

DECLARATION

I hereby declare that this thesis is the result of my own original towards the Master of Science Degree in Economics and that to the best of my knowledge, it neither contains material published by another person nor materials which have been accepted for the award of any other degree of the University, except where due acknowledgments have been made in the text.

ID NUMBER PG2756014

FESTUS AKUETTEH ANKRAH
STUDENT'S NAME SIGNATURE DATE

CERTIFIED BY:
DR. HADRAT YUSIF
PRINCIPAL SUPERVISOR'S NAME SIGNATURE DATE

CERTIFIED BY:
MR. JONATHAN QUARTEY
INTERNAL SUPERVISOR'S NAME SIGNATURE DATE

CERTIFIED BY:
DR. HADRAT YUSIF
(HEAD OF DEPARTMENT) SIGNATURE DATE

DEDICATION

This work is dedicated to Almighty God, for his protection and guidance. To my parents Mr. and Mrs. Ankrah, and my siblings Daniel, Charlotte and Felix Ankrah for their prayers, support and guidance in my life and to all who helped in diverse ways in making this study a success.



ACKNOWLEDGEMENTS

Glory is to the Almighty God for his bountiful endowment of grace and absolute sustenance through Jesus Christ that kept me on campus and in the course of preparing this thesis. My sincere and deepest appreciation and gratitude goes to Dr. Hadrat Yusif, for guiding and helping me out whenever I encountered any problem in the course of the research work.

I would also like to thank Dr. (Sr.) Eugenia Amporfo, Dr. Daniel Sakyi, Dr. George Adu, Mr. Emmanuel Buabeng and all the other lecturers in the Economics Department, KNUST for their useful lectures and enthusiastic suggestions in the thesis seminar. Warm gratitude goes to all lecturers and non-teaching staff of the Department of Economics for the various contributions they made towards my training

I would like to thank the University, Kwame Nkrumah University of Science and Technology for giving me the opportunity to further my education in Economics and helping me, yet, unearth such a huge potential in me.

Notwithstanding the technical and instrumental assistance, I received equally vital assistance from my family friends and mates. My appreciation goes to persons like Gertrude Kumi Emmanuel Torto, Alfred Quaynor Solomon Torgbor, Peter Boadi, Justina Darko, Christian Ganyo and all my friends at KNUST for their support throughout the program.

Table of Content

DECLARATION	ii
DEDICATION	iii

ACKNOWLEDGEMENTS	iv
List of Table	vi
List of Figure	vii
ABSTRACT	viii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of Problem	3
1.3 Objectives of the Study	4
1.4 Research Questions	4
1.5 Importance of the Study	4
1.6 Scope of Study and Limitation	5
1.7 Organization of Study	5
CHAPTER TWO	5
LITERATURE REVIEW	5
2.1 Introduction	5
2.2 Theories on Foreign Direct Investment	6
2.2.1 Internalization Theory	6
2.2.2 Product Life Cycle Theory	7
2.2.3 The Eclectic Paradigm	7
2.3 Theories of Economic Growth	8
2.3.1 The Classical Growth Theory	9
2.3.2 The Neoclassical Growth Model or Solow-Sawm Growth Model	9
2.3.3 Endogenous growth theory	10
2.3.4 Unified growth theory	11
2.4 Theories on FDI and Economic Growth	11
2.4.1 Modernization Theory	11
2.4.2 Dependency Theory	12
2.5 Empirical Literature Review	12
CHAPTER THREE	16
METHODOLOGY	16

3.1 Introduction	16
3.2 Model Specification	16
3.3 Data Type and Sources	17
3.4 Justification and Definition of Variables	17
3.4.1 Dependent Variable	17
3.4.2 Independent Variables	18
3.5 Econometric Techniques for Estimation	20
3.5.1 Test of Unit Root	20
3.5.2 Test of Cointegration	21
3.5.4 Granger Causality Test	22
CHAPTER FOUR	24
DATA PRESENTATION, ANALYSIS AND DISCUSSIONS	24
4.1 Introduction	24
4.2 Descriptive Statistical Analysis	24
4.3 Graphical Analysis	25
4.4. Unit Root Test	28
4.4 Lag Length Selection Test	29
4.5 Cointegration Analysis	30
4.6 Vector Error Correction Model (VECM)	32
4.7 Granger Causality Test	35
CHAPTER FIVE	36
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION	36
5.0 Introduction	36
5.2 Summary of Findings	36
5.3 Conclusion	37
5.3 Recommendation	37
REFERENCE	38

List of Table

Table 4.1 A Summary of Descriptive Statistics28

Table 4.2 PP Unit Root Test..... 32

Table 4.3 ADF Unit Root Test..... 33

Table 4.4 Optimal Lag Length Selection34

Table 4.5a Johansen Cointegration Rank Test (Trace)35

Table 4.5b Johansen Cointegration Rank Test (Maximum Eigenvalue)36

Table 4.5c Long Run Model When Normalized36

Table 4.6 Vector Error Correction Model (VECM)37

Table: 4.7 Granger causality test38

List of Figure

Figure 4.1: A Graph Real Gross Domestic Product (1992 to 2014) 29

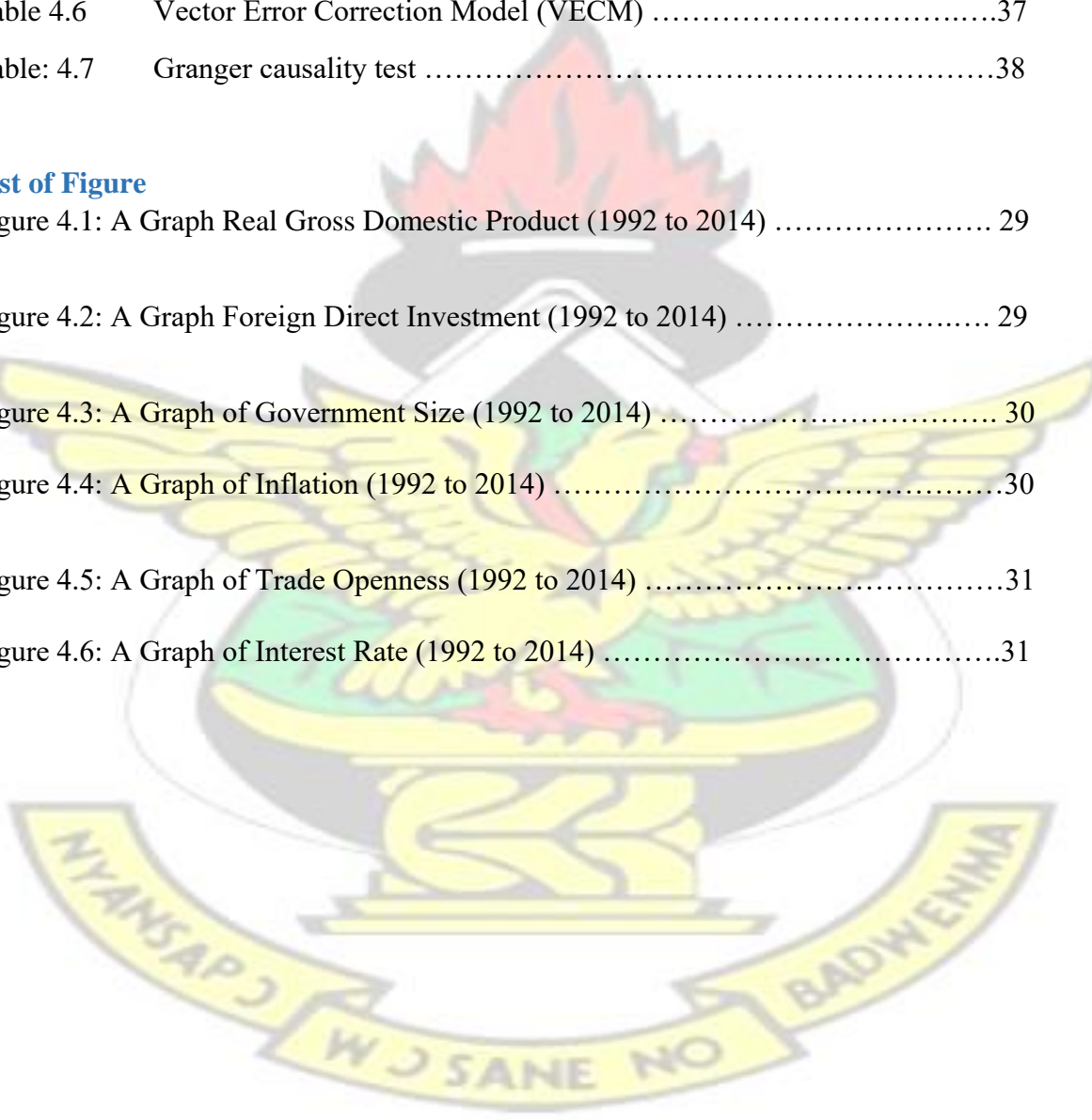
Figure 4.2: A Graph Foreign Direct Investment (1992 to 2014) 29

Figure 4.3: A Graph of Government Size (1992 to 2014) 30

Figure 4.4: A Graph of Inflation (1992 to 2014)30

Figure 4.5: A Graph of Trade Openness (1992 to 2014)31

Figure 4.6: A Graph of Interest Rate (1992 to 2014)31



ABSTRACT

The impact of foreign direct investment (FDI) on the economic growth of host economies has attracted significant debate in the literature with empirical evidence being inconclusive. Ghana FDI inflow has shown mix trends over the year. This paper aims to study the relationship between FDI and economic growth in Ghana for the period 1992-2014 using time series data. The data used in this study was mainly secondary data collected from the period, 1992 to 2014 consisting of yearly observations for each variable. The real GDP growth and foreign direct investment net inflows as percent of GDP (FDI ratio) data were taken from the World Banks World Development Indicators 2014. The study employs the cointegration, Vector Error correction Model (VECM) and the Granger causality testing to empirically examine the relationships and directional relationships between the variables.

