-specific resources.

Firm-specific factors give the firms the advantage to compete with other firms in the industry. Enterprises may gain a competitive advantage from their internal factors which include structural and strategic related factors.

There exist factors that accrue to all firms within the same industry and those that accrue to firms by their location, the latter factors do not give the firm an ownership advantage over other firms (Dunning & Archer, 1987). Ownership-specific factors may take the form of patents (a legally protected right), trademarks, brand names, a commercial monopoly, the acquisition or possession of a particular raw material essential to the production of the product, or from exclusively controlling a particular market. Other factors such as the size of the firm, technical features of the firm thus, its ability to produce on a large and the existence of a surplus in entrepreneurial capacity also give the firm a form of ownership advantages.

The theory explains that multinational firms may gain some additional ownership advantages as a result of their location (Dunning & Archer, 1987). The country in which a multinational firm operates may present some form of ownership advantage to the firm. The specific locational environment may enable the firm to engage in international transfer pricing, thus, transfer liquid assets between different currency areas to benefit or hedge against exchange rate fluctuations. A multinational firm may also gain ownership advantage by engaging in international product or process specialization as well as operate a

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parallel production capacity in another country to minimize the impact of labour or industrial unrest on the firm (Dunning, 1977).

Firm internally generated resources are linked to location-specific endowments. However, one basic feature of these inputs is that they are not so confined in their usage.

Internalisation advantages

The internalisation advantage factors aid multinational firms in deciding whether to enter a new market through direct production, licensing, or export. Dunning argues that firms possessing ownership advantages will determine the foreign market it will supply, whilst the locational resources enable the firm to decide whether to supply the foreign market through exports (trade) or by establishing a physical presence (local production or non-trade) (Dunning, 1976).

A firm may decide to take advantage of its internal resources (ownership advantages) to exploit a foreign market by whatever means it deems fit instead of selling or leasing out its ownership advantages to a firm that is sited in that market already (Dunning, 1980). Multinational firms are said to internalize their internal inputs such as management skills, technology, and capital to avoid the negative effects or to capitalize on the imperfections of the external mechanisms of allocating resources thus, the price or market mechanisms and the public authority.

According to Dunning (1980), in situations where economies of interdependent activities cannot be determined, or where there is no or inadequate information about the product or service being produced and marketed or when acquiring such information is very costly, market

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imperfection may arise. In situations, where the imperfections in the market present opportunities to the multinational firm, the firm may internalize its operations to exploit these advantages.

Dunning's eclectic paradigm has been considered to be the most detailed framework for analysing FDI (Boddewyn, 1988; Driffield & Love, 2007). Most researchers base on this paradigm in conducting studies relating to multinational enterprises' investment activities.

From the various theories reviewed, the early theories that seek to explain the operations of multinational firms focused on why a firm will engage in overseas production paying less emphasis on where to locate their operations. Dunning eclectic paradigm however differs as it integrates the early theories and introduces a new dimension thus, the locational determinants of FDI. This work focuses on the locational determinants' ability and extent of explaining FDI with particular emphasis on corporate tax rate and IFRS adoption.

Empirical Review

The theoretical arguments show clearly that locational factors are important in explaining FDI. Below is a review of empirical studies by various authors on corporate taxation, IFRS, and FDI.

Importance of FDI

FDI plays a key role in the development of every economy. Governments of various jurisdictions strive to increase the amount of FDI that flows into their countries. FDI is of great benefit to the host country. Some of these benefits are resource transfer, provision of employment, enhancement in competition, the influence on the balance of payment, and poverty reduction.

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Resource transfer

FDI inflows contribute positively to the host country's economy as it fosters the transfer of resources such as technology, capital, and managerial knowledge and skills which might not be available in the host country. This spillover effect will result in an improvement in the economic growth of the recipient country (Hill, 2000).

Technology

Technology plays a very important role in economic growth as it fosters the transfer of technology and knowledge between countries (Osabutey & Debrah, 2012). Osabutey and Debrah argue that the main means of technology and knowledge transfer is through FDI. FDI facilitates the transfer of technology which influences human capital formation, further resulting in economic growth (Anwar & Nguyen, 2010). Hill (2000) identified technology to be in two forms: technology embedded in the production process thus, the technology employed in the production process, and the product itself being of a technological nature such as smartphones.

Less developed economies mostly lack the resources needed to undertake research and development hence rely on innovations and technologies of advanced countries (Kurtishi-Kastrati, 2013). Vernon (1966) explains that firms in developed economies invest more in innovations and technologies. These technologies are later transferred to less developed economies through the activities of multinational enterprises that engage in offshore production.

FDI links countries with high technological levels to those will low levels bridging the technological gap between countries (Petri, 2012). Osano

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and Koine (2016) in their quest to examine the role FDI plays in technology transfer in Kenya reported that investment in Kenya's energy sector has led to the transfer of technology to local investors. However, Petri asserts that investors are motivated to move their technologies to low technological locations with effective institutions that protect intellectual property. Kurtishi-Kastrati (2013) posits that technologies transferred by multinational enterprises are more advanced and environmentally safer than domestic ones.

Technology spillover occurs through a demonstration and or imitation by domestic firms, personnel turnover, and subcontracting with domestic firms (Crespo & Fontoura, 2007). Acquiring new technologies may be risky and expensive to domestic firms. Multinational firms employing new technologies efficiently and effectively in their operations may influence domestic firms to adopt such technologies. Domestic firms employing the services of people who have been earlier engaged by a foreign firm and know of the technologies used in the foreign firm can introduce it to the domestic firm (Glass & Saggi, 2002).

Technology transfer is also fostered by a business relationship that exists between a foreign and a domestic firm (Crespo & Fontoura, 2007). In situations where a domestic firm serves as the supplier of a foreign firm, the latter may provide technical support to the domestic firm in an attempt to improve upon the quality of their supplies.

Capital

Domestic savings are at times inadequate in meeting the needs of a country, therefore there is the need to attract foreign savings to augment it.

The main channels of capital inflows are through FDI, bank lending, equity investment, and bonds (Reisen & Soto, 2001).

Multinational enterprises invest in projects to gain returns from their investments. Globalization and the removal of trade barriers enable capital to search for the highest rate of return across borders. Unrestricted capital flows reduce risk as it allows for investment diversification (Feldstein, 2000).

FDI is identified to be a critical source of funding for countries especially developing economies (Anarfo, Agoba & Abebreseh 2017; UNCTAD, 2015).

Certain projects require huge funding which may be unavailable to domestic firms due to their size and financial capacity. Large Multinational firms are likely to be able to undertake such projects since they may have the needed resources internally or can easily access funding as compared to host country firms (Hill, 2000). This makes multinational enterprises very essential in a country.

Dar (2015) in his quest to examine the role of FDI as a source of external finance in developing countries concluded that FDI is a major source of external finance in developing economies. Developing countries rely on FDI to avoid or reduce capital shortage (UNCTAD, 2015). FDI is thus, a very important source of capital to developing economies.

FDI tends to be resilient even in a financial crisis as compared to other sources of finance especially short-term flows which are normally reversed during a financial crisis (Dar, 2015). Multinational enterprises have a going concern orientation as they seek to exist for the foreseeable future. In

situations of economic recessions, the probability of their exit is very low as compared to other sources of finance.

FDI has a crowding-in effect on domestic investments (Jenkins & Thomas, 2002). FDI as a source of capital benefits the host country by drawing-in additional domestic capital as new markets are created for local investors. Borensztein, Gregorio, and Lee (1998) assert that FDI complements domestic investment as they reported that a dollar increase in FDI inflows will result in a more than one dollar increases in total investment in the host economy.

Management

Managerial skills and knowledge are a vital intangible resource. FDI facilitates the transfer of knowledge and skills (El-Wassal, 2012). Transfer of managerial skills (expatriates) and labour training activities of multinational firms increases the stock of knowledge in the host country (Kurtishi-Kastrati, 2013).

A spin-off benefit may also arise as a result of labour mobility (Osano & Koine, 2016). Local labour who might have acquired a certain level of skill or knowledge as a result of the position occupied or task assigned in the foreign firm may exit the firm to work in or establish a local firm hence transferring the knowledge and skills acquired from the foreign firm to the local firm. The host country's labour force also benefits from FDI in terms of being efficient and developing entrepreneurial skills (Lall & Streeten, 1977; Dunning, 1993).

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Employment

FDI is considered as one of the means of reducing the Unemployment rate (Kwan & Tang, 2020; Sunde, 2016). The establishment of new firms and or the expansion of already existing firms will result in the employment of labour which will lead to a decrease in the unemployment rate of the country.

FDI has a direct and indirect effect on employment (Kurtishi-Kastrati, 2013). Multinational firms directly employ the labour force of the host country or through outsourcing or subcontracting parts of its operations to a local firm, provide employment indirectly.

Balcerzak and Żurek (2011) investigated the effect of FDI on unemployment in Poland from 1995 to 2009. They reported that FDI inflows reduce unemployment. Zeb, Qiang & Sharif (2014) also reported that FDI was significant in reducing unemployment in Pakistan. They found this after conducting a multiple regression analysis on data obtained from the period, 1995 to 2011.

Kwan & Tang (2020) recommended the need for policymakers to enact policies that will assist in attracting FDI as it helps in reducing unemployment. The assertion that FDI has the potential of reducing the unemployment rate of the host country, may not always be so. The introduction of new technologies through FDI operations may render some labour redundant (Osano & Koine, 2016). Unskilled labour may be at risk of losing their jobs as machines that may be deemed more efficient may be a preferred choice.

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Competition

Foreign enterprises influence competition in the host country (OECD, 2002). The presence of foreign firms brings about competition. Domestic firms are induced to adopt strategies to gain a competitive advantage over other firms. This results in devising efficient ways of utilizing resources and adopting new technologies (Crespo & Fontoura, 2007). Efficiency and the adoption of new technologies will result in lower prices which benefits the consumer.

The increase in competition causes firms to invest more in research and development and machinery to stay ahead of their competitors. The ability of FDI to influence competition depends on the type of product or service (Kurtishi-Kastrati, 2013). Services such as telecommunication where exportation is not a good option of market entry foster competition.

Balance of Payments

FDI has a favorable effect on the balance of payment of countries especially developing economies (Rahman, 2016). FDI influences the balance of payment account of a country in three ways: effect on capital, import, and export (Kurtishi-Kastrati, 2013).

The first consequence is the effect on capital account. The establishment of a foreign subsidiary benefits the capital account of the host country as a result of the initial capital invested. This makes the capital account of the host country to have a favourable balance. However, this effect is seen once thus, during the initial capital introduction or inflow stage.

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Foreign firms may engage in the exportation of goods and services to other countries. An increase in export positively influences the current account which will translate into having a favourable trade balance.

On the other hand, situations, where the foreign firm produces goods or services which were previously imported, improves the current account balance of the host country. Import substitution firms tend to lower the amount of import in the host country. This improves the current account balance (Kurtish-Kastrati, 2013).

Hailu (2010) in a quest to examine the impact of FDI on trade in Africa reported the existence of a significant positive effect of FDI on export. Hailu argued that an expansion of FDI in the continent will positively influence export promotion and the trade balance. However, in his empirical study, the relationship between FDI and imports was seen to be positive. According to Hailu, the positive association could be as a result of the importation of production inputs instead of the production of import substitutes and the production of goods whose complements are imported products. Adam (2018) was of the view that repatriation of profits by foreign firms can adversely affect the balance of payment.

Poverty

Poverty is one of the major problems in countries especially in developing economies. This has led to the implementation of policies that are geared towards reducing the poverty rate. Social intervention policies are one of the means governments use to tackle this socio-economic problem. FDI inflows are seen as one of the strategies that can be used to reduce poverty rates in developing economies (Ucal, 2014).

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FDI has both a direct and indirect effect on poverty reduction (Gohou, 2011). FDI directly impacts welfare through the creation of new jobs for new workers. However, Gohou argues that the volume of jobs created must exceed job losses resulting from FDI operations such as lay-off resulting from mergers and acquisitions and shut-down of local firms.

At the macro level, FDI indirectly influences poverty through economic growth (Magombeyi & Odhiambo, 2017). FDI aids in the transfer of best practices which aides in economic growth. Economic growth, on the other hand, improves the standard of living through increment in GDP, technological improvement, and a favourable economic environment (Hung, 2005). Aside from this stimulation effect, FDI improves the quality of growth which helps in reducing the poverty rate (Klein, Aaron & Hadjimichael, 2001).

Soumaré and Gohou (2009) investigated the impact of FDI on growth and poverty reduction in Africa. They concluded that FDI inflows reduce poverty and improve welfare. However, they state that the relationship varies across the various regions of the continent. FDI was seen to affect welfare in Eastern and Central Africa while the impact in Southern and Northern Africa was insignificant. Ucal (2014) in his empirical work found FDI to have a significant effect on poverty. Ucal concluded that FDI reduces poverty in developing economies. Hung (2005) assessed the indirect effect of FDI on poverty. Hung investigated the effect of FDI on economic growth in Vietnam and found the existence of a positive relationship between these two variables. By using a partial regression analysis Ucal reported that FDI indirectly reduces poverty in the host country.

The ability of FDI in reducing the poverty rate has been empirically proven by many researchers as most of their findings confirm the ability of FDI in reducing the poverty rate. Klein, Aaron, and Hadjimichael (2001) asserts that countries providing a conducive environment and ensuring equality among domestic and foreign firms aids in the successful implementation of FDI. They explain that the removal of restrictions that seeks to protect domestic or foreign firms foster equitable and healthy competition among firms.

Although FDI has some level of adverse consequences, it also presents some prospects to the host economy hence, policymakers have to devise ways of maximizing its benefits while minimizing its effects. However, OECD (2002) argues that to fully benefit from FDI inflows, countries must reach a certain level of development in terms of technology, education, health, and infrastructure. Agrawal (2015) recommends for policymakers to remove obstacles that impede the flow of FDI to maximise their growth prospects.

IFRS adoption and FDI

The move to have a harmonised accounting system around the globe was premised on the benefits it will bring. The adoption of IFRS is viewed as a means of enhancing financial statements comparability which will lower the cost of information translating into an increment in FDI inflows (Akpomi & Nnadi, 2017). Various researchers have conducted studies on how IFRS adoption influences FDI. Some of these works are reviewed below:

Drawing data from 124 countries around the globe (sample size), Gordon, Loeb, and Zhu (2012) analysed the effect of IFRS adoption on FDI from the period 1996 to 2009 using the Ordinary Least Square (OLS)

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approach. They provide evidence that the adoption of IFRS increases FDI inflows. However, they argue that developing countries benefit more as opposed to developed economies.

Márquez-Ramos (2011) examine the effect of IFRS adoption on FDI in the European Union (EU) countries. His findings show that IFRS adoption leads to an increase in FDI inflows. Márquez-Ramos asserts that risk-averse countries gained more in terms of FDI when they adopted IFRS.

Lungu et al. (2017) confirmed the findings of Márquez-Ramos (2011) and Gordon et al. (2012). Investigating the impact of IFRS adoption on FDI, Lungu et al. used a sample of 23 emerging countries in Europe and Asia from the year 1996 to 2014. They employed the OLS model for data analysis and found IFRS to have a significant positive impact on FDI.

