EFFECT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH AND POVERTY IN NIGERIA

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UNIVERSITI UTARA MALAYSIA
January 2019

EFFECT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH AND POVERTY IN NIGERIA

BY

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Thesis Submitted to
School of Economics, Finance and Banking,
Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Master of Sciences (Economics)

Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

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ABSTRACT

The increasing concern by the government to reduce poverty and achieve a sustainable economic growth in Nigeria is of great importance. The objectives of this study are to examine the effect of FDI on economic growth, to assess how FDI affects poverty, and to investigate the direction of causal relationship amongst FDI, economic growth, and poverty in Nigeria. The study used time series data for the period of 1980-2015. The data were mainly sourced from the World Development Indicators (WDI), the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS). The study employed the approach of Autoregressive Distributive Lag (ARDL) and Granger Causality relationship in analyzing the data. The results show that FDI has a significant positive effect on economic growth in the short run and long run. However, FDI is only found to have a significant positive effect on poverty in the long run. The results of analysis also show that the models of economic growth and poverty have high speed of adjustment toward equilibrium in the short run because of high coefficient value of error correction terms. As the Granger causality relationship results confirm that FDI has unidirectional causality relationship with poverty and economic growth, the government expenditure, economic growth and trade openness are found to have bidirectional causality relationships with poverty. Therefore, this study recommends that the government of Nigeria should implement subsidies and tax relief programs to attract more FDI inflow and establish poverty alleviation commission aimed at executing specific poverty alleviation programmes.

Keywords: FDI, poverty, ARDL, economic growth

ABSTRAK

Keprihatinan yang semakin meningkat oleh kerajaan untuk mengurangkan kemiskinan dan mencapai pertumbuhan ekonomi yang mampan di Nigeria adalah sangat penting. Objektif kajian ini adalah untuk mengkaji kesan pelaburan asing langsung (FDI) terhadap pertumbuhan ekonomi, menilai bagaimana FDI mempengaruhi kemiskinan, dan menyiasat arah hubungan bersebab antara FDI, pertumbuhan ekonomi, dan kemiskinan di Nigeria. Kajian ini menggunakan data siri masa untuk tempoh 1980-2015. Sumber utama data ialah Petunjuk Pembangunan Dunia (WDI), Bank Pusat Nigeria (CBN) dan Biro Statistik Kebangsaan (NBS). Kajian ini menggunakan pendekatan Lat Bertabur Autoregresif (ARDL) dan hubungan bersebab *Granger* untuk menganalisis data. Dapatan kajian menunjukkan bahawa FDI mempunyai kesan signifikan yang positif terhadap pertumbuhan ekonomi dalam jangka pendek dan jangka panjang. Walau bagaimanapun, FDI didapati hanya mempunyai kesan positif yang signifikan terhadap kemiskinan dalam jangka masa panjang. Keputusan analisis juga menunjukkan model pertumbuhan ekonomi dan kemiskinan mempunyai kelajuan penyesuaian yang tinggi ke arah keseimbangan dalam jangka pendek kerana nilai koefisien terma pembetul ralat adalah tinggi. Keputusan hubungan bersebab *Granger* mengesahkan FDI mempunyai hubungan bersebab sehala dengan kemiskinan dan pertumbuhan ekonomi manakala perbelanjaan kerajaan, pertumbuhan ekonomi dan perdagangan terbuka mempunyai hubungan bersebab dua hala dengan kemiskinan. Oleh itu, kajian ini mencadangkan agar kerajaan Nigeria melaksanakan subsidi dan pelepasan cukai untuk menarik lebih banyak aliran masuk FDI dan menubuhkan suruhanjaya pembasmian kemiskinan yang bertujuan untuk melaksanakan program pengurusan kemiskinan tertentu.

Kata kunci: FDI, kemiskinan, ARDL, pertumbuhan ekonomi

ACKNOWLEDGEMENT

All praise is to Allah, we seek His help and His forgiveness. We seek refuge with Allah from the evil of our own souls and from our bad deeds. Whomsoever Allah guides will never be led astray, and whomsoever Allah leaves astray, no one can guide. I bear witness that there is no God but Allah and I bear witness that Muhammad is His slave and Messenger.

I would like to start by thanking Allah (SWT) whom has made it possible for me to successfully reach to this stage in my Master of Economics programme. I feel very privileged to have work with my supervisor, Prof. Dr. Sallahuddin Hassan. In this respect, I would like to express my sincere appreciation and salute to my hardworking supervisor for his guidance towards the successful completion of this thesis. I equally thank him for his encouragement and kindness, all of which have made me to learn so much from him (Academically, socially & morally). May Allah (SWT) reward him.

My gratitude goes to the members of my proposal defense and viva voce examination committees, Associate Prof. Dr. Siti Hadijah Che Mat, Dr. Mohammed Razani Mohammed Jali and Associate. Prof. Dr. Mukhriz Izraf Azman Aziz, Associate Prof. Dr. Siti Hadijah Che Mat, Associate. Prof. Dr. Nor'Aznin Abu Bakar for their useful contributions. My sincere appreciation goes to Universiti Utara Malaysia for providing enabling environment for my research. I spent many enjoyable hours with the University community, particularly the Master's and PhD colleagues. Without this research environment, I doubt that many of my ideas would not have come to realization. Equally, I gratefully acknowledge the effort and encouragement from Kano State Polytechnic, Kano, Nigeria for their support during the entire period of my studies.

Special thanks go to my family who have been supportive to my studies. In particular: my Late Dad Haruna Muhammad for your total support, (May your Soul Rest in Peace); my Mum, Hasana Ahmad for your prayers and encouragement. I feel very lucky to have a family that shares my passion for academic pursuit. Also, to my friends for their support and prayers.

Finally, I would like to thank my wonderful wife, Aisha Sa'idu Muhammad and daughters, Aisha Aminu Haruna, Ummussalama Aminu Haruna and my son, Ahmad Aminu Haruna for their patient, love and understanding.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributive Lag
BOS	Bureau of Statistics
CBN	Central Bank of Nigeria
CUSUM	Cumulative Sum of Recursive Residuals
CUSUMQ	Cumulative Sum of Recursive Residuals Square
ECT	Error Correction Term
EGR	Economic Growth
FDI	Foreign Direct Investment
GDP	Gross Domestic Products
GEX	Government Expenditure
GMM	Generalized Method of Moments
IFR	Infrastructure
IMF	International Monetary Fund
IPS	Im, Pesaran and Shin
K	Capital
L	Labour
LDCs	Less Developed Countries
OLS	Ordinary Least Square
POV	Poverty
PP	Phillips-Perron
Q	Output
TOP	Trade Openness

UNCTAD	United Nations Conference Trade and Development
USD	United State Dollar
VECM	Vector Error Correction Model
WB	World Bank
WDI	World Development Indicators

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Less Developed Countries (LDCs) in Africa, Asia, and Latin America understood that foreign direct investment (*FDI*) as an impetus of modernization, economic growth, development, employment, income growth, as well as poverty cutback. Findlay (1978) argued that *FDI* promotes economic growth all the way through its effect on technological progress. Adding together, technological progress brings about new and efficient production techniques that can give way to economies of scale and affecting poverty in a given society. The appropriate receiving country policies procedures and essential stage of development, payback that may ensue from *FDI* consist of employment opportunities, acquisition of know how in addition to human capital growth, knowledge through employee guidance in new industrial ventures. In addition, *FDI* can contribute a vital part in modernizing state economies with encouraging economic growth in LDCs (Grieg-Gran, Dufey & Ward, 2008). Thus, *FDI* is important when it comes to economic advancement in LDCs (Rama, 2008; Dollar & Kraay, 2001; Kolstad & Tondel, 2002).

Thus, it is broadly believed that the growth of an economy significantly depends on mutually foreign and domestic investment. Nigeria needs *FDI* in order to develop the real sector of the economy and reduce the poverty. The inflow of *FDI* in Nigeria is viewed in tremendous dimension since the 1970s. The sum of *FDI* influx to Nigeria was estimated at USD2.23 billion in 2003 and rose to USD5.31 billion in 2004 i.e a rise of 13.8 percent. The value rose to USD9.92 billion which is 87 percent increase as at 2005. The figure

though slightly declined to USD9.44 billion in 2006. Hence, the country's *FDI* inflows have been steadily decreasing since 2011 when it dropped from USD8.9 billion to USD7 billion in 2012, declined 21.4 percent to USD5.6 billion in 2013 and totaled an estimated USD4.9 billion in 2014 according to the Global Investment Trends (GIT) (2015). It has been reported that *FDI* to Nigeria declined by 27 percent from USD4.7 billion as recorded in 2014 to USD3.4 billion in 2015, according to United Nations, Conference on Trade and Development (UNCTAD) (2016). *FDI* in Nigeria increased by USD673.95 million in the second quarter of 2016. FDI into Nigeria is averaged USD1,348.23 million as of 2007 until 2016, reaching an all-time high of USD3,084.90 million in the fourth quarter of 2012 and a record low of USD501.83 million in the fourth quarter in 2015.

Recently, the concern for economic growth and poverty lessening has been at the core of universal policy making. Economic growth is a total increase in the capacity of an economy towards the production of goods and services compared from one period to another. Besides, economic growth and *FDI* has received a lot of attention among scholars. According to Khosravi and Karimi (2010), classical research estimation shows that economic growth is principally linked capital and labour as factor inputs of production. Economic growth serves as the expansion of the country's potential gross domestic products (GDP). For example, if the *FDI* rate of yield on investment exceeds the state return, then macroeconomic policies to encourage investment that can lift the growth rate, moreover levels of utility. Economic growth has offered insight into why the state of growth at diverse rates over time; and hence influences the government into her choice of attracting *FDI* that will, in turn, influence the growth rates and reduce poverty.

In addition, economic growth resulted in employment opportunities and urge labor demand, the foremost and often the exclusive asset of the poor. In turn, growing employment has been decisive in delivering higher growth. Economic growth might be the most powerful mechanism for poverty cutback and adding the quality of life in LDCs. Nigeria has recorded a low rate of economic growth in the world with 1.5 percent rate of economic growth in 2016 (World Data Atlas, 2017). Generally, poverty is a global phenomenon. According to Sustainable Development Goals Declaration (2015), around the globe, more than 800 million populace lives on less than USD1.90 per day that is about the equivalent of the total population of Europe living in severe poverty.

However, poverty is described as multidimensional perception involving the short of cultural and social, more so economic resources essential to secure the least nutrition, productively partake in the daily living, and to certain social reproduction and economic benefits (World Bank, 2000). In Indonesia, more than half the population lives on less than USD2 a day (Country Partnership Strategy (CPS), 2014). Equally, in Pakistan, 50.7 percent live either in absolute poverty or are vulnerable to it (CPS, 2015). On the other hand, Nigeria is one of the most impoverished country on earth. The condition has reached disturbing stage since at least 45 percent of the populace lives beneath the poverty line of USD1.90, whereas 67 percent of the deprived are destitute. For instance, the report of Bureau of Statistics (BOS), as cited by Oluwatosi, (2012), indicated that at least 67 million people are living below the poverty line in Nigeria for the period 1980-1996.

Further, the proportion of remote populace and urban residents scourge in perfect poverty range ascend from 3.0 percent and 6.5 percent to 7.5 percent and 14.8 percent from 1980 to 1985. Within a short time, the fraction of active poor in villages has increased from

21.80 percent to 36.60 percent and 14.20 percent to 30.30 percent, consistently. Moreover, in 1997 to 1999, the average figure of non-poor in rural as well as metropolitan areas decreased from 71.70 percent and 82.80 percent towards 48.60 percent and 62.20 percent (Okumadewa, 1999; Awoseyila, 1999).

1.2 Macro Fact of FDI Economic Growth and Poverty in Nigeria

Africa and in Nigeria specifically, has witnessed an enormous upsurge in the level of poverty (Okpe *et al.,* 2009). The documentaries made by Oladunni (1999), on the whole, dependents percentage is 234 per 100 advantageously employed individuals in Nigeria. In the villages, is 286 per 100 employees, even though in the metropolitan is 219 for every 100 employees. The employed age 15 to 64 years dependancy quotient is 259 unemployed per 100 workers nationally. In the urban and rural, is 302 and 222 dependents to each 100 employees. The above situation combined to accelarate the poverty condition of the average employee further, as each shoulder economic burden of over 200 unemployed.

The available records from the National BOS highlight that in 1980 about 17.1 million, in 1985 about 34 million, in 1992 is about 39.2 million, 1996 is about 67 million and in 2004 is 68.7 million of households in Nigerian are considered poor. Conceivably, the poverty level amplified to 112.47 million in the period 2010. Figure 1.1 demonstrates the graphical pattern of poverty trends for the period 1981 - 2015.

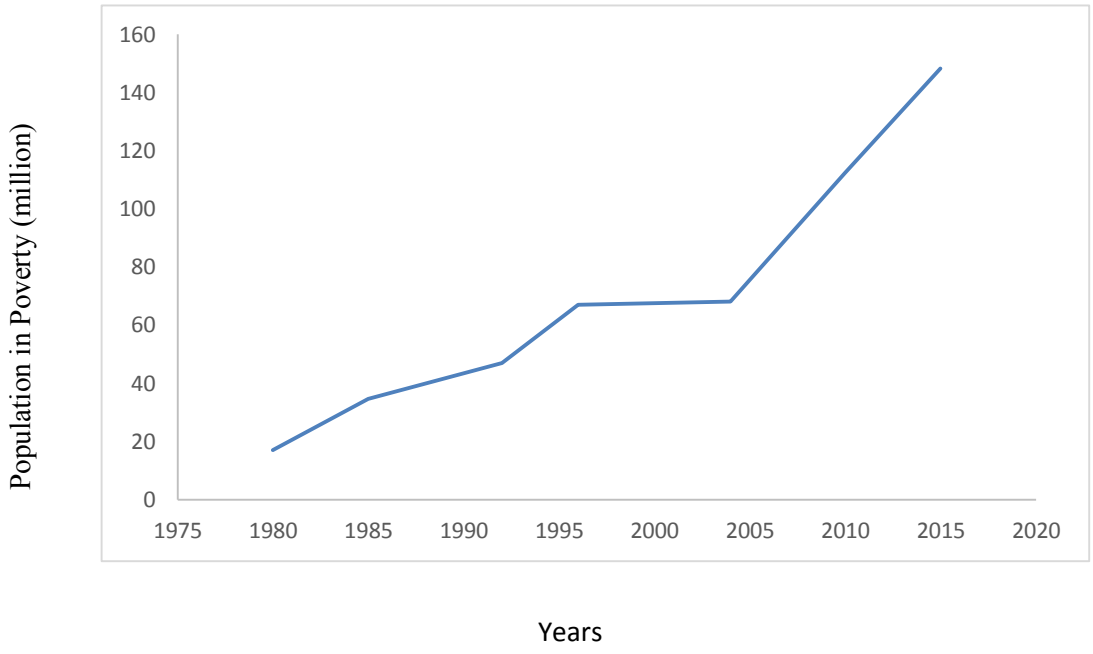

Figure 1.1
Total Annual Population Trend of Poverty in Nigeria, 1980-2015
Source: BOS, 2015

It is clear from Figure 1.1 that, the increasing trend of poverty from 1981 - 2015 must be linked with the level of dwindling GDP in the real sector thereby leading to an increase in poverty over time. However, in 1980 the estimated number of population living in poverty are 17.1 million, and in 1996 the number is more than double to the tune of 67.1 million. Accordingly, the year 2010 and 2015, the number of people below the poverty line of USD1.90 are 112.47 million and 148.38 million, respectively. From 2005 upward, the level of poverty increases at a steady rate and could not be disconnected with the falling productivity or decrease in GDP due to the falling investment in the real sector of the economy (BOS, 2016). It reaches high of all time in the period 2007 - 2015 due to the governance of macroeconomic policies leading to inflation and falling economic growth.

In addition, *FDI* inflows are required in the context of Nigeria to complement economic growth and reduce the poverty incidence. According to World Development Indicators

(WDI, 2018) and the International Monetary Fund (IMF, 2018), *FDI* inflows to Nigeria are on the increase, for 1980 to 2015. When *FDI* increased from USD309,598 million in 1979 to USD485,581 million in 1985, the GDP also improved from USD47,259 million adding up to USD64,200 million in 1980. But, GDP decreased to USD28,873 million in 1985. Likewise, when *FDI* increased from USD587,882 million in 1990 to USD1.14 billion in 2000, the GDP also shows a similar response from USD30,757 million to USD46,386 million during the same period.