The study establishes that a long-run equilibrium and causal relationship exists between the dependent variable; Real Gross Domestic Product and the independent variables under consideration namely, Trade openness, Interest Rate, Inflation and Government Size. It was determined that in the short-run, effects of FDI, Trade Openness, Inflation and Interest Rate volatility on RGDP are significant while the Government Size volatile on RGDP is nearly imaginary.

The significance of the FDI variable in the equation is an indication the FDI affects the macroeconomic economy. As a consequence, FDI promotion policies should be adjustment to bring more investment to the country which then translates into high economic growth in the Ghanaian economy. Future research in this area should focus on the impact of FDI on the various sectors of the economy in Ghana. This builds on the findings on this study and helps inform policy makers in shaping FDI polices for the various sectors of the economy.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The connection between foreign direct investment (FDI) and growth in recent decades ruled the educational and policy literature of developing countries. The growing interest in this topic is signalled by the outstanding place assumed by “FDI- driven policies” within the policy framework of both developed and developing countries and the importance to understand the canals in which FDI attempts economic process absolutely (Lemi and Asefa, 2003). Growing interest has conjointly been seen as a reaction to the gradual fall in Aid coupled with the quick pace of globalization of the economy (Asafu-Adjaye, 2005).

Foreign direct investments (FDI) are the net inflows of investment to gaining long lasting management interest for an enterprise working in an economy other than that of the investor (World Bank, 2014). Numerous explanations have been detailed for the significance of FDI inflows, including job creation, market competition and transfer of technology and capacity. Hence, developing countries are reliant on FDI as a source of outside funding. As a result, numerous countries have designed policies to boost FDI inflow. Also, FDI provides the developing countries the chance to diminish reliance on foreign aid.

The dynamic role of FDI as an impetus for growth has turned out to be more basic for developing nations. FDI significance as a provider of development financing immensely adds to growth by increasing total investment in the beneficiary country and increasing productivity advantages through innovation and administrative aptitudes. A few researchers have shown that FDI may negatively affect the economic growth of the beneficiary nation (Hermes and Lensink, 2003). Repatriation of profits by foreign firms dangers beneficiary nation's Balance of Payment account (Kentor, 1998). According to Fry (1999) FDI has diminished the savings and investment rate, and also the growth of developing economies.

Balasubramanyam et al (1996) stated FDI can positively affect the beneficiary country if the absorptive ability of the country is relative to level of education, technology, infrastructure and political balance.

In 2013, Foreign Direct Investment (FDI) streams came back to an upward pattern. Worldwide FDI inflows ascended by 9 % to \$1.45 trillion in 2013. FDI inflows expanded in all major economies – developed, developing and transition economies. Worldwide FDI stock rose by 9%, achieving \$25.5 trillion. FDI streams to developing economies achieved another high of \$778 billion, representing 54 percent of worldwide inflows, in spite of the fact that the development rate eased back to 7 %, contrasted and a normal development rate in the course of recent years of 17 %. Developing Asia countries keeps on being the locale with the most noteworthy FDI inflows, essentially over the European Union (EU), customarily the district with the most elevated share of worldwide FDI. FDI inflows was up likewise in the other creating locales, Africa (up 4 %) and Latin America and the Caribbean (up 6 %) (UNCTAD, 2014).

FDI in developing economies has developed quickly taking after financial and political change all inclusive. To build their share of FDI inflows, most nations have smoothed limitations on FDI, reinforced macroeconomic stability and privatized state-possessed enterprise, set out on domestic financial changes and capital account liberalization with tax motivations and subsidies allowed to these different foreign companies and people who expect to invest in Ghana (Anokye et al, 2006)

Similar to other countries, Ghana plays an active part in the global competition for foreign FDI. Ghana has racked in fairly small FDI inflows since the initiation of the more probable investment agenda in the early 1960's. This helped Ghana come out from agricultural dependence to a recent, active and high – tech economic system with higher per household incomes and greater fairness (Oteng, 2006).

This shows the continuing significance of FDI as a creator of employment and income, as well as a means for the transfer of technology, and as a foundation for creating new industry and economic growth. Subsequently, in the light of developing challenges in the manufacturing industry (increasing cost of production, and increased competition in the global market), government has implemented policy to improve the appeal of the FDI (Quarmyne, 2007).

FDI was particularly crucial in the early periods of economic development, adding to a great extent to the take-off of the host nation. Consequently, local investment got up to speed, and even surpassed, FDI in the zone, in this way constraining the last's effect. This is a positive event that represents the nation's ability to learn and change outside innovation to nearby setting. Besides, the Ghanaian experience recommends that domestic and foreign investment have supplemented each other in keeping the development process (Ofosu and Ayittey, 2007).

1.2 Statement of Problem

Most developing countries are struggling to get out of poverty, create wealth for the teeming population and achieve improved Gross Domestic Product. One of the perceived obstacles to achieve these aims is the lack of capital. FDI is seen as a major source of stimulating economic growth. But there are some controversies as regards the issue of foreign direct investment. For example, there is the dependency school which opposes FDI. Rodney (1976) saw FDI as extension of colonialism. Abbas (2006) summarized the views of the anti FDI proponents by rejecting FDI as ineffectual with negative results which are at best ambiguous. On the other hand, proponents of FDI (and they are in the majority) argue that FDI is essential for any developing nation to achieve any measure of economic growth and development. Such proponents are Wai-Mun et al (2008) and Meier (1984). The proponents argue that FDI brings to the home country a package of relatively cheap scarce capital, advanced technology, superior technical knowledge. Meier (1984) adds that the host country gains more than the country from

where it comes. Several studies have been done in this area but this work is motivated to wade into the controversy to ascertain the true position. FDI net inflow to Ghana and real GDP has shown mixed trends and declining since 2011. It is in view of this that an empirical assessment of the impact of FDI on Economic Growth in Ghana becomes imperative.

1.3 Objectives of the Study

The general objective of this study is to examine the influence or role of FDI on Economic Growth in Ghana.

Specifically,

1. To assess the long run and short run impact of FDI on Economic Growth in Ghana
2. To assess the FDI determinant
3. To assess the causal lineage between FDI and Economic Growth

1.4 Research Questions

This study seeks to answer the following questions:

1. Foreign Direct Investment does not have significant effect on Gross Domestic Product (GDP) of Ghana?
2. What are the determinants of FDI in Ghana over the period (1992-2014)?
3. There is no causal linkage between FDI and Economic Growth?

1.5 Importance of the Study

It is apparent from the above discussion that FDI is a key and vital factor in influencing the current process of global economic development. The study attempts to analyse the important dimensions of FDI in Ghana. The study works out the trends and patterns, main determinants and investment flows to Ghana. The study also examines the role of FDI on economic growth in Ghana for the period 1992-2014. By knowing the impact of FDI's, the study intends to give

an insight to foreign investors who would wish to invest in Ghana by indicating how much effort and resources they should invest to yield greater returns. Decision and policy makers such as the Government of Ghana would be able to use the empirical evidence from this research to make important decisions, put in place policies and systems to make the environment conducive to attract foreign investors. Again, the study seeks to add to existing literature so others can draw from the findings to make informed decisions.

1.6 Scope of Study and Limitation

The study uses annual times series data of Ghana from 1992 to 2014 is used for the study. Thus the sample size of twenty-three years.

1.7 Organization of Study

The study is organized into five chapters. Chapter One is the introduction which covers the background to the study, statement of problem, objective of the study, hypothesis or research questions, justification of the study and organization of the study. Chapter Two presents summary of the existing theoretical and empirical literature on the FDI-growth interaction. Chapter Three is the methodology for the study and models estimation. Chapter Four focuses on data analysis. Chapter Five comprises of summary, conclusions and policy recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the relevant theoretical and empirical literature on the linkage between foreign direct investment and economic growth. The first section explores the theoretical underpinning of the study, the second section examines empirical literature of interest to the topic, while the last section draws conclusions from both the theoretical and empirical

literature.

2.2 Theories on Foreign Direct Investment

Through this section we look at three theories on FDI and the definition of FDI. The first theory tries to explain why firm will undertake FDI as a way of entering a foreign market. The second theories explain why firms in the same in same industry or sector often undertake FDI. The third theory which is the eclectic paradigm which combine the two perspectives in an explanation of FDI.

Foreign Direct Investment (FDI) is defined as an investment regarding a long term relationship and reflecting an enduring interest and control by a resident in one economy (foreign investor) in an undertaking inhabitant in an economy other than that of the outside direct speculator (FDI venture or associate endeavor or outside affiliate). FDI derives to the speculator practicing a vital level of impact on the administration of the undertaking occupant in the other economy. Such venture includes both the underlying exchange between the two substances and every consequent exchange in the middle of them and among outside offshoots, both fused and unincorporated. FDI might be attempted by people and also business substances. (IMF, 1993). Developing economies of which Ghana is part are faced with the problem of an annual resource gap (since income levels and domestic savings is low), increase in government expenditure, high propensity to consume imported goods and inadequate foreign exchange resources. So, the majority of assets required will need to originate from abroad or foreign direct investment (FDI) (IMF, 1998)

2.2.1 Internalization Theory

The theory explains the development of Transnational Organizations (TNO) and their inspirations of undertaking foreign direct investment. Buckley and Casson developed the theory in 1976, Hymer gave an international dimension to the work of Casson by distinguished two notable reasons for FDI. The comparative advantage some firms in a specific activity and

the competition removal (Hymer 1976). With the goal business should grow beyond their nation of origin, a decision is made when confronted with three choices; produce and export, license production right to a firm situated in the foreign nation and set up in a another nation. This theory tries to show why firms frequently prefer FDI to licensing as a means of going into a foreign market (Hymer, 1976). Licensing is disadvantageous on the grounds that, first it might bring about a business giving out significant technological skills to a foreign competitor. Furthermore, authorizing don't grant the firm the regulator status for manufacturing, marketing and strategy of the foreign country that might need to achieve maximum profit. Thirdly, expense got for licensing is not equal to the loss of control over manufacturing and marketing.