Owusu, Saat, Suppiah, and Law (2017) investigated the effect of IFRS adoption on FDI inflows using data obtained from 116 developing economies from 1996 to 2013. Their study employed the two-step system GMM estimation technique to examine the relationship. Their findings showed the adoption of IFRS does not have a significant effect on FDI inflows. This contradicts the findings of Lungu et al. (2017), Márquez-Ramos (2011), and Gordon et al. (2012). However, upon interacting institutional quality with IFRS adoption, Owusu et al. (2017) reported the existence of a significant positive association between IFRS and FDI. They argue that the adoption of IFRS alone does not affect FDI inflows hence countries should take into consideration country-level institutional quality as it plays a key role in influencing IFRS's ability in attracting foreign capital inflows.

Aprian and Irawan (2019), conducted a study on the impact of IFRS

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adoption on FDI in ASEAN countries. Based on a random effect model, they came out with the finding that IFRS adoption has a positive impact on FDI inflows.

Taran, Mironiuc, and Huian (2016) findings supported that of Owusu et al. (2017). Taran et al. examined whether IFRS adoption has any impact on FDI. Their findings indicate that IFRS adoption is not significant in explaining FDI.

In examining the impact of IFRS on FDI, Johnson, Vu, and Im (2016) reported that IFRS adoption has a significant positive effect on FDI. The number of their observation was large as 136 countries were sampled with the study period ranging from 2002 to 2013. Johnson et al. explain that countries may generate more FDI inflows if they have an environment with a high level of regulatory quality. However, they state that the magnitude of the estimated coefficient may differ if the measurement of the adoption level was to be considered. Lungu et al. (2017) were also of the same view as they called on future researchers to consider the extent of the level of adoption.

Nejad, Ahmad, Salleh, and Rahim (2019) conducted a study on the effect of IFRS on FDI in ASEAN countries from the year 2001 to 2016. Nejad et al. found IFRS to be positively associated with FDI. They concluded that IFRS is an important determinant of FDI inflows. Pertiwi and Nazar (2019) also conducted a study on the adoption of IFRS on foreign direct investment in ASEAN economic community countries. Their findings confirm that of Nejad et al. (2019) however, Pertiwi and Nazar (2019) failed to control for variables such as GDP per capita, GDP growth, inflation among others which have been proven to be essential factors that influence FDI.

Nejad, Ahmad, Salleh, and Rahim (2018) had a similar outcome as Nejad et al. (2019). Conducting a panel study on the effect of IFRS on FDI in ASEAN countries using the dynamic ordinary least square (DOLS) technique from 2001 to 2016, Nejad et al. found IFRS to have a significant positive relationship on FDI. Conducting a further analysis by employing a causality test showed the existence of a short and long-run causality between the two variables.

Efobi, Odebiyi, and Beecroft (2014) investigated the impact of IFRS adoption on FDI. They used data from 92 countries consisting of both developed and developing economies from the period 2002 to 2010. The GMM estimation technique was employed in analysing the data. They reported that an annual increase in IFRS adoption by a country leads to a decline in the volume of FDI between 0.3 and 0.18 percentage. Thus, IFRS adoption has a significant negative effect on FDI. However, they found the lagged value of FDI, GDP per capita, market size, trade, and inflation rate to be significant in attracting FDI.

Nnadi and Soobaroyen (2015) confirmed the findings of Efobi et al. (2014) as they also found IFRS adoption to negatively affect FDI after conducting a study covering 34 African countries for 20 years. This contradicts the findings of other researchers who found a positive association.

Emeni (2014) employed the Ordinary Logistic Regression (OLR) model to analyse data obtained from 46 African countries. Emeni reported that IFRS adoption has an insignificant positive effect on FDI. This confirms the findings of Efobi et al. (2014).

Odo (2018) examined the effect of IFRS adoption on FDI using

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microdata obtained from sampled commercial banks in Nigeria from 2011 to 2014. The OLS regression model was employed in the study. Odo reported that IFRS adoption is insignificant in attracting FDI. However, he asserts that to attract FDI inflows, governments should focus on creating an environment that will help attract FDI.

Akpomi and Nnadi (2017) conducted a study using a sample of 48 African countries to identify the impact of IFRS adoption on FDI from 1996 to 2011. The fixed-effect model was employed in their data analysis. They found IFRS to have a positive effect on FDI.

Jayeoba, Ajibade, Olayinka, Ogundajo, and Kwarbai (2016) analysed the effect of IFRS adoption on FDI in five African countries from 1980 to 2015. Jayeoba et al. first examined the magnitude of the effect of IFRS on FDI in isolation which they reported that IFRS has a significant positive effect on FDI.

Jinadu, Ojeka, and Ogundana (2016) examined the impact of IFRS adoption on FDI. Using primary data sourced from foreign investors of quoted firms in Nigeria, their results indicate the existence of a statistically significant effect of IFRS on FDI after employing the OLS regression method for data analysis.

Furthermore, Ajibade, Okere, Isiaka, and Mabinuori (2019) conducted a study on the effect of IFRS adoption on FDI in Ghana and Nigeria. Ajibade et al. employed the OLS in analysing the data. They found IFRS to have a negative insignificant effect on FDI in Nigeria while that of Ghana showed a positive significant effect. Ajibade et al. conclude that IFRS alone does not lead to an increase in FDI. They recommend for IFRS to be linked to a

particular objective to enhance its benefits.

Corporate tax rate and FDI

Van Parys and James (2010) assessed the impact of taxation on a country's ability to attract FDI using the minimum effective tax rate and statutory tax rate as a measure of the tax burden. They found FDI to be sensitive to taxation in developed economies and insensitive to developing economies. The limitation of their work is on the use of different measures of tax burden for the various countries included in their study. Not using a uniformed measure of tax burden may have biased their parameters.

Abbas and Klemm (2013) assessed the impact of corporate tax on corporate tax revenue, domestic and foreign investment. They drew data from 50 emerging economies from the period 1996-2007. The effective average tax rate was used as a measure of corporate tax. The result from their regression analysis shows that corporate tax rate negatively impacts FDI.

Eshghi, Eshighi, and Li (2016) in their empirical study investigated the impact of corporate tax rate on FDI inflows from Germany into five Central and Eastern European countries from 2000 to 2012 by employing GMM to conduct their analysis. They reported that corporate tax rate was not significant in explaining bilateral and total FDI flows. Hunady and Orviska (2014) used panel data regression analysis to investigate how corporate and effective tax rate influences FDI in European Union countries from the period 2004 to 2011. Their findings indicate corporate and effective tax rates have no significant effect on FDI. Their findings confirm that of Li et al. (2016) who also reported that corporate tax is insignificant in explaining FDI.

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Bellak and Leibrecht (2009) in their study on whether low corporate tax rates attract FDI contradicts the findings of Li et al. (2016). Using the bilateral effective average tax rate, they found corporate tax rate to have a significantly negative relationship with FDI. They concluded that governments that lower their taxes attracted foreign capital inflows. Thus, the tax-lowering strategy has an important impact on foreign firms' locational decisions.

Jensen (2012) utilizing a time-series cross-sectional general error correction model to explore the impact of corporate tax rates and FDI inflows in the Organisation for Economic Co-operation and Development economies from 1980 to 2000, found corporate tax rate to found no significant relationship with FDI. Jensen's finding contradicts that of Bellak and Leibrecht (2009), however, confirms that of Li et al. (2016); Hunady and Orviska (2014).

Goodspeed, Martinez-Vazquez, and Zhang (2011) examined how government policies specifically, taxation, good governance, and infrastructure impacts the stock of FDI in developed and developing economies. Both the effective and statutory tax rate was employed as a measure of corporate taxation. They reported that developed countries' FDIs are sensitive to tax whiles developing countries' FDI is insensitive to tax. Van Parys and James (2010) reported the same in their work. Goodspeed et al. explain that the insignificant effect of corporate tax rate on FDI in developing countries could be resulting from fallbacks in the tax administration system of developing countries.

Gropp & Kostial (2000) on the other hand, found the statutory corporate tax rate to be significant in explaining FDI. The result from their

random effect model showed that a 0.10 increase in corporate tax rate will result in a 0.030 reduction in FDI inflows.

Arbatli (2011) conducted an empirical study to examine the effect of some economic policies on FDI inflows in emerging economies. Using a sample of 46 emerging countries, Arbatli reported that corporate tax rate is a statistically significant determinant of FDI. Hansson and Olofsdotter (2013) also found corporate tax rates to be sensitive to FDI in EU member countries.

Overesch and Wamser (2010) analysed the effect of corporate tax policies of East European countries on German FDI specifically on multinational firms' locational, investment, and capital structure decisions. They reported that local corporate taxes are inversely related to the investment and locational decisions of multinational enterprises.

Conducting a panel study on 60 countries from the year 1999 to 2009, Anguelov (2017) examined whether a reduction in the marginal corporate tax rate could lead to an increase in FDI and economic growth. Employing the random effect model, corporate tax was seen to have a strong negative association with FDI. Although the number of observations was large, the use of the random effect model does not reflect causality hence a dynamic heterogeneous panel model should have been employed since the work was based on macro data.

Abdioglu, Binis, and Arslan (2016) used the GMM model and fixed effect panel estimation to examine the effect of corporate tax rate on FDI in the Organisation of Economic Co-operation and Development (OECD) countries. They found a negative relationship to exist between corporate tax rate and FDI level. They concluded that countries that reduce their corporate

tax rates attract a higher inflow of FDI.

Kersan-Škabić (2015) employed the same analytical technique as Abdioglu et al. (2016) to examine the role corporate tax rate plays in attracting FDI in 6 Southeast European countries from the period 2000 to 2011. Employing the GMM analytical model for data analysis, he found corporate tax rate and institutional variables to be insufficient in attracting FDI while factors such as market size, wages, GDP per capita, and growth rates were seen to be significant determinants of FDI.

Kinda (2018) used firm-level data of 30 countries in Africa to conduct a study on whether taxes affect the location of FDI. Their findings confirmed that of Kersan-Škabić (2015), Li et al. (2016) as he reported that there is no significant effect of corporate taxation on FDI.

Furthermore, Aregbeshola (2014) used a sample of 46 African countries to investigate the effect of corporate tax rate on FDI. Aregbeshola employed the dynamic panel estimation technique and reported that corporate tax rate has a negative but insignificant effect on FDI inflows.

Cleeve (2008) on the other hand investigated how fiscal policies are effective in attracting FDI in sub-Saharan Africa. Using a sample of 16 countries in the region from the period 1990 to 2000 and employing the fixed and random effect models for data analysis, Cleeve reported that corporate tax rates are essential in attracting FDI. Stapper (2010) who assessed the ability of corporate tax rates in boosting FDI in sub-Saharan Africa confirmed the findings of Cleeve. Stapper concluded that tax regimes can play a role in boosting FDI in the region. However, he identified the need to improve upon the reputation of countries in the region in order to help attract multinational

enterprises.

Obeng (2014) in his empirical study examined the effect of corporate tax rate and sectoral FDI inflows in Ghana. Using the Johnsen cointegration technique, Obeng reported that corporate tax rate influences FDI and that governments should reduce corporate tax to attract or increase its inflows.

Ugwu (2018) investigated the impact of tax incentives on FDI in Nigeria, Ghana, and South Africa after IFRS adoption from the period 1999 to 2015. The result showed a positive significant relationship between tax incentives and FDI. He urged governments to give tax incentives to attract FDI inflows.

Olaleye, Riro, and Memba (2016) analysed the effect of corporate tax reduction on FDI in listed manufacturing companies in Nigeria. Adopting a descriptive research design and conducting a regression analysis, they reported that a strong positive relationship exists between corporate tax reduction and FDI.

The inconsistency in empirical findings on the effect of corporate tax rate and FDI calls for the need to conduct further research. Li et al. (2016), argue that the statutory tax rate is forward-looking while the effective tax rates which are extracted from the firm's financial statements is backward-looking. Egger et al. (2009) explain that the backward-looking tax rates include statutory tax rates as well as tax base allowances such as depreciation, investment allowances, and inventory valuation. Hence, they result in biased estimates of the company's tax burden as they are dependent on the firm's tax planning and management activities. Based on these arguments, this study

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adopts the average statutory corporate tax rate as a measure of corporate taxation.

This study examines the effect of corporate tax rate and FDI in sub-Saharan Africa conditioned on the adoption of IFRS.

A further study is conducted to identify the threshold effect (turning point) of corporate tax rate and FDI as none of the study identified the optimum points at which if corporate tax rate exceeds will be detrimental to the flow of FDI. The turning point is important to policymakers in the region to serve as a ceiling where corporate tax rate should not exceed since tax forms a large portion of government revenue and the African continent has been identified the second after Asia as the second continent with the highest average tax rate.

Interaction effect: Corporate tax rate and IFRS adoption on FDI

Azémar et al. (2015) used a sample of 27 EU countries from the period 1981 to 2005 to explain whether countries with large market size are sensitive to corporate tax rate as compared to those with the lesser market size. They reported that countries with larger markets impose higher corporate tax rates as compared to smaller countries in competing for FDI.

Görg et al. (2007) conducted a study on the interaction effect of social expenditure and corporate taxation on FDI using panel data of 18 selected OECD member countries. Görg et al. concluded that if governments provide public goods that improve the economy, corporate taxation does not prevent FDI inflows.

Kottaridi et al. (2019) using data of Greek multinational firms investigated the moderating role of institutional quality on corporate taxation

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and FDI from the period 2001 to 2010. Kottaridi et al. reported that multinational firms engaging in offshore operations pay less attention to high taxation when there exist quality institutions or regulations.

The various researchers have examined how other policy variables moderates the effect of corporate taxation on FDI. However, none of these studies examined the interaction effect of corporate taxation and IFRS adoption on FDI hence, this work fills this gap by determining the moderating role of IFRS adoption on corporate tax rate and FDI.

Causality: FDI and Corporate tax rate

Previous studies have focused mostly on the effect of corporate taxation on FDI neglecting the other way round. The probability that foreign direct investment might influence the corporate tax rate of the host country has not received much attention. Foreign investors may be able to influence governments to reduce their corporate tax rate.

More so, countries may reduce their corporate tax rate due to a rise in FDI. An increase in FDI inflows causes the tax base of the recipient country to rise. Where the tax base is high, the government may impose lesser tax rates since revenue targets will be achieved considering the large tax base. The study contains further analysis conducted to examine the bi-causal relationship between corporate tax rate and FDI to ascertain the direction of the relationship.

Conclusion

This chapter reviewed the theoretical and empirical issues relating to FDI, with emphasis on corporate tax rate and IFRS adoption. The relevance of FDI to the host country was discussed. Theoretical explanations on FDI were

also discussed as well as empirical studies. The chapter identifies and explains conflicting findings in the literature which serves as a premise on which further studies can be done using different samples and periods.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter described the various methodologies adopted in testing for the various objectives of the study. The econometric approaches were thoroughly explained and variables that entered the model as control variables were justified why they were included in the estimations. Econometric techniques addressed under this chapter were the system Generalised Method of Moment, difference Generalised Method of Moment, fixed and random effect models, Pedroni cointegration, and panel granger causality test.

Research Design

The Research design is the general plan for collecting and analysing data together with procedures to enhance both internal and external validity (Mitchell & Jolley, 2010). It can also be defined as the blueprints for gathering, measuring, and analysing data.

The philosophy of the research is positivism as this work seeks to determine the cause and effects of the various variables under study. The positivists are said to hold a deterministic philosophy whereby they assess the probability of an event occurring, its causes, and expected results or outcomes (Creswell, 2014).

The study adopted an explanatory or causal research design using a quantitative research approach. Explanatory studies establish causal relationships between variables (Saunders, Lewis & Thornhill, 2015). Also, it is the most popular research approach used in examining the relationship between different variables and measure objective theories (Creswell, 2014).