Figure 1.2 shows *FDI* net influx in the period 1980 - 2015. In addition, from 1980 - 2005 the inflows of *FDI* fluctuate over time due to changes in commodity prices, since Nigeria's *FDI* relied on the volume of the export sector (e.g oil). Thus, in 2005 the *FDI* worth USD1,884,250 billion, with the increasing trend, the pattern remains fluctuating until 2010, when the *FDI* jumped to USD2,005,390 billion. Hence, *FDI* it reaches highest of all time in 2011 worth of USD8,841,114 billion. This is due to the oil price boom in the global market and other factors responsible. Finally, *FDI* decline sharply in 2015 to the tune of USD3,128,592 billion because of an oil glut in the world and start picking up steady to the worth of USD4,434,648 billion in 2016.

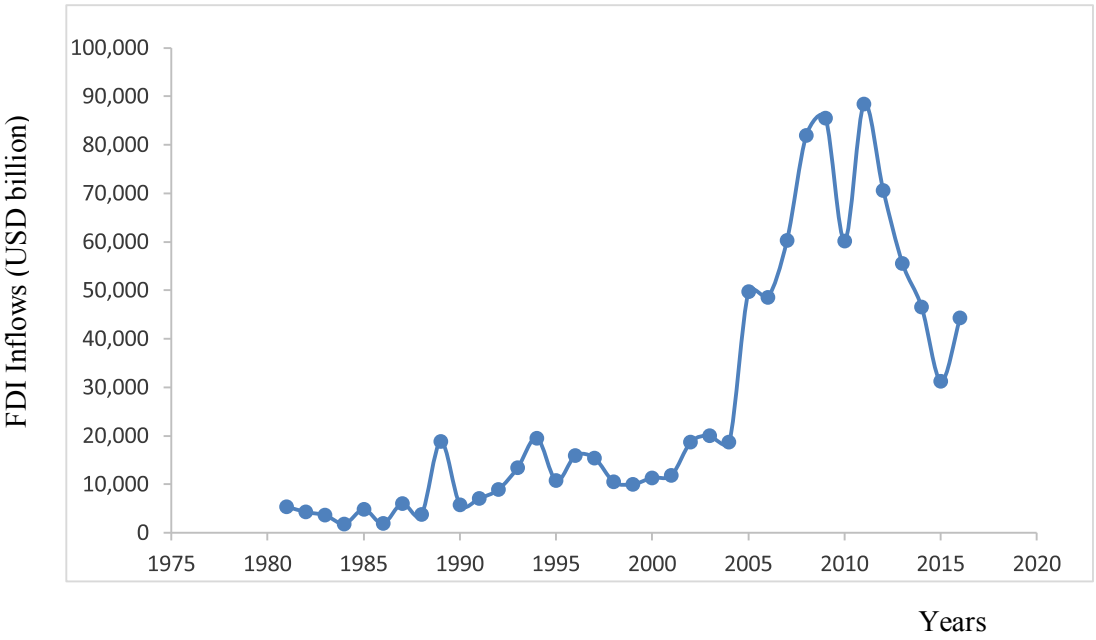

Figure 1.2
Annual Growth of FDI Net Inflows in billion, 1980 – 2015
Source: UNCTAD, 2017

Figure 1.3 illustrates the pattern of economic growth in 1980 is at bid high beginning of five percent. In the period 1988 - 1990, the growth rate was sharply declined to a negative value of ten percent due to drastic fall in investment to complement the growth and increasing number of people living below poverty line of USD1.90, till 1991. The year 1994 - 1996 the rate of growth started picking up sharply to the rate of 4.5 percent and swings down slowly in the year 2000 – 2003 due to transitional change of government and changes in economic policies, and fluctuate in 2005 - 2006. In the year 2009, the rate of growth swiftly declines to the negative value of three percent and goes up in 2010 to the rate of six percent. However, in 2011, the rates of growth strike the highest level of all time to the positive value of seven percent and decline on a steady trend in 2015.

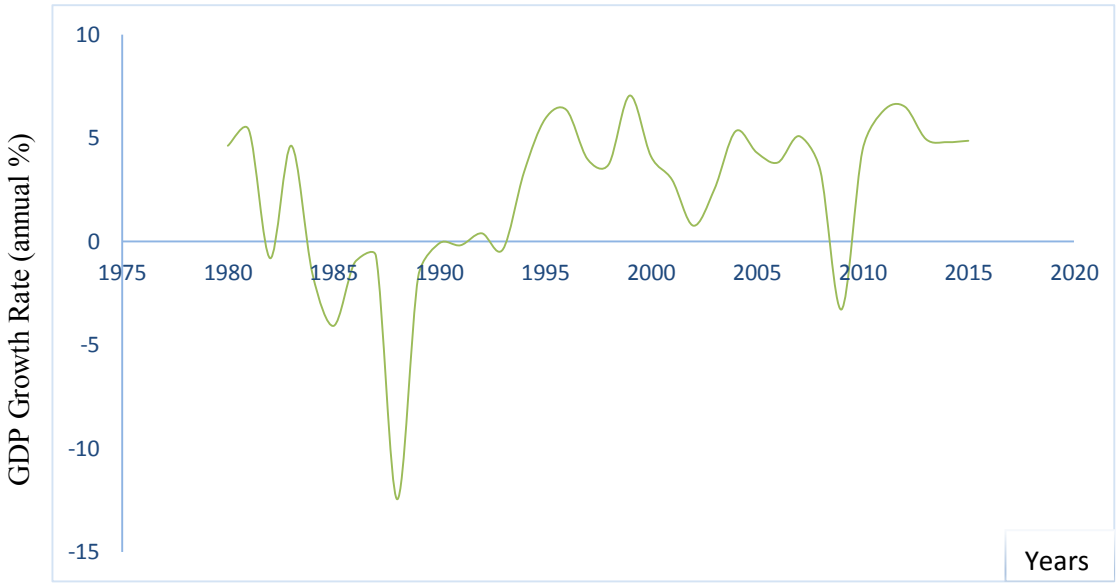

Figure 1.3
The Annual GDP Growth, 1980-2015
Source: IMF, 2017

1.3 Problem Statements

The sluggish expanding in economic growth does not appear to be capable of poverty reduction in Nigeria. *FDI* is a key part of successful economic growth and development in LDCs (Klein *et al.,* 2001). In addition, the previous studies conducted shows that *FDI* accelerate the rate of economic growth (Borensztein *et.al* 1993; Nair-Reichert, 2001; Alfaro, 2007; Azman-Saini, 2010). The influx of *FDI* in Nigeria should have been rapidly increasing the rate of economic growth as in Figure 1.2 demonstrates the inflows of *FDI* from 1980 - 2004 was steadily increases while the rate of growth was sharply declining and fluctuating as in Figure 1.3 in the same period. Besides, Figure 1.2 shows a fast increasing trend of *FDI* in 2005 - 2010 this should have accelerated the economic growth, but the rate of growth decline sharply in the same period as in Figure 1.3. Finally, *FDI* inflows show decreasing pattern from 2011 – 2015. On contrary to the growth rate in Figure 1.3 is at the steady trend instead of declining. These inconsistence patterns should

be investigated. However, Nigeria has recorded a low rate of economic growth in 2016 (Freeman, 2017). In contrast, Figure 1.3 shows the low volatility of the economic growth despite an increase in *FDI*. In another study, Alfaro (2003) found that *FDI* alone plays an ambiguous role in accelerating economic growth. The concern of this research is to find the empirical evidence on the nature of the effect of *FDI* on economic growth, in the context of Nigeria. For the purpose of better utilization of *FDI* inflows towards improving the economic growth.

The increase in *FDI* and volatility in economic growth might affect poverty. The responsiveness of *FDI* to poverty reduction in Nigeria is not clear. In Nigeria, poverty is on high alert despite the inflows of *FDI*, as in Figure 1.1 demonstrates the increasing number of population living below poverty line of USD1.90 from 1980 - 1995. While Figure 1.2 shows the increasing pattern of *FDI*. However, Figure 1.2 in 2005 - 2010 shows increasing trend of *FDI*, concurrently Figure 1.1 demonstrate an increasing number of people living below USD1.90. Finally, Figure 1.2 shows *FDI* declining sharply in 2011 – 2015 and the corresponding Figure 1.1 demonstrates the increasing population living below the poverty line. Considering the incidence of poverty in Nigeria the need emerges to investigate how responsive is the poverty to the *FDI* inflows in Nigeria. Hence, the studies conducted in the past have established an optimistic response of *FDI* towards poverty comprise (Hung, 1999; Shamim *et al*. 2014; Bharadwaj, 2014; Uttama 2015). More so, Baradwaj (2014), Huang *et al*. (2010) and Nishat and Ali (2010) found the negative influence of *FDI* on poverty alleviation.

In addition, the causality among the variables in the context of Nigeria is not given much attention. Figure1.2 shows that *FDI* does not cause growth when compared with Figure

1.3 were the growth rate declined from 1980 - 1994 as well as in 2005 - 2010. Figure 1.3 demonstrates an increase in economic growth in 2000 while Figure 1.1 indicates the increasing number of people below the poverty line. Among the few studies that analyzed causality among *FDI*, growth, and poverty however, the results are inconclusive. A study conducted by Ogunniyi and Igberi (2014), on the effect of *FDI* on poverty found no causality between the two variables. Other studies have found unidirectional causality between *FDI* and poverty (Gohou & Soumare, 2015). The need to investigate causality among *FDI*, growth, and poverty to come up with findings that are more robust cannot be overemphasized.

1.4 Research Question

Following the problem statement, the following questions will act as a guide to the study. It is expected that answers will be provided to the following question:

i. What is the effect of *FDI* on growth in Nigeria?

ii. How responsive is the poverty to the *FDI* inflows in Nigeria?

iii. What is the direction of the causality among *FDI*, growth and poverty level in Nigeria?

1.5 Objectives of the Study

The main objective of the research is to study the effect of *FDI* on economic growth and poverty in Nigeria. To accomplish this, the study will pursue the following specific objectives:

i. To examine the effect of *FDI* on economic growth in Nigeria,

ii. To assess how *FDI* affect poverty in Nigeria,

iii. To examine the direction of causality among *FDI*, economic growth and poverty in Nigeria.

1.6 Significance of the Study

This study is significant in terms of policy, practice, and literature. Poverty matters had been at the epicenter of government concern and the way to solve the problems associated with it. On the other hand, *FDI* being an indispensable ingredient of economic growth and development, its prosperity needs to be treated with utmost importance. The tripod level of significance can be put into context considering the poverty that affects the significant number of people living in poverty in Nigeria.

Further, in the realm of policies, the outcome of the study will provide input into the national, state and local government poverty alleviation program and policy, as well as good framework that can attracts *FDI* into some neglected sector of the economy and robust macroeconomic policies that can fairly feet with the modern trend of technology. This is achievable if the study suggests best practices for program design, process harmony and, synchronized execution templates. The recommendation will be innovative compared with the multi-dimensional and loosely coordinated approaches that characterized with the current corrupt practices of poverty reduction programs.

1.7 The Scope of the Study

The research limits its scope to the effect of *FDI* on economic growth and poverty in Nigeria. The study uses secondary data on poverty(*POV*), economic growth (*EGR), FDI*, government spending (*GEX*), infrastructure (*IFR)* and trade openness (*TOP)*. These

enable the study to focus on a particular aspect of areas of the issue. Therefore, the study covers the period of 35 years (1980 – 2015). The time period selected is influenced by the availability of data of each of the variables.

1.8 Organization of the Study

This research is made up of five chapters. Chapter One been an introduction. It contains the overview of *FDI*, economic growth and poverty in Nigeria, research questions, problem statement, and the significance of the study and research objectives. Other components of this chapter cover the scope of the research as well as the organization of chapters. Chapter Two accommodates a review of the literature on issues related to the study as well as the empirical review. Chapter Three contains the theoretical framework and the methodology employed for the study. Chapter Four comprised discussion of the results like descriptive statistics, correlation, co-integration, unit root test, autoregressive distributive lag (ARDL) and post estimation for the purpose of the empirical evidence. Chapter Five contains the summary of the findings, the government current practice of poverty alleviation programs, policy implications and conclusion for better solution to poverty alleviation and sustainable growth.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter seeks to establish a solid literature foundation for the study by taking into account the work of other scholars in same or related subject matter. Issues surrounding the key variables, conceptualization issues, review of empirical studies and theoretical framework, as well as literature gap for the study, are discussed.

2.2 Theoretical Review of Foreign Direct Investment Economic Growth and Poverty

This section reviews the related literatures and previous study conducted to observe the effects of *FDI* on economic growth as well as effect of *FDI* on poverty in the subsequent sub-section.

2.2.1 Foreign Direct Investment and Economic Growth

FDI is considered as engines of economic growth of a country. Zhang (2001), argued that, *FDI* as instrument of growth is part of intensifying the velocity of capital development of a country, growing the volume of employment and in fact flourishing the industrial base of the receiving country. Economic growth is viewed, in consequence of *FDI*, which result to improvement in productivity of the economy and transfer of higher technologies that can lead to employment opportunities and in turn, brings competition (Kobrin, 2005).

Khan (2007) portrayed that *FDI* is known as a factor that flourishes overall growth foundation of the developing economies. It has been maintained that, the contributions of *FDI* on economic growth is not only through foreign capital provisions but also through creating new domestic investments (Jenkins &Thomas, 2002).

However, there is a well-known conviction among policy makers and researchers that *FDI* could play a significant contribution in developing various economies of nations and similarly, not only causing but also enhancing economic growth in LDCs (Grieg-Gran, Dufey, & Ward, 2008). Klein, Aaron and Hadjimichael (2001) maintained that, *FDI* is among of the integral ingredients for successful transformations of economic activity towards attaining economic growth of developing countries. They stated that, rapid economic growth transformations come from the nature of *FDI*, which satisfies rapid transfer of best practice requirement of economic growth. All these advantages are assumed to be vital and necessary for excellent economic recovery and rapid poverty cutback in developing countries.

Likewise, *FDI* acts as a technology transfer vehicle between from developed economies to developing countries (Borensztein, *et al.,* 1998). The major means of long-run growth, in the perspective of the neoclassical paradigm, is through the exogenous technological progress and the growth of labor force, which can be easily facilitated through *FDI*. Furthermore, *FDI* can stimulate technology transfer, which tends to increase the productive efficiency of factors. It is logical to think that increases in technology translate into the improved productivity of the labor force and this, in turn, results in increased capital yield. If economic growth is driven by innovation as argued by Aghion and Howitt (1998), the need for *FDI* to accelerate development is justified given the important roles

that technology and knowledge play in increasing production levels (Barro, 2001; Lucas, 1988).

Anwar and Nguyen (2011) detailed that, *FDI's* effect on economic growth can easily be observed where more resources are endowed in training, education and when developing the financial markets are given attention its deserved as well as where the technological gap between local and foreign enterprises are reduced. Similarly, when *FDI* is complemented with the local investment it promotes the development of enterprises (Tan & Tang, 2016). In most of the developing countries, disequilibrium between savings and investment exist, whereby created a major gap in both real sector and money sector of the economy. The influx of *FDI* equips the recipient country to have her level of investment rise-up to even more than the level of domestic savings that have been existing (Hye, Hye & Shahbaz, 2010).

It is part of presumptions of the neoclassical growth theory model that *FDI* have no effect on growth rate in the long-run. This is apparent taking into consideration the model assumed diminishing marginal products of inputs, steady economies of scale, perfect competition and optimistic substitution elasticity of inputs (Sass, 2003). Contained in the neoclassical framework (Solow, 1956), the *FDI* influence on growth rate of output was hindered by the decreasing in physical capital return. Thus, *FDI* may perhaps exercise effect on output per capita, but not rate effect. Further, in the long run is not capable to change the growth rate of output (Robles & Calvo 2003). This lack of pragmatism in neoclassical thought instigated the emergence of endogenous school of thought, which many perceives it as a new appropriate model that emphasizes the function of technological improvements.