2.2.2 Product Life Cycle Theory

Vernon developed this theory in 1966. He explains types of FDI made by U.S. companies in Western Europe after the Second World War in the manufacturing industry. Firms attempt investment at specific stages in the life phase of the product they organized. He referred to four phases of item cycle; innovation or introduction, growth, maturity and decline. At the first stage the firms produce products for domestic consumption export the surplus to foreign countries or markets. The exports increase to a level which necessitates a subsidiary in importing countries to support production

2.2.3 The Eclectic Paradigm

The Eclectic Paradigm was championed by British Economist Dunning. It is combination of three theories that can be inferred from the theories of Dunning (1977) on foreign direct investment. Firms undertake FDI in response to competitive advantages in the form of ownership, location and internationalisation (OLI Paradigm). The ownership advantage catches immaterial resources, that is private properties firms own. These are shown in three ways; First is the possession of monopoly advantage as preferred entree to markets through possession of natural limited resource, licenses, besides information extensively characterized in in all forms; and thirdly economies of scale and access to more financial funds or capital. Location observes

focal points gave with advantages particularly the stability of favourable circumstances is. Area focal points separate nations as far as destinations of FDI. These focal points are: first financial advantages that encompass of numerical and subjective components of generation, transportation cost, market size et cetera; besides, Political favourable circumstances which might be basic and particular government arrangements that influence FDI streams lastly Social focal points which incorporates separate between the home and outside nations, social assorted qualities, state of mind towards outsiders among others.

Internationalization suggests a method for measuring diverse courses by which the firm will abuse its controls from the offer of products and administrations to different assertions that are marked between the firms. Without a doubt, this piece inside of the OLI worldview emerges from the internationalization hypothesis. Dunning acknowledges the contention of disguise hypothesis that it is troublesome for a firm to permit its own special abilities and know-how. In this manner, he contends that consolidating area particular resources or asset enrichment and the association's own remarkable abilities regularly require remote direct speculation. That is, it requires the firm to set up creation offices where those remote resources or assets are located.

2.3 Theories of Economic Growth

Economic growth is the increase of per capita gross domestic product (GDP) or other measures of aggregate income, typically reported as the annual rate of change in real GDP. Economic growth is primarily driven by improvements in productivity, which involves producing more goods and services with the same inputs of labour, capital, energy and materials. Economists draw a distinction between short-term economic stabilization and long-term economic growth. The topic of economic growth is primarily concerned with the long run. The short-run variation of economic growth is termed the business cycle.

The long-run path of economic growth is one of the central questions of economics; despite some problems of measurement, an increase in GDP of a country greater than population growth is generally taken as an increase in the standard of living of its inhabitants. Over long periods of time, even small rates of annual growth can have large effects through compounding (Harris 1978).

2.3.1 The Classical Growth Theory

The modern conception of economic growth began with the critique of Mercantilism, especially by the physiocrats and with the Scottish Enlightenment thinkers such as David Hume and Adam Smith, and the foundation of the discipline of modern political economy. The theory of the physiocrats was that productive capacity, itself, allowed for growth, and the improving and increasing capital to that capacity was "the wealth of nations". Whereas they stressed the importance of agriculture and saw urban industry as "sterile", Smith extended the notion that manufacturing was central to the entire economy.

David Ricardo argued that trade was a benefit to a country, because if one could buy a good more cheaply from abroad, it meant that there was more profitable work to be done here. This theory of "comparative advantage" would be the central basis for arguments in favour of free trade as an essential component of growth (Harris 1978).

2.3.2 The Neoclassical Growth Model or Solow-Swan Growth Model

The notion of growth as increased stocks of capital goods was codified as the Solow-Swan Growth Model, which involved a series of equations which showed the relationship between labour-time, capital goods, output, and investment. According to this model, technological change is vital, even more important than the accumulation of capital. This model was the first attempt to model long-run growth analytically. This model assumes that countries use their resources efficiently and that there are diminishing returns to capital and labour increases. From these two premises, the neoclassical model makes three important predictions. First, increasing

capital relative to labour creates economic growth, since people can be more productive given more capital. Second, poor countries with less capital per person will grow faster because each investment in capital will produce a higher return than rich countries with ample capital. Third, because of diminishing returns to capital, economies will eventually reach a point at which any increase in capital will no longer create economic growth. This point is called a "steady state". The model also notes that countries can overcome this steady state and continue growing by inventing new technology. In the long run, output per capital depends on the rate of saving, but the rate of output growth should be equal for any saving rate. In this model, the process by which countries continue growing despite the diminishing returns is "exogenous" and represents the creation of new technology that allows production with fewer resources. Technology improves, the steady state level of capital increases, and the country invests and grows. The data does not support some of this model's predictions, in particular, that all countries grow at the same rate in the long run, or that poorer countries should grow faster until they reach their steady state. Also, the data suggests the world has slowly increased its rate of growth. However modern economic research shows that the baseline version of the neoclassical model of economic growth is not supported by the evidence (Solow 1956).

2.3.3 Endogenous growth theory

Growth theory advanced again with the theories of economist Paul Romer and Robert Lucas, Jr. in the late 1980s and early 1990s. Unsatisfied with Solow's explanation, economists worked to "endogenize" technology in the 1980s. They developed the endogenous growth theory that includes a mathematical explanation of technological advancement. This model also incorporated a new concept of human capital, the skills and knowledge that make workers productive. Unlike physical capital, human capital has increasing rates of return. Therefore, overall there are constant returns to capital, and economies never reach a steady state. Growth

does not slow as capital accumulates, but the rate of growth depends on the types of capital a country invests in. (Wikipedia, 2015).

2.3.4 Unified growth theory

Unified growth theory was developed by Galor (2005) to address the inability of endogenous growth theory to explain key empirical regularities in the growth processes of individual economies and the world economy as a whole. Endogenous growth theory was satisfied with accounting for empirical regularities in the growth process of developed economies over the last hundred years. As a consequence, it was not able to explain the qualitatively different empirical regularities that characterized the growth process over longer time horizons in both developed and less developed economies.

2.4 Theories on FDI and Economic Growth

In this section, the review of theories related to both FDI and Economic Growth. The theories set to explain the positive or negative impact of FDI on economic Growth.

2.4.1 Modernization Theory

This theory communicates a positive role of FDI on economic growth in developing countries. The interest for capital arrangement in developing countries can be achieved by FDI which leads to economic growth (Firebaugh, 1992). Mello (1999) underpin the thought with the conclusion that FDI is a vital segment to fill the asset hole in various creating nations. Additionally, FDI is beneficial to develop infrastructure, for instance, avenues and creation lines. Upgraded physical base, will grow the absorptive limit of the host nations, which may attract promote FDI.

Modernization Theory in like manner prescribes that FDI trades data, innovation, administrative aptitudes, adding to the economic improvement in the beneficiary nation (Mengistu et al.2007). Supporting the modernization theory Borensztien et al. (1998) debates

on FDI role of improving economic growth by trading advancement and figuring out how to creating countries. This theory highlights a useful result of FDI on financial development.

2.4.2 Dependency Theory

This theory criticises the modernization theory. It speculates that while FDI may demonstrate a positive effect in the short run, it has a negative impact on economic growth over the long run. This Theory demonstrates that FDI negatively influences the advancement of the beneficiary countries (Dutt, 1997). This hypothesis is maintained by Brecher and DiazAlejandro (1977) where they propose that FDI may conflictingly impact economic growth of the benefit nation if the FDI-financed affiliations repatriate over the top advantages to the parent country. This condition is known as repatriation of advantages, which unfavorably affects the BOP of the host country (Brecher and Diaz-Alejandro, 1977).

Experts confirm that FDI inimically impacts money related improvement by swarming out private theory. For example, in a study on eleven Central and Eastern European nations, Eller et al (2005) found that FDI swarmed out neighborhood capital likewise, Quazi (2004) states that FDI may conversely impact the host country as an aftereffect of capital flight, which is the surge of close-by capital, understanding an opposing impact on the country's available record and outside exchange account. FDI augments the host nation's imports in light of the fact that FDI-financed affiliations routinely require bleeding edge capital mechanical assembly and focus stock that are occasionally not open in the host nation (Rahman, 2008). Broadening imports may negative effect cash related progression as a consequence of the resulting exchange lack (Fry, 1999)

2.5 Empirical Literature Review

Empirical studies on the subject with respect to the causative connection of FDI to economic growth, its effect and causes. Some Studies have confirmed FDI causes economic growth,

others demonstrating opposite and others there reported no relationship. Direct Investment can possibly support technology, efficiency, investments and savings despite the fact that academia, and economist are yet to establish vigorous positive relations. Recent works on the topic has shown role of FDI on economic growth is not clearly defined but depends on upon country.

At the cross-country level, Balasubramanyam et al. (1996) employed the OLS technique to establish the relationship between FDI and economic growth using data for 46 developing nations from 1970 to 1985. Their results showed FDI has substantial positive spill-overs on growth in countries adopting export promoting policies whereas countries dominated with import substituting policies had weaker positive effects.

In another comprehensive study for 69 developing countries during the two periods of 1970 - 1979 and 1980 - 1989, Borensztién et al. (1998) in a study also established a positive relationship between FDI and economic growth. However, in terms of impact level it depends of the quality of human resource. He thus asserted that FDI is a significant means for the transmission of technology to human resource of beneficiary economy and improvement in economic growth.

De Mello (1999) also investigated the connection between growth and foreign direct investment for 32 OECD and non-OECD countries. Annual time series data for the period 1970-1990, his results supported the fact that FDI has positive impact on growth when FDI augments domestic investment.

In 2001 Bende et al. in like manner did a study on the relationship subject in the middle of FDI and monetary Growth in four nations over the period 1970-1998. Another study by Choe in 2003 utilized board data to look at as a part of what way FDI and financial Growth relate in eighty countries for the period 1971-1995. The results asserted evidence of causality relationship between of FDI and financial development in either heading.