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In this study quantitative approach was used to quantify the hypothesized relationship between the dependent and independent variables based on twenty-four sub-Saharan African countries (i.e. Angola, Botswana, Cameroon, Congo Rep., Cote d'Ivoire, Gabon, Ghana, Guinea, Kenya, Lesotho, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe).

Data Source

The study made use of annual data spinning from a period of 2004 to 2017 on each variable. The study focused on twenty-four sub-Saharan African countries selected based on data availability (see Appendix 2 for all the countries included in the study). Data were extracted from multiple sources. For instance, the institutional variables were sourced from Worldwide Governance Indicators, IFRS adoption status from IAS Plus, International Federation of Accountants (IFAC), and World Bank Reports on the Observance of Standards and Codes (ROSC). Corporate tax rate was sourced from Tax Foundation and Ernst & Young worldwide corporate tax guide report. The remaining variables were sourced from United Nations Development Program (UNDP) and the World Bank's World Development Indicators (WDI).

Specification of The Research Model

The theoretical model for the study was based on the O.L.I (Eclectic) paradigm. The eclectic theory is with the assertion that, in addition to having ownership and internalization advantages, a firm must have locational advantages in the host economy before it decides to locate.

Based on this theory and empirical works, a bench model equation was developed. Equation 1 represents the base model. Included in the base model are common factors that have been continuously proven to be essential determinants of FDI. The base model helps ensure that key factors are controlled for. Variables that have been consistently proven to be important determinants of FDI are the GDP growth rate (GDPG) used to capture a market factor thus the size and growth of the market), GDP per capita (GDPPC) which is also a market factor that captures the level of economic development and purchasing power, unemployment (UNEM) capturing availability of labour, human development index (HDI) capturing labour welfare, natural resources (NATRES), trade (TRADE) capturing openness to trade), inflation (INFL), and foreign aid (AID).

$$FDI_{it} = \gamma_0 FDI_{it-1} + \gamma_1 GDPG_{it} + \gamma_2 GDPPC_{it} + \gamma_3 UNEM_{it} + \gamma_4 HDI_{it} +$$
$$\gamma_5 NATRES_{it} + \gamma_6 TRADE_{it} + \gamma_7 INFL_{it} + \gamma_8 AID_{it} + \mu_i + \varepsilon_{it} \qquad 1$$

The base model is extended to include institutional factors that have also been proven to be determinants of FDI as according to Dunning (2006), the institutional environment also influences the location of FDI.

$$FDI_{it} = \gamma_0 FDI_{it-1} + \gamma_1 GDPG_{it} + \gamma_2 GDPPC_{it} + \gamma_3 UNEM_{it} + \gamma_4 HDI_{it} +$$
$$\gamma_5 NATRES_{it} + \gamma_6 TRADE_{it} + \gamma_7 INFL_{it} + \gamma_8 AID_{it} + \gamma_9 INSTI_{it} +$$
$$\mu_i + \varepsilon_{it} \qquad 2$$

The benchmark model is then extended to include the policy variables.

$$FDI_{it} = \gamma_0 FDI_{it-1} + \gamma_1 CIT_{it} + \gamma_2 ADOPT_{it} + \gamma_3 (CIT_{it} \times ADOPT_{it}) +$$
$$\gamma_4 GDPG + \gamma_5 GDPPC_{it} + \gamma_6 UNEM_{it} + \gamma_7 HDI_{it} +$$
$$\gamma_8 NATRES_{it} + \gamma_9 TRADE_{it} + \gamma_{10} INFL_{it} + \gamma_{11} AID_{it} +$$
$$\gamma_{12} INSTI_{it} + \mu_i + \varepsilon_{it} \qquad 3$$

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where FDI is the dependent variable and is used to measure FDI inflows. Corporate tax rate (CIT) and IFRS adoption (ADOPT) were the policy variables or the main variable of interest and were measuring corporate tax rate and IFRS adoption respectively. ADOPT is a dummy variable that captures whether a particular country adopted IFRS or otherwise. CIT $\times$ ADOPT showed an interaction between the two variables of interest. Control variables such as the previous year's FDI (LnFDI), inflation rate (INFL), GDP growth rate (GDPG), GDP per capita (GDPPC), trade to GDP (TRADE), natural resource (NATRES), foreign aid (AID), human capital development (HDI) and institutions (INSTI) were also included in the model. The error component takes the form:

$\eta_{it} = \mu_i + \varepsilon_{it}$ for $t=1,2,3…,$T and $i=1, 2, 3,…,N$

Where (μ and ε) were the two-way error term. μ_i is the time-invariant which captures the unobserved individual or countries specific effect such as the ability to adopt and $\varepsilon_{i,t}$ is the remaining disturbance term. i is the specific countries and t being the period considered for the study (γ_0 to γ_{12}).

Analysis of the joint effect is based on results from the partial differentials of FDI to IFRS and corporate tax rate. The result from equation 3 is represented in equation (4) and equation (5):

$$dFDI_{it}/dADOPT_{it} = \gamma_2 + \gamma_3\overline{CIT_{it}} \qquad\qquad 4$$

$$dFDI_{it}/dCIT_{it} = \gamma_1 + \gamma_3\overline{ADOPT_{it}} \qquad\qquad 5$$

Where $\overline{CIT}$ is the mean corporate tax rate and $\overline{ADOPT}$ is the frequency or duration of adopting IFRS.

Estimation Techniques

The work adopted a panel estimation approach. This methodology or longitudinal data gives a broader overview of different cross-sections across times. Utilizing panel data controls for heterogeneity among the various units which might result in not too objective results if not considered in a broader spectrum of individual units across various periods (Agyei, Marfo, Ansong & Idun, 2019).

Static panel methodology does not consider the lag of the dependent variable as a regressor while the dynamic panel estimators do. Hence, the dynamic panel methodology is employed as the previous year's FDI may send a signal to other investors on the existence of markets that needs to be exploited. The fixed and random effect estimations assume that the independent variables are strictly exogenous. However, whilst the random effect estimator considers the individual variable to be selected randomly, and not correlated with the error term (white noise), the fixed effect estimator considers it to be a nuisance parameter.

The dynamic panel estimators are preferred in conditions where: the "t" frequency (time series) is lesser than the number of individual units (cross-section) and when the dependent variable is dynamic due to the previous year's occurrence. The lag of the dependent variable may cause endogeneity which both the fixed effect and random effect do not serve as a good estimator for such models. Also, where the error term is expected to be correlated with the independent variables thus, there exists autocorrelation within individual independent variables but not across them, the dynamic panel estimators are

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ideal. The nature of this work makes the dynamic panel estimators a preferred choice.

The number of cross-sections which is 24 exceeds the time series frequency of 14, making the dynamic panel estimator a good option. More so, the dependent variable is likely to change depending on past year's happenings. The nature of most macro data that is used for this study is such that previous periods realisations may influence its current outcomes. Due to the characteristics of variables used in the study, the two-step generalised method of moments (GMM) approach is employed in analysing objectives 1 and 2 as proposed by Arellano and Bond (1991).

The two-step GMM approach is effective in handling the issue of unobserved heterogeneity. It permits the dynamic nature of the dependent variable whilst controlling for biases due to endogeneity (Roodman, 2009). It also accepts unbalanced panels and controls for autocorrelation and heteroskedasticity.

In assessing whether FDI inflows persist overtime, Arellano-Bond dynamic panel estimation was employed. From equation 1, it is assumed the previous year's FDI inflows in conjunction with empirically proven basic determinants of FDI also drives the current year's FDI inflows.

To test for the validity of instruments used, both Hansen's (1982) J test, Sargan (1958) test, and test for over-identifying restriction were employed. Failure to reject the null hypothesis of the overall validity of the instrument used depends on the p-value. Where the p-value is not statistically significant, gives support to the use of the instrument. However, the concentration would mainly be based on the Hansen statistics.

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To test for autocorrelation or serial correlation of the error term, the AR(2) p-value is considered. When the AR(2) probability value is statistically not significant, it implies a failure to reject the null hypothesis of no second-order serial correlation. It means the original error term is serially uncorrelated and the moment conditions are specified correctly. In testing for the overall fitness of the model, the F statistics were used.

Examining objective one, four different econometric models were estimated. Which were the pooled ordinary least square, fixed effect (static models), two-step difference GMM proposed by Arellano and Bond (1991), and two-step system GMM pioneered by Arellano and Bover (1995) and Blundell and Bond (1998) (dynamic panel).

The pooled OLS and the fixed effect models were estimated to serve as a guide in deciding between the difference and system GMM the most appropriate for the data set. To analyse the interaction effect of corporate tax rate and IFRS (categorical or dummy variable) on FDI in sub-Saharan Africa, a linear dynamic model was estimated. The dynamic panel based on equation 3 was specified as:

$$FDI_{it} = \gamma_0 FDI_{it-1} + \gamma_1 CIT_{it} + \gamma_2 ADOPT_{it} + \gamma_3 CIT \text{ x } ADOPT_{it} +$$

$$\gamma_4 GDPG_{it} + \gamma_5 GDPPC_{it} + \gamma_6 UNEM_{it} + \gamma_7 HDI_{it} +$$

$$\gamma_8 NATRES_{it} + \gamma_9 TRADE_{it} + \gamma_{10} INFL_{it} + \gamma_{11} AID_{it} +$$

$$\gamma_{12} INSTI_{it} + \mu_i + \varepsilon_{it} \qquad\qquad 6$$

for t=1,2,3…, T and i=1, 2, 3, …, N

From equation 3, it is observed that the past dependent variable is correlated with the present. Hence the dependent variable is observed as strictly endogenous and it is the reason the two-step GMM is adopted since GMM

controls for endogeneity as well as omitted variable bias and unobserved panel heterogeneity.

The difference GMM according to Arellano and Bond (1991), corrects endogeneity by transforming all regressors through differencing by removing fixed effects. The difference GMM by transforming data subtracts the previous observation from the contemporaneous one (first difference transformation), magnifies gap in unbalance panel and may lead to loss of data. From equation 3, the resulting outcome of the transformed equation is represented as:

$$FDI_{it} = \gamma_1 \Delta FDI_{it-1} + \gamma_2 \Delta CIT_{it} + \gamma_3 \Delta ADOPT_{it} + \gamma_4 \Delta CIT \text{ x } ADOPT_{it} +$$
$$\gamma_5 \Delta GDPG_{it} + \gamma_6 \Delta GDPPC_{it} + \gamma_7 \Delta UNEM_{it} + \gamma_8 \Delta HDI_{it} +$$
$$\gamma_9 \Delta NATRES_{it} + \gamma_{10} \Delta TRADE_{it} + \gamma_{11} \Delta INFL_{it} + \gamma_{12} \Delta AID_{it} +$$
$$\gamma_{13} \Delta INSTI_{it} + \mu_i + \mathcal{E}_{it} \qquad\qquad 7$$

Arellano and Bover (1995) and Blundell and Bond (1998) system GMM correct endogeneity by introducing instruments to dramatically improve efficiency or builds a system of two equations; the original equation and the transformed one. Unlike difference GMM, system GMM subtract the average of all future available observation of a variable. With GMM, data is not lost even with unbalanced data.

To decide between difference and system GMM, the study followed the rule of thumb suggested by Bond, Hoeffler, and Temple (2001). Bond et al. (2001) suggested that the autoregressive model should initially be estimated by pooled OLS and fixed effect approach. Pooled OLS estimate of the lagged dependent variable is considered the upper bound limit whiles estimates from fixed effect served as the lower bound estimate. Bond et al.

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(2001) final suggestion were that if the estimate obtained from difference GMM is close to or below the fixed effects estimates. The former estimate is downward biased due to weak instrumentation. System GMM in such a condition is preferable.

To estimate the threshold and determine whether the relationship between corporate tax rate and FDI is U-shaped (monotonic) or inverted U-shaped (non-monotonic), the squared of corporate tax rate would be incorporated into equation 2. The quadratic (non-linear) model represented in equation 8, would be estimated with a two-step system and difference GMM model.

$$\text{FDI}_{it} = \gamma_0 FDI_{it-1} + \gamma_1 CIT_{it} + \gamma_2 CIT_{it}^2 + \gamma_3 GDPG_{it} +$$

$$\gamma_4 GDPPC_{it} + \gamma_5 UNEM_{it} + \gamma_6 HDI_{it} + \gamma_7 NATRES_{it} +$$

$$\gamma_8 TRADE_{it} + \gamma_9 INFL_{it} + \gamma_{10} AID_{it} + \gamma_{11} INSTI_{it} + \mu_i + \varepsilon_{it} \qquad 8$$

To determine whether the model is most appropriate, the study followed the rule of thumb of Bond et al. (2001) which is described above, in deciding between the two models.

After deciding on the model to consider, the significance of corporate and corporate square is considered. When the two variables are significant, Lind and Mehlum's (2010) methodology is followed to test for the presence of a U-shaped or inverse U-shaped relationship between an explanatory variable and the outcome variable on a specific interval. It gives the threshold as well as the gradient or slope of the curve. To reject or fail to reject the null hypothesis that the curve is monotonic or Inverse U-shape depends on the significance of the probability value. If the probability value is significant, the study will reject the null hypothesis.

To estimate causality, the study performed a panel cointegration test using Pedroni (2004) cointegration approach. Lag length included would be based on results from the lagged selection criterium. Pedroni (2004) proposed several tests for the null hypothesis of cointegration in the panel model. The test has two dimensions, the within and the between dimension. The within a dimension is based on estimators that effectively pooled the autoregressive coefficient across different members on the estimated residual. Whiles the between dimension is based on estimators that simply average the individually estimated coefficients for each member. The decision to reject the null hypothesis of no cointegration depends on the majority decision from the eleven statistics.

Once cointegration is identified between the variables, it shows there is at least a single aspect of causality. The ability of one variable to predict the cause of the other is known as causality. Dumitrescu and Hurlin (2012) panel causality was used because the method allows all coefficients to be different across-sections. It also runs standard granger causality regressions for each cross-section individually and takes the average of their test, thus Wbar statistic (Dumitrescu & Hurlin, 2012). Equation 9 represents the basic model for conducting a granger causality test.

$$Y_{it} = \gamma_0 + \gamma_1 Y_{t-1} + \gamma_p Y_{t-p} + \gamma_1 X_{t-1} + \ldots + \gamma_p X_{t-p} \qquad 9$$

Equation 9 is summarised as:

$$\Delta Y_{it} = \gamma_0 + \sum_{m=1}^{p} \gamma_P \Delta Y_{it-m} + \sum_{m=1}^{p} \gamma_P \Delta X_{it-m} + \varepsilon_{it} \qquad 10$$

$$\Delta X_{it} = \gamma_0 + \sum_{m=1}^{p} \gamma_P \Delta X_{it-m} + \sum_{m=1}^{p} \gamma_P \Delta Y_{it-m} + \varepsilon_{it} \qquad 11$$

To test whether the independent variable (X) granger causes the dependent variable (Y), the null hypothesis is tested:

H_o: $\theta_{1,i}=0$, implying the independent variable (X) does not homogeneously cause the dependent variable (Y). Similarly, whether the independent variable (Y) does not homogeneously granger causes the dependent variable (X). With the estimates probability values (usually based on the Z-bar tilde), the null hypothesis may be rejected or not rejected.

Three possible conclusions are normally be drawn from the test. If one out of the two hypotheses is rejected, then there is a unidirectional causality. Secondly, rejection of all the two hypotheses indicates bi-directional causality and finally, if all the hypotheses are simultaneously rejected, then no causality is established between the two variables.