The assumption of *FDI*-led economic growth is basically on the endogenous growth model, which analyze that *FDI* connected with additional factors such as exports, technology transfer, capital and human capital have had significant effects in revamping economic growth (De Gregorio, Borensztein & Lee, 1998; Lim & Maisom 2000). These spurring-growth factors could be furnished and nurtured, to encourage economic growth by means of *FDI*. In addition, a number of new studies recommend that the *FDI* inflow may able to inspire country's economic efficiency in the course of technology transfer and spillover effect (Shakar & Aslam, 2015; Borensztein, De Gregorio, & Lee, 1998).

The growth model has been developed basically on endogenous variables by Rebelo (1991), Lucas (1998) and Romer (1986). However, growth model initialized capital in a manner of R&D, human resources growth and explained the benefits that may occur from these forms of capital. *FDI* inflected the insertion of invented technologies and materials input in the process of production in the recipient economies. *FDI* could also encourage economic growth of the recipient country through increase in productivity, resulting in optimistic externalities and other overflow effects. Shakar and Aslam (2015), explained that *FDI* is measured as one of the crucial sources of skill transfer and acquisition, technological diffusion and human capital outsourcing, this can be a source of promoting economic growth resulting from *FDI* inflows. According to Thompson (2010), considering this, the endogenous growth model through economic sub-sectors can clarify the influence of *FDI* that coming in, to support growth activities very clearly, when compared with the neoclassical school of thought. As such, it could be proper to enlighten *FDI* growth alliance by applying endogenous growth model.

However, some authors argued that *FDI* may contain no conclusion on growth directly on its own. The authors evaluated the sound effect of *FDI* on the growth qualified upon the subsistence of a number of factors. For instance, proposed models by Benhabib and Spiegel (1994), Nelson and Phelps (1966) maintained that, attention necessary for sufficient human capital with capability to be absorptive. Akinlo (2004), explained that, *FDI* bestows economic growth if an adequate capability is obtainable in the receiving economy to soak up improved technologies. Additionally, valuable significant of *FDI* is endowed in a situation determined by an investment regime, macroeconomic stability and trade directness (Balasubramanyam *et al.,* 1996). In consequence, the wholesome consequence of *FDI* on growth may be zero, whereas the impact of *FDI* interlude with a number of factors such as trade and financial market development as well as human capital may be positively connected with income growth in specific and economic growth in largely (Borensztein *et al.,* 1998).

Some scholars argued that *FDI* might be used as a tool of exploitation and siphoning the recipient country's resources through surplus repatriation and, therefore, have unfavorable influence on growth due to the prevailing system of decapitalization and reliance. Frank (1979) and Amin (1974) developed and analyzed dependency theory, state that the flows of foreign capital would have no cause on long-term economic growth in LDCs. An unfavorable outcome of *FDI* on growth may be explained by de-capitalization if *FDI* diverts domestic capital or displaces savings in the country towards *FDI* activities from productive sector. De-capitalization as Bornschier (1980) described as decrease in funds accessible in the host economy for investment.

Bornschier (1980) clarified the instance of de-capitalization in *FDI* receiver countries, particularly LDCs. For instance, LDCs aspire to persuades and invite foreign investment for them to gain from transfer of the superior technology in their countries. These flows are largely gathered in common locations and sector especially, in manufacturing sectors, which are expected to have more of the capital that comes in form of investment. Hence, the capital accessible for use in other real sectors of the receiving country may be declined. As a result, *FDI* may perhaps persuade higher consumption and investment in short-term period and replicate harmfully in long-term growth (Stoneman, 1975; Bornschier, 1980; O'Hearn, 2000). Suanes and Roca-Sagalés (2015) analyzed that, *FDI* widens inequality based on determined *FDI* levels. This is corroborated by Basu and Guariglia (2007) who argued that *FDI* promotes not only growth but also inequality. Likewise, in a recent work Lessmann (2013) argued that *FDI* increases inequality in low and middle-income countries. This result can be applied in Nigeria, that has the greatest inequality around the world. Economic growth is measured to be a significant requisite towards poverty reduction in a giving country. The work of Dollar and Kraay (2001), maintained that at the receiving end individual income tends to rise as economic growth occurred.

2.2.2 Foreign Direct Investment and Poverty

The possibility of jobs creation is very high in a country where there is an influx of *FDI* Adams *et. al* (2009). Barro *et. al,* (2013) argued that, the firms in the host economies invest massively resulting to a high level of productivity and in that way ensuing development and economic growth. In addition, voluminous investment in real assets where firms operate, also employ people as well coach them to labor in their founded firms. And so, there be economic growth capable of creating jobs in the host economies

in so doing assisting to reduced poverty level. An enhancement in employment level resulted by *FDI*, have the ability to generate additional employment opportunity in sectors of the economy in course of the multiplier effect. Alfaro *et. al,* (2007) argued that, elaborated by the actual improvements in employment and will enhance aggregate demand by exacting force on other economic units to raise output hence demand for additional labor to be employed in the other economic units as well. Thus, there will be employment formation which may lead to a lessening in the level of poverty.

Consequently, the capacity of receiving country to harnessed the major benefits of *FDI* in reducing poverty, is being highly determined by the level of advancement of (or how developed) the host economy (Meyer & Sinani, 2009). The stage and rate of economic advancement play an imperative role in determining capability of the receiving economy to equip the home firms and make them proficient of extracting the payback by influx of *FDI*, thus, having trained labour power, and recipient's countries' capacity to outline *FDI* procedures that can assist in alleviating poverty (Meyer & Sinani, 2009). The differences in terms of stages on growth and the level of economic advancement brought about a wide range of disparity in terms of the benefits that are being acquired from *FDI* between rich and poor economies (Kemeny, 2010; Meyer & Sinani, 2009). The low-income economies, that have increasing possibilities of social capabilities, have a visible strong impact of *FDI* (Kemeny, 2010).

However, Aamir and Shahbaz (2008) maintained that the mainly crucial determinant of *FDI* effects on poverty cutback in a country is the capacity of the host economy to make available good and favorable conditions for economic and political activities in order to take advantage of the social payback from the *FDI*. The influence of *FDI* on human

progress could be analyzed from two viewpoints. On the social side, reducing poverty and improving wellbeing in common, are major concern of authority in developing countries. *FDI* may be capable of achieving these objectives because jobs are being created from new investments, encourages technological progress and enhance local skills. From the economic view point, current literatures especially, on endogenous growth suggest that human capital could be the most important supplier to self-sustained growth in economic development and in GDP per capita, given the fact that human development is the main contributors to human capital.

Smith and Todaro (2003) and Hayami (2001) maintained that *FDI* may use improved technology which can facilitate in ever-increasing productivity. Consequently, Mayne (1997) described that, *FDI* may assist towards breaking the vicious circle of poverty and underdevelopment. The impact relied on how the receiving country's macroeconomic policies, labor market quality, investment level as well as economic environment. Klein *et al.* (2001) portrayed that *FDI* could help in raising the rate of economic growth through equity market stability and may aid in curving poverty through the accessibility of finance to active poor. Nevertheless, Saravanamttoo (1999) argued, that when the rate of investments acceleration is higher than population growth it could be of great aid in reducing poverty in a country. Seeing that, *FDI* is helping in playing a role towards increasing the level of investment to the recipient country and so helping toward poverty reduction in a giving country.

Amis (2000) described that, *FDI* can influence on well-being through indirect and direct channels. The direct channels comprised of spillovers toward the private units (forward linkages and backward). Spillovers could occur if *FDI* generates positive vertical spillover

with sound effects on home suppliers (backward linkages) through domestic sourcing and firms (forward linkages). *FDI* as well creates constructive parallel spillovers thereby augmenting competition and creating new technologies suitable for implementation. *FDI* could be of help on welfare by creating employment (Alfaro *et al,* 2010). For this channel to be proficient, the employments created must be greater than the jobs lost as a result of *FDI* mergers and acquisitions. The indirect effects of *FDI* on welfare happen mostly at the macroeconomic level. It is expected that *FDI* would raise the total country's investments where the country has a favorable aggregate net transfer of revenues.

Taking into cognizance the nature of effects of *FDI* on poverty, the possibility of seeing a growth of employment level and a reduction in number of those living below the poverty line of USD1.90, mainly as a result of improvement in the skill of the labor force, increase on the demand for labor and safety nets, all having direct effects on poverty (Nguyen, *et al.* 2008). The *FDI* effects of reducing poverty either directly or indirectly, are not unique in every condition, many factors lead to this variation. Among the factors include the quantity of investment and its quality as well as the choice of production techniques (labor intensive or capital-intensive techniques), the investment types (Greenfield, merger & acquisition, privatization), the sector conditions where investment takes place, technological improvements, revenue generated from *FDI* taxes payments and how they are being spent, investment and wages efficiency. In addition to this, given the fact that factors affecting the nature of economic and features of political environment, political opinions and economic and are among the important factors influencing the effects of *FDI* on poverty (Aamir & Shahbaz, 2008).

Consequently, any economy that aimed at achieving a desirable result in terms poverty reduction through *FDI*, should, therefore, make political and economic conditions attractive for such investments (Barro, 2001). *FDI* (especially, labor-intensive) provides important assistance directly, in the process of poverty reduction that is caused by high level of unemployment. In this sense, the impact of *FDI*'s on poverty is through its connections on and provision of employment. *FDI* clearly, contributes towards a reduction of poverty, through measurable employment and income making. The collective impacts of *FDI* are seen in these conditions are very small, therefore, the greater consequences or impacts of *FDI* are in its indirect contribution. According to Alfaro *et al.*, (2007) the poverty reducing impact of *FDI* through labor-intensive techniques is more visible and greater than that of capital-intensive techniques. This is because capital-intensive investments provide very little employment and employed very little skilled labor force. The *FDI*'s labor-intensive investments are more effective than capital-intensive investment in poverty reduction process taking into cognizance the employment opportunities offered by the *FDI* labor-intensive investments. Though the growth of employment contributes positively towards poverty reduction, at the level at which income-wage is the main determinant of poverty reduction (Adeniyi *et al.,* 2012).

2.3 Empirical Review of Foreign Direct Investment Economic Growth and Poverty

2.3.1 Foreign Direct Investment and Economic Growth

The *FDI* role through economic growth thereby impacting on poverty can be witnessed by many kinds of literature. Borensztein *et al*. (1998) applied regression framework to anlyse the *FDI* impact on economic growth. The data used in the study is on *FDI* from industrial countries to LDCs whereby LDCs are the recipient countries. The results show

that *FDI* effects on economic growth is positively, the effect was conditioned to availability of the human capital stock in the *FDI* recipient countries. Having the least threshold of human capital transmits into a higher productivity of *FDI*. Thus, the contributions of *FDI* to economic growth to the receiving countries are feasible when host country possess the assimilating capacity to the advanced technologies that the influx of the *FDI* comes with into the host country. The result indicate mainly the *FDI* impact on economic growth is being driven from efficiency gain (indirect gains) as opposed to overall induced level of investment (direct gain).

Above and beyond, *FDI* is found to be the element of economic growth of a country (Yousaf, Hussain & Ahmad, 2008; Zaman, Rasheed, Khan & Ahmad, 2012; Caves, 1974; Kindleberger, 1969). They applied ARDL, fixed effects model and regression analysis, respectively to arrive at the conclusion that *FDI* contribute to economic growth. In addition, it also found to have positive cause on the receiving country economic growth, in a cross-country regression framework, utilizing data on *FDI* flows from industrial countries to 69 developing countries over the last two decades (Borensztein, Gregorio & Lee, 1998). Barrel and Pain (1999) suggested that *FDI* is a mechanism for disseminating ideas and technologies among countries. This conclusion is similar to that obtained by Borensztein *et al.,* (1998), verified the consequence of *FDI* on economic growth in LDCs and indicated that *FDI* acts as a mechanism of technology transfer through increased productivity and if the receiving economy meets minimal requisite in human capital.

Similarly, Sanchez-Robles and Bengoa (2002) used fixed effects model, came to a similar conclusion for Latin America. This implies that *FDI* contributes to increasing production when there is sufficient capacity to absorb technology in the receiving countries

(Borensztein *et al.,* 1998; Gomes & Veiga, 2013) and when linkages are generated with local firms and the export capacity of the receiving country is improved (Anwar & Nguyen, 2011; Ahmad *et al.,* 2003; Liu *et al.,* 2002). The approaches employed by these studies are gravity model, ARDL and Vector Auto Regressive (VAR) respectively. This occurs when the human capital level in an *FDI* receiving country is low, the cost of technology transfer is high. In this respect, Romero (2016) employed generalized method of moment (GMM) and, suggested that *FDI* encourage domestic investment and emphasized on the role of *FDI* on strengthened growth by interaction with macroeconomic policies and human capital.

By and large, results from other studies by means of analytical framework such as Kolstad and Tøndel (2002), Rama (2008) and Dollar and Kraay (2001) also sustained on the view that, the relevance of *FDI* become imperative when it comes to advance the economic growth in LDCs. In other empirical study such as those by Borensztein *et al*. (1998) and Blomstrom *et al*. (1999) discovered that economy grow by positive influence of *FDI*. Furthermore, the empirical connections linking economic growth and *FDI* in Nigeria is still not clear, despite having a number of studies tested the effects of *FDI* on Nigeria's economic growth with different results (Akinlo, 2004; Adelegan, 2000; Odozi, 1995; Oyinlola, 1995; Oseghale & Amonkhienan, 2009). To ascertain how economic growth in Nigeria is being influenced by *FDI*, Adelegan (2000) conducted such study using seemingly unrelated regression (SUR) model. The result shows that *FDI* in Nigeria is pro-import and pro-consumption therefore, inversely influencing gross domestic investment (GDI). Akinlo (2004) deployed ARDL and established that in inflow of foreign capital in Nigeria has very little and statistically insignificant consequence on economic growth of the country.

In other, empirical finding, *FDI* has fixed optimistic effects on economic growth, similar to Baharumshah and Thanoon (2006), Papanek (1973), Tsai (1994), Ali (2005), Rana (2012) and Mosely (1980). In effect ARDL applied to draw long run effects of independent variable in which FDI and error correction term (ECT) was fit-in to examine short-run effects, the results revealed that FDI was absolutely correlated to economic growth, in long run periods. The increment of share of *FDI* related to the plan productivity in some countries is positive. *FDI* may add to the recipient country's economic growth by expanding its capital stock, ever-increasing the transfer of technology and acquisition of skill or increase the level of competition on the local industry thereby causing the rise in economic growth.

On an empirical basis, the optimistic influence of *FDI* influx in receiving country economic growth was reported by various studies such as Trevino *et al.* (2003), Grosse and Taylor, (2001), Sarno (1999), Veugelers, (1991), Trevino (2004) and Pain and Barrell (1999). The cause of FDI on economic growth has been reported to be optimistic (Trevino & Upadhyaya, 2003; Irandoust & Ericsson, 2001; Dunning, 1998; Borensztein *et al.,* 1998; De Mello, 1999) and pessimistic (Moran, 1998). Hansen and Rand (2006), studied the effect of FDI on GDP by employing VAR modeling on 31 LDCs over long period 1970-2000. The work did present facts of optimistic relation between economic growth and *FDI* in long period of time.

Taking into cognizance, the specification of Borensztein *et al.* (1998), many researchers have formulated the linear growth-model for the purpose of empirically assessing the effects of human capital and *FDI* on economic growth. Borensztein *et al.* (1998), proposed a simple endogenous growth model in which an *FDI* proven to have an optimistic effect

on growth. The *FDI* affects growth through human capital. A positive association has been established on the consequence of *FDI* on the rates of economic growth as well as on human resources. This implies that abundant supply of human resources in receiving economy, the better will be the impact of *FDI* on the economic growth. For example, study by Carkovic and Levin (2002) deployed GMM and ascertained the relationships between *FDI* and economic growth for 72 countries. The outcomes do not sustain the fact that *FDI* increases economic growth directly without recourse to human capital.