Chowdhury and Mavrotas (2003) observationally investigated the association in the middle of

FDI and monetary Growth with yearly time arrangement information for the period 1969 to 2000 for three countries Johansen and Granger causality tests was utilized to assess a positive relationship in the middle of FDI and GDP development and causality that continues running from both headings.

Contrary to the findings from the country studies by Borensztein et al. (1998) other countryspecific studies that have looked at link between FDI and economic growth adopting different methodologies found no reciprocal links between economic growth and FDI Ouattara, 2005; Ayanwale, 2007; Other works in developing countries like Nigeria (Akinlo, 2004; Amaghionyeodiwe and Osinubi, 2010) and Ghana (Gyapong and Karikari, 1999) could not establish a positive connection between FDI and economic growth.

Many studies have been on Ghana in relation to FDI and Economic Growth, also studies on FDI determinant and relation with other macroeconomic indicators. In 2009, a study by Adjaye analysed the relationship between FDI and GDP growth in Ghana with data from 1970 to 2007. The method adopted by the study was Johansen and Juselius multivariate maximum. It establishes a critical positive relationship between FDI and growth. The study also stated a two-way causality between FDI to growth. The study by Frimpong et al. (2011) findings contradicts Adjaye (2009) to investigation of causal connection between growth and FDI in Ghana with data for the 32 years i.e. 1970 to 2002. The finding uncovered that there is no causality between FDI and economic development for the period. Be that as it may, they found a causality from FDI to development within the post SAP period. The clashing results could be because of the distinction in methodologies used.

Furthermore, Sackey et al., (2012) utilized different methods, for example, Vector Auto Regression (VAR) and Johansen co integration to test the impact of FDI on Economic growth of Ghana for the time period 2001-2010. The study indicated a positive long run relationship between FDI and economic growth in Ghana.

A study by Antwi et al. in 2013 used simple regression and estimated a positive and statistically significant relationship between FDI and growth with a times series data from 1980 to 2010. They however failed to check for the directional causality between FDI and economic growth. Commodore (2013) studied the impact of FDI and trade on economic growth of Ghanaian economy from 1970 to 2010 using The Autoregressive Distributed Lag (ARDL) bounds test technique. The role of FDI in pushing economic growth in the Ghanaian economy still remains ambiguous whilst trade openness had a positive impact on economic growth in both the long and the short run. Unidirectional causal relationships running from growth to FDI and trade, as well as from FDI to trade was also realised. The study proposes the harmonisation of trade and FDI policies in future long-term development framework and more importantly that policy makers should not wholly depend on foreign capital to spur economic growth but rather promote joint ventures between domestic capital owners and foreign investors as this will be more welfare enhancing to the Ghanaian economy.

Osakonor (2011) studied the impact of foreign direct investment on productivity growth in Ghana's manufacturing sector for the period 1979 to 2009 using the both quantitative and qualitative methods. The study used secondary data mainly from the African Development Indicators (ADI). Vector Error Correction(VEC) model was used to evaluation the relationships. The speed of adjustment coefficient was found to be significant and showed that 53 per cent of changes to the long run equilibrium are corrected in a given year. It was found that though FDI impacted productivity growth in the manufacturing sector, the impact showed a negative relationship. The negative impact of the FDI on the manufacturing sectors' equation may be due to the fact that when divided into proportion the FDI goes to other sectors which may end up drawing resources from the manufacturing sector thereby resulting in a fall in their output.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter specifies the method to be used for estimation and analyses of the impact of foreign direct investment on Economic Growth of Ghana. These are presented based on the empirical literature reviewed in the previous chapter. In sum, this chapter provides brief description of model specification, estimation technique and the data gathering processes.

The chapter is organized around the following sections; model specification for the impact of foreign direct investment on Ghana's Economic Growth, Justification of the Variables and Hypotheses of the thesis, the econometric techniques to be used for the estimations are discussed and the data collection procedure.

3.2 Model Specification

A lot of macroeconomic factors influence the growth of a country. These factors include capital, labour, technology, exchange rate, interest, inflation, government budget deficits, imports, exports, money supply and FDI. In order to measure the impact of FDI on Growth of Ghana, the study will consider most of these factors. Within the framework of the Classical, Neoclassical and the Endogenous Growth Model of growth theory the following model variables are included in a log-linear function.

$$\mathbf{RGDP = F (FDI, TRP, GOVSIZE, INFL, INT)} \quad (1)$$

$$\ln Y_t = \beta_0 + \beta_1 \ln FDI_t + \beta_2 \ln INFL_t + \beta_3 \ln TRP_t + \beta_4 \ln GOVSIZE + \beta_5 \ln INT_t + \varepsilon_t (2)$$

where the β s are the parameters to be estimated, ε_t represents the error term, Y_{it} is real GDP, FDI_{it} is the value of real gross foreign direct investment flows as a share of GDP, $GOVSIZE$ is

government consumption as a ratio of GDP, $INFL_t$ is the inflation rate, INT_t is real interest rate, TRP_t is trade openness is the and \ln is the natural logarithmic operator.

3.3 Data Type and Sources

The study makes extensive use of secondary data since it is accurate for the analysis and readily available, thus making it convenient to use (Ghauri, et al., 2002). The key variables used for the analysis includes real GDP, the value of real gross foreign direct investment flows as a share of GDP, government consumption as a ratio of GDP, the inflation rate, real interest rate.

This study will use secondary data from the Bank of Ghana, Ministry of Finance Budget Statements, Ghana Statistical Service, Ghana Investment Promotion Reports, World Development Indicators Reports, and UNCTAD World Investment Reports.

To examine the relationship between Real GDP and the independent variables, annual time series data spanning the periods 1992-2014 for which data is available is used. Thus the sample size will be twenty-two (23) years.

3.4 Justification and Definition of Variables

This section gives a brief description on the dependent and independent variables.

3.4.1 Dependent Variable

3.4.1.1 Economic Growth

Economic growth is basically defined as the growth in the total or per capita output of an economy often measured by an increase in real GDP and caused by an increase in the supply of factors of production or their productivity (Rutherford, 2002). Economic growth can also be implied as an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. Though variables like real output per capita and growth in real gross domestic product can be used to measure economic growth, this study would proxy economic growth with growth in real GDP. The choice of this variable is hinged on the fact

that it is widely recognised as a good measure of the economic value of a nation's output and income. It is also a key objective for development economists as it inherently accounts for impact of inflation on the total value of goods and services in an economy. To this end, the real GDP variable will be the dependent variable in the model.

3.4.2 Independent Variables

3.4.2.1 Foreign Direct Investment

Foreign direct investment refers to long term participation by country "A" in management, joint venture, transfer of technology and expertise in country "B". Shim et.al (1995). It is also the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. This embodies the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (World Development Indicators, 2011). This study uses the FDI time series which is depicted by net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors as a percentage of GDP.

FDI is particularly relevant in the economic growth model due to the crucial role it plays in the economy of developing countries for which the Ghanaian economy is part. FDI increases domestic investment by serving as a source of the capital, technology, managerial skills and market access needed to propel developing countries towards economic growth and development. Empirical evidence therefore suggests a positive relationship between FDI and economic growth (Frimpong and Oteng-Abayie, 2006; Abdullah et.al, 2009 and Kargbo, 2012). The coefficient of FDI is expected to be positive.

3.4.2.2 Government Size

This is measured as the ratio of government consumption to GDP. It is expected to bear a direct relationship to economic growth. This is because a higher level of government consumption

should translate into provision of more social capital that should encourage production and growth. The expected coefficient is expected to be positive.

3.4.2.3 Real Interest Rate

FDI will get to countries that pay a higher return on capital. We assume that a higher return on capital is indicative of a higher level of productivity and hence a higher potential to grow the economy. Interest rate is represented by the 91-day treasury bill rate. The interest rate provide opportunity cost for potential investors in Ghana, who can use the rate to compare with what obtains in other parts of the world where there are available options. We assume a direct relationship between income per capita and the return on capital. Asiedu (2001) found a positive relationship between the interest rate and the FDI, suggesting that higher GDP per capita implies a brighter prospect for FDI in the host economy.

3.4.2.4 Trade Openness

Trade openness is usually defined as the sum of exports and imports of goods and services measured as a share of gross domestic product. A high trade openness value reflects a high incidence of trade, which implies high volumes of exports and imports as well as relatively low trade barriers of the country. The goods and services traded are sometimes in the form of inputs and outputs of FDI related projects. This implies that while high trade openness is relevant to export oriented FDI, import-substitution FDI also gains from lower trade barriers against imported inputs (Wilhelm et. al, 1998). Thus, the growth-enhancing effects as well as magnitude of FDI is highly dependent on the incentives offered by the recipient country through its trade policies which is eventually represented in its trade openness values (Bhagwati, 1978). This explains the relevance of the trade openness variable to the economic growth model of Ghana that has implemented both export oriented and import substitution trade policies in the past. To this end, the coefficient of trade openness is expected to be

positive. High trade volume is particularly important to export-oriented FDI. While importsubstitution FDI gains from trade barriers against competing imported products, it benefits from low trade barriers against imported inputs.

3.4.2.5 Inflation

Inflation rate as a measure of overall price stability of the country. We expect an indirect relation between inflation and economic growth.