Variable Selection and Justification

Dependent Variable

FDI

FDI is the dependent variable. It was measured using net inflows of FDI expressed as a percentage of GDP as used by Akpomi and Nnadi (2017), Owusu et al. (2017). Data was sourced from the World Bank's world development indicator (WDI) database.

Independent Variables

IFRS adoption (ADOPT)

IFRS adoption is a policy variable in this study. It is represented in the work as ADOPT. This is a dummy variable that is used to capture the adoption status of the various jurisdictions selected for the study. The value 0 is assigned to countries that have not adopted IFRS while the number 1 is used to represent countries that have adopted IFRS either fully or partially. A country is given a score of 1 where all firms or sections of firms in the country prepare

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their financial statements using IFRS. Data on IFRS adoption status was sourced from IAS Plus, International Federation of Accountants (IFAC), and World Bank Reports on the Observance of Standards and Codes (ROSC).

Corporate Tax Rate (CIT)

This is also a policy variable in this study. This variable was measured using the average statutory corporate tax rate. The average statutory corporate tax rate was employed in measuring corporate tax rate instead of the effective tax rate as the former is said to be forward-looking while the latter, which is extracted from the firm's financial statements is backward-looking (Li et al., 2016). Egger et al. (2009) explain that the backward-looking tax rates include statutory tax rates as well as tax base allowances such as depreciation, investment allowances, and inventory valuation. Hence, they result in biased estimates of the company's tax burden as they are dependent on the firm's tax planning and management activities. Based on these justifications this work adopted the statutory corporate tax rate as a measure of corporate tax rate as used by Obeng (2014).

Control Variables

Control variables are variables that affect the dependent variable and as such should be held constant when testing for the effect of the independent variables on the dependent variables. This study controlled for the effect of some variables which has been empirically proven to influence FDI.

Gross domestic product growth (GDPG)

This was represented in the work as GDPG. It was measured using the annual percentage growth of GDP. It is used as a proxy to capture the host countries' market size and growth as used by Gordon et al. (2012). According

to Dunning (1982; 2001), firms may undertake offshore production with the intent of seeking new markets. A positive coefficient is expected as it is assumed that firms are attracted to locations with large markets and growth prospects. Data for this variable was sourced from the WDI database.

GPD per capita (GDPPC)

GDP per capita was used in the study as a market factor as used by Owusu et al. (2017). It is used as a proxy to capture the level of economic development and purchasing power of the citizens as used by Akpomi and Nnadi (2017). The quest to seek new markets has been identified as one of the factors that influence offshore production. It is assumed that a high GDP per capita, is an indication of high demand for goods and services. This attracts FDI as foreign firms and investors try to make use of the high demands to maximize revenue. A positive coefficient is expected. GDP per capita was measured using the GDP per capita in current US$. Data was sourced from WDI.

Unemployment (UNEM)

The unemployment rate was used as a proxy to measure the availability of labour force as used by Taran et al. (2016). Where the unemployment rate is high, it is believed that labour will be available at a lesser cost since people will be willing to offer their services at a lesser income level. However, FDI may reduce the unemployment rate (Kwan & Tang, 2020; Sunde, 2016). Data was sourced from the WDI database.

Human development index (HDI)

The human development index was used as a proxy to measure labour welfare. This index integrates the level of education, income, and health of the

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populace. It captures the human welfare of a country. Education and labour costs (income) are considered as some of the factors that influence FDI (Eshghi et al., 2016). Alsan, Bloom, and Canning (2006) argue that labour health is also a significant factor that influences FDI. Hence, the HDI which captures these three elements was adopted in this study. HDI may influence FDI positively or negatively depending on the objective and priorities of the foreign firm. Data on HDI was sourced from United Nations Development Program (UNDP).

Total natural resource (NATRES)

Multinational firms engage in offshore production with the intent of seeking natural resources (Dunning, 1982; 2001). This variable is measured by expressing total natural resource rents as a percentage of GDP as employed by Owusu et al. (2017). A positive sign is expected. Data was sourced from WDI.

Inflation (INFL)

Inflation was used in the study to capture the level of macroeconomic stability. It was measured using GDP deflator as employed by Nejad et al. (2018). It is expected that a high inflation rate will serve as a disincentive to foreign investors. Data was sourced from International Financial Statistics (IFS).

Trade (TRADE)

Trade was used in this study to assess the host country's openness to trade with the outside world. It was measured using total trade (export + imports) as a percentage of GDP as employed by Abdioğlu et al. (2016). The O.L.I. paradigm is with the assumption that firms may engage in foreign

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production in locations where they can operate efficiently as well as where there is the availability of natural resources. Resource and efficiency-seeking multinational firms may locate in areas where they can achieve their objective and later export to other markets. Where there exist trade restrictions, it may serve as a disincentive to efficiency and resource seeking multinational enterprises. On the other hand, trade restrictions may benefit market seeking firms who engage in offshore production with the intent of serving the host country's market. Data was sourced from the WDI database.

Foreign aid (AID)

Foreign aid is considered to affect FDI. Amusa, Monkan, and Viegi (2016) point out that productive infrastructural aid positively influences FDI. Hence, foreign aid is controlled for in this study. It was measured using net official development assistance and official aid received constant at 2015 US$ as used by Nejad et al. (2019). Data was sourced from WDI.

Institutional variable (INSTI)

Institutional variables that have been consistently proven to influence FDI were employed in the study. Dunning (2006) asserts that a good institutional environment attracts FDI. Kaufmann, Kraay, and Mastruzzi (2010) provides six governance indicators that can be used to capture the institutional environment. These include voice and accountability, political stability, rule of law and corruption perception, government effectiveness, and regulatory quality.

Voice and accountability (VOACC)

Voice and accountability are institutional factors that capture the degree of citizenry participation in elections, freedom of association, and

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speech, as well as the freedom of the media. This indicator is measured in a range starting from -2.5 which is the least score indicating poor participation and fewer freedoms with the highest score being 2.5 denoting better participation and freedom levels. Data was sourced from the Worldwide Governance Indicator 2010 database prepared by Kaufmann, World Bank.

Political stability (POSTA)

Political stability captures the probability of the occurrence of political instability or violence that is politically motivated. It is another indicator of the institutional environment. Political instability and violence may disrupt the activities of multinational enterprises making locations prone to such occurrence less attractive to foreign investors. Political stability is measured using a scale measurement ranging from -2.5 to 2.5 as used by Owusu et al. (2017). The lesser the score the higher the environment is prone to political instability and violence. Data was sourced from the Worldwide Governance Indicator 2010 database prepared by Daniel Kaufmann, World Bank.

Rule of Law (LAW)

Rule of law is used to assess the legal system effectiveness and the confidence level of the populace in it. It also captures the willingness of the citizens to be law-abiding, the effectiveness of proprietary rights, quality of the security service (police and military), enforcement of bidding agreements, confidence in the judiciary, and the Wprobability of the occurrence of crime. Foreign investors look for locations where their safety is guaranteed. Protection of proprietary assets enables firms to enjoy their monopolistic advantage since their inventions cannot be easily imitated as the law protects them. This makes such locations attractive to investors. It is measured on a

scale of -2.5 to 2.5 with higher scores connoting the existence of law and order. Data was sourced from the Worldwide Governance Indicator database prepared by Daniel Kaufmann, World Bank.

Control of corruption (CORRUPT)

Control of corruption captures the degree to which people take advantage of the system for personal gains. It reflects how public officials exploit their positions for personal benefits. This includes both small and huge forms of corruption. It is measured on a scale of -2.5 to 2.5 with high scores connoting a better institution. Data was sourced from the Worldwide Governance Indicator database prepared by Daniel Kaufmann, World Bank.

Government effectiveness (GOEFF)

Public service quality and the extent of political influence on civil service is captured by this index. It is measured on a scale ranging from -2.5 to 2.5 with greater scores denoting a high level of government effectiveness and less interference by political parties on civil service. Data was sourced from the Worldwide Governance Indicator database prepared by Daniel Kaufmann, World Bank.

Regulatory quality (REGQ)

This variable capture government policies by taking into consideration policies, rules, and regulations' planning and implementation. It also assesses the level of government commitment towards achieving the formulated policies. Data was sourced from the Worldwide Governance Indicator database prepared by Daniel Kaufmann, World Bank, and measured from a range of -2.5 to 2.5 with greater scores indicating quality in regulations.

Institutional quality average (INSTIAVE)

This variable is used to measure institutional quality by taking the simple average of all the six institutional variables by Kaufman et al. (2010). It considers the simple average of voice and accountability, political stability, rule of law, control of corruption, government effectiveness, and regulatory quality Owusu et al. *(*2017).

Conclusion

The chapter presented the data sources for the study and the appropriate methodologies adopted to estimate all three objectives. It gives a vivid description of the model specifications and as well as justifies why certain control variables are included in the models to be estimated.
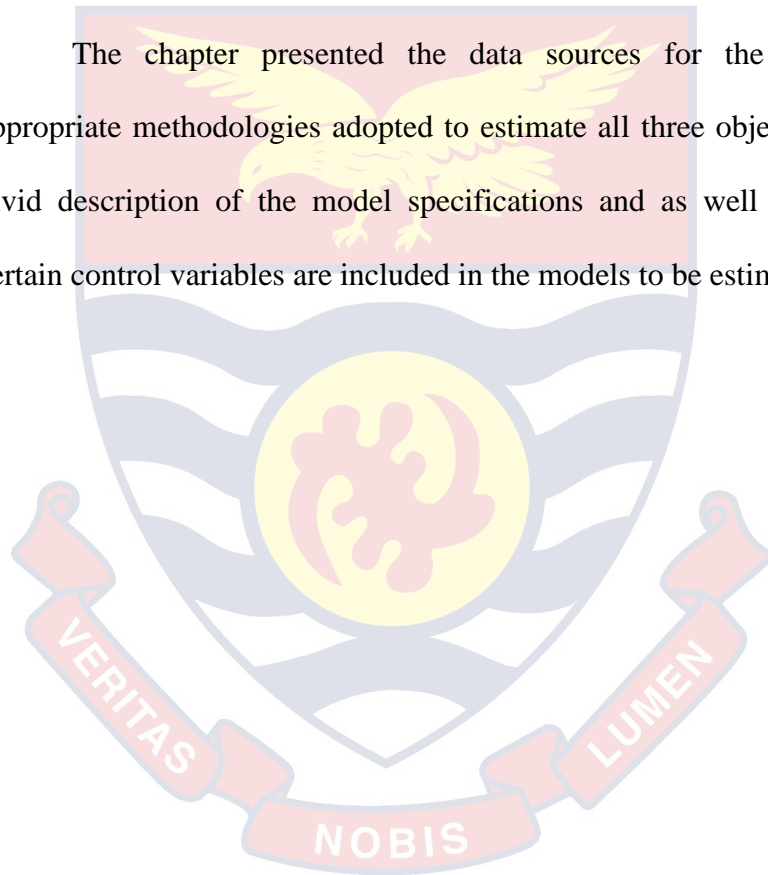
CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter looked at the descriptive statistics of the variables used in the estimations. It also showed outputs from the various econometric estimations, analyses, and discussions in the dynamic heterogeneous panel.

Descriptive Statistics

Table 1 showed the descriptive statistics of variables used in the analysis for all the 24 sub-Saharan countries selected for the study. FDI to GDP had an average value of 4.81 percent and positively skewed as well. Angola in 2017 recorded the minimum FDI of about -6.06 percent, while Congo Republic had the maximum FDI to GDP of about 50.02 percent in 2015. This shows that in 2017, Angola had a fall in FDI inflows.

From figure 1, Mozambique recorded the highest level of FDI inflows as its average FDI to GDP ratio stood at 17.7435 percent followed by the Congo Republic with a rate of 13.6981 percent. Countries like Mauritania, Swaziland, Ghana, Guinea, Namibia, and Zambia average FDI to GDP ratio was above the regions' average. This indicates that averagely, these countries were attractive to foreign investors.

On the other hand, countries like Gabon, Uganda, Tanzania, Botswana, Malawi, South Africa, Zimbabwe, Senegal, Rwanda, Nigeria, Mauritius, Cote d'Ivoire had an average rate of FDI to GDP below the regions' average. Angola was the least in terms of FDI inflows as it had an average of 0.99492 percent which is far below the region's average. Figure 1 clearly shows that most countries in the region were performing below average in terms of

attracting FDI inflows. This calls for the need for reconsidering strategies aimed at attracting FDI.

From table 1, apart from corporate tax rate, GDP growth, and political stability that were negatively skewed, all variables considered in their standard forms (without the log forms) were positively skewed.

The mean values of institutional factors were negative. For instance, the mean of voice and accountability, political stability, and rule of law were about -1.675, -2.400, and -1.852, respectively. This showed on average, the various institutions within the province of sub-Saharan Africa were weak as according to Kaufmann et al. (2010) a lower score is an indication of how weak the particular governance indicator is in the country.

The average corporate tax rate was about 30.054 percent, a minimum rate of 15.00 percent, and a maximum of 38.50 percent, recorded in Mauritius and Cameroon respectively.
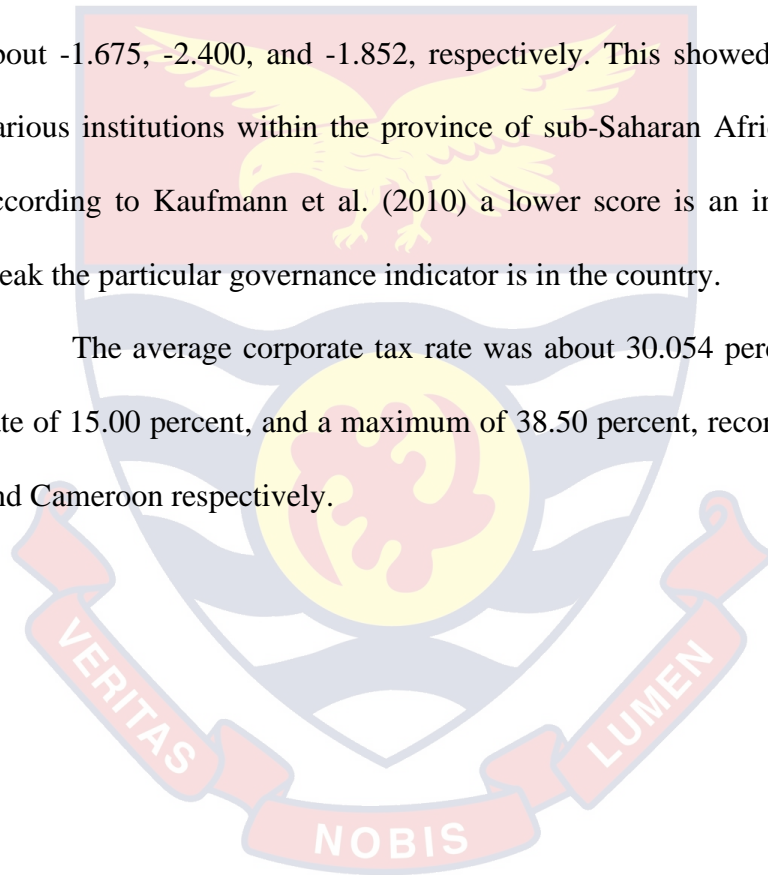
Table 1: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Variance	Skewness	Kurtosis
FDI to GDP	335	4.809	6.451	-6.057	50.018	41.619	3.324	17.696
CIT	336	30.054	4.925	15	38.5	24.253	-0.703	3.816
GDPG	336	3.282	3.619	-18.491	18.066	13.096	-0.187	8.141
UNEM	336	10.515	8.142	0.699	32.973	66.288	0.919	2.603
NATRES	336	12.883	12.816	0.0011	59.619	164.257	1.791	5.734
INFL	336	8.357	11.462	-29.691	100.626	131.385	3.791	29.396
TRADE	333	79.348	30.722	20.723	165.646	943.8157	0.530	2.553
AID	336	8.72e+08	9.76e+08	1.13e+07	1.13e+10	9.53e+17	4.491	42.696
GDPPC	336	2503.8	2532.921	250.5175	10795.5	641	1.437	4.062
HDI	336	0.523	0.094	0.341	0.793	0.008	0.7061	3.077
Institutional factors								
VOACC	336	-0.435	0.682	-1.675	0.941	0.465	0.235	1.892
POSTA	336	-0.338	0.783	-2.400	1.200	0.613	-0.286	2.750
LAW	336	-0.521	0.635	-1.852	1.029	0.403	0.257	2.66
GOEFF	336	-0.528	0.568	-1.546	1.057	0.323	0.776	2.961
REGQ	336	-0.468	0.600	-2.236	1.127	0.359	-0.004	3.679
CORRUPT	336	-0.513	0.625	-1.443	1.159	0.392	0.599	2.499

