

**REPUBLIC OF TURKEY
ISTANBUL GELISIM UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**

Department of Economics and Finance

**FOREIGN DIRECT INVESTMENT AS A VEHICLE FOR ECONOMIC