3.5 Econometric Techniques for Estimation

3.5.1 Test of Unit Root

Current standard regression analysis begins with the investigations into the stationarity of the variables that are used. The Augmented Dickey –Fuller (ADF) test is employed to determine the level or degree of integration of the variables – how many times the variables need to be differenced to attain stationarity. Thus ADF tests the equation;

$$\Delta Y_t = \alpha + \beta Y_{t-1} + \sum_{i=1}^m \gamma_i \Delta Y_{t-i} + \epsilon_t \dots \dots \dots 3$$

Where represents the variable in question, is the trend, is the lag length and is a random variable assumed to be a —white noise. After plotting the data on a diagram, trend and intercept will be added as appropriate. Equation (3) is applied to all variables. Hypothesis to be tested is as follows:

Hypothesis to be tested is as follows:

H₀: All the coefficient of the variables are equal to zero

H₁: At least one coefficient of the variables is not equal to zero

In the context of the ADF test, if the calculated ADF test statistic is greater than the MacKinnon critical values, the null hypothesis (H₀) is rejected which implies that the variable under consideration is stationary and integrated of order zero, that is, I(0) otherwise accept H₀ which

implies that the series in question is not stationary (Gujarati, 2004). Similarly, the corresponding probability values generated for the test statistics would guide outcome of the Philips Perron and the Augmented Dickey Fuller-GLS tests

3.5.2 Test of Cointegration

Since the variables to be used are all not likely to be stationary, applying OLS on the level variables will produce spurious result as noted by Granger and Newbold (1974). Engle and Granger (1987) developed a two-step approach, which is based on an OLS estimation of the long-run equation and a unit root test of the residuals. When the residual series is found to be stationary it is included in the (differenced) short-run specification as an error correction term. The error correction (EC) term provides information on the speed of adjustment of the long run equation to equilibrium. Although this is popular, it has shortcomings. For instance, if there are more than two variables in a model, there may be more than one cointegrating vector. With the single-equation approach these different cointegrating vectors cannot be identified. But even if there is only a single cointegrating vector the univariate approach is inefficient if not all variables on the right-hand side of the cointegrating vector are weakly exogenous. The multivariate or vector error correction (VEC) approach, which has been developed by Johansen (1988, 1991) and Johansen and Juselius (1990, 1992), overcomes most of the problems of the two-step approach. The study therefore adopts the VEC model.

Having tested for cointegration, we used vector error correction model (VECM) that looks at the long run relationship between our variables as well as the dynamics and error correction in the short run. We estimated the long run impact of FDI on Economic growth as follows:

$$LnY_t = \beta_0 + \sum_{i=1}^n \theta_{1i} LnY_{t-1} + \sum_{i=1}^n \theta_{2i} LnFDI_{t-1} + \sum_{i=1}^n \theta_{3i} LnINFL_{t-1} + \sum_{i=1}^n \theta_{4i} LnTRP_{t-1} + \sum_{i=1}^n \theta_{5i} LnGOVSIZE_{t-1} + \sum_{i=1}^n \theta_{6i} LnINT_{t-1} + U_t \dots\dots\dots(4)$$

$$\Delta LnY_t = \beta_0 + \sum_{i=1}^n \theta_{1i} \Delta LnY_{t-1} + \sum_{i=1}^n \theta_{2i} \Delta LnFDI_{t-1} + \sum_{i=1}^n \theta_{3i} \Delta LnINFL_{t-1} + \sum_{i=1}^n \theta_{4i} \Delta LnTRP_{t-1} + \sum_{i=1}^n \theta_{5i} \Delta LnGOVSIZE_{t-1} + \sum_{i=1}^n \theta_{6i} \Delta LnINT_{t-1} + \varphi ECT_{t-1} + U_t \dots\dots\dots 5$$

When the error correction term's (ECT_{t-1}) coefficient is represented by ϕ

3.5.4 Granger Causality Test

In line with the objectives of the study, granger causality tests is also done to assess the causal relationship between the variables. Since regression analysis only deals with the dependence of one variable on other variables it does not necessarily imply causation or prediction (Gujarati, 2007). This study adopts the widely used Granger causality test to assess the presence and the direction of causality between the variables under consideration. The direction of causality determines the direction of the relationship among variables. In that regard, there might be one-way causality, two-way causality or no causality between the variables. The Granger causality test states that, if a variable X Granger causes variable Y, the mean square error (MSE) of forecast of y based on the past values of x are lower than that of a forecast that uses only past values of Y. To test for causality between FDI inflows, trade and economic growth, the traditional Granger-type causality developed by Granger (1988) tests will be used to identify the direction of causality.

In order to achieve its main objective, the study will adopt the Ordinary Least Squares (OLS) estimation technique to estimate the parameters of the specified model when they are found stationary. All the assumptions of the Ordinary Least Squares are assumed to hold.

These assumptions include:

- (1) The error terms are normally distributed with a mean of zero and a variance of σ^2 ,
- (2) The explanatory variables are non-stochastic,
- (3) The error term has a constant variance i.e. homoscedasticity, and
- (4) Successive error terms are uncorrelated i.e. no serial correlation.

However, emphasis is placed on the correlation between growth of the economic growth and foreign direct investment. In order to estimate the regression model, a statistical package,

EIEWS 9, will be used. The output will be evaluated using the t-statistic and p-values for the coefficients which results in either rejecting or failure to reject the hypothesis at a specified level of significance.

KNUST



CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.1 Introduction

This section presents the empirical results and discusses the contextual interpretation of the impact of foreign direct investment on the economic growth of Ghana. The rest of the chapter is grouped into the following sections. The first two sections provide the descriptive statistics and results of unit roots tests respectively, which is followed by section 4.4 and 4.5 for the test of cointegration for the impact of foreign direct investment on economic Growth of Ghana and Granger Causality Test. The last section, 4.6 presents the results on the Error Correction Model.

4.2 Descriptive Statistical Analysis

The various descriptive statistical characteristics of the variables used in the study are discussed in this section. Table 4.1 gives the summary statistics of the variables used for the empirical analysis using their natural logarithmic forms. The measure of central tendency was done by the use of the Means and the medians of the variables. Over the period under study, RGDP averaged 22.99874. The measure of dispersion was also captured with the use of standard deviations; all the variables are not widely dispersed about their mean values. The Jarque–Bera statistics was used to determine the normality of the variables. All the variables passed the normality test given by the Jarque-Bera test results as shown by their corresponding probabilities.

Table 4.1 A Summary of Descriptive Statistics

	LOGRGDP	LOGFDI	LOGGS	LOGINF	LOGTBR	LOGTRP
Mean	22.99874	0.722703	2.538087	2.859453	3.155954	4.367153
Median	22.93398	0.363872	2.488542	2.715898	3.249987	4.402470

Maximum	23.74190	2.411636	3.039173	4.085330	3.868698	4.754008
Minimum	22.48112	-1.590366	2.274429	2.166403	2.261763	3.828502
Std. Dev.	0.369975	1.059962	0.219275	0.523557	0.501536	0.230736
Skewness	0.445721	-0.022267	0.982507	0.681641	-0.377313	-0.410684
Kurtosis	2.140446	2.228403	2.943055	2.649749	2.075235	2.636936
Jarque-Bera	1.469607	0.572456	3.703504	1.898665	1.365289	0.772858
Probability	0.479600	0.751091	0.156962	0.386999	0.505279	0.679479
Sum	528.9709	16.62217	58.37600	65.76741	72.58694	100.4445
Sum Sq. Dev.	3.011385	24.71745	1.057797	6.030468	5.533845	1.171259
Observations	23	23	23	23	23	23

Source: Author's Estimation, 2016

4.3 Graphical Analysis

Below is the graphical analysis which shows the trends of Real Gross Domestic Product, Inflation, Trade openness, Foreign Direct Investment, Government Size and Interest Rate from the period 1992 to 2014 in natural logarithm.

4.3a Trends of Real Gross Domestic Product

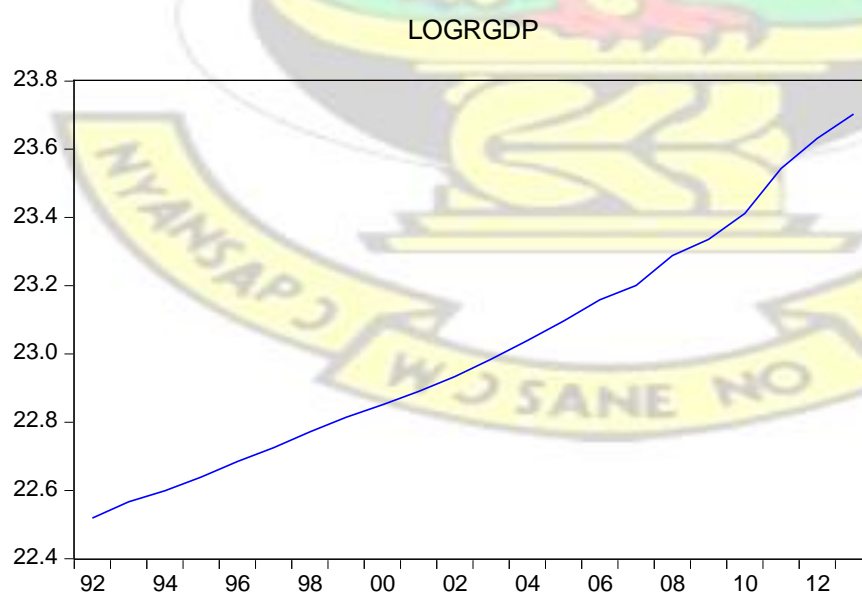


Figure 4.1: A Graph Real Gross Domestic Product (1992 to 2014)

4.3b Trends of Foreign Direct Investment

LOGFDI

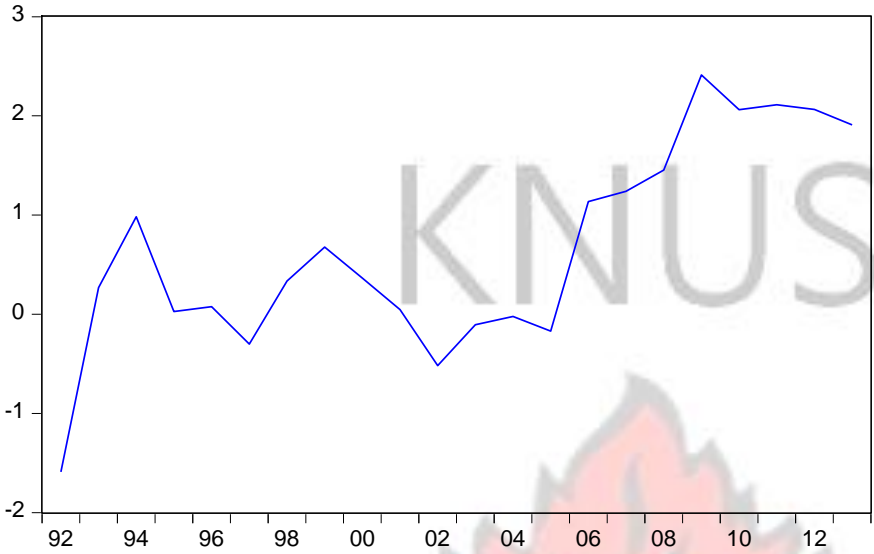


Figure 4.2: A Graph Foreign Direct Investment (1992 to 2014)