Source: Author's computations (2020). *Note**: institutional variables are ranked from -2.5 (very weak) to +2.5(very strong).
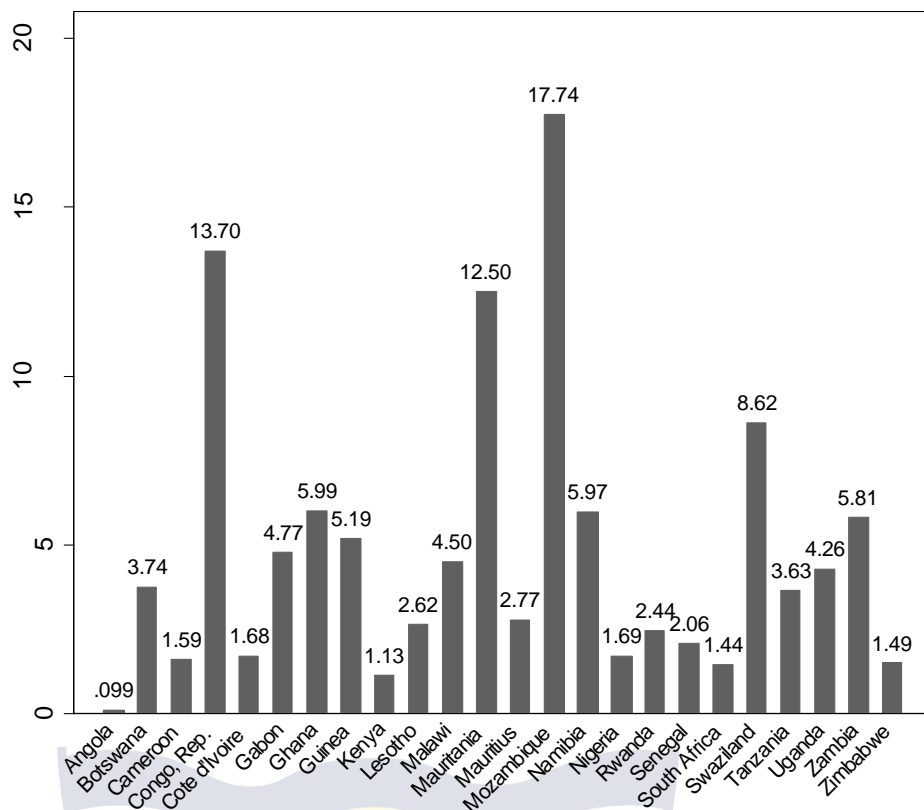
Figure 1: Average FDI to GDP for the selected countries

Source: Author's computations (2020)

Table 2 showed the distribution of International Financial Reporting Standards (IFRS) adoption across countries at given periods. Countries like Cameroon, Congo Republic, Cote d'Ivoire, Guinea, Mauritania, and Senegal base on the 14-year study period did not adopt IFRS at all. Other countries: Botswana, Kenya, Lesotho, Malawi, Mauritius, Tanzania, Uganda, and Zimbabwe have been practising IFRS for 14 years thus throughout the periods under consideration. Angola has 12 years of not using IFRS standards and 2 years of implementing IFRS.

Ghana practised IFRS for 11 years out of the 14 years considered. Mozambique had a frequency of IFRS adoption of 11 years; Namibia, 13 years; Nigeria, 6 years; Rwanda, 10 years; South Africa, 13 years; Swaziland,

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9 years and Zambia 13 years. This shows that countries in sub-Saharan Africa for many years have adopted IFRS for financial reporting purposes. A summary of IFRS adoption in the region and individual countries' year of adoption is shown in Appendix A and B respectively.

Table 2: Distribution of years of IFRS adoption across countries

	Total number of years Not adopt	Total number of years Adopted	pooled
Angola	12 (3.57)	2 (0.60)	14 (4.17)
Botswana		14 (4.17)	14 (4.17)
Cameroon	14 (4.17)	-	14 (4.17)
Congo, Rep.	14 (4.17)	-	14 (4.17)
Cote d'Ivoire	14 (4.17)	-	14 (4.17)
Gabon	14 (4.17)	-	14 (4.17)
Ghana	3 (0.89)	11 (3.27)	14 (4.17)
Guinea	14 (4.17)	-	14 (4.17)
Kenya	-	14 (4.17)	14 (4.17)
Lesotho	-	14 (4.17)	14 (4.17)
Malawi	-	14 (4.17)	14 (4.17)
Mauritania	14 (4.17)	-	14 (4.17)
Mauritius	-	14 (4.17)	14 (4.17)
Mozambique	3 (0.89)	11 (3.27)	14 (4.17)
Namibia	1 (0.30)	13 (3.87)	14 (4.17)
Nigeria	8 (2.38)	6 (1.79)	14 (4.17)
Rwanda	4 (1.19)	10 (2.98)	14 (4.17)
Senegal	14 (4.17)	-	14 (4.17)
South Africa	1 (0.30)	13 (3.87)	14 (4.17)
Swaziland	5 (1.49)	9 (2.68)	14 (4.17)
Tanzania	-	14 (4.17)	14 (4.17)
Uganda	-	14 (4.17)	14 (4.17)
Zambia	1 (0.30)	13 (3.87)	14 (4.17)
Zimbabwe		14 (4.17)	14 (4.17)

Source: Author's computations (2020)

Effect of Corporate Tax Rate, IFRS Adoption and Interaction Term on FDI

To investigate objective one, different econometric models were estimated to test for the various hypotheses. The study first examined the interaction effect of IFRS adoption and corporate tax rate on FDI inflows. Thus, investigate whether reducing corporate tax rate will attract more FDI

inflows should countries within the sub-Saharan Africa region adopt IFRS, as well as the effect of IFRS adoption on FDI, should countries in sub-Saharan Africa reduce their corporate tax rate.

Table 3 reported results from pooled ordinary least square (POLS), fixed-effect model, and two-step difference and system Generalized Method of Moment (GMM) were estimated. Table 3 column 1 shows the list of policy and control variables (explanatory variables). Column 2 to 8 shows the output from two-step system GMM estimations while the last three columns are the estimates from the OLS, fixed-effect model, and difference GMM which were included for robustness test purposes.

Institutions play a vital role in economic development as such, each institutional variable was incorporated in the regression to examine the impact of institutions on the economy. Due to the issue of multicollinearity on the part of the institutional variables, model 1 to 6 each in table 3 takes into consideration a single institutional variable at a time.

In assessing the rule of institutions in attracting FDI, model 1 used government effectiveness as the institutional variable. Model 2 has political stability as its institutional variable. Model 3, 4, 5, and 6 have voice and accountability, regulatory quality, control of corruption, and rule of law as institutional variables respectively. An institutional index, which is the average of the institutional variables was included in the estimation and the resulting output is reported in model 7.

Deciding Between Difference and The System GMM

According to Blundell and Bond (1998), if the dependent variable in a dynamic model is persistent and close to being random walk, where the

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coefficient of the lagged dependent variable is tilting towards one, applying difference GMM estimator will produce inefficient and biased parameter of estimated coefficient of lagged dependent variable. The poor performance of the difference GMM was attributed to the poor instrument, hence propose system GMM as the appropriate estimator (Blundell & Bond, 1998).

Bond et al. (2001) proposed a clearer path. The study initially estimated the autoregressive model by pooled OLS and fixed effect approach. The coefficient of the lagged dependent variable for the OLS (0.472) is considered as the upper bound and that of the fixed effect (0.216) considered as the lower bound.

Based on Bond et al. (2001) guidelines, it can be observed that the estimate of the lagged dependent variable of the difference GMM (0.199) is closer and also below fixed effect, difference GMM estimate is, in this case, is downward biased and inefficient due to weak instrumentation, system GMM is favoured in its place. The Hansen test also supported the assertion that the system GMM may be of much benefit than the difference GMM, since the probability value of the Hansen statistic was not extremely large.

Diagnostics

The results as well as the diagnostics statistics are reported in Table 3. The overall validity of the model, captured by the Fisher statistics was statistically significant across all the estimated models. The p-value of the Hansen test and Arellano-Bond test AR(2) results were not significant and it implied the instruments used were not over-identified and the model was also free from second-order serial correlation hence, inferences can be made based on the results. However, the significance of AR(1) suggests that a dynamic

model is appropriate for this study. Also, the number of instruments included in the model is less compared to the number of countries. This confirms that the model is not suffering from an instrument proliferation problem.

Table 3: Effect of Corporate Tax Rate, IFRS Adoption and Interaction Term on FDI

VARIABLES	System Generalized Method of Moment (System GMM)							(Diff GMM)	Robustness (Fixed Effect)	(OLS)
	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)	(Model 6)	(Model 7)			
	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp
L.FDIgdp	0.458***	0.449***	0.458***	0.449***	0.457***	0.467***	0.465***	0.199***	0.216***	0.472***
	(0.0783)	(0.0807)	(0.0714)	(0.0731)	(0.0735)	(0.0771)	(0.0758)	(0.0626)	(0.0552)	(0.0487)
ADOPT	-58.96**	-66.36***	-67.52***	-54.22**	-45.04**	-44.79*	-47.82**	77.79*	-13.35*	-10.39**
	(22.33)	(20.84)	(22.15)	(22.19)	(18.89)	(22.83)	(21.17)	(38.17)	(7.999)	(4.336)
CIT	-2.220***	-2.208***	-2.265***	-1.946***	-1.941***	-1.976***	-1.945***	0.634	-0.425**	-0.0825
	(0.382)	(0.305)	(0.314)	(0.347)	(0.308)	(0.347)	(0.319)	(0.801)	(0.189)	(0.0985)
ADOPT × CIT	2.122***	2.397***	2.456***	1.997***	1.736***	1.702**	1.784***	-2.292*	0.484*	0.366**
	(0.681)	(0.616)	(0.671)	(0.662)	(0.554)	(0.689)	(0.630)	(1.179)	(0.259)	(0.144)
UNEM	-0.248***	-0.297**	-0.289***	-0.253**	-0.152	-0.128	-0.165*	-0.755**	-0.00798	-0.115*
	(0.0822)	(0.121)	(0.0926)	(0.0978)	(0.0926)	(0.0964)	(0.0893)	(0.309)	(0.177)	(0.0594)
NATRES	0.254***	0.278***	0.275***	0.253***	0.263***	0.286***	0.269***	-0.339***	-0.122*	0.0150
	(0.0774)	(0.0803)	(0.0777)	(0.0715)	(0.0732)	(0.0791)	(0.0713)	(0.0860)	(0.0619)	(0.0298)
lnAID	-1.205*	-1.809***	-1.693**	-1.386**	-1.747***	-1.704**	-1.509**	1.318	-0.138	0.464
	(0.624)	(0.611)	(0.713)	(0.576)	(0.554)	(0.653)	(0.593)	(1.595)	(0.613)	(0.388)
lnGDPPC	2.459**	2.727**	2.680**	2.621**	2.577*	1.908	2.345*	0.954	2.049	-0.789
	(1.147)	(1.122)	(1.231)	(1.144)	(1.271)	(1.278)	(1.202)	(2.056)	(1.579)	(0.784)

Table 3 continued: Effect of Corporate Tax, IFRS Adoption and Interaction Term On FDI

VARIABLES	System Generalized Method of Moment (System GMM)							Robustness		
	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)	(Model 6)	(Model 7)	(Diff GMM)	(Fixed effect)	(OLS)
	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp
GDPG	0.176*	0.181**	0.191**	0.165*	0.186*	0.148	0.152*	0.493**	0.137*	0.0815
	(0.0987)	(0.0864)	(0.0895)	(0.0831)	(0.0950)	(0.0992)	(0.0863)	(0.218)	(0.0805)	(0.0795)
HDI	-27.03*	-32.78**	-29.08*	-30.30*	-36.54**	-27.42	-32.41*	-68.66**	-9.981	7.505
	(15.19)	(14.51)	(15.39)	(15.43)	(15.29)	(16.00)	(15.84)	(31.57)	(14.39)	(7.902)
TRADE	0.00182	0.00836	0.00482	0.000207	0.0189	0.0280	0.0166	0.182***	0.150***	0.0835***
	(0.0231)	(0.0234)	(0.0253)	(0.0282)	(0.0241)	(0.0247)	(0.0235)	(0.0298)	(0.0263)	(0.0164)
INFL	-0.0814***	-0.0917***	-0.0811***	-0.0854***	-0.0914***	-0.0874***	-0.0880***	0.0403	-0.0432*	-0.0572**
	(0.0216)	(0.0243)	(0.0234)	(0.0240)	(0.0243)	(0.0216)	(0.0242)	(0.0336)	(0.0256)	(0.0243)
GOEFF	-1.255									
	(1.497)									
POSTA		0.290						-2.094**	-1.994**	0.0683
		(0.529)						(0.882)	(0.996)	(0.487)
VOACC			-0.359							
			(1.358)							
REGQ				-0.414						
				(2.071)						
CORRUPT					-2.239					
					(1.375)					
LAW						-2.030				
						(2.107)				
INSTIAVE							-1.110			
							(1.816)			
Constant	87.08***	101.4***	97.14***	82.98***	92.13***	93.06***	88.35***	-	-2.034	-7.860
	(18.53)	(18.18)	(19.82)	(17.71)	(16.92)	(18.19)	(17.33)		(16.56)	(10.47)

Table 3 continued: Effect of Corporate Tax, IFRS Adoption and Interaction Term On FDI

| VARIABLES | System Generalized Method of Moment (System GMM) | | | | | | | (Diff GMM) | (fixed effect) | (OLS) |
| | (Model 1) | (Model 2) | (Model 3) | (Model 4) | (Model 5) | (Model 6) | (Model 7) | | | |
	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp	FDIgdp
AR(1)	0.056	0.066	0.061	0.061	0.062	0.065	0.061	0.090		
AR(2)	0.567	0.648	0.626	0.601	0.658	0.654	0.619	0.591		
Sargan test of OIR.	0.037	0.038	0.055	0.025	0.027	0.023	0.024	0.073		
Hansen test of OIR	0.210	0.240	0.256	0.242	0.228	0.227	0.220	0.365		
DHT for instruments										
a) Instruments for levels										
Hansen exclude group	0.146	0.224	0.196	0.191	0.208	0.202	0.202			
Diff (null H= exogenous)	0.745	0.319	0.566	0.506	0.338	0.356	0.330			
Number of instruments	23	23	23	23	23	23	23	21	na	na
Fisher	597.23***	535.64***	206677.31***	263.12***	373.41***	336.58***	1131.72***	193.79***	7.85***	22.73***
Observations	308	308	308	308	308	308	308	284	309	309
R-squared									0.273	0.500
Number of countries	24	24	24	24	24	24	24	24	24	

Source: Author's computations (2020). *Note:* Standard errors in parentheses; ***. **, * indicated significance at 1%, 5% and 10% respectively.
DHT: Difference-in-Hansen tests of exogeneity of instrument subsets.