Further, there have been several investigations that estimated the causality amongst *FDI* and economic growth in China and other Asian countries. These countries are among those that have benefitted the most from the entry of external capital (Preeti & Gaurav, 2014) by applying random effects approach, because *FDI* has strengthened their industrial capacity and diversified their exports. It is well known that manufacturing generates more linkages than does the primary sector and that the income and employment multipliers are high. Liu *et al.* (2002) found a two-way relationship between the two variables. The established bidirectional causality among *FDI* and economic growth is an expected result and it is logical that two variables intervene over time. Anwar and Sun (2011) used a simultaneous equations model and indicated the inflows of the foreign capital increase the stock of domestic capital in Malaysia, which influences production levels. This is corroborated in a recent work by Solarin and Shahbaz (2015) which employed ARDL approach. As well, the trade liberalization and financial development achieved by these countries can reinforce the positive effects of the inflows of foreign capital (Iamsiraroj & Ulubaşoğlu, 2015). They employed GMM to arrive at the conclusion.

On contrary, there have been empirical investigations that show the negative influence of *FDI* on the economic growth, they applied different methodology in their sttudy such as fixed effects model, GMM, random effects and OLS (Musibah *et al.*, 2015; Saltz, 1992; Mencinger, 2003; Ang, 2009). These results suggest that the relationship between the two variables is negative and that it changed in the period of study and with the productive structure of the countries. Other investigations have shown *FDI* does not have any effect on economic growth they used panel regression analysis and random effects model (Hermes & Lensink, 2003; Carkovic & Levine, 2002a). Levine and Carkovic (2002b) argued, that *FDI* does not have any robust and independently influence on economic growth, which implies that *FDI* does not always accelerate the economic growth. This conclusion is corroborated by Curwin and Mahutga (2014), deployed panel regression found and suggested that the penetration of *FDI* reduces growth in short-term and long-term of the socialist countries. However, the empirical findings by Bornschier *et al.* (1980) and Alschuler (1988) revealed that foreign assist, trade and *FDI* have long-run consequence in reducing the rate of growth and widening disparity.

2.3.2 Foreign Direct Investment and Poverty

The effects of *FDI* on poverty emanates from direct and indirect economic activities, ranging from providing jobs opportunities and technological progress. *FDI* generally, has a great impact on the channels of wages distribution over human capital especially, where visible disparity exists in the main channel of the wages distribution, such as skilled and unskilled workers wages distributions. Xu (2000) and Borenzstein, De Gregorio and Lee (1998) used gravity model and panel regression model and show that *FDI* facilitates the transfer of know-how, which transform into a better rate of growth only if the host economy has minimum requisite human capital stock. Durham 2004, Alfaro, Chanda,

Kalemli-Ozcan and Sayek, 2004 and Hermes and Lensink (2003) supported that only economies with inflows of *FDI* and well-developed financial markets gain significant economic growth. These economic activities curved poverty in the long run. The researches employed different methodology such as seemingly unrelated regression (SUR), simultaneous equation and panel regression analysis.

Therefore, the *FDI* has higher value of the labour productivity than the domestic investments. *FDI* also increases the demand for the skilled labour which leads to the rise of total wages of the skilled labour. This is because the *FDI* usually have more skilled labour than the host economy. (Aitken & Harrison, 1994; Blomstrom & Sjoholm, 1999; Feenstra & Hanson, 1997). Accordingly, Tambunan (2005) confirmed that *FDI* influx brings about and strengthens both forward backward and production connection with home firms and other units of the economy. For instance, through sub-contracting between the foreign and home firm, out sourcing may supply semi-finished or apparatus to the foreign firms. These connection increases recipient countries economic activities and generate employment in supply chain and distributor firms and in turn, affect poverty in a giving economy.

Soumare and Gohou (2012) observed the influence of *FDI* towards poverty alleviation in five selected provinces in Africa between 1990 and 2007. However, they employed human development index (HDI) as a measure of welfare and poverty cutback. The outcomes of the study demonstrate that indeed *FDI* alleviate poverty and more often than not, in poor countries than in rich ones. On a different empirical argument, Aaron (2005) discovered that *FDI* added 26 million employments in LDCs worldwide. For example, it established that in every single direct employment opportunity generated by foreign firms,

on average 1.6 additional employment opportunities were indirectly formed through linkages between *FDI* and home firms. Therefore, all in the course of value added multiplier effect of *FDI*, employment was created indirectly and directly which eventually contribute towards poverty cutback.

Hung (2005) analyzed how *FDI* impacted on growth and reduces poverty using regression analysis on panel data of 12 cities of Vietnam and some provinces, from 1992 to 2002. His findings are in accord with that of Baradwaj (2014), having confirmed that *FDI* has direct and indirect effect and applied different categories of variables that needs distinguished or separated. In addition, Aaron (2005) reaffirmed, the findings of Baradwaj (2014). Hung (1999) investigated the connection between *FDI* and how it reduces poverty in two parts: by examining how the inflows of *FDI* in different provinces affect their respective economic growth and in the second part, the effects of *FDI* on poverty was also examined.

Panel data was used across African countries to examining the influence of *FDI* on economic growth and poverty by Soumaré and Gohou (2012) using econometric models. The contribution of *FDI* in the process of poverty reduction was examined in addition to the examining the possible disparities in terms of the *FDI*'s contributions to the African regional poverty reductions. Specifically, variables used are carefully selected which include the ratio of *FDI* net inflow over gross capital formation without including some variables like GDP and *FDI* just for the purpose of getting the aimed detailed results as they claimed. The study also replaced GDP with human development index for the purpose investigating the effects on welfare. The study discovered bi-directional causality amongst *FDI* and GDP per capita and concluded that *FDI* leads to poverty reduction and

improved welfare. Furthermore, they stated the positive consequence of *FDI* on welfare varies substantially across regions of Africa. As the results show that, *FDI* affects welfare positively, in Eastern and Central Africa regions significantly, despite that the impact of *FDI* on welfare in Southern and Northern regions of Africa are insignificant.

Furthermore, the following studies established a positive significant effect of *FDI* on poverty cutback, among them include; Uttama (2015), Soumare (2015), Israel (2014), Bharadwaj (2014), Shamim *et al*., (2014), Ucal (2014), Fowowe and Shuaibu (2014), Gohou and Soumare (2012), Mahmood and Chaudhary (2012); Zaman *et al*. (2012); Reiter and Steensma (2010), Calvo and Hernandez (2006), Jalilian and Weiss (2004) and Hung (1999). In his earlier study, Hung (1999) inquired the consequence of *FDI* on poverty for a period 1992 and 2002, in 12 cities of Vietnam and some provinces. The study applied panel data and made use of poverty incidence as proxy to poverty, the study revealed that *FDI* reduces poverty. In addition to that, the study maintained that an increase in *FDI* by one percent lower the population of people living in abject poverty line by 0.05 percent. The study also maintained that apart from the mentioned direct effect, indirect effect on poverty reduction through GDP increments exists though with smaller effect than the direct effects. Nevertheless, apart from research that discovered optimistic significant effect of *FDI* on poverty cutback, there are also a number of research that reported an inverse effect of *FDI* on poverty cutback. These researches include Huang *et al*. (2010) and Nishat and Ali (2010).

An unbalanced panel of ASEAN countries was used by Jalilian and Weiss (2004) probed the influence of *FDI* has on poverty in giving countries for the period 1997 – 2007. The study used the take home income lowest 20 percent of giving population as proxy of

poverty. The study revealed, *FDI* is positively impacting by increase income of the poor. Calvo and Hernandez (2006) using panel data, in Latin America analyzed the influence of *FDI* on poverty for the period 1984 – 1998. The study makes use of proxies for poverty as poverty-gap and poverty headcount. The results of the study indicated that the benefits of *FDI* vary according to the direction of the foreign auxiliary in addition to the initial local conditions by which the *FDI* was built on. The results also show that *FDI* decreases poverty at an average level and doubling the foreign capital results in the poverty headcount to decline by 5.3 percent.

In their investigation of the relationship of *FDI* and poverty reduction. Zaman *et al.* (2012) further classified economies into those with high and low *FDI* potential in Pakistan for the period 1985 - 2011. The result disclosed a significant and strong consequence of *FDI* on poverty, especially, in those regions with a low *FDI* prospects. The study applied OLS using proxy of poverty headcount as poverty. The outcomes show that one percentage increase in *FDI* impaired poverty by 47 percent in city, 44 percent in remote residents and 46 percent at the national level.

On the contrary, to the above finding, Ucal (2014) used samples of 26 developing economies to investigate the consequence of *FDI* on poverty, using unequal panel. The analysis was conducted for the period 1990 - 2009. The study reveals the existence of an inverse cause of *FDI* on poverty in selected developing economies. This confirmed that *FDI* contribute vital roles in poverty reduction in the selected economies. In another study, Huang *et al*. (2010) assessed *FDI* effect on poverty in 12 Easter Latin American countries for a period 1970 - 2005.The study used an unbalanced panel data and a proxy of poverty used in this study was the average take home income of the poor population. The result

shows that influx of *FDI* has an inverse effect on poverty. A time series data from Pakistan was used by Nishat and Ali (2010) for the period 1973 - 2008 for the purpose of investigating *FDI* effect on poverty. The study employed ARDL and with a measurement of headcount on poverty as an alternative to poverty. They result shows that *FDI* influx has an inverse impact on poverty and thereby reducing poverty in Pakistan during the short-term and long-term.

A number of research work have discovered that *FDI* has an impact that is immaterial on poverty cutback. These categories of studies consist of Ogunniyi and Igberi (2014), Akinmulegun (2012), Gohou and Soumare (2012), Tsai and Huang (2007) and Tsai and Huang (2007) analyzed the consequence of influx of *FDI* on poverty in Taiwan, for the period 1964 - 2003, using time series data. The research used average income base quintile as a proxy for poverty. The result shows that *FDI* inflows have irrelevant influenced on the mean income of the poor. Applying VAR on a time series data of Nigerian data, Akinmulegun (2012) studied the effects of *FDI* on welfare of the country for the period 1986 - 2009. The results indicate that *FDI* inflows affects welfare of Nigerians insignificantly. The result is in accord and consistent with a separate study conducted in Nigeria for the period 1980 - 2012 by Ogunniyi and Igberi (2014).

Finally, Ogunniyi and Igberi (2014) applied OLS on time series data from Nigeria for the period 1980 – 2012 for the reason to investigate the *FDI* influence on poverty lessening in the country. The study employed per capita GDP as a measure of poverty. The results show an insignificant consequence on poverty by *FDI* in the country within the period of study. Similarly, in their investigation of the impact of *FDI* in reducing poverty, Gohou and Soumare (2012) conducted their analsis by exhausting panel data of 52 African

countries for the period 1990 - 2007. The study utilized Human Development Index and GDP per capita as proxies for poverty. On the panel data, the study tried to control endogeneity through applying and making use of 2-stage least square regression. The result reveals the influence of *FDI*'s on poverty cut-back is irrelevant in Northern regions and the Southern provinces of Africa.

2.4 Literature Gap

Besides, the studies by other scholars on *FDI* on economic growth and poverty show inconsistent results may be because of various reasons such as different methodology used or different sampling methods applied. Therefore, the result of one country cannot be generalized in another country because of different economic factors. In Nigeria, less concerned is given to *FDI* on growth and poverty. Therefore, this study is expected to investigate the direction of the causal association among the variables aimed at filling this gap. To our knowledge, few study in Nigeria is conducted taking into consideration these variables. On the basis of this, the effect of *FDI* on economic growth and poverty would remain examined.

2.5 Conclusion

This chapter cover the review of related empirical literature as well as a theoretical review of the connection *FDI* on economic growth and poverty. Under the theoretical review, the *FDI* and new growth theory and the neoclassical growth theory, are discussed. Finally, the last sub-section of the chapter handles the literature on the link connecting *FDI* and economic growth, as well as *FDI* and poverty in addition to causality base literature. It also demonstrates the gap in the literature as contradicting findings were established.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter obliges us with methodology of the study. It commences by introducing the entire chapter. Next, the chapter provides Section 3.2 which accounts on the theoretical framework and then Section 3.3 offers the model specification. Aside of these, Section 3.4 describes growth model and development, Section 3.5 provides the justifications of variables, though, the sources of data and variables measurement were data are explained in Section 3.6. After those points, Section 3.7 provides the method of analysis consisting of time series analysis, which includes unit root test for the time series data. Furthermore, Section 3.8 demonstrates Granger causality. And finally, Section 3.9 conclusions.

3.2 Theoretical Framework

The theoretical framework in this study highlighted the importance of FDI, infrastructure, government spending, growth and poverty. The framework for this study was developed based on Keynes (1936) one of the initial organized efforts to connect indirectly poverty cutback with infrastructure. In his book General Theory of Money, Interest and Employment, Keynes maintained however an economy determined by market failure and depression, public soaring expenditure is essential to correct the economy back to employment level. This demonstrates the needs for public investment in infrastructure would add to employment, national income, in addition to wellbeing of people. Harmonious to neoclassical theory, FDI affects income growth by ever-increasing sum of capital per person. It escalates long-run growth through such variables as human capital and research and development (R&D). Thus, know-how transfer through to their

subsidiaries and high-tech spillovers to unaffiliated firms in the receiving country, multinational cooperation (MNCs) accelerate the development of new in-between product varieties, increase product quality, make possible R&D on international collaboration, and renew the existent human capital (Ikara, 2003). This theory may perhaps be of realistic magnitude in developing economies where the volume of investment was financed and owned by government, especially in infrastructure and market system does not work properly.

Todaro (1994) comments on the crucial features that encourage economic growth, improving investments and quality of physical structure put in place and human capital, that enhance the capacity of productive resources and that raise the productivity of all through invention and innovation. FDI contributes to GDP growth and is consider vital for economic advancement. Anderson *et al*. (2014) sustained that infrastructure for public consumption produces dual special effect which is macroeconomic and microeconomic in nature. Jahan and McCleery (2005) stretch emphasis to that infrastructure restructuring can provides a solid strategy to cutback poverty either directly or indirectly. In the course of the direct channel, poverty decline as people's have access to education and healthcare facilities to get better, accessible cleaner energy, and government ensure safety. The indirect effect happens when the efficiency of workers improved, transport cost will reduce, a new employment in so doing leading to economic growth.

Jahan and McCleery (2005) maintained the influence of infrastructure on economic development along with poverty lessening take the shape of first effects, followed by succeeding effects. The first, infrastructure growth leads to two initial effects that could

cause to poverty cutback through economic growth. These two initial are the demand and supply side effects. Figure 3.1 demonstrates the framework.

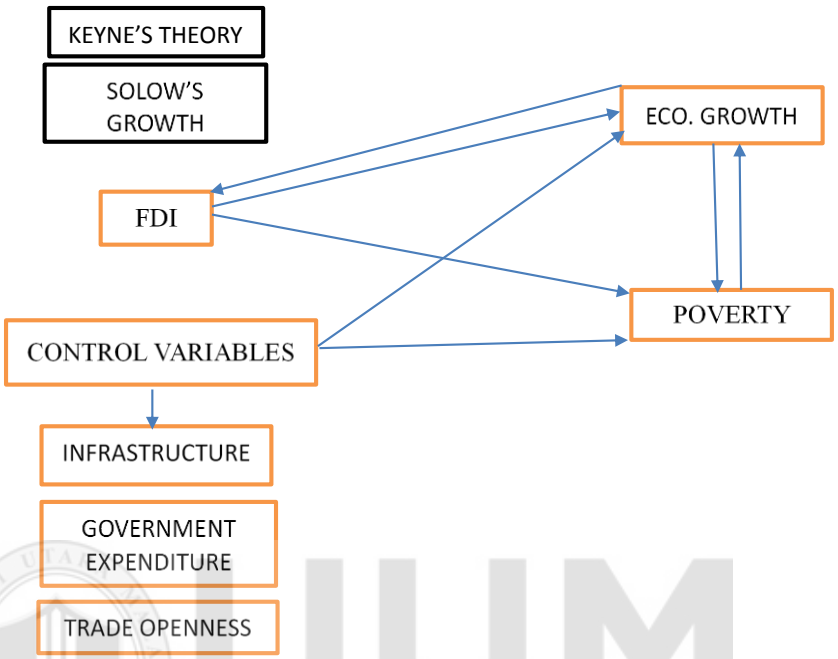

Figure 3.1 Theoretical Framework Underline the Research.