4.3c Trends of Government Size

LOGGS

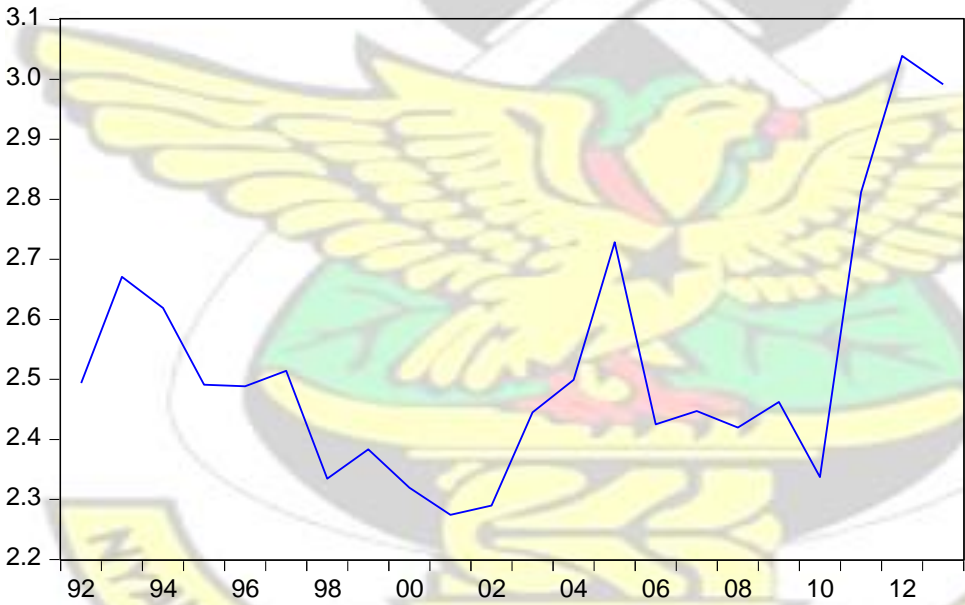


Figure 4.3: A Graph of Government Size (1992 to 2014)

4.3d Trends of Inflation

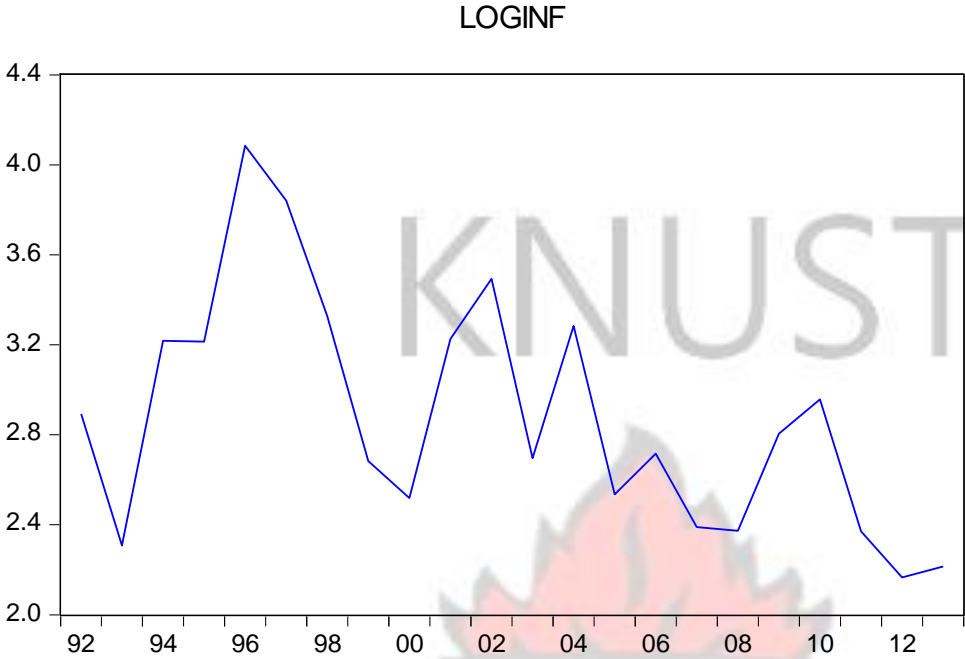


Figure 4.4: A Graph of Inflation (1992 to 2014)

4.3e Trends of Trade Openness

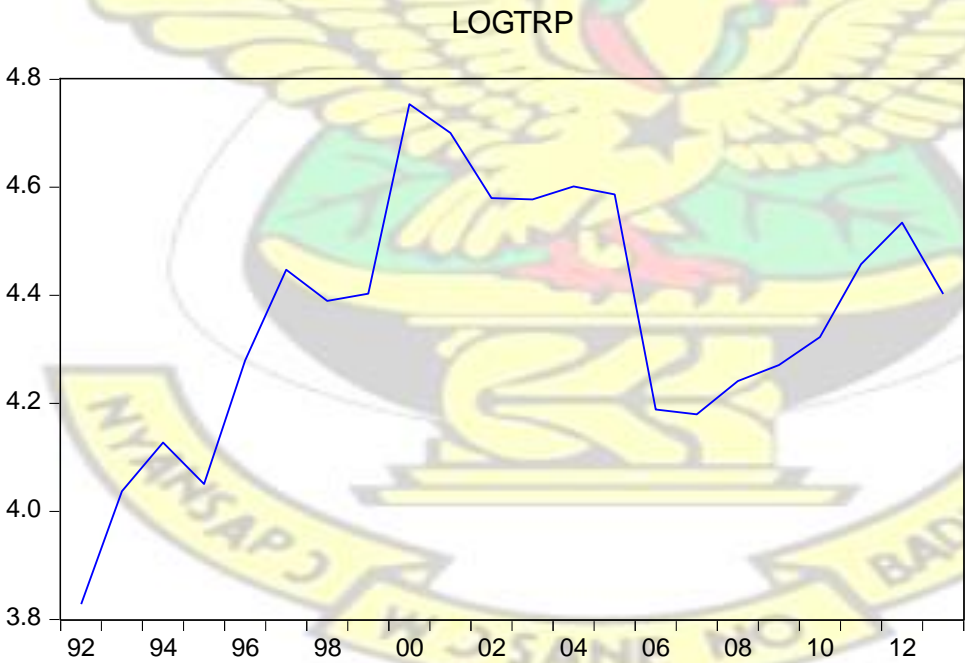


Figure 4.5: A Graph of Trade Openness (1992 to 2014)

4.3e Trends of Interest Rate

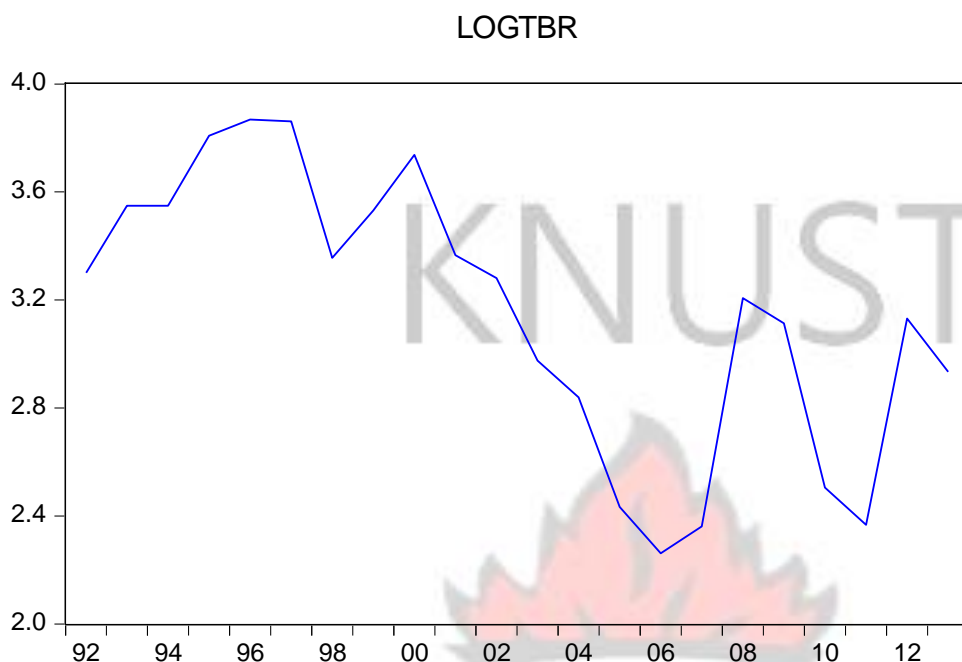


Figure 4.6: A Graph of Interest Rate (1992 to 2014)

4.4. Unit Root Test

Both ADF and PP test are employed to check for unit root based on the hypothesis below;

Null Hypothesis (H_0): Has a unit root

Alternative Hypothesis (H_1): Has no unit root

Table 4.2 and 4.3 shows the summary of both the PP and ADF test

Table 4.2 PP Unit Root Test

Variable	Deterministic Term	Test Statistic Value @ level	5% Critical Value @ level	Test Statistic Value @ 1st difference	5% Critical Value @ 1st difference	Test Statistic Value @ 2nd difference	5% Critical Value @ 2nd difference
LFDI	Constant	-2.177413	-3.004861	-5.645359	-3.012363		
LINF	Constant	-2.410506	-3.004861	-5.670364	-3.012363		
LRGDP	Constant & Trend	-0.137918	-3.612199	-3.473654	-3.622033		
LGS	Constant & Trend	-1.864517	-3.632896	-5.469045	-3.644963		
LTRP	Constant	-2.697242	-3.004861	-4.407508	-3.012363		

LTBR	Constant & Trend	-2.298361	-3.632896	-4.672867	-3.644963		
------	------------------	-----------	-----------	-----------	-----------	--	--

Source: Author's Estimation

Table 4.3 ADF Unit Root Test

Variable	Deterministic Term	Test Statistic Value @ level	5% Critical Value @ level	Test Statistic Value @ 1 st difference	5% Critical Value @ 1 st difference	Test Statistic Value @ 2 nd difference	5% Critical Value @ 2 nd difference
LFDI	Constant	-2.134884	-3.004861	-5.417260	-3.012363		
LINF	Constant	-2.404099	-3.004861	-4.858482	-3.040391		
LRGDP	None	-1.820454	-1.960171	2.850319	-1.960171		
LGS	Constant & Trend	-1.864517	-3.632896	-4.226645	-3.710482		
LTRP	Constant	-2.693043	-3.004861	-4.401371	-3.012363		
LTBR	Constant & Trend	-2.169008	-3.632896	-3.933776	-3.268973		

Source: Author's Estimation, 2016

From both ADF and PP unit root test, by comparing the absolute values of the test statistics and critical values at 5%, all the variables considered in the model are not stationary at level.