Interpretation of the Explanatory Variables

From table 3 model 1, the lag of the dependent variable (LFDIgdp) was statistically significant at 1 percent. The main variable of interest, IFRS adoption, corporate tax rate, and the interaction term were all significant. Unemployment rate, natural resources, and inflation were all statistically significant at 1 percent. Government effectiveness in capturing the institutional environment was negative but statistically not significant. In model 2, the lag of FDI, IFRS adoption, corporate tax rate, and the interaction variable were all significant however, political stability was positive but insignificant.

From models 1 to 7, the lag of FDI was significant throughout. IFRS adoption, corporate tax, and the interaction term were significant throughout all the models. Unemployment rate was negative and significant in almost all the models except models 5 and 6 where it was insignificant. From model 1 to 7, natural resource was significant and positive. This shows that foreign investors are interested in locations with more natural resources.

Foreign aid was negative and significant throughout all the models. GDP growth was also significant and positive in all the models. Human development index capturing human welfare was negative and statistically significant in all the models except model 6. Trade was positive but not significant across all the models. Inflation rate was negative and significant in all the models.

From models 1 to 7 all the institutional variables were all negative and insignificant except political stability in model 2 which was positive but insignificant. This shows that apart from political stability that attracts FDI to

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sub-Saharan Africa, improvement in all the other governance indicators (institutional environment) repels FDI although not significant.

From table 3, almost all the results from the various models are in the same direction with little differences as discussed above. Comparing the various system GMM models, it is observed that the signs of the estimated coefficients are not different from one another except the institutional variables. From the various estimates, the lag of FDI was statistically significant at 1 percent level. This is evidence of the persistence of FDI inflows in sub-Saharan Africa. Based on this, model 7 is assumed as the baseline model since it considers the average impact of the institutional variables on the macroeconomy and considers all other variables included in model 1 to 6.

From model 7, a percentage increased in previous years foreign direct investment inflows led to about a 0.465 percent increase in current year's FDI inflows, all things being equal. The past FDI growth strongly predicts current FDI inflows. In other words, a country's present year FDI level has a strong influence in determining its FDI growth level in the following year. This result confirms that of Efobi et al. (2014). Previous year's FDI inflows to a particular country give a signal to other investors of an advantage that is being exploited.

The product life cycle theory posits that at initial stages firms produce in their home country and export to other countries. As time elapses, competition tightens as more firms enter the market. This causes investors to look for other locations where they can exploit the market and resources at a lower cost. In the quest to look for market and efficiency, they move to less developed markets. Foreign investors shifting their investments or operations

to sub-Saharan Africa indicates to other investors who are yet to explore the region that there exists a larger and cost-efficient market in the region. This will cause new foreign investors or firms to also move to sub-Saharan Africa.

To analyse the interaction effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa, the study focused on the interaction of the two variables (corporate tax rate and IFRS adoption). To interpret the partial effect, elasticity, or semi-elasticity of FDI inflows to an independent variable to depend on the magnitude of another variable, the study followed equations 4 and 5 (see appendix 3 for the mathematical derivations).

Model 7 is represented as: $FDI_{it} = 0.465l.FDI_{it} - 47.82IADOPT_{it} - 1.945CIT_{it} + 1.787ADOPT_{it} \times CIT_{it}$

The coefficient of the interaction was positive and statistically significant. The coefficient of the interaction represents corporate tax effect on FDI inflows conditioned on IFRS adoption status, the reverse also holds. By substituting the average corporate tax rate into equation 4, the outcome demonstrated a positive association between IFRS and FDI $(\partial FDI_{it}/\partial ADOPT_{it} = -47.82 + 1.787(30.054) = 5.886)$. At average corporate tax rate, adopting IFRS increased FDI inflows by 5.89 percent more compared to not adopting IFRS, ceteris paribus. In other words, the effect of IFRS adoption on FDI increased by 5.89 percent, if a country reduced corporate tax rate to 30.05 percent. Adopting IFRS would directly increase FDI if corporate tax rate is reduced.

In situations where all countries charge a corporate tax rate of 30.05 percent, countries that adopt IFRS will have a 5.89 percent more FDI inflows as compared to a country that has not adopted.

Adopting IFRS would promote corporate transparency and a reduction in information asymmetry which would result in lower information costs. Choi (2014) indicated that the adoption of IFRS improved comparability of financial statements especially, in companies with large foreign ownership ratios. This however showed that investors easily identified and evaluated investment potentials with a fall in corporate tax rate, considering the short period foreign direct investment begins to flow in.

This attested to claims made by Gordon et al. (2012); Jayeoba et al. (2016) and Lungu et al. (2017) that International Financial Reporting Standards produced high-quality accounting information that attracts foreign investors but contradicted Efobi et al. (2014); Owusu et al. (2017); and *Taran* et al. (2016). It showed that a country's financial reporting structure is proved prudent in the institutional structure of sub-Saharan African countries especially when it is coupled with a reduced tax burden.

According to Dunning's eclectic paradigm, the institutional environment in which the accounting system forms part when is improved attracted, foreign investors. Quality accounting information improved capital allocation efficiency due to an increase in transparency and a decline in information asymmetry among partners involved in transactions. Quality financial information increases the confidence level of investors.

On the other hand, the study found that reducing corporate tax rate attracted more FDI inflows if IFRS is adopted for about one year, one month or more compared to the other counterparts {Thus: $\partial FDI_{it}/\partial CIT = -1.945 + 1.787(ADOPT_{it})$}. If a country does not adopt IFRS, an increase in corporate tax by 1 percent leads to a 1.95 percent decline in FDI. On the other

hand, in countries that adopt IFRS, a 1 percent increase in corporate tax results in a 0.158 percent fall in FDI.

Countries adopting IFRS have the liberty to increase tax rate to generate more revenue than countries that have not adopted IFRS since a higher percentage increase in tax only results in a lesser proportionate fall in FDI. To the state, increasing corporate tax becomes an incentive. It is prudent to reduce corporate tax rate, but making it too cheap becomes a cost to the nation.

On the part of foreign companies, a reduction in corporate tax rate, increases real income. An increase in profit will result in an increase in dividends which is the reward of equity capital. Retained earnings will also increase leading to overall firm growth. Investors are likely to enjoy a higher dividend and capital gains on their investments. The eclectic theory posits that foreign firms to enjoy locational advantages engage in offshore operation. Lower tax rates enable firms to operate at a lower cost and achieve efficiency since they will be able to minimize operating costs.

A high tax rate decreases return on equity which becomes a disincentive to investment. Low-profit margins would make a project less attractive causing new firms not to invest in a particular project or location and old firms winding up. Foreign firms may even relocate to more attractive locations and export their products to the market depending on the openness of the economy. The findings in this study showed that corporate tax rate has a negative consequence on FDI confirming the findings of Abbas & Klemm (2013); Arbatli (2011); Gropp & Kostial (2000); Bellak and Leibrecht (2009).

However, it contradicted that of Hunady and Orviska (2014); Kersan-Škabić (2015), and Li et al. (2016).

Although, corporate tax rate leads to a fall in FDI, adopting IFRS mitigates the rate of the fall. When IFRS is adopted, an increase in corporate tax rate by 1 percent leads to a 0.158 percent fall in FDI. In situations where a country has not adopted IFRS, increasing corporate tax rate by 1 percent will lead to a greater percentage fall of about 1.95 percent in FDI.

Control variables

Except for political stability which may positively influence foreign direct investment, all the other institutional variables (government effectiveness, voice, and accountability, regulatory quality, control for corruption, and rule of law) were negative and statistically not significant. The negative sign of the institutional variables attests that investors from the diaspora take advantage of the weak institutions in sub-Saharan Africa for their gains.

The studies of Kersan-Ŝkabić (2015) and Adeleye, Osabuohien, and Bowale (2017) confirm the weak and inefficiency of institutions in sub-Saharan Africa. An example is the recent financial crisis in Ghana, deforestation especially at the Atiwa forest and pollution of rivers by Chinese migrants and the xenophobic attack in South Africa is an institutional error. Feridun, Ayadi, and Balouga (2006) spoke on the extent of pollution and resource depletion in Nigeria as a result of trade liberalization and globalization.

Aside from the institutional variables, trade as a percentage of GDP is statistically not significant, although it is positively signed. Trade to GDP not

being statistically significant may be an indication that FDI's that flowed to sub-Saharan Africa were market seeking to serve the local market.

However, control variables capturing market factors (GDP growth, GDP per capita) and labour availability (unemployment rate) were significant. GDP growth was positive and significant at 10 percent level. An increase in GDP growth by 1 percent led to a 0.152 percent increase in FDI inflows, holding other factors constant. Higher GDP growth is associated with a less than proportionate increase in FDI inflows. Given capital availability, a country with a high market growth prospect, ceteris paribus, will attract investors as there is a high probability of a growth in the market, which will translate into high sales and maximum profit realization.

Similar to Akpomi and Nnadi (2017), GDP per capita was used as a proxy to capture the level of economic development and purchasing power of the citizens and is statistically significant at 10 percent. From model 7, a percentage increase in economic development and purchasing power resulted in a 2.35 percent increase in FDI inflows. A small increase in GDP per capita led to a greater proportionate increase in FDI inflows. One major objective of every investor is to maximize profit and or wealth. Operating in a location where the purchasing power of the citizens is high is paramount as it influences their consumption or demand for goods and services. This confirms to earlier submission that foreign investors in sub-Saharan Africa aim at serving the local market or seek for the market. Investors' movement to sub-Saharan Africa is based on the citizenry's ability to pay for their products.

With foreign investor's level of technology compared to indigenous firms with low technical know-how, foreign investors produce at a minimum

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cost and beat selling price. Since their products are of high quality and also below the market price (competitive advantage), they easily take over the market and dictate price. GDP per capita was a major covariant among the control variables that positively determine FDI inflows in sub-Saharan Africa.

The other control variable capturing a labour factor is the unemployment rate. From Table 3, model 7, unemployment is negative and statistically significant at 10 percent level. A rising unemployment rate will result in a fall in hiring cost (wage) all things being equal as labour supply will exceed its demand. However, FDI inflows cause the unemployment rate to fall as part of the unemployed labour will be engaged (Kwan & Tang, 2020; Sunde, 2016). According to Table 3, model 7, a 0.165 percent increase in FDI inflows led to a 1 percent fall in the unemployment rate in the region.

Natural resources, captured by total natural resources rents, were statistically significant at 1 percent level and had a positive coefficient as projected. According to the eclectic theory, the search for natural resources influences the locational decision of foreign firms. An increase in natural resources by 1 percent would appreciate FDI inflows by 0.27 percent. Africa is considered as the major producer of most raw materials especially agro-based. Access to raw materials reduces transportation costs and total variable costs. For investors to enjoy a locational advantage, they are attracted to the sub-Saharan province with modern technology.

Due to low saving and capital accumulation in sub-Saharan Africa, most countries use their resource base to attract foreign investors. Most developing countries reduce environmental regulations (Lopez, 1992) like emission standards, taxes on emission as well as ease the bureaucratic

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processing of acquiring emission permit to promote profitability. According to Lopez (1992), removing environmental restrictions with the intention of opening up to trade and investors worsens impoverishment.

Inflation rate and foreign aid were statistically significant. When flow of foreign aid or inflationary rate reduces, foreign direct inflows into sub-Saharan Africa appreciates. Reduction in inflationary rate by 1 percent increased FDI by about 0.08 percent, holding other factors constant. Macroeconomic stability (price stability) is an incentive to investors. Real money balance and value of domestic currency improvement encourages export which further increases demand for domestic currency.

Lastly, one important variable is the human development index (HDI) which captures human welfare or development. From Table 3, the seventh model depicted a negative relationship between FDI inflows and human wellbeing. When the natives of sub-Saharan Africa deteriorate by 32.41 units, foreign investment into the region increases, holding other factors constant. From the analysis, foreign investors are self-seeking than having the welfare of the African economy at heart. Multinational companies integrating into the continent concentrate on the gains they may derive through trade. Access to raw materials, cheap labour, market, and less restrictive policies matters to foreign investors than the people's welfare. The findings from this study contradict Soumaré and Gohou (2009); Ucal (2014) who asserts that FDI improves welfare. FDI may promote economic growth as indicated by Mogambeyi and Odhiambo (2017) but not development.

Determining the Threshold Effect Between Corporate Tax Rate and FDI in sub-Saharan Africa

To estimate the threshold effect and determine either relationship between FDI inflows and corporate tax rate is monotonic or non-monotonic, the study adopted Lind and Mehlum's (2010) methodology. Table 4 showed a non-linear model estimated using the two-step system GMM, difference GMM, fixed effect, and pooled ordinary least square (POLS). The square of corporate tax rate is incorporated into the model. From Table 4, it is deduced that in both systems and difference GMM results, corporate tax rate, and corporate tax rate square were statistically significant.

The focus is not on the pooled OLS or the fixed effect. In a dynamic panel, the estimated parameter of lagged dependent variables with pooled OLS upward biased, whilst the fixed effect is biased downwards (Bond et al., 2001). The estimate of the lagged dependent variable of the difference GMM (0.243) is not below the fixed effect estimate (0.223). Additionally, the lagged dependent of the fixed effect estimate is closer to that of the system GMM (0.231). In this instance, the difference GMM is preferred.

Table 4: Estimate of a quadratic model

VARIABLES	(S-GMM) FDIgdp	(D-GMM) FDIgdp	(Fixed Effect) FDIgdp	(OLS) FDIgdp
L.FDIgdp	0.231***	0.243***	0.223***	0.499***
	(0.0597)	(0.0310)	(0.0552)	(0.0476)
CIT	-6.856**	-7.826*	-1.325*	0.648
	(2.831)	(4.060)	(0.779)	(0.544)
CITsquare	0.119**	0.131*	0.0196	-0.00949
	(0.0473)	(0.0666)	(0.0131)	(0.00921)
UNEM	0.342**	-0.148	0.0152	-0.0942
	(0.124)	(0.241)	(0.173)	(0.0601)
LnAID	-0.292***	-0.241***	-0.146**	0.0260
	(0.0608)	(0.0403)	(0.0597)	(0.0299)
NATRES	2.190**	0.660*	0.351	0.661*
	(0.987)	(0.349)	(0.612)	(0.363)
LnGDPPC	1.016	0.0640	0.850	-0.440
	(1.276)	(1.007)	(1.205)	(0.486)
GDPG	0.0401	0.0322	0.0948	0.0305
	(0.0385)	(0.0660)	(0.0786)	(0.0759)
TRADE	0.103***	0.173***	0.153***	0.0774***
	(0.0264)	(0.0177)	(0.0261)	(0.0164)
INFL	-0.0487*	-0.0119	-0.0311	-0.0611**
	(0.0261)	(0.0139)	(0.0255)	(0.0242)
INSTIAVE	-19.79***	0.739	-0.707	1.388*
	(5.096)	(6.300)	(2.732)	(0.799)
Constant	33.62		15.45	-22.76*
	(30.57)		(20.67)	(12.78)
Threshold	28.83	29.89		
AR(1)	0.087	0.099		
AR(2)	0.793	0.514		
Sargan test of OIR	0.030	0.041		
Hansen test of OIR	0.380	0.346		
DHT for instruments				
a) Instruments for levels				
Hansen exclude group	0.325			
Diff (null H= exogenous)	0.530			
b) IV (equation)				
Hansen test excluding group	0.184	0.668		
Diff (null H = exogenous)	0.502	0.274		
Number of instruments	22	20		
Fisher	72.62	230.52***	8.60***	26.13***
Observations	309	285	309	309
R-squared			0.257	0.492
Number of countries	24	24	24	

Source: Author's computations (2020). *Note:* Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1 indicated significance at 1%, 5% and 10% respectively. DHT: Difference-in-Hansen tests of exogeneity of instrument subsets. Diff is Difference and OIR is overidentification restrictions. Estimates were done using xtabond2 routine in Stata.