3.3 Model Specification

The Harrod–Domar model and the succeeding well-known Solow model, along with others, believe that savings and investment have an important function to play in growth and development. Therefore, the output will be determined by factor inputs of labour, capital, and infrastructure. In addition, considering the endogenous growth theory that incorporated technology into production functions and economic activities acknowledge infrastructure as an essential input in the course of production. The Neoclassical Production function by Solow (1956) which relates output (Q) as a linear function of capital (K) and labour (L) is adopted for this study as shown at period (t) in Equation [3.1]

$$Q_t = F(K_t, L_t) \quad [3.1]$$

With the introduction of technical progress also in time trend by A_t Equation [3.1] result in what is known as Solow Residual of 1957 as represented in Equation [3.2]

$$Q_t = F(K_t, L_t, A_t) \quad [3.2]$$

Taking into consideration a single country scenario, the structure of Nigeria Economy and dynamics of FDI, infrastructure (IFR), government expenditure (GEX), trade openness (TOP), the explanatory variables of interest is then feed in through technical progress factor (A_t) as in Equation [3.3]

$$A_t = g\ (\ FDI_t, IFR_t, GEX_t, TOP_t) \quad [3.3]$$

When substitute Equation [3.3] into Equation [3.2] resulting in Equation [3.4];

$$Q_t = F\ (L_t, K_t, FDI_t, IFR_t, GEX_t, TOP_t) \quad [3.4]$$

Transforming Equation [3.4] into linear equation will produce the following equations

$$POV_t = \gamma_0 + \beta_1 FDI_t + \beta_2 IFR_t + \beta_3 TOP_t + \beta_4 GEX_t + \mathcal{E}_t \quad [3.5]$$

$$EGR_t = \vartheta_0 + \delta_1 FDI_t + \delta_2 IFR_t + \delta_3 TOP_t + \delta_4 GEX_t + \varepsilon_t \quad [3.6]$$

where:

POV = poverty (were measured based on real consumption expenditure per capita of house hold)

EGR = economic growth (is measure by GDP Growth rate annual percentage at time t)

FDI = foreign direct investment (is measured as Gross foreign direct investment (GFDI))

IFR = infrastructure (is measured by telephone lines and number of roads kilometers as a proxy for infrastructure availability)

TOP = trade openness (is measured by trade intensity ratio, which is the share of export and import to GDP)

GEX = government expenditure (is measured using the total composition of current and capital expenditure)

γ = the intercept of the equation, ϑ= intercept, β= Coefficients, δ = Coefficients

ε_t = error term

Finally, Equation [3.7] to Equation [3.9] represent causality function;

$$FDI_t = F(POV, EGR) \quad [3.7]$$

$$POV_t = F(FDI, EGR) \quad [3.8]$$

$$\mathrm{EGR}_t = F(FDI, POV) \quad [3.9]$$

Equation [3.7] represent *FDI* function, as whether there is causality relation between *FDI* as independent variable, *POV* and *EGR* as dependent variables. In Equation [3.8] *POV* as independent variable overtime, demonstrate whether there is causality between *POV*, *FDI* and *EGR*. Further, Equation [3.9] *EGR* as independent variable, illustrate whether causality exists between *EGR, FDI* and *POV* over a giving time period.

3.4 Justification of Variables

In this study, the effect of FDI on economic growth and poverty is examined. The study, therefore, uses economic growth and poverty as the dependent variable while the explanatory variables are FDI, infrastructure, government expenditure and trade openness. The description and measurement of these variables are provided in detail in the following subsections.

3.4.1 Poverty

The poverty (*POV*) is the dependent variable in this research. *POV* is described as a state in which an individual's take home is inadequate to meet a given standard of living (Cashin, 2010). Following the work of Okojie (2002), Ogun (2010), Fans and Chan-Kang (2004) and Jalilian and Weiss (2004), *POV* was measured by real consumption expenditure per capita. While alternative to this measurement is per capita income, the study adapts per capita real consumption expenditure on the foundation that expenditure approach of poverty measurement is better to income measures.

3.4.2 Economic Growth

Economic growth (*EGR*) assumed to be dependent variable. *EGR* is described as total increase in the level of outputs and services compared overtime. However, by adapting research work of Mahmood and Chaudhary (2012), *EGR* is measured as *GDP* growth rate annual percentage overtime.

3.4.3 Foreign Direct Investment

Foreign direct investment (*FDI*) is defined as the act of an entity resident in one economy (direct investor) obtaining a lasting interest in an entity that is resident in another economy (direct investment enterprise). *FDI* is independent variable capable to influence *EGR* as well as *POV*. In this study, *FDI* is measured as gross *FDI* (GFDI), investment gross inflows to obtain controlling interest (more of voting stock or 10 percent). Firms operating in economy other than that of the shareholder (Kok & Ersoy, 2009). Following the previous study of Jenkins and Thomas (2002), Apergis *et al.* (2007), Nair-Reichert, Weinhold and (2001), Carkovic and Levine (2002), Dollar and Kraay (2001), Rama (2008), Kolstad and Tøndel (2002), Carkovic and Levine (2005) and Alfaro (2004). Arising from the above research, this study hypothesized that *FDI* has positive effect on *POV* and *EGR*.

3.4.4 Infrastructure

Infrastructure (*IFR*) is defined as a number of fixed telephone line per 100 persons in giving country over long period of time, or number of fixed line telephone and cell phone subscribers or accessible to internet. In term of measurement, infrastructure is measured on the annual basis of number of fixed telephone lines (Canning and Pedroni 1999; Canning 1998; Ogun, 2010; Haile & Assefa 2006). By considering the previous studies of Estache *et al.* (2002) and Fan *et al.* (2000). This study hypothesized that *IFR* has positive effect on *POV*. Equally, this study hypothesized that *IFR* has positive effect on *EGR*.

3.4.5 Trade Openness

Trade openness (*TOP*) is defined as an open economy with the robust macroeconomic policies capable in attracting FDI thereby leading to economic growth. Moreover, *TOP* is measured by trade intensity ratio, which is the proportion of import and export to GDP, following the study of Hassan, Bakar, Abdullah, (2014). This study, therefore, hypothesized that *TOP* has positive effect on *POV*. Thus, the study hypothesized that *TOP* has positive effect on *EGR*.

3.4.6 Government Expenditure

Government expenditure (*GEX*) is defined as a proportion of yearly government spending on investment and infrastructure out of its total annual budgets. This influence economic growth and curve poverty. *GEX* is measured using the total composition of current and capital expenditure (Nurudeen & Usman, 2010). However, following the studies by Fan *et al*. (2000), Gomanee *et al*. (2003), Sen (1997) and Datt and Ravillion (1997). This study hypothesized that *GEX* has positive effect on *POV* and on *EGR*.

3.5 Data

Secondary data are deployed in this research. The data are collected and verified from numerous sources i.e Central Bank of Nigeria (CBN), National BOS, IMF and World Bank Development Indicators (WBDI), for the period of 1980 to 2015.

3.6 Method of Analysis

The study used time series data and ARDL method of analyses are employed. It starts by examining the Stationary properties of the series, Test of exogeneity, Selection of lag length, Selection of optimal model, General modelling, Bound test for co-integration, Estimation of long run coefficients and Estimation of short run coefficients.

3.6.1 Unit Root Test

Time series analysis requires series to be stationary and in deciding the order of integration of the series. Maddala and Kim (1998) present an impression of different stationarity test proposed in literature. The diverse tests have weaknesses and strength under dissimilar circumstances. The most effective and generally applied unit root tests are Augmented Dickey-Fuller (ADF) test after Dickey and Fuller (DF), (1979) and Phillips-Perron (PP) test, after Phillips and Perron (1988).

The ADF test is augmented from earlier adaptation as DF test. Assumed, the first order Autoregressive process of Y:

$$Y_t = \alpha_1 Y_{t-1} + \in_t \quad [3.10]$$

where Y is coefficient, α_1 stands for parameter and $\in_t$ represents white noise error term. Series Y assumed stationary in the absence of unit root. Meaning that the characteristic root of the processes: $\alpha_1 < 0$ (or $\rho < 1$), and non-stationary if $\alpha_1 = 1$. By subtracting from Y_{t-1} from Equation [3.10], the basic test is carried on:

$$\Delta Y_t = \rho Y_{t-1} + \in_t \quad [3.11]$$

$$Y_t = \alpha_1 Y_{t-1} + \in_t \quad [3.12]$$

$$Y_t - Y_{t-1} = \alpha_1 Y_{t-1} - Y_{t-1} + \in_t \quad [3.13]$$

$$\Delta Y_{\in} = (\alpha_1 - 1) Y_{t-1} + \in_t \quad [3.14]$$

where, Δ represent difference operator and the test comprise null hypothesis H_0: ρ=0. ADF parameters corrects for higher order autoregressive process by assuming:

$$\Delta Y_t = \alpha_0 + \rho Y_{t-1} + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \beta_{p-1} \Delta Y_{t-p+1} + \epsilon_t \quad [3.15]$$

Like Perron and Phillip (1988), the Fuller and Dickey (1979) test relies on the basic first order autoregressive specification of Equation [3.14]. The distinction emerges from ADF parametrically corrects higher order autocorrelation, the PP employed a non-parametric correction on the *t*-statistics of the characteristic root of the first order Autoregressive procedure ρ is to report for serial correlation in the disturbance term ε_t. The techniques make the PP test sounds to heteroskedasticity and unidentified order of autocorrelation. Normally, PP test is viewed as more consistent as opposed to ADF, it is identified to be robust to a nuisance parameter and it is not affected by weak dependence and heterogeneity of sample data (Katafono, 2000).

3.6.2 Exogeneity Test

Exogeneity is seen as an illustration of the Davidson and Mackinnon (2004) version of the Wu-Hausman specification test. An exogenous variable is a variable that is not affected by other variables in the system. In addition, independent variable that affects a model without being affected by it, and whose qualitative characteristics and method of generation are not specified by the model builder. An exogenous variable is used for setting arbitrary external conditions, and not in achieving a more realistic model behavior. For example, if a variable which is a regressed is suspected of being endogenous (jointly dependent) it can be proved or disproved adopting the exogeneity test by adding the residual from the reduced form equation for the suspected variable to the relevant structural form equation and its significance tested. The null hypothesis of exogeneity is rejected if the residual is found to be significant. There are three types of exogeneity, weak, strong and super exogeneities. The major

reason for distinguishing the three types of exegeneity is that generally, while weak exogeneity is adequate for estimation and testing, forecasting requires strong exogeneity and super exogeneity is for policy analysis.

3.6.3 Optimal Lag and the Lag Length Selection Criterion

The optimal ARDL order is determine using appropriate model selection criteria such as Akaika Information Criteria (AIC). The justification for using AIC over other methods is that the AIC perform better when small sample size is employed (Hurvich & Tsai, 1989). Equation [3.16] is estimated in determining the optimal order.

$$AIC_l = \frac{-pq}{2}(1 + log2\pi) - \frac{p}{2} log \left| \sum_{l}^{k} \right| - qs \qquad [3.16]$$

where l is the maximum order of ARDL to be selected in the model, Σ_l is the system covariance matrix estimator in the regression.

3.6.4 The Optimal Autoregressive Distributed Lag Method

ARDL methods have been used by researchers for long period of time, but currently provide a valuable means of analyzing the long run interactions amongst economic time series data. The ARDL methods was lately improved by Pesaran and Shin (1999) and extended more by Pesaran, Shin and Smith (2001) and Narayan (2005). This method has econometric advantage when compared to other cointegration methods. One of the advantage its can be useful regardless of the degree of integration of the series and provides robust results for the small sample sizes and as well as reliable estimates of the long-run coefficients (Pesaran & Shin 1999). An ARDL model is as shown in Equation [3.20].

$$\Delta Y_t = \beta_o + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \cdots + \beta_n \Delta Y_{t-k} + \gamma_1 Y_{t-1} + \gamma_2 Y_{t-2} + \cdots + \gamma_n Y_{y-k} + \varepsilon_t \quad [3.17]$$

where ε_t, is a disturbance term and the model is autoregressive, in the sense that Y_t represents a vector of the variables employed in the model. The ΔY_t can be explained (in partial) by change and lagged values of itself. It also has a distributed lag component, in the form of successive lags of the other independent variable. Sometimes, the present value of the independent variable itself is omitted from the distributed lag part of the models structure.

Assume Equation [3.17] represents the derived ARDL model. Considering the presence of lagged values of the dependent variable as repressors', OLS estimation would produce biased coefficient estimates. If the stochastic term, ε_t, is auto correlated, the OLS would also be an inconsistent estimator. Using the established ARDL model to estimate the long-run model, Vector Error Correction Model (VECM) is used in computing long run coefficients accordingly. The existence of long run equilibrium relationship among serial variables can be checked by using various methods. The most popularly adopted methods include Engle Grager test of Granger (1987), Fully Modified OLS (FOLS) method by Phillips and Hansen's (1990), maximum likelihood Johansen Juselius (1990) and (ML) based Johansen (1988, 1991) test.

These methods, however, are regarded as weak because they do not provide robust results for small samples, structural shocks or breaks. Due to these shortcomings, another approach to cointegration known as ARDL modeling has gained popularity. However, a

dynamic VECM can be resulting from ARDL that integrates the short run dynamic with the long-run equilibrium without losing long run information. In view of the advantages, therefore, the use of ARDL methods have come to portrays an important role presently in the modeling of non-stationary time series data. In nutshell, they would be used in implementing the 'Bound Test', to verify if long-run relationships are present in a given time series variable, some could be stationary at level, while others are not.

3.6.5 General Modeling of ARDL

The general ARDL models are normally represented by the symbol ARDL ($p, q_1, q_2, \ldots q_n$), where ρ is the number of lags of the dependent variables, $q_1,\ldots,q_n$ are the number of the lags of the k_{th} independent variable. A representation of the ARDL process is in Equation [3.16]. Since the ARDL bounds tests model uses the OLS regressions, criteria like the AIC, SBC, and Hannan-Quinn (HQ) information criterion are known in the models selection and the determination of the lag lengths.

3.6.6 Bounds Test for Cointegration

ARDL-bounds testing method is used to investigate the existence of long-run association involving FDI, infrastructure, government expenditure and trade openness. The ARDL-bounds modelling technique is proposed by Pesaran and Shin (1999) and then extended by Pesaran, Shin, and Smith (2001). The ARDL-bounds co-integration method has many benefits when equated with other procedures of co-integration. For instance, the assumption of restricting all the variables to be integrated in the same order ARDL bounds test does not say this, which was contrary to other techniques of co-integration. Thus, the ARDL method can be employed without regarding the variables are integrated of order

zero or order one. Secondly, the ARDL test is suitable with the even small size sample, whereas other techniques of co-integration are responsive to the sample size. Thirdly, the ARDL method offers unbiased estimates of the long-run model and valid t-statistics even when some of the variables are endogenous (Harris & Sollis, 2003). ARDL model applied in this study can be formulated in Equation [3.18] to Equation [3.19]:

$$\Delta POV_t = \alpha_0 + \sum_{i=1}^{p} \propto_1 \Delta POV_{t-i} + \sum_{i=0}^{q_1} \propto_2 \Delta FDI_{t-i} + \sum_{i=0}^{q_2} \alpha_{3i} \Delta IFR_{t-i} + \sum_{i=0}^{q_3} \alpha_4 \Delta GEX_{t-i} + \sum_{t=0}^{q_5} \alpha_5 \Delta TOP_{t-i} + \beta_1 POV_{t-i} + \beta_2 FDI_{t-i} + \beta_3 IFR_{t-i} + \beta_4 GEX_{t-i} + \beta_5 TOP_{t-i} + \varepsilon_t \quad [3.18]$$

$$\Delta EGR_t = \vartheta_0 + \sum_{i=1}^{p} \vartheta_1 \Delta EGR_{t-i} + \sum_{i=0}^{q_1} \vartheta_2 \Delta FDI_{t-i} + \sum_{i=0}^{q_2} \vartheta_3 \Delta IFR_{t-i} + \sum_{i=0}^{q_4} \vartheta_4 \Delta GEX_{t-i} + \sum_{i=0}^{q_5} \vartheta_5 \Delta TOP_{t-i} + \gamma_1 \Delta EGR_{t-i} + \gamma_2 FDI_{t-i} + \gamma_3 IFR_{t-i} + \gamma_4 GEX_{t-i} + \gamma_5 TOP_{t-i} + \varepsilon_t \quad [3.19]$$

where, α, β, and ϑ are model parameters; Δ first difference operator; *t* time period; and ε_t error term. The bounds test method is founded on joint *F*-statistic for cointegration analysis. In this situation, null hypothesis of no cointegration among the variables in Equation [3.18] is $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ alongside alternative hypothesis $H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 = 0$. In addition, Equation [3.19], null hypothesis of no cointegration is $H_0: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_4 = 0$ alongside of alternative hypothesis $H_1: \gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq \gamma_5 = 0$. If the estimated statistic is larger than the upper critical

bounds value, null hypothesis is rejected. Alternatively, If *F*-statistic falls within the bounds, the cointegration result is inconclusive. Finally, if *F*-statistic is below the value of the lower bounds, then we failed to reject the null hypothesis of no cointegration.