Thus they all have unit root present in them.

4.4 Lag Length Selection Test

Before estimating a VAR model, it is important to determine the optimal lag length of the model to ensure that the parameters are consistent. Each of the information criteria, as per the table above, suggests the various lag length. We used the Schwarz Information Criterion to select a

lag length of one (1) to minimize information criteria. We then test for cointegration between our independent variables and Real Gross Domestic product using the Johansen cointegration approach as that approach is not sensitive to what is chosen as the endogenous variable.

Table 4.4 Optimal Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-23.23891	NA	6.53 e-07	2.784658	3.083093	2.849426
1	98.89029	162.8389*	2.09e-10	-5.418123	-3.329078*	-4.964746
2	153.3740	41.51136	1.08e-10*	-7.178471*	-3.298817	-6.336487*

* 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

4.5 Cointegration Analysis

All the variables at levels are non-stationary and integrated of either order one or two. The possibility of the presence of cointegrating relations among the variables is been indicated. Cointegration analysis shows the long- run steady state relations among non-stationary integrated variables; therefore, it is a necessary step to build empirically meaningful relationships. Hence cointegration analysis test is been conducted for the existence of cointegrating vectors based on the hypothesis below;

Null Hypothesis (H_0): No cointegration relationship among variables

Alternative Hypothesis (H_1): Cointegration relationship among variables

Summary of Johansen Cointegration Test is shown in table 4.5a and 4.5b

Table 4.5a Johansen Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value
None *	0.955838	171.3259	95.75366
At most 1*	0.912401	105.8084	69.81889
At most 2*	0.653167	54.67370	47.85613
At most 3*	0.529555	32.43657	29.79707
At most 4*	0.381955	16.60097	15.49471
At most 5*	0.288060	6.495898	3.841466

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level Source:

Author's Estimation, 2016

Table 4.5b Johansen Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5% Critical Value
None *	0.955838	65.51756	40.07757
At most 1*	0.912401	51.12468	33.87687
At most 2	0.653167	22.23713	27.58434
At most 3	0.529555	15.83560	21.13162
At most 4	0.381955	10.10507	14.26460
At most 5	0.288060	6.495898	3.841466

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Source: Author's Estimation, 2016

Our Johansen cointegration test results based on the trace statistic is presented in table 4.5a while the results based on the maximum-eigenvalue test statistic is presented in table 4.5b.

Based on the results in table 4.5a, we reject the null hypothesis of no cointegration at the 5% significance level given the trace statistic of 95.75366. Turning to the maximum-eigenvalue test statistic in table 4.5b, we again reject the null hypothesis of no cointegration. We therefore have cointegration between the independent variables and real gross domestic product.

Table 4.5c Long Run Model When Normalized

1 Cointegration Equation(s): Log likelihood 122.5539

Normalized cointegrating coefficients (standard error in parentheses)					
LRGDP	LINF	LGS	LFDI	LTBR	LTRP
1.000000	1.371167	2.907207	0.884932	-0.308817	2.762580
	(0.12166)	(0.26142)	(0.07474)	(0.09392)	(0.27379)

Source: Author's Estimation, 2016

From the long run cointegration model table above, the correlation of the model in the long run is revealed. In the sense that, when foreign direct investment, inflation, government size and trade openness increases, real GDP also increases while as, when interest rate increases, real GDP decreases.

However, since the cointegration test indicates that the variables are cointegrated, the fitting method of analysis is the application of Vector Error Correction Model (VECM), which will indicate the real impact or relationship of foreign direct investment on GDP in the long run and short run deviations that may arise.

4.6 Vector Error Correction Model (VECM)

The application of VECM methodology in this analysis is to enhance the quality, flexibility and versatility of the econometric model of dynamic systems and the integration of short-run

dynamics with the long-run equilibrium. The results obtained with the use of VECM are displayed in table 4.6 below.

Table 4.6: Vector Error Correction Model (VECM)

Dependent Variable: D(GDP)

	Coefficient	Std. Error	t-Statistic	Prob.
ECT(1)	-0.039820	0.007733	5.149687	0.0002
DlnRGDP(1)	-1.681339	0.449898	-3.737154	0.0025
DlnFDI(1)	0.012104	0.006022	2.009904	0.0457
DlnTRP(1)	-0.080428	0.028255	-2.846505	0.0137
DlnGOVSIZE(1)	0.035080	0.028446	1.233218	0.2393
DlnINF(1)	-0.028055	0.008277	-3.389480	0.0048
DlnINT(1)	0.068191	0.018728	3.641126	0.0030
Residual	0.150181	0.024852	6.043152	0.0000
R-squared	0.805346	Mean dependent var		0.058225
Adjusted R-squared	0.700533	S.D. dependent var		0.026230
S.E. of regression	0.014354	Akaike info criterion		-5.367270
Sum squared resid	0.002678	Schwarz criterion		-4.969357
Log likelihood	64.35634	Hannan-Quinn criter.		-5.280913
F-Statistic	7.683603			
Prob (F-Statistic)	0.045426			
Durbin-Watson stat	2.060290			

The R-squared of 0.805346 obtained from the short-run model suggests that all the explanatory variables thus, inflation, interest rate, trade openness, FDI and Government size jointly account for approximately 80.5% of the variations in the RGDP. The F-statistic of 7.683603 is relatively high and thus provides a good fit for the estimated model. Based on these probability statistics from the regression, the model is good for analysis and policy interpretation.

The adjusted (R^2) minimizes the influence of the number of explanatory variables included in the model; the adjusted R^2 indicates that after removing the influence of the explanatory variables, the dependent variable is still explained by the equation with 70.1 % and the Durbin Watson Stat (DW) of 2.060 indicates a good fit and an absent of autocorrelation.

Quite interestingly, the VECM revealed mixed results with varying statistical significance level for some of the coefficients while most of them were also statistically insignificant. Similar to the long-run coefficients, the short run coefficients are short-run elasticities. In the case of the FDI, were found to be statistically significant. Precisely, in the first lag, a coefficient of 0.012104 was found to be statistically significant at the 5% significance level and it also exhibited a positive sign in the short run. RGDP increase by 1.2% when FDI changes by 1% in the short run. For Trade openness, it had a coefficient of -0.80428 was found to be statistically significant at the 5% significance level indicating an inverse relationship as against the positive expectation. Interest rate and Inflation were also found to be statistically significant at the 5% significance level highlight the short run causality in Real GDP. However, the Government Size had a coefficient of 0.035080 and was found not to be statistically insignificant at 5% significant level.

The long- run component of the model is given by the lagged error correction term, ECT (1). From the results the ECT (1) is correctly signed and significant. It means that the variables $DlnFDI$, $DlnTRP$, $DlnINT$, $DlnINF$ and $DlnGOVSIZE$ are indeed causally related with the dependent variable $DRGDP$ through this error-correction term. A significant ECT (1) coefficient means that all things being equal, whenever the actual value of $DLNINF$ falls below the value consistent with its long-term equilibrium relationship, changes in the independent variables help bring it up to the long term equilibrium value. The size of the coefficient indicates that the speed of adjustment to equilibrium is 3.98%.

4.7 Granger Causality Test

To identify if independent variables in the short run could influence economic growth in the Ghanaian economy. The hypothesis below was used;

Null Hypothesis (H_0): No granger cause RGDP

Alternative Hypothesis (H_1): Granger cause RGDP

This result is shown in the table below by conducting a granger causality test.

Table: 4.7: Granger causality test

Null Hypothesis	F Statistics	Probability
FDI does not Granger Cause Y	0.00439	0.0021
INF does not Granger Cause Y	0.55688	0.0453
INT does not Granger Cause Y	0.77981	0.0414
TRP does not Granger Cause Y	1.03637	0.0126
GOV does not Granger Cause Y	3.11763	0.0375

Source: Author's Estimation, 2016

As can be seen in Table 4.7, the F-statistic used to test causality is significant at 5% significance level in the case of the null hypothesis that, In FDI Granger do not cause In Y. Thus, the Fstatistic is sufficient enough to reject the null hypothesis in favour of the alternative that GDP In FDI Granger causes In Y. Therefore, the results indicate that FDI Granger causes Y or RGDP implying that past values of FDI significantly contribute to the prediction of current RGDP even in the presence of past values of RGDP. This further implies that causality runs unidirectional from FDI to the RGDP. Thus, FDI is found to impact RGDP in the long run and can stir movements in RGDP. This result shows that over the period, 1992-2014, for the study, past values of FDI significantly contribute to the prediction of the current GDP in Ghana. Thus, feedback relationship exists between FDI and GDP in Ghana over the period 1992-2014. It is also evident from Table 4.7 that an independent relationship or causal relationship was

identified between INFL, TRP, INT GOVSIZE FDI and GDP indicating an influence on economic growth in the Ghanaian economy under the period of consideration. This finding does not supports the conclusions of Akinlo (2004) and Ayadi (2008) that foreign capital has a minute and statistically insignificant effect on the growth of the Nigerian economy.