Corporate tax rate to FDI inflows (threshold) is derived using Lind and Mehlum's (2010) methodology. Mathematical computation is done to confirm the results (see Appendix 5). The U-test output based on the difference GMM is reported in Table 5.

From Table 5, the probability and t value were 0.036 and 1.88. Since the probability value was significant, the null hypothesis of no inverse U-shape relationship was rejected at 5 percent level of confidence. The relationship depicted a U-shaped, minimum or monotonic and a threshold of about 29.89 percent. It meant, FDI declines, gets to optimum and rises as corporate tax rate is reduced.

Table 5: Test for a U-shaped relationship

Extreme point: 29.89456

H$_1$: U shape

vs. H$_0$: Monotone or Inverse U shape

	Lower bound	Upper bound
Interval	15	38.5
Slope	-3.899408	2.25291
t-value	-1.880936	2.014943
P>|t|	0.0360841	.0276223

Source: Author's computations (2020).

The intuition was that reducing corporate tax rate below 29.89 percent would be an incentive to foreign direct investors. From the data, on average, it was economically inefficient to fix corporate tax rate above the threshold since it caused a decline in FDI inflows. Again, the study observed the rate of change of FDI to corporate tax or the slope at the lower bound was about 3.90 percent

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in absolute terms. This depicted that a smaller reduction in corporate tax rate led to a more than proportionate increase in FDI inflows.

This implies that fixing corporate tax above the threshold of 29.89 percent may cause foreign investors to leave the country. It is only when corporate tax is fixed below 29.89 percent that foreign investors will start trooping in. If a country in sub-Sahara Africa fixes corporate tax rate above the 29.89 percent threshold (say 40 percent), reducing corporate tax rate to 35 percent will still cause a decline in FDI. FDI will continue to fall even if corporate tax is further reduced to 30 percent. But when corporate tax rate is reduced to 29.89 percent, there will be no change in FDI. FDI inflows only appreciate after a further reduction in corporate tax rate from 29.89 percent to a lesser rate. From table 1, the average corporate tax rate for sub-Saharan Africa is 30.054 percent. This is above the threshold of 29.89 percent hence; corporate tax should be reduced.

Determining the Causal Relationship Between Corporate Tax Rate and FDI in sub-Saharan Africa

From the first objective, the study found an inverse relationship between corporate tax rate and FDI inflows. Although a negative association was established between the dependent and the independent variable, it may not necessarily imply causality. The study tested for Granger non-causality from all independent variables to the dependent variable in the heterogeneous panel using the procedure proposed by Dumitrescu and Hurlin (2012).

Pre-Estimation Test

Table 6: Lag Selection Criterium

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1553.295	NA	908135.5	22.23278	22.29581	22.25839
1	-1129.627	823.1259	2429.328*	16.30895*	16.56110*	16.41142*
2	-1123.198	12.21408	2520.745	16.34569	16.78694	16.52500
3	-1121.923	2.367578	2816.217	16.45605	17.08640	16.71221
4	-1116.516	9.810682	2967.130	16.50737	17.32683	16.84037
5	-1106.575	17.60954	2931.615	16.49393	17.50249	16.90378
6	-1100.506	10.49169	3063.209	16.53579	17.73346	17.02249
7	-1087.948	21.16883*	2919.640	16.48497	17.87174	17.04851
8	-1083.217	7.771911	3114.857	16.54596	18.12184	17.18635

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

To test for causality between foreign direct investment and other independent variables, Pedroni (2004) panel cointegration was done to ascertain a long-run association among the variables. To be sure of the maximum lags to include in the estimation, maximum lags selection criterium was performed. Table 6 showed the result of the lag selection criterium and at 5 percent significant level, Akaike information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HQ) selected 1 as the maximum lag to include in the estimation.

Table 7: Pedroni Residual Cointegration Test

Null Hypothesis: No cointegration

Trend assumption: Deterministic intercept and trend

Automatic lag length selection based on SIC with a max lag of 1

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-1.368451	0.9144	-0.355837	0.6390
Panel rho-Statistic	-0.844939	0.1991	-1.752668	0.0398
Panel PP-Statistic	-8.670201	0.0000	-8.541827	0.0000
Panel ADF-Statistic	-7.940536	0.0000	-8.721201	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	0.060639	0.5242
Group PP-Statistic	-10.04191	0.0000
Group ADF-Statistic	-8.562780	0.0000

Source: Author's computations (2020).

Table 7 represented Pedroni's (2004) residual cointegration test. The output showed two dimensions; the within dimension (upper part) and between dimension (lower part). Out of eleven test statistics, seven were statistically significant while the remaining four were not. The decision on either to reject or fail to reject the null hypothesis of no cointegration was based on the probability value of the majority of the test statistics. However, Das, Chowdhury, and Akhtruzzaman (2012) described the panel ADF and group ADF as the most reliable statistics. The panel ADF and the group ADF were both significant as well.

Confidently, the null hypothesis of no cointegration was rejected, which meant there exist a long-run relationship among the variables

considered in the study. Since cointegration is established, the study proceeded to assess the direction of causality between foreign direct investment, corporate tax rate, and other control variables considered in the study. Table 8 represented the pairwise panel causality test estimated with a maximum lag of 1, based on the Akaike Information Criterion (AIC).

The first column showed the null hypotheses, followed by the W-statistics, Zbar-statistics, and the P-value. The decision to reject or failing to reject the null depended on the significance of the probability value. From row 2 and row 3 in Table 8, the null hypothesis that FDI does not granger-cause inflation and vice versa were tested. The study concluded that inflation does granger-caused FDI but FDI did not granger-cause inflation. A one-directional or unidirectional causal relationship is detected from inflation and FDI. Low inflation rate induced FDI inflows but the reverse was false. Thus, macroeconomic stability (low inflation) attracts FDI but the presence of foreign firms will not cause price hikes or economic instability.

On the other side, at 10 percent level of significance, FDI inflows caused GDP growth or countries' growth rate but the opposite did not hold. An increase in FDI was a major determinant of GDP growth, but GDP growth does not granger cause FDI inflows in sub-Saharan Africa. The output from foreign firms will cause the region's GDP to increase (grow). Again, the study found a unidirectional relation between unemployment and FDI. Increased FDI reduced unemployment but not the reverse.

FDI was found not to granger-cause human welfare (HDI) but human welfare induced foreign direct investment. Investors were unwilling to sacrifice a portion of their capital in training and educating their employees

since it is costly, time consuming and unreliable since labour force is mobile. Investors employ highly qualified, well-skilled, and experienced labour to manage their investment.

Table 8: Results from Dumitrescu-Hurlin panel granger causality test

Null Hypothesis	W-Stat	Zbar-Stat	P-Value
FDI does not Granger-cause inflation	0.530	-1.630	0.1032
Inflation does not Granger-cause FDI	2.559	2.962	0.0031
GDP growth does not Granger-cause FDI	1.356	0.240	0.8105
FDI does not Granger-cause GDP growth	2.105	1.935	0.0530
Unemployment does not Granger-cause FDI	1.931	1.541	0.1232
FDI does not Granger-cause Unemployment	2.174	2.090	0.0366
HDI does not Granger-cause FDI	2.442	2.697	0.0069
FDI does not Granger-cause HDI	1.738	1.104	0.2695
Trade does not Granger-cause FDI	2.567	2.980	0.0029
FDIGDP does not Granger-cause trade	2.317	2.413	0.0158
Foreign aid does not Granger-cause FDI	2.344	2.475	0.0133
FDI does not Granger-cause foreign aid	2.291	2.355	0.0185
FDI does not Granger-cause corporate tax rate.	0.721	-1.189	0.2346
Corporate tax does not Granger-cause FDI	2.388	1.728	0.084
GDP per capita does not Granger-cause FDI	2.148	2.033	0.0421
FDI does not Granger-cause GDP per capita.	1.169	-0.184	0.8542

Source: Author's computations (2020).

A unidirectional causal relationship was established between GDP per capita (level of economic development or purchasing power) and FDI inflows. GDP per capita was found to cause FDI inflows whiles FDI does not granger-cause GDP per capita. A high level of economic development or purchasing power in sub-Saharan Africa was an incentive to boost and attract foreign investment.

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However, the study found strong evidence to support bi-directional causality between FDI and trade and foreign aid and FDI. Trade caused FDI inflows and vice versa. Openness (trade) of the region's economy attracted foreign investors. This means that multinational firms were attracted to the region since they will be able to freely trade with other regions without restrictions enabling them to operate efficiently and reach out to a larger market. As foreign investment increases, trade also increases as some inputs which are not locally available will be imported and finished goods exported.

Foreign aid complements FDI inflows. FDI inflows in sub-Saharan Africa determined aid received by the continent. This could probably be a result of foreign aids that is used for productive infrastructural development making the continent attractive to foreign investors. On the other hand, the desire to create a strong trade relationship with the region might have contributed to foreign aids received. Thus, the presence of foreign investors in the region caused their home country government to give aid to sub-Saharan Africa to strengthen the bond between the two countries and create a conducive environment for their nationals to undertake their business activities.

Finally, a unidirectional causality relationship was established between corporate tax rate and FDI inflows. Reducing corporate tax rate promoted FDI inflows which were consistent with the estimate in the heterogeneous panel. Reducing corporate tax eased the tax burden levied on the investor. This will enable them to achieve a high-profit margin ensuring efficiency within the domestic market. FDI inflows did not granger cause corporate tax rate. The intuition was that foreign investors in sub-Saharan Africa do not have a strong

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voice in influencing corporate tax rates imposed by the government. Also, inflows of FDI do not cause governments in the region to reduce their corporate tax rate. This implies that no matter the national taxable income base, tax rate is not altered

From the dataset, it was observed that it took long years for governments to decide on corporate tax rate. The decision to either reduce or increase corporate tax rate would be based on forecasting and future expectations on injections from foreigners.

Conclusion

To conclude, the study found the system Generalised Method of Moment (GMM) appropriate for objective one but not the second objective. Conditioned that a country adopts IFRS, reducing corporate tax rate by 100 percent will increase FDI inflows by 15.8 percent. Secondly, countries that adopted IFRS accounting principles induced more FDI inflows than their other counterparts when corporate tax is reduced at the same rate in both cases. At average corporate tax rate, adopting IFRS increased FDI inflows by 5.89 percent more compared to not adopting IFRS, ceteris paribus. Again, it was estimated that fixing the corporate tax rate above 29.89 percent would repel foreign investors. Finally, the Dumitrescu and Hurlin panel causality test confirmed a unidirectional relationship between corporate tax rate and FDI in sub-Saharan Africa.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter summarises the entire study. It presents conclusions and recommendations derived from the analysis of the data and also includes suggestions for further studies.

Summary of Main Findings

The individual link between corporate tax rate and FDI; IFRS adoption and FDI has long been debated among various researchers in the field. Various theories such as the monopolistic advantage theory, product life cycle theory, internalization theory, and eclectic theory have been propounded to explain the link between various factors and FDI. This intends to help understand why people or firms engage in offshore production and or investment. Several researchers premising on these theories of international production formulate models to undertake empirical studies but these empirical works came out with inconsistent findings.

To contribute to already existing empirical findings, this work aimed to find the interaction effect of corporate tax rate and IFRS adoption on FDI. The main issues considered were as follows:

a) Analyse the interaction effect of corporate tax rate and IFRS adoption on FDI in sub-Saharan Africa.

b) Determine the threshold effect of corporate tax rate on FDI in sub-Saharan Africa.

c) Determine the causal relationship between corporate tax rate on FDI in sub-Saharan Africa.

To achieve these objectives, the study employed yearly secondary data from the period 2004 to 2017. Twenty-four countries within the sub-Saharan African region were selected based on data availability. Countries included in the data set include Angola, Botswana, Cameroon, Congo Rep., Cote d'Ivoire, Gabon, Ghana, Guinea, Kenya, Lesotho, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.

Data were extracted from Worldwide Governance Indicators, IFRS adoption status from IAS Plus, International Federation of Accountants (IFAC), World Bank Reports on the Observance of Standards and Codes (ROSC), Tax Foundation, Ernst & Young worldwide corporate tax guide report, United Nations Development Program (UNDP) and World Bank's World Development Indicators (WDI). The model for the study was based on the eclectic paradigm of international production and other empirical works conducted on international production (FDI).

Objective 1: Analyse the Interaction Effect of Corporate Tax Rate and IFRS Adoption on FDI in sub-Saharan Africa

Before determining the joint effect of corporate tax rate and IFRS adoption on FDI, the nature of the data was assessed to determine whether to use the static or dynamic panel methodology. After scrutinizing the data, the dynamic panel methodology was chosen. In deciding whether to use the two-step difference or system GMM, the study followed the rule of thumb suggested by Bond et al. (2001) that the autoregressive model should initially be estimated by pooled OLS and fixed effect approach. Applying Bond et al. (2001) suggestions, the two-step system GMM was preferred to the two-step

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difference GMM for objective 1 while for objective 2, the difference GMM was used.

The validity of instruments was checked using the Hansen (1982) J and Sargan (1958) test for over-identifying restrictions. However, the main focus was on the Hansen test. The outcome from the Hansen test and Arellano-Bond test AR(2) showed that the instruments used were not over-identified and the models were also free from second-order serial correlation.

For robustness, seven separate models were estimated with institutional variables simultaneously incorporated into the model. From the two-step system GMM model 1 to 7, all the institutional variables were negative and insignificant except political stability in model 2 which was positive but insignificant. This shows that apart from political stability that attracts FDI to sub-Saharan Africa, improvement in all the other governance indicators (institutional variables) repels FDI. Throughout the various models thus, from models 1 to 7, the lag of FDI was positive and significant. IFRS adoption, corporate tax rate, and the interaction term were significant throughout all the models. Natural resource was significant and positive. This shows that foreign investors were more interested in the natural resources the region possesses.

Focusing on the main objective, the output from model 7 was used to ascertain the interaction effect since a composite index which is an aggregation of all the institutional variables was included in the model. It was seen that at average corporate tax rate, adopting IFRS directly increased FDI by 5.89 percent more compared to not adopting IFRS. On the other hand, the study found that in a country that adopts IFRS, an increase or decrease in

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corporate tax rate of 100 percent will cause FDI to fall or increase by 15.8 percent respectively. Hence, countries that adopt IFRS may realise revenue by imposing a higher corporate tax rate than countries that are not adopting IFRS.