3.6.7 The Estimation of Long Run Coefficients

The long run models are evaluated based on the determined ARDL models to examine the effect of the independent variables on the regress and in the long run situation as shown by Equation [3.20]. Here again ln Y, is a vector of log variables specified in the poverty alleviation model. The long run models in their specific and disaggregated forms are as in Equation [3.20] to Equation [3.21].

$$InPOV_t = \gamma_1 + \sum_{i=1}^{p} \propto_{1i} lnPov_{t-i} + \sum_{i=0}^{q_1} \vartheta_{1i} lnFDI_{t-i} + \sum_{i=0}^{q_2} \varphi_{1i} lnIFR_{t-i} + \sum_{i=o}^{q_3} \pi_{1i} lnGEX_{t-i} + \sum_{i=0}^{q_4} \theta_{1i} lnTOP_{t-i} + \varepsilon_{1t} \quad [3.20]$$

$$InEGR_t = \partial_1 + \sum_{i=1}^{p} \beta_{1i} lnEgr_{t-i} + \sum_{i=0}^{q_1} \varphi_{1i} lnFDI_{t-i} + \sum_{i=0}^{q_2} \pi_1 lnIFR_{t-i} + \sum_{i=0}^{q_3} \theta_{1i} lnGEX_{t-i} + \sum_{i=0}^{q_4} \beta_1 lnTOP_{t-i} + \varepsilon_{1t} \quad [3.21]$$

The successful estimation of the long run relations gives way for the estimation of the short run in the form of an *ECT* as in Section 3.7.8

3.6.8 The Estimation of Short Run Coefficients

The short run is evaluated using ARDL and *ECT* in their specific forms, the models estimated are represented as in Equation [3.22] to Equation [3.23].

$$\Delta InPOV_t = \gamma_2 + \sum_{i=1}^{k} \propto_{2i} \Delta lnPov_{t-i} + \sum_{i=0}^{k} \vartheta_{2i} \Delta\, lnFDI_{t-i} + \sum_{i=0}^{k} \varphi_{2i} \Delta\, lnIFR_{t-i}$$
$$+ \sum_{i=o}^{k} \pi_{2i} \Delta\, lnGEX_{t-i} + \sum_{i=0}^{k} \theta_{2i} \Delta lnTOP_{t-i} + \aleph ECT_{t-i}$$
$$+ \varepsilon_{2t} \qquad [3.22]$$

$$\Delta lnEGR_t = \partial_2 + \sum_{i=1}^{m} \gamma_{2i} \Delta lnEgr_{t-i} + \sum_{i=0}^{m} \pi_{2i} \Delta lnFDI_{t-i} + \sum_{i=0}^{m} \sigma_{2i} \Delta lnIFR_{t-i}$$
$$+ \sum_{i=0}^{m} \rho_{2i} \Delta lnGEX_{t-i} + \sum_{i=0}^{m} \alpha_{2i} \Delta lnTOP_{t-i} + \Psi ECT_{t-i}$$
$$+ \varepsilon_{2t} \qquad [3.23]$$

The lag (ECT_{t-1}) measures the speed of the adjustment mechanism or feedback in stabilizing disequilibrium in the model. It describes how disequilibrium in the model will immediately converge to equilibrium after a particular shock in the economy. In addition, a negative and significant coefficient of the *ECT* term is necessary to ensure the existence of adjustment of disequilibrium and long run relationship in the model (Narayan, 2005; Abdullahi *et al*., 2011). The higher the magnitude of the *ECT* term, the better will be the speed of adjustment.

3.6.9 Diagnostic Checking

Conducting the tests of stability leads to the determination of goodness of fit of ARDL model achieved through the diagnostic test. The test also includes serial correlation test, normality and heteroscadesticity tests. While stability test involves employing the

cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUM-Q) test, determination of the forecast error of the model is another means of determining the reliability of the ARDL model. If the error or difference amongst real observations and forecast is infinite, the model can be considered best fitting model.

3.7 Granger Causality Test

Once long-run relationships have been established, the succeeding step is to examine causal link between the *FDI*, with growth and poverty alleviation by means of Granger causality. Further, Granger causality test is a statistical hypothesis test for determining whether a time series variable is useful in forecasting one another. The Granger causality test technique is chosen in this study because it responds favourably to large and small samples. In line with the earlier work of Iyke and Odhiambo (2014), the Granger Causality is specified in Equation [3.24] to Equation [3.26]

$$\Delta \mathrm{POV_t} = \emptyset_0 + \sum_{i=1}^{n} \emptyset_{1i}\, POV_{t-i} + \sum_{i=0}^{n} \emptyset_{2i}\, \Delta FDI_{t-i} + \sum_{i=0}^{n} \emptyset_{3i}\, \Delta IFR_{t-i} + \sum_{i=0}^{n} \emptyset_{4i}\, \Delta GEX_{t-i} + \sum_{t=0}^{n} \emptyset_{5i}\, \Delta TOP_{t-i} + \emptyset_6 ECT_{t-i} + \mu_t \quad [3.24]$$

$$\Delta \mathrm{EGR_t} = \lambda_0 + \sum_{i=1}^{l} \lambda_{1i}\, EGR_{t-i} + \sum_{i=0}^{l} \lambda_{2i}\, \Delta FDI_{t-i} + \sum_{i=0}^{l} \lambda_{3i}\, \Delta IFR_{t-i} + \sum_{i=0}^{l} \lambda_{4i}\, \Delta GEX_{t\,-i} + \sum_{t=0}^{l} \lambda_{5i}\, \Delta TOP_{t-i} + \lambda_6 ECT_{t-i} + \mu_t \quad [3.25]$$

$$\Delta FDI_t = \theta_0 + \sum_{i=1}^{m} \theta_{1i}\, \Delta FDI_{t-i} + \sum_{i=0}^{m} \theta_{2i}\, \Delta POV_{t-i} + \sum_{i=0}^{m} \theta_{3i}\, \Delta IFR_{t-i} + \sum_{i=0}^{m} \theta_{4i}\, \Delta GEX_{t-i} + \sum_{t=0}^{m} \theta_{5i}\, \Delta TOP_{t-i} + \theta_{6i} ECT_{t-i} + \mu_t \quad [3.26]$$

where, $\emptyset$, θ, and λ are parameters of the model; Δ first difference operator; *t* time period; ECT_{t-1} error correction term; and μ_t is error term. These equations postulate that a current value of a dependent variable is related to a past value of itself as well as that of independent variable in form of repressors, where it is assumed that the disturbance term are uncorrelated.

3.8 Conclusion

As the third chapter, it exhibits the methodological procedures employed for this study. It began by explaining the theoretical framework, whereupon the premise of this study is decided for the analysis of *FDI* on growth and poverty alleviation, is explored and then specifies the models of the study. Following the model specification, the chapter further prescribed the justifications of variables and the data sources. It further consists of ARDL method as well as Granger causality test base on ARDL.

CHAPTER FOUR

DICUSSION OF RESULTS

4.1 Introduction

This chapter is designed to present the estimation results of the analysis and the discussions of findings. Section 4.2 offers descriptive statistics, while Section 4.3 presents correlation analysis. Section 4.4 consists of the results of time series data analysis, using ARDL, the Granger causality test results, and lastly, diagnostics checking which includes Cumulative Sum of Recursive Residuals (CUSUM), Cumulative Sum of Recursive Residuals Square (CUSUMQ), normality, heteroskedasticity and autocorrelation.

4.2 Descriptive Statistics

This section provides the explanation about the reliability as well as the degree of confidence of the employed data. Before estimating the growth and poverty models, this study first described the summary of statistics for all variables utilized in the study. Table 4.1 presents the summary of descriptive statistic.

Table 4.1, the data for Nigeria is normally and evenly dispersed. For instance, the mean value, 1,268 for poverty variable corresponds to the standard deviation of 298. This means, on the average at least 1,268 people are living below the USD1.90 and however, on the minimum 790 people and maximum of 1,743 people are living below the poverty line, this correspond with the UN (2016) report that at least 80 percent of Nigerians are below the poverty line. Besides, *EGR* averagely is 2.30 and the standard deviation is 3.92, meaning the rate of growth due fluctuate over time in response to the volume of economic activities, and the maximum rate of growth is -12.49 and minimum of -7.03.

Table 4.1
Descriptive Statistics of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
EGR	2.306	3.924	-12.449	- 7.036
POV	1268.653	298.434	790.790	1743.183
FDI	2.892	2.340	-1.150	10.832
IFR	0.437	0.277	0.103	1.184
GEX	15.939	11.208	6.915	43.479
TOP	51.046	16.369	21.124	81.813

Similarly, the average value of *FDI* is 2.89 relates to the standard deviation of 2.34 and the maximum of *FDI* inflows was USD10.83 billion at a time, while the minimum *FDI* repatriation overtime is -1.15, meaning that investors reduces their investment overtime due to economic shocks. In addition, the *IFR* mean value is 0.43, which correspond to the standard deviation of 0.27, and the maximum value of 1.18 and minimum value of 0.10, this demonstrate that physical infrastructure improve overtime. Likewise, *GEX* is 15.93 on average, which corresponds to the standard deviation of 11.20, however, over time government expenditure rise to maximum USD43.47 billion and lowest of USD6.91 billion. And finally, the mean value of *TOP* is given by 51.04 matches to the standard deviation of 16.36, the maximum of *TOP* is USD81.81 billion and minimum of USD21.12 billion overtime. These justifies that the standard deviation is lower than the mean for the observations. It means that the observation is closer to the mean. Therefore, the observation is normally distributed.

4.3 Correlation Analysis

Table 4.2, show the correlation between *POV* as dependent variable and the independent variable of interest *FDI* indicate a relatively strong positive correlation and statistically significant. This finding is similar to the research conducted in Africa by Soumare and

Gohou (2012), Hung (2005) in Vietnam, Uttama (2015), Soumare (2015) and Aaron (2005). On the other hand, in the case of *POV* and *IFR* indicate weak correlation and statistically insignificant. This finding is in line with the results of Ogun (2010) and Estache *et al.* (2002). Thus *POV* with the remaining control variables *GEX* and *TOP* shows negative correlation and statistically significant, respectively.

Table 4.2
Correlation Analysis for Nigeria

Variables	**POV**	**FDI**	**IFR**	**GEX**	**TOP**
POV	1.000				

FDI	0.545	1.000			
	(0.000)	-----			
IFR	0.314	0.111	1.000		
	(0.065)	(0.522)	-----		
GEX	-0.372	-0.607	-0.430	1.000	
	(0.027)	(0.000)	(0.009)	-----	
TOP	-0.184	-0.115	0.502	-0.464	1.000
	(0.046)	(0.010)	(0.020)	(0.005)	-----
Variables	**EGR**	**FDI**	**IFR**	**GEX**	**TOP**
EGR	1.000				

FDI	0.244	1.000			
	(0.156)	-----			
IFR	0.423	0.111	1.000		
	(0.011)	(0.522)	-----		
GEX	-0.286	-0.607	-0.430	1.000	
	(0.094)	(0.000)	(0.009)	-----	
TOP	0.203	-0.115	0.502	-0.464	1.000
	(0.240)	(0.507)	(0.005)	(0.005)	-----

Note: Figures in parenthesis represents *p*-values.

In addition, *FDI* as independent variable indicates a weak correlation and statistically insignificant on *EGR*. While *GEX* and *EGR* are negatively correlated -0.28 and statistically insignificant. The outcome of this study is consistent with the work of Akinlo (2004) and Adelegan (2000) conducted in Nigeria. Besides, *IFR* on *EGR* has strong correlation of 42 percent and statistically significant. While, *TOP* on *EGR* has weak correlation of 20 percent and statistically insignificant.

4.4 Exogeneity Test

Table 4.3 shows the results of block exogeneity test. The null hypothesis of exogeneity test is rejected if the residual found to be significant as detailed in Section 3.7.2. It has been determined that the variable of interest *FDI* and control variables like *IFR* and *GEX* are free from exogeneity problems.

Table 4.3
Block Exogeneity Test

DV: **EXD**		
Excluded	χ^2	***p*-value**
EGR	7.40	0.68
POV	43.59	0.00*
FDI	10.33	0.41
IFR	16.75	0.07**
GEX	11.12	0.34
TOP	27.85	0.00*

Note: * and ** represent 5 percent and 10 percent significance level.

4.5 Unit Root Test Result

In Table 4.4, show the unit root test results of the variables. The null hypothesis of unit roots for *POV* and *TOP* cannot be rejected at five percent level of significance. However, after first differencing the variables, the null hypothesis of unit roots for all variable are rejected at five percent significance level. Thus, the variables become stationary at first difference. However, to confirm the results of ADF unit root test, the study further employed PP in which *EGR*, *POV*, *FDI* and *IFR* are stationary at I(0) and *GEX* and *TOP* are non-stationary at I(0) and by differencing I(1) all the variables become stationary. Thus, is concluded that some variables are stationary at level and others at first difference.

Table 4.4
Unit Root Test for the Variables

	ADF		PP	
Series	Level	First Difference	Level	First Difference
LOGEGR	-5.47	-9.35*	-5.48	-32.27*
	(0.00)*	(0.00)	(0.00)*	(0.00)
LOGPOV	-3.49	-9.26*	-3.72	-9.26*
	(0.50)	(0.00)	(0.03)*	(0.00)
LOGFDI	-3.65	-3.55*	-3.62	-3.54*
	(0.00)*	(0.00)	(0.01)*	(0.00)
LOGIFR	-4.69	-3.56	-4.46	-3.55*
	(0.00)*	(0.00)	(0.00)*	(0.02)
LOGGEX	-4.47	-3.58*	-2.81	-3.55*
	(0.00)*	(0.00)	(0.06)*	(0.00)
LOGTOP	-2.35	-3.60*	-2.27	-3.54*
	(0.16)	(0.00)	(0.18)	(0.00)

Notes: * represents statistically significant at 10 percent level of significance.
Figures in parenthesis represent *p*-value

4.5.1 Selection of Lag Length

This sub-section deals with the estimation and selection of the optimum ARDL model for the purpose of selecting appropriate lag model. The AIC help in determining best number of lags to be considered in the model. The models selected are displayed in Table 4.5. From the table, the optimal ARDL Model 1 and Model 2 are ARDL (1, 3, 0, 0, 0) and ARDL (3,1,1,2,3). Both models respectively, selected for further estimation.

In Model 1, R-squared is 74 percent meaning that the explanatory variable explained the dependent variable by 74 percent. While the adjusted R-squared is 62 percent, means that it reduces the impact of an unnecessary explanatory variable in the Model 1 by 62 percent. Hence, the *F*-statistic of 6.352 and 0.000 jointly, the explanatory variable fully explained the dependent variable at 5 percent significant level.