KNUST

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This concluding chapter contains the summary of the major findings, the conclusions that are derivable from the study and recommendations.

5.2 Summary of Findings

By estimating the economic growth using annual data which expands from 1992 to 2014 the result found showed that in the long run relation between FDI on the economic growth. When both ADF and PP unit root test was carried out on the variables, it showed that variables were not stationary at level.

From the Johansen Cointegration test, using both Trace and Max-Eigen test statistics, the existence of six cointegrating equations at 5% level of significance was found. Implying that, the variables considered in the model do collectively move together over a long run period of time. Thus from the Johansen Cointegration test we can conclude that there is a long run relationship among independent variable in the study and economic growth.

A VECM was applied due to the presence of cointegrating equations among endogenous variables. From the VECM, it was seen that in the long run, all the variable impacted on the dependent variable RGDP. In the short run FDI, trade openness, inflation and interest rate

significantly impact growth in Ghana while Government Size was found not to have significant impact on economic growth over the period.

Granger Causality Test was conducted to examine if FDI and other determinants does impact the Ghanaian economy in the short run. From the test, it was revealed that in the short run FDI and other determinant do statistically significantly influence the Ghanaian economy under the period of study.

5.3 Conclusion

The study extended the findings of previous studies on the evidence on the effect of FDI on Ghana's Economic growth. From the study carried out, it is seen that in the long run period, Foreign direct investment does statistically influence Ghanaian macro-economic growth but in the short run period, it does impact the Ghanaian macro-economic growth.

In the short run period, foreign direct investment, inflation, government size, trade openness does effectively influence the Ghanaian economy positively. An increase in foreign direct investment by 1% causes the Ghanaian economy to increase by about 88%, an increase inflation by 1% increases the Ghanaian economy by about 137% which the opposite of the expectation in relationship. An increase government size by 1% increases the Ghanaian economy by about 290.7%, and also an increase trade openness by 1% increases the Ghanaian economy by about 276.3%. Whiles Treasury bill rate does effectively influence the Ghanaian economy negatively in the short run. A 1% increase in interest rate causes the Ghanaian economy to decrease by about 30.9 %.

5.3 Recommendation

To strengthen and improve the performance of the Ghanaian macroeconomic economy, policy makers need to focus and improve on the macroeconomics variable.

Firstly, the significance of the FDI variable in the equation is an indication the FDI affects the macroeconomic economy. As a consequence, FDI promotion policies should be adjustment to bring

more investment to the country which then translates into high economic growth in the Ghanaian economy.

Future research in this area should focus on the impact of FDI on the various sectors of the economy in Ghana. This builds on the findings on this study and helps inform policy makers in shaping FDI policies for the various sectors of the economy.

REFERENCE

Anokye M. Adam, and George Tweneboah, (2006): "Foreign Direct Investment and Stock Market." *International Research Journal of Finance and Economics* 1-8.

Asafu-Adjaye, J (2005). *What Has Been the Impact of Foreign Direct Investment in Ghana?* The Institute of Economic Affairs Policy Papers. Vol.1 No.9 Issn 0855-2452

Asiedu, E. (2002) *On The Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different?* World Development pp 107-119

Balasubramanyam, V. N., Mohammad, S., & Sapsford, D. (1996). *Foreign direct investment and growth in ED and IS countries.* Economic Journal, 106(1), 92–105.

Balasubramanyam, V.N., Salisu M.A., and Sapsford D (1996) *Foreign Direct Investment and Growth in EP And IS Countries* Economic Journal. 106 (434) : 92-105.

Bengoa, M., & Sanchez-Robles, B. (2003). *Foreign direct investment, economic freedom and growth: new evidence from Latin America.* European Journal of Political Economy, 19, 529–545

Bhagwati, J. (1978), *Anatomy and Consequences of Exchange Control Regimes*, Studies in International Economic Relations.

Bjork, Gordon J. (1999). *The Way It Worked and Why It Won't: Structural Change and the Slowdown of U.S. Economic Growth.* Westport, CT; London: Praeger. pp. 2, 67. ISBN 0-27596532-5.

Borensztein, J, Degregorio J, and Lee J W, (1998), *How Does Foreign Direct Investment Affect Economic Growth?* Journal of International Economics, pp 115-135.

Bornschiefer, V., & Chase-Dunn, C. K. (1985). *Transactional corporations and underdevelopment.* New York: Praeger.

Boyd, J. H. and Smith B. D. (1992). *Intermediation and the Equilibrium Allocation of Investment Capital: Implications for Economic Development.* Journal of Monetary Economics 30 409-432.

Brecher, R. A., & Diaz-Alejandro, C. F. (1977). *Tariffs, Foreign Capital, and Immiserizing Growth.* Journal of Economics

- De Mello, L. (1999), *Foreign Direct Investment Led Growth: Evidence from Time-Series and Panel Data*. Oxford Economic Papers.
- Dickey, D. A. and Fuller, W. A. (1979), *Distribution of The Estimators for Autoregressive Time Series with A Unit Root*, Journal of the American Statistical Association 77, Pp.427-431.
- Dunning, J. H. (1977), *Trade, location of economic activity and MNE: a search for an eclectic approach*. In: Ohlin, B. (Ed.). *The international allocation of economic activity*. Macmillan, London, pp. 395–418.
- Dunning, J. H. (1988), *The eclectic paradigm of international production: A restatement and some possible extensions*. *Journal of International Business Studies*, 19 (1), 1-31.
- Dutt, A. K. (1997). *The pattern of foreign direct investment and economic growth*. *World Development*, 25(11), 1925–1936.
- Eller, M., Haiss, P., & Steiner, K. (2005). *Foreign direct investment in the financial sector: The engine of growth for central and eastern Europe? Europe Institute Working Paper No. 69*, Vienna University of Economics and Business Administration.
- Firebaugh, G. (1992). *Growth Effects of Foreign and Domestic Investment*. *American Journal of Sociology*, 105–130.
- Frimpong, J. M, and Oteng-Abayie E F. (2006) *Bivariate Causality Analysis Between Fdi Inflows and Economic Growth in Ghana* MPRA, pp 17.
- Fry, M. (1999). *Some lessons for South Asia from developing country experience with foreign direct investment*. The World Bank, 1999, Washington D.C.
- Galor, O. (2005). *From Stagnation to Growth: Unified Growth Theory*. *Handbook of Economic Growth*. Elsevier
- Gujarati, D. (2007): “*Basic Econometrics. Fourth Edition*”, Mcgraw-Hill, New York.
- Gyapong, A, and Karikari J A (1999), *Direct Foreign Investment Strategies and Economic Performance in Ghana And Ivory Coast*, *Journal of Economic Development*.
- Harris D.J (1978), *The classical theory of Economic Growth* Stanford, Stanford University Press
- Hermes, N., & Lensink, R. (2003). *Foreign direct investment, financial development and economic growth*. *Journal of Development Studies*, 40(1), 142–153.
- Herzer, D, Stephen Klasen and Felicitas Nowak Lehmann D. (2008), — *In Search of FDI-Led Growth in developing countries: The way forward*, *Econometric modelling*, 25:793-810
- Hymer, S., 1976 (1960 dissertation): “*The International Operations of Nation Firms: A Study of Foreign Direct Investment*”, Cambridge, MLT Press. *International Economics*, 7, 317–322.
- International Monetary Fund (IMF 1993), *Balance of Payments Manual*, Fifth edition

International Monetary Fund (IMF), (2008). *Foreign Direct Investment Report on Emerging Economies*. IMF.

Knickerbocker, F. T. (1973). *Oligopolistic Reaction and Multinational Enterprise*. Boston: Harvard Business School Press. Lall,

Lemi, A., and S. Asefa. (2003) *Foreign Direct Investment and Uncertainty: Empirical Evidence From Africa*. Africa Finance Journal, pp36-67

Mankiw, N.G., Romer, D. and D. N. Weil, (1992), *A Contribution to The Empirics of Economic Growth*, Quarterly Journal of Economics, 107, 407-437.

Mello, D. L. R. Jr. (1999). Foreign direct investment-led growth: Evidence from time series and panel data. *Oxford Economic Papers*, 51(1), 133–151.

Mengistu, B., & Adams, S. (2007). *Foreign direct investment, governance and economic development in developing countries*. The Journal of Social, Political, and Economic Studies, 32(2), 223.

Oteng-Abayie, (2006). *Impact of FDI and economic growth in Ghana*.

Quarmyne, R (2007). *Government Interventions in attracting FDI in developing economies*. South American Economic Journal, Vol 7, pg 5-7.

Quazi, R. M. (2004). *Foreign aid and capital flight: A case study of Bangladesh*. Journal of the Asia Pacific Economy, 9(3), 370–393.

Rahman, K. M. A. (2008). *Globalization and the climate of Foreign Direct Investment: A case study for Bangladesh*. Journal of Money, Investment and Banking

Romer, C. (1993). *FDI and technology transfer to the host country*.

Romer, P. (1993). *Idea gaps and object gaps in economic development*. Journal of Monetary Economics, 32(3), 543–573.

Shim J.K. And Siegel J. G. (1995), *Dictionary of Economics*, United States of America.

Solow R.M. (1956), *A Contribution to Economic Growth*, Quarterly Journal of Economics Vol 70 No. 1 pp. 65-94

UNCTAD, (2014). *World Investment Report 2014*. Geneva: UNCTAD

Wikipedia, (2011). Economic Growth (online) at [http://en.wikipedia.org/org/wiki/Economic Growth](http://en.wikipedia.org/org/wiki/Economic_Growth) (Accessed December 27,2015)

Wilhelms S. K.S. And Dean Witter M. S. (1998) *Foreign Direct Investment and Its Determinants in Emerging Economies* African Economic Policy Paper Discussion Paper.

World Bank (2014). *World development indicators*. Washington DC, USA.

KNUST