Objective 2: Determine the Threshold Effect of Corporate Tax Rate and FDI in sub-Saharan Africa

In the effort to achieve objective two, the work followed Lind and Mehlum (2010). To check for the threshold of corporate tax rate as well as the existence of non-monotonic or inverse U-shape relationship between corporate tax rate and FDI inflows, the square of corporate tax rate and corporate tax rate was incorporated into the base model. The study failed to reject the null hypothesis of no inverted U-shape and concluded on the existence of a U-shape relationship in the region with a threshold of about 29.89 percent. This implies that reducing corporate tax rate below 29.89 percent attracts FDI. However, reducing corporate tax rate above the threshold will still witness the exit of the already existing foreign business unless the tax rate is reduced to or below 29.89 percent.

Objective 3: Determine the Causal Relationship Between Corporate Tax Rate on FDI in sub-Saharan Africa

Finally, the study undertook a granger causality test to verify the direction of causality between corporate tax rate and FDI using Dumitrescu and Hurlin (2012) Granger non-causality. A unidirectional causality between corporate tax rate and FDI inflows was found.

Conclusion

Existing literature on corporate tax rate, IFRS adoption, and FDI has been mostly focused on how corporate tax rate or IFRS adoption influences

FDI in isolation. In this study, the eclectic theory of international production and hypothesis were applied to analyse the interaction effect of corporate tax rate and IFRS adoption on FDI in sub- Saharan Africa. A further analysis was done to determine the turning points of FDI on corporate tax rate. Also, a granger causality test was conducted to identify the direction of causality between FDI and corporate tax rates in sub-Saharan Africa. Although results reported were based on a sample of 24 countries over a 14-year period, which is relatively small, the diagnostic tools and estimation techniques employed in the study confirm the reliability of the results reported. Despite the limitations of the study, generalisation can be made on other countries in Africa and developing regions in the world however, care must be taken in doing so.

Based on the two-step system GMM employed for the study, the study clearly showed the existence of a significant relationship between the policy variables and the interaction term on FDI. This indicates that corporate tax rate and IFRS adoption plays a significant role in attracting FDI. The findings are in line with the eclectic theory that foreign investors are attracted to locations where there exist a good financial reporting system and the opportunity to maximize profits. Hence, a reduction in corporate tax rate and an improvement in the financial system will attract FDI. It is concluded that: corporate tax rate affects FDI if countries in sub-Saharan Africa adopt IFRS; IFRS adoption affects FDI if sub-Saharan Africa countries reduce corporate tax rate.

From the finding, if a country should adopt IFRS, an increment in corporate tax rate by 1 percent will cause FDI to fall by 0.158 percent while if a country has not adopted IFRS, increasing corporate tax rate by 1 percent will

cause FDI to fall by 1.95 percent. More so, in a situation where all countries impose the same corporate tax rate, adopting IFRS will cause the adopting country to have additional FDI inflows of 5.89 percent as compared to counterparts that have not adopted.

Results from the threshold and U-shape relationship showed that unless corporate tax rate is reduced to or below 29.89 percent, foreign investors will continue to leave. Fixing the rate below the threshold of 29.89 percent attracted more foreign investors.

Recommendations

From the study, it is seen that corporate tax rate and IFRS adoption plays a significant role in attracting FDI into sub-Saharan Africa. To ensure the continuous inflow of foreign capital, it is important to look at the corporate tax policies and the accounting system. Accounting bodies (ICAG) and Stock Exchange authorities should ensure that firms within their jurisdiction adopts IFRS. Also, Ministry of Finance and Ghana Revenue Authority should set corporate tax rates below 29.89 percent at a level that will attract FDI inflows.

It is proven from the study that when IFRS is adopted it is not advisable to reduce corporate tax rate extremely as the reduction results in just a small change in FDI (the sacrifice far exceeds the outcome). Ministry of Finance and Ghana Revenue Authority should minimize the giving of tax incentives especially the ones that come in the form of reductions in corporate tax rates as these come with less desired results. It is recommended that the corporate tax rate should be set below 29.89 percent which is the threshold in the region to be able to attract FDI. Countries like Zambia, Uganda, Tanzania, Senegal, Rwanda, Nigeria, Namibia, Mozambique, Malawi, Kenya, Guinea,

Gabon, and Angola will have to review their corporate tax rate as it is above the threshold of 29.89 percent.

It is also recommended firms should form industrial associations for their voices to be heard in terms of the imposition of huge tax burdens as the Granger causality test showed that FDI does not influence corporate tax rate.

Public institutions such as law enforcement agencies (e.g. police service), environmental protection agencies in sub-Saharan Africa should improve on their institutional environment as foreign investors take advantage of the weak institutions. The only concern of foreign investors is political stability. Weakness in the institution enables foreign investors to overexploit natural resources (since foreign investors are attracted to areas with more natural resources), deplete reserves, and damage the environment without considering the effect of their activities on the environment. The environmental protection agencies should monitor and hold foreign investors accountable for their actions. A levy should be imposed on foreign firms whose activities affect the environment negatively. Such funds can be used to put the environment back in a good shape.

From the study, although inflows of FDI resulted in a reduction in unemployment, labour welfare (HDI) deteriorated. Labour welfare that captures health, education, and income level fell although people were being employed. This indicates that the labour force engaged by these foreign firms were overexploited without corresponding healthcare packages, wages, and a chance to build on or further their education. This calls for the need for the various labour commissions in the region to ensure that labour employed by these foreign firms has a good working condition, adequate compensation in

terms of motivation and the opportunity to build on their skills and knowledge. labour laws should be enacted to protect the right of workers.

The government must ensure that the purchasing power of the citizens is high as it is the major factor that attracts FDI inflows. Also, a low inflation rate should be achieved and maintained as it attracts foreign investors.

Suggestions for Future Researchers

Future researchers can consider the level of adoption or compliance levels and of IFRS adoption as well as the number of years of adoption. More so, a study can be conducted on sectorial basis by considering sectorial level of compliance to IFRS and their respective FDI inflows.

In examining the effect of corporate tax on FDI, future researchers can use the effective tax rate as a measure of tax burden.
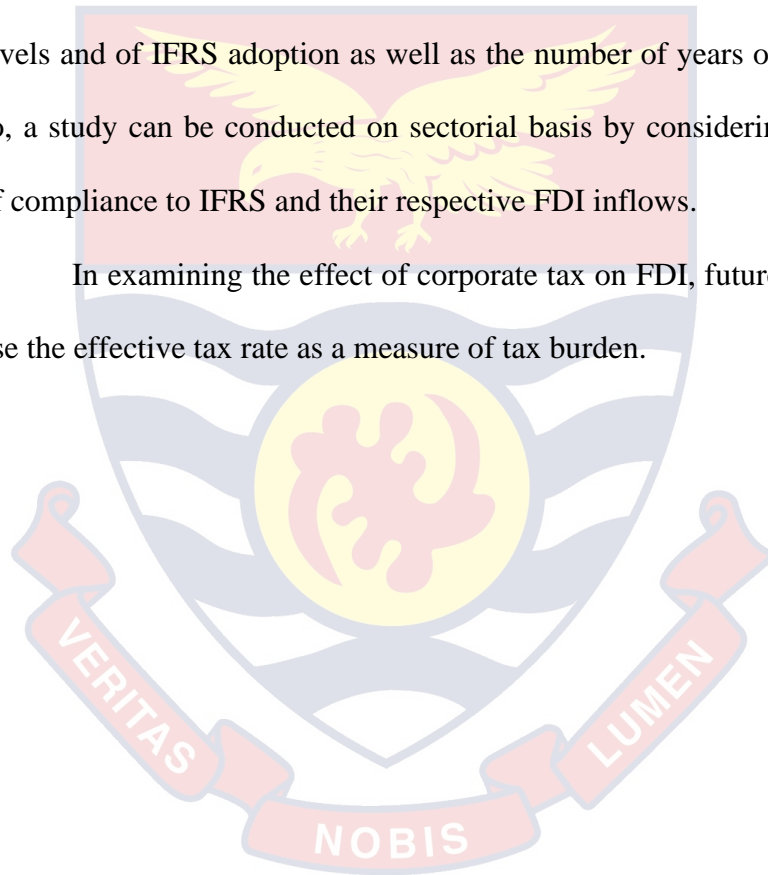
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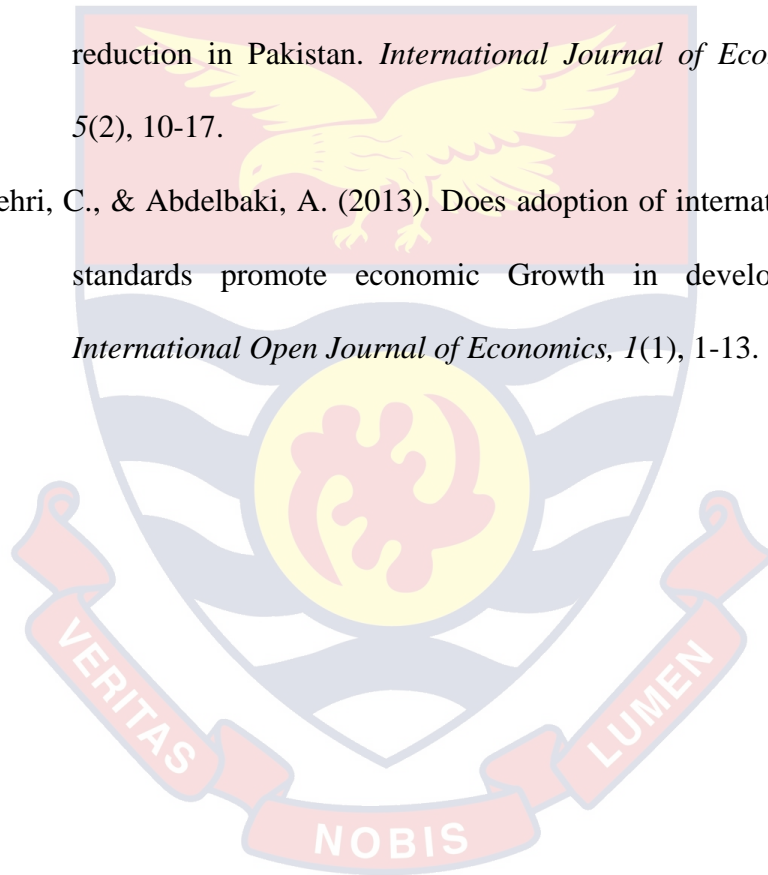
APPENDICES

Appendix 1: Distribution of IFRS Adoption

IFRS Adoption	Frequency (Cumulative Years)	Percent	Cumulative frequency
Not adopted	136	40.48	40.48
Adopted	200	59.52	100.00
Total	336	100.00	

Appendix 2: Countries adoption of IFRS as at 2017 and year of adoption

Country	Adoption status	Year of Adoption
Angola	Adopted (Partially)	2016
Botswana	Adopted	2003
Cameroon	Not adopted	
Congo Rep.	Not adopted	
Cote d'Ivoire	Not adopted	
Gabon	Not adopted	
Ghana	Adopted	2007
Guinea	Not adopted	
Kenya	Adopted	1999
Lesotho	Adopted	2001
Malawi	Adopted	2001
Mauritania	Not adopted	
Mauritius	Adopted	2001
Mozambique	Adopted (Partially)	2010
Namibia	Adopted	2005
Nigeria	Adopted	2012
Rwanda	Adopted	2008
Senegal	Not adopted	
South Africa	Adopted	2005
Swaziland	Adopted	2009
Tanzania	Adopted	2004
Uganda	Adopted	1998
Zambia	Adopted	2005
Zimbabwe	Adopted	1993

Appendix 3: Derivation of The Partial Effects

$$FDI_{it} = 0.465L.FDI_{it-1} - 47.82ADOPT_{it} + 1.787ADOPT \times CIT_{it} -$$

$$1.945CIT_{it} - 0.165UNEM_{it} + 0.269NATRES_{it} - 1.509lnAID_{it} +$$

$$2.345lnGDPPC_{it} + 0.152GDPG_{it} - 32.41HDI_{it} +$$

$$0.0166TRADE_{it} - 0.088INFL_{it} - 1.11INSTIAVE_{it}$$

CASE 1

$$\frac{\partial FDI_{it}}{\partial ADOPT_{it}} = -47.82 + 1.787(CIT_{it})$$

By substituting the mean value of corporate tax rate into derived derivative or the partial differential, the result is presented below:

$$\frac{\partial FDI_{it}}{\partial ADPOT_{it}} = -47.82 + 1.787(30.054)$$

$$\frac{\partial FDI_{it}}{\partial ADOPT_{it}} = -47.82 + 53.706$$

$$\frac{\partial FDI_{it}}{\partial ADOPT_{it}} = 5.886 > 0$$

CASE 2

$$\frac{\partial FDI_{it}}{\partial CIT_{it}} = -1.945 + 1.787(\overline{ADOPT_{it}}) < 0$$

Where $\overline{ADOPT_{it}}$ is dummy and captured in the data set as 1, or otherwise 0.

$$\frac{\partial FDI_{it}}{\partial CIT_{it}} = -1.945 + 1.787(\overline{1}) = -0.158$$

Appendix 4: Computing the Threshold Based on the System GMM Output

$$FDI_{it} = 0.231l.FDI_{it-1} - 6.856CIT_{it} + 0.119CIT^2{}_{it} + \gamma control_{it}$$

$$\frac{\partial FDI_{it}}{\partial CIT_{it}} = -6.859 + 2(0.119)CIT_{it}$$

Equilibrium condition $\left(\frac{\partial FDI_{it}}{\partial CIT_{it}}\right) = 0$

$$\frac{\partial FDI_{it}}{\partial CIT_{it}} = -6.859 + 2(0.119)CIT_{it} = 0$$

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$2(0.119)\text{CIT}_{\text{it}} = 6.856,$ $CIT = \dfrac{6.856}{2(0.119)} = 28.81$

Hence FDI+ to corporate tax rate is 28.81 percent.

Second order condition for maximum or minimum

$\dfrac{\partial^2 \text{FDI}_{\text{it}}}{\partial \text{CIT}^2{}_{\text{it}}} = 2(0.119) > 0$ (Positive), which satisfied the condition for minimum

or U-shaped or monotonic relationship.

Appendix 5: Computing the Threshold Based on the Difference GMM

Output

$$\text{FDI}_{\text{it}} = 0.243l.FDI_{it-1} - 7.826\text{CIT}_{\text{it}} + 0.131\text{CIT}^2{}_{\text{it}} + \gamma\text{control}_{\text{it}}$$

$\dfrac{\partial \text{FDI}_{\text{it}}}{\partial \text{CIT}_{\text{it}}} = -7.826 + 2(0.131)\text{CIT}_{\text{it}}$

Equilibrium condition $\left(\dfrac{\partial \text{FDI}_{\text{it}}}{\partial \text{CIT}_{\text{it}}}\right) = 0$

$\dfrac{\partial \text{FDI}_{\text{it}}}{\partial \text{CIT}_{\text{it}}} = -7.826 + 2(0.131)\text{CIT}_{\text{it}} = 0$

$2(0.131)\text{CIT}_{\text{it}} = 7.826,$ $CIT = \dfrac{7.826}{2(0.131)} = 29.87$ percent

Hence FDI growth to corporate tax rate is 29.87 percent.

Second order condition for maximum or minimum

$\dfrac{\partial^2 \text{FDI}_{\text{it}}}{\partial \text{CIT}^2{}_{\text{it}}} = 2(0.131) > 0$ (Positive), which satisfied the condition for minimum

or U-shaped or monotonic relationship