Table 4.5
Optimal ARDL Model Selection

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Model 1: ARDL (1,3,0,0,0)				
LOGPOV(-1)	0.337	0.181	1.861	0.075**
LOGFDI	-4.840	3.170	-1.524	0.140
LOGFDI(-1)	4.230	3.140	1.349	0.189
LOGFDI(-2)	2.720	3.190	0.853	0.401
LOGFDI(-3)	3.970	3.360	1.182	0.248
LOGGEX	-0.248	4.129	-0.060	0.952
LOGIFR	388.974	155.709	2.498	0.019*
LOGTOP	-2.211	2.942	-0.751	0.459
C	659.528	320.467	2.058	0.050*
Model 2: ARDL (3,1,1,2,3)				
LOGEGR(-1)	0.131	0.188	0.698	0.494
LOGEGR(-2)	-0.711	0.210	-3.373	0.003*
LOGEGR(-3)	-0.141	0.212	-0.667	0.514
LOGFDI	4.960	1.730	2.874	0.011*
LOGFDI(-1)	-2.740	1.760	-1.561	0.138
LOGGEX	0.270	0.253	1.067	0.301
LOGGEX(-1)	0.298	0.258	1.154	0.265
LOGIFR	44.441	16.607	2.676	0.016*
LOGIFR(-1)	-16.157	20.663	-0.781	0.445
LOGIFR(-2)	-39.046	22.669	-1.722	0.104
LOGIFR(-3)	23.510	18.141	1.295	0.213
LOGTOP	0.058	0.110	0.530	0.602
LOGTOP(-1)	0.313	0.114	2.737	0.014*
LOGTOP(-2)	-0.262	0.142	-1.842	0.084**
LOGTOP(-3)	0.377	0.130	2.890	0.010*
C	-39.713	13.342	-2.976	0.008*
R-squared	0.742	R-square		0.818
Adjusted R-squared	0.625	Adjusted R-squared		0.625
F-statistic	6.352	F-statistics		4.235
Prob(F-statistic)	0.000	Prob(F-statistic)		0.008

Notes: * and ** represent 5 percent and 10 percent level of significance.

Further, the estimated R-squared in Model 2 is 81 percent, showing that, the explanatory variable explained the dependent variable by 81 percent. However, the adjusted R-squared reduces the influence of unnecessary explanatory variable by 62 percent in the model. Finally, the *F*-statistic of 4.23 and 0.008 jointly, the explanatory variable explained the dependent at 5 percent significant level.

4.5.2 The ARDL Bounds Test

The results of the Bound Test are shown in Table 4.6. The result of the *F*-statistics offered that when *POV* is used as dependent variable, the calculated *F*-statistics 9.01 is greater than the upper bound at the five percent significance level. Similarly, employing *FDI* as the dependent variable, the *F*-statistics of 5.09 is greater than the upper bound at five percent level of significance. Moreover, when *IFR* is utilized as the dependent variable, the *F*-statistics of 6.72 is greater than the upper bound at the five percent level of significance. Finally, *GEX* and *TOP* have *F*-statistics as 7.96 and 12.54 respectively, both greater than Narayan (2005) critical value.

In Model 2, by utilizing *EGR* as the dependent variable, the *F*-statistics of 5.47 is greater than the upper bound at five percent significance level. Also, when *FDI* is used as the dependent variable, the *F*-statistics of 4.03 is greater than the upper bound at five percent level of significance. In the same vein, when *IFR* employed as a dependent variable, *F*-statistics of 5.36 is greater than upper bound at the five percent significance level. Both models *POV* and *EGR* have evidenced of co-integration with independent variables in the models. Meanwhile, the computed *F*-statistics in Model 1 and Model 2 are individually greater than Narayan (2005) upper critical values at the five percent significance level. Consequently, long run relationship exists amongst *EGR* and *POV* as well as its determinants.

Table 4.6
ARDL Bound Test Results

Model 1: Poverty	*F*-stat	lag	sig. level	Critical value I(0)	I(1)
F_{POV}*[POV / FDI, IFR, GEX, TOP]*	9.012*	4	10%	2.45	3.52
F_{FDI}*[FDI/ POV, IFR, GEX, TOP]*	5.096*	4	5%	2.86	4.01
F_{IFR}*[IFR/ POV, FDI, GEX, TOP]*	6.729*	4	1%	3.25	4.49
F_{GEX}*[GEX/ POV, FDI, IFR, TOP]*	7.966*	4		3.74	5.06
F_{TOP}*[TOP/ POV, FDI, IFR, GEX]*	12.542*	4			
Model 2: Economic Growth					
F_{EGR} *[EGR/FDI, IFR,GEX,TOP]*	5.475*	4	10%	2.45	3.52
F_{FDI} *[FDI/EGR,IFR,GEX,TOP]*	4.039*	4	5%	2.86	4.01
F_{IFR} *[INF/EGR,FDI,GEX,TOP]*	5.361*	4	1%	3.25	4.49
F_{GEX} *[GEX/EGR,FDI,IFR,TOP]*	29.933*	4		3.74	5.06
F_{TOP} *[TOP/EGR,FDI,IFR,GEX]*	11.704*	4			

Note: * represents 10 percent level of significance.

4.5.3 The Long Run Relationship

Table 4.7 portrays the long run estimation results of Model 1. The coefficient of *FDI* means that an increase by one percent of *FDI* inflows to acquire controlling interest in some industries in Nigeria, affect poverty by 49 percent and statistically significant. This finding is consistent with the studies conducted by Gohou and Soumare (2010), Dollar and Kraay (2001), Rama (2001), Kolstad and Tondel (2002) and Chowdhury and Mavrotas (2006), demonstrate that indeed *FDI* alleviates poverty.

In addition, the coefficient of *IFR* described that one percent increase in infrastructure such as improving good roads network, education, healthcare system and communication system will reduce *POV* by 56 percent and statistically significant. Thus, an increase in

IFR will decrease *POV*. By implication, *FDI* and *IFR* could largely decrease the poverty level. The result of infrastructure is in line with the studies of many empirical findings. Furthermore, studies by Ogun (2010), Amis and Kumar (2000), Estache *et al.* (2002), Canning and Bennathan (2000) in major cities in China, Malaysia, India, Latin America and African cities showed the impact of infrastructure towards facilitating economic growth and reducing poverty across different region of world economies. Furthermore, one percent increase in *GEX* will reduce poverty by 37 percent in the long run. Finally, improving *TOP* by one percent will affect poverty by 34 percent and hence statistically significant at ten percent.

Table 4.7
Long Run Coefficients Estimates of Independent Variables: Poverty Model 1: ARDL (1,3,0,0,0)

Variable	**Coefficient**	**Std. Error**	***t*-Statistic**	**Prob.**
LOGFDI	0.490	0.200	2.452	0.002*
LOGGEX	-0.375	6.230	-0.060	0.092**
LOGIFR	-0.565	0.404	-1.398	0.002*
LOGTOP	-0.340	0.272	-1.250	0.084**
C	996.252	319.946	3.113	0.004*

Note: * and ** represent 5 and 10 percent level of significance.

Table 4.8, exhibits the estimation results of *FDI*, *GEX* and *TOP* are statistically significant at the five percent level. The coefficient *FDI* means that an increase in *FDI* inflows by one percent will cause a 28 percent increase in economic growth. This finding is similar to the studies conducted by Yousaf, Hussain, and Ahmad (2008), Zaman, Rasheed, Khan, and Ahmad (2012), Caves (1974), and Kindleberger (1969). Their findings established long run positive relationships amongst *FDI* and economic growth.

However, if *GEX* increases by one percent bring about an increase in *EGR* by 33 percent, and in the case of *IFR* is statistically significant at 10 percent towards economic growth, because one percent increase will cause *EGR* to increase by 60 percent because of the importance of physical infrastructure in terms of growth and development. Finally, if *TOP* increases by one percent, it could contribute to economic growth by 28 percent and statistically significant.

Table 4.8
Long Run Coefficients Estimates of Independents Variable: Economic Growth Model 2: (3,1,1,3,3)

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
LOGFDI	0.280	0.367	0.762	0.019*
LOGGEX	0.330	0.144	2.291	0.035*
LOGIFR	0.605	0.245	2.469	0.053**
LOGTOP	0.282	0.104	2.711	0.016*
C	-23.070	7.815	-2.951	0.009

Note: * and ** represent 5 percent and 10 percent level of significance.

4.5.4 The Short Run Relationship

Following the successful estimation of the long run relationships, the study further estimates the short run dynamic of the two models. Table 4.9 shows the computed coefficients of the Model 1. The estimated *FDI* coefficient is -0.58, this means that one percent increase of *FD*I inflows will reduce poverty by 58 percent. This finding is similar to the studies conducted by Durham 2004, Alfaro, Chanda, Kalemli-Ozcan and Sayek, 2004 and Hermes and Lensink (2003). In addition, the estimated *GEX* is -0.25, meaning that if government expenditure increases by one percent, poverty will reduce by 24 percent however is not statistically significant in the short run. The role of *IFR* is important towards reducing poverty. Its coefficient is -0.97, means that a one percent increase in infrastructure spending by the government will reduce poverty by 97 percent.

The results of Model 1 clearly show that the coefficient of *ECT* found to be -0.66 demonstrating the movement of the economy towards the equilibrium and statistically significant. This characterize the fast speed to correct long run equilibrium in a year. Signifying a reasonable long run correction each year.

Table 4.9
Short Run Estimates: Independent Variable Poverty Model 1: ARDL (1,3,0,0,0)

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
LOG(POV(-1))	-0.270	0.140	-1.928	0.140
LOG(FDI(-1))	-0.581	0.290	-2.003	0.401*
LOG(FDI(-2))	-0.102	0.310	-0.329	0.248*
LOG(GEX)	-0.248	4.129	-0.060	0.092**
LOG(IFR)	-0.974	0.709	1.373	0.019*
LOG(TOP)	-2.211	2.942	-0.751	0.459
ECT(-1)	-0.662	0.181	-3.657	0.001*

Note: * and **represent statistically significant at 5 and 10 percent level of significance.

Table 4.10, Model 2 shows that the short run coefficient of *FDI* is 0.52 meaning that, one percent increase inflow of *FDI* will cause growth by 52 percent over time and statistically significant at five percent towards economic growth. Further, *IFR* is statistically significant and positively affect economic growth by 24 percent in the short run. While *TOP* is statistically significant at the ten percent. Henceforth, an increase in government spending on *IFR* by one percent will increase economic growth by 24 percent. Also, an increase in *TOP* by one percent will increase economic growth by 5 percent. This result is similar to the empirical findings of Yanikkaya (2003) and Awokuse (2008) revealed that trade openness contributes to economic growth. However, the finding of *IFR* on economic growth is similar to the studies of empirical findings of Ogun (2010) for Nigeria and Haile and Assefa (2006) for Ethiopia, McCleery and Jahan (2005), establishes that improvement in infrastructure accelerates economic growth. The *ECT* coefficient is turn out to be -0.72 meaning that the economy is moving close to equilibrium and statistically significant. This demonstrates fast speed correction towards long run equilibrium in a

year. This finding can be supported by the theory proposed by Keynes (1936), in his book General Theory of Money, Interest, and Employment as detailed in Section 3.2.

Table 4.10
Short Run Estimates: Independents Variable Economic Growth Model 2: ARDL (3,1,1,3,3)

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
LOG(EGR(-1))	0.853	0.309	2.761	0.013*
LOG(EGR(-2))	0.141	0.212	0.665	0.514
LOG(FDI)	0.515	0.370	1.391	0.011*
LOG(GEX)	0.270	0.253	1.067	0.301
LOG(IFR)	0.241	0.607	0.397	0.016*
LOG(IFR(-1))	39.046	22.669	1.722	0.104
LOG(IFR(-2))	-23.510	18.141	-1.295	0.213
LOG(TOP)	0.058	0.110	0.527	0.602
LOG(TOP(-1))	0.262	0.142	1.845	0.084**
LOG(TOP(-2))	-0.377	0.130	-2.900	0.010*
ECT(-1)	-0.721	0.387	-1.863	0.000*

Note: * and ** 10 represent 5 percent and 10 percent level of significance.

4.6 Diagnostic Checking

The appropriateness of specified models could additionally confirm by diagnostic tests to ensure that the results are free from spurious inference. Table 4.11 displays how the results of diagnostic test of the ARDL Models.

Table 4.11
Diagnostic Test of the ARDL Model

Test Statistics	*F* - Statistics	Probability
Model 1		
Autocorrelation	2.192	0.072
Normality	1.075	0.584
Heteroskedasticity	1.199	0.207
Model 2		
Autocorrelation	0.613	0.245
Normality	0.022	0.988
Heteroskedasticity	0.804	0.544

The results from Table 4.11 establishes that null hypothesis of no autocorrelation, homoskedasticity and normality of residuals distribution cannot be rejected. For this reason, it is resolved that the models passed the diagnostic test.

4.6.1 CUSUM and CUSUM-Q Stability Test

Lastly, the strength and stability of the models can be additionally measured by employing CUSUM and CUSUMQ examinations as suggested by Brown and Durbin (1975). Figure 4.1 and Figure 4.2 depict the CUSUM and CUSUMQ respectively. These test of stability were done to both models. The plot of the CUSUM statistics stays inside five percent significance level, the results reaffirmed to be stable. Similar comparable goes to CUSUMQ statistics that are founded on squared recursive residuals. The plotted CUSUM and CUSUMQ statistics remained within bound limits. From Figure 4.1 and Figure 4.2, the plots of the stability test revealed that the series are within the critical bound at five percent significance level. This, therefore, justifies the stability of Model 1 over time.

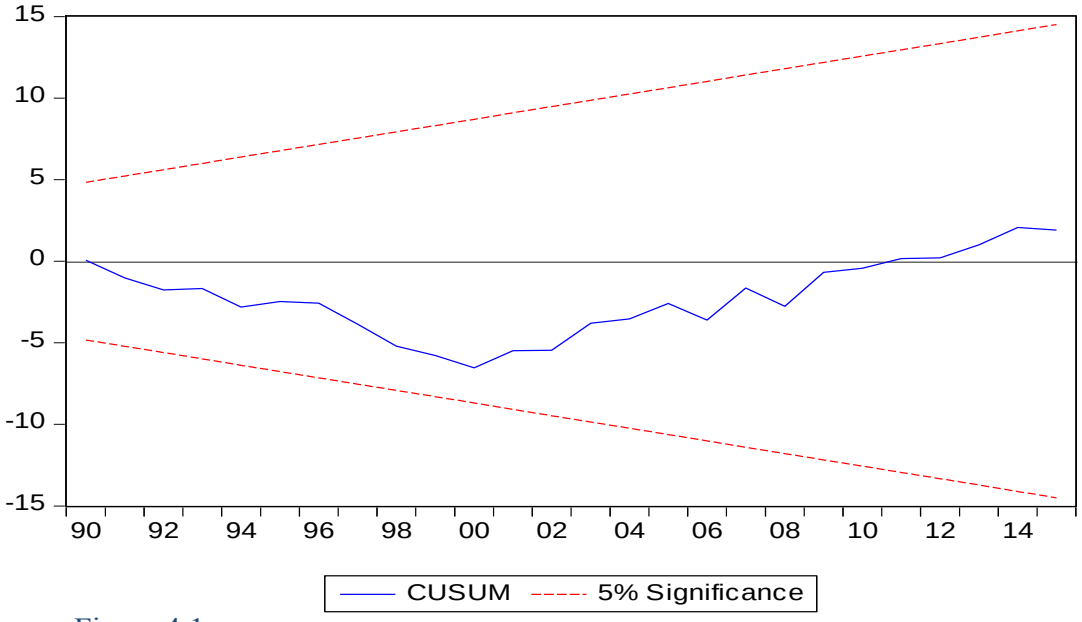

Figure 4.1
CUSUM Stability Test

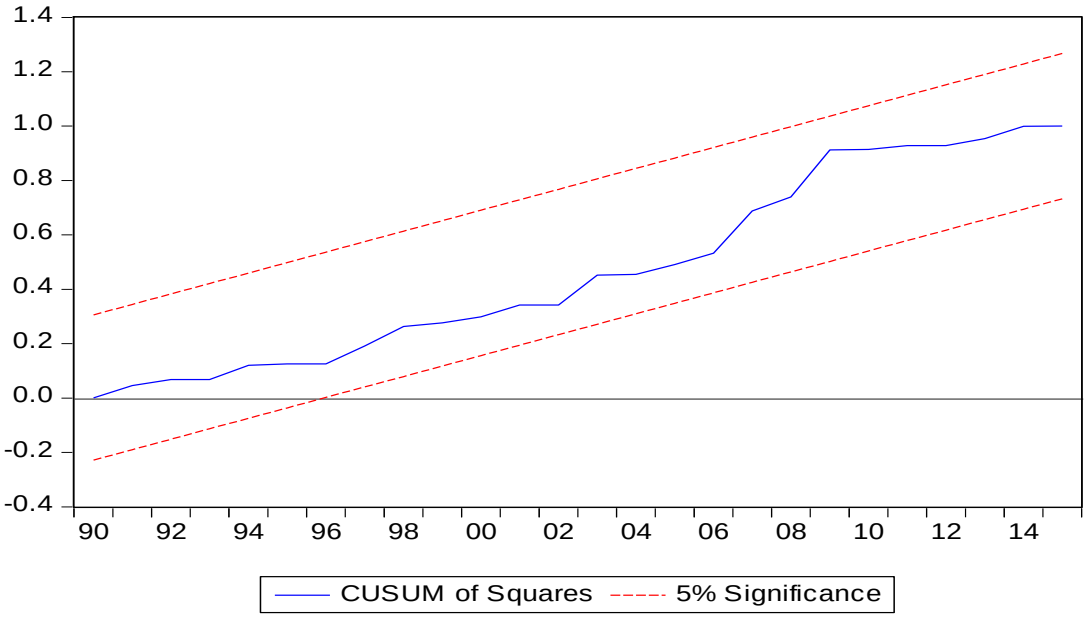

Figure 4.2
CUSUMQ Stability Test

Furthermore, Figure 4.3 and Figure 4.4 depict the CUSUM and CUSUMQ, respectively. Model 2 represents growth model which plots CUSUM and CUSUMQ produced the required outcomes by establishing the stability of the model in the long run because the graph did not cross the critical bound line at five percent level of significance.

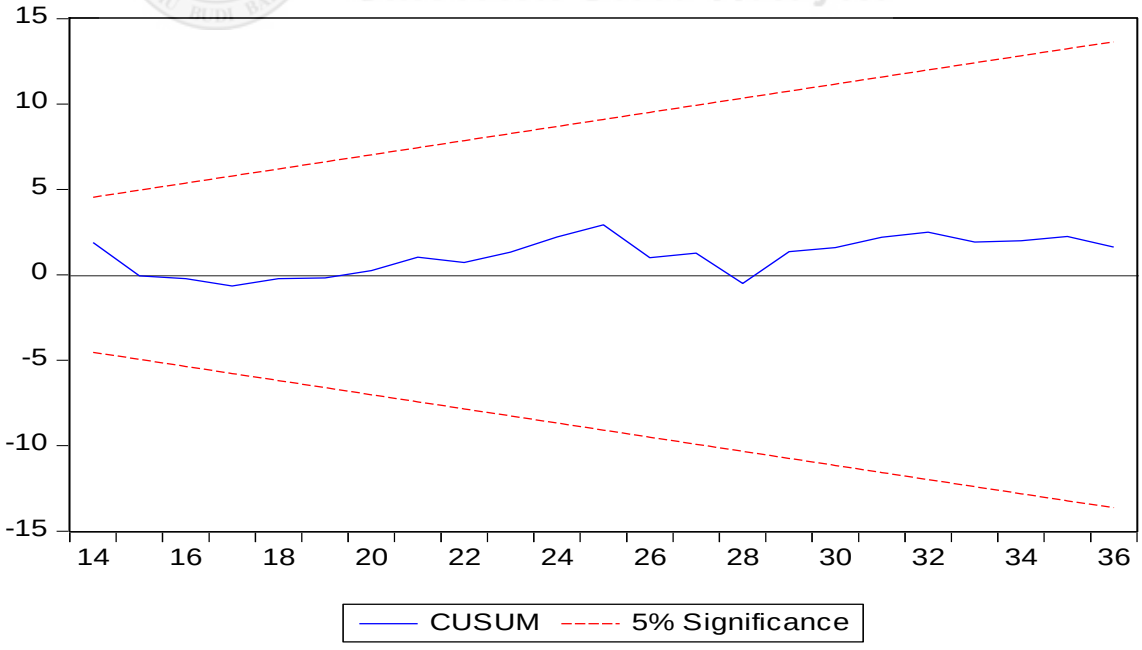

Figure 4.3
CUSUM Stability Test

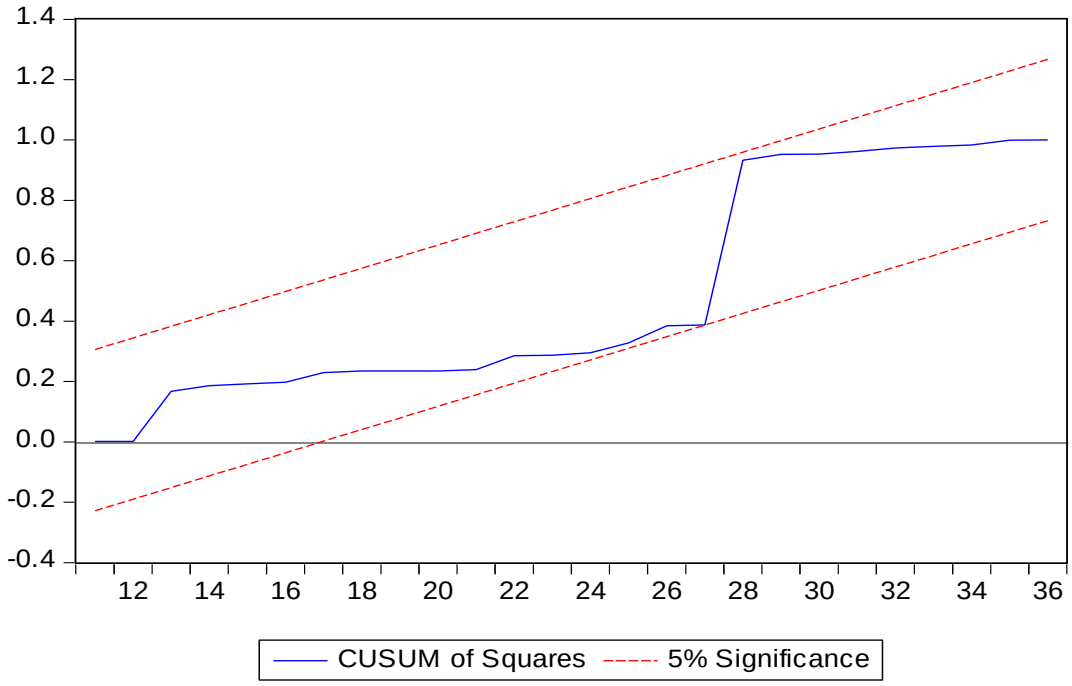

Figure 4.4
CUSUMQ Stability Test

4.7 Granger Causality

The Granger causality test results for both models are shown in Table 4.12. For Model 1, unidirectional causality was found among *FDI* and *POV*, *IFR* and *POV* and subsequently *GEX* and *POV*. However, bidirectional causality between *TOP* and *POV* were found. The results of this study are consistent with the empirical findings of Ucal (2014) in some selected LDCs, Huang *et al*. (2010) in East Asia and Latin America and Hye *et al*. (2010) in Pakistan, that unidirectional causality was found on *FDI* against poverty.

Model 2 was slightly different from the earlier discoursed results of Model 1. Table 4.12 exhibit that unidirectional causality exists among *FDI* and *EGR, IFR* and *GDP* and *TOP* and *EGR* with strong statistical significance. On the other hand, *GEX* and *EGR* was found to be bidirectional causalities. These results are similar to the empirical findings of Zaman, Rasheed, Khan, and Ahmad (2012) in Bangladesh, India, Nepal, Pakistan and Sri Lanka

and as well as Carkovic and Levin (2002) in Ireland. They established that *FDI* and *EGR* are unidirectional while *GEX* and *EGR* are bidirectional causality. Meaning that government expenditure could stimulate economic growth and economic growth could influence government spending in the area of *FDI* and *IFR*.

Table 4.12
G*ranger Causality Test Results*

Null Hypothesis	*F*- Statistics	Probability	Conclusion
Model 1: Poverty			
FDI does not Granger Cause *POV*	0.818	0.041*	Unidirectional
POV does not Granger Cause *FDI*	1.182	0.321	Causality
IFR does not Granger Cause *POV*	3.462	0.045*	Unidirectional
POV does not Granger Cause *IFR*	0.354	0.704	Causality
GEX does not Granger Cause *POV*	2.719	0.083*	Bidirectional
POV does not Granger Cause *GEX*	0.526	0.055*	Causality
TOP does not Granger Cause *POV*	10.663	0.000 *	Bidirectional
POV does not Granger Cause *TOP*	3.219	0.005*	Causality
Model 2: Economic Growth			
FDI does not Granger Cause *EGR*	0.368	0.698	Unidirectional
EGR does not Granger Cause FDI	1.397	0.041*	Causality
IFR does not Granger Cause *EGR*	0.563	0.031*	Unidirectional
EGR does not Granger Cause *IFR*	0.312	0.736	Causality
GEX does not Granger Cause *EGR*	0.732	0.027*	Bidirectional
EGR does not Granger Cause *GEX*	2.637	0.019*	Causality
TOP does not Granger Cause *EGR*	0.690	0.516	Unidirectional
EGR does not Granger Cause *TOP*	0.721	0.005*	Causality

Note: * and ** represents 5 and 10 percent level of significance.

4.8 Conclusion

This study analyzed the effect of *FDI* on economic growth and poverty in Nigeria. Primarily, focus on the objectives of the effect of *FDI* on economic growth, how responsiveness of *FDI* on poverty and causality between and amongst *FDI*, *EGR,* and *POV*. The outcomes of the estimation proved that *FDI* affect economic growth in the long run and statistically significant and in the short run *ECT* is very fast to correct the economy back to equilibrium. Likewise, *FDI* has a positive response to *POV* in the long run and statistically significance, however in the short run is not statistically significance.

The chapter established mixed levels of stationary in the series using ADF and PP, while the two models established the presence of co-integration by applying the ARDL bound testing procedures. Granger-causality tests were used to examine the direction of causality among the variables. Finally, CUSUM and CUSUMQ stability test.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATION

5.1 Introduction

This chapter designed to present summary and conclusion of the study. It commences by introducing the entire chapter. Section 5.2 offers the summary of findings, while Section 5.3 presents policy implications. Section 5.4 provides limitations of the study, as Section 5.5 offers the suggestion for future research, and finally, Section 5.6 concludes the chapter.

5.2 Summary of Findings

This study is largely set out to investigate the effect of *FDI* on economic growth and poverty in Nigeria. The current policy implemented by the government for poverty reduction in Nigeria are; improvement of the educational system generation, meals for schoolchildren, material aid for poor citizens, micro-crediting plan and N-Power. These programs are consumption base and may not be sustainable for growth and poverty reduction in the long run. The initial objective of the study is to examine the effect of FDI on economic growth in Nigeria. In this regard, the findings re-affirmed that *FDI* in the long run influenced economic growth to a considerable percent in Nigeria with strong statistical significance. Similarly, *GEX* and *TOP* as control variables contribute in the long run in achieving the positive effect on economic growth. Equally, in the short run, *FDI* has a high positive effect on economic growth in Nigeria with a weak statistical significance. In terms of speed of adjustment, the finding proves that *ECT* to equilibrium in the short run it has the fast speed to adjust the economy back to equilibrium.

The second objective focus on how responsive is the *FDI* on poverty in Nigeria. The outcome of this shows that *FDI* affects poverty positively, that is to say, *FDI* inflows reduce poverty and statistically significant in the long run. However, *GEX* and *TOP* contributes in terms of poverty reduction and is statistically significant as control variables. Meanwhile, in the short run, *FDI* resulted to be weak and statistically insignificance towards poverty. Thus, *IFR* affects poverty strongly and statistically significant. The *ECT* has the fast speed to adjust the economy back to equilibrium.

Finally, the third objective is to examine the direction of causality among *FDI*, economic growth, and poverty. The result showed that *FDI* and economic growth has unidirectional causality and however, *FDI* and poverty has unidirectional causality. Besides, *IFR* and *POV* have unidirectional causality while *TOP* and *POV* have bidirectional causality. Likewise, *IFR* and *EGR* and *TOP* and *EGR* has unidirectional causality respectively, and lastly, *GEX* and *EGR* resulted in bidirectional causality.

5.3 Policy Implications

Having established that *FDI* has a positive effect towards economic growth in the short and long run. Concerted efforts have to be made to review policies that can attract and safeguard *FDI* suitable for economic growth by improving specific macroeconomic and institutional framework, these should be done and carefully implemented, like subsidies and tax relief. Additional strategy implication of this study is that federal government should dedicate a considerable proportion of its budgetary spending allocations on infrastructure that can help to improve the existing and potential *FDI*, these tendencies could restore confidence to investors.

Secondly, finding establishes the positive effect of *FDI* on poverty in Nigeria. Considering Nigeria experiences an increasing number of the population living in absolute poverty. In this regard the government should focus on horizontal *FDI* (market seeking) under this, industries are attracted based on the potential economic growth and development, infrastructure, population growth and geographical location, like Malaysia, Singapore and Taiwan whereas vertical *FDI* (cost saving) in this form of *FDI* industries are persuaded based on abundant supply of human capital, cheap access to raw materials input and labor, for instance in the case of Indonesia, India, China when compared to portfolio *FDI.* These forms of *FDI* it could be effective in reducing poverty.

In addition, the federal government should establish a commission that can seek advantageous *FDI* targeted to poor population called Poverty Alleviation Commission (PAC) and should be extended to different tiers of government in the country. The objective of the commission is to implement poverty alleviation related programs within the country. Further, *IFR* was found to have a strong effect in reducing poverty, the government should encourage private participation in infrastructure development as it is being done in the public sector. Projects like Build-Operate-Transfer (BOT) schemes and this, in turn, will encourage economic growth.

The third objective of causality among the variables found to have a different direction of causality. As *FDI* and *POV*, *GEX* and *POV* and *IFR* and *POV* have unidirectional causality, respectively. While *TOP* and *POV* has bidirectional causality. Further, *FDI* and *EGR*, *IFR* and *EGR* as well as *TOP* and *EGR* have found to be unidirectional causality, hence *GEX* and *EGR* found to be bidirectional causality. Therefore, policies that can stimulate *FDI* and *IFR* could directly affect *EGR* and *POV*. Differently, where causality

is zero, policies on one variable will not affect the other but invariable effect one another in case of mutual causality. The policy proposed by this study to support the causality is government spending and tax relief policy.

Based on the above, it is the view of this study that government should endorse fiscal policy or instruments that allow *FDI* to stimulate economic growth, that can generate productive connections with homegrown productive structure and technology relocation. In addition, trade openness should not be based on commodity trade, the government should create an enabling environment for local firms to produce value added commodities and export thereby reducing poverty.

5.4 Limitations of the Study

This study focused on the effect of FDI on economic growth and poverty in Nigeria. The study uses secondary data. Thus, the study covers the period of 35 years (1980 – 2015). Consequently, empirical computation is limited due to insufficient data sources bias in Nigeria. The time series data collected may possibly suffer from sources bias. World economies are evolving and rapidly dynamic, therefore the need for more studies using rich updated data is required. However, possible changes in legislation and regulations are required as time progress. Some variables are likely missing or limited due to the use of single sources of data. The combination of these limitations may produce different results on empirical findings.

5.5 Suggestions for Further Research

In the succeeding limitations of this study, the study proposes that additional research should consider issues alike. Firstly, further research should expand the coverage of time and by making use of a richer data and because issues of poverty and sustainable economic growth are not only limited to Nigeria, but rather, the whole developing and developed countries. Lastly, this study employed the ARDL model on the time series, in examining the effect of FDI on economic growth and poverty. Therefore, further research should conduct a survey or combine time series and survey, by adopting a GMM model which of course outside the scope of this study. Future research should focus on the instrumentation of the capacity to absorb technology and productive specialization.

5.6 Conclusion

Following the summary of findings, on the title of the study, the effect of FDI on economic growth and poverty in Nigeria, reaffirm previous related studies. The chapter presents the policy implications for this study from which policies on how the current government should improve *FDI* policies like the fiscal policy to attract and enhances economic growth and reduces poverty were suggested. The study was limited to some factors, which include data coverage of the study and the methodology employed. The study suggested future research on data set that will cover countries and different methodology to be employed. Finally, the chapter was closed with the conclusion.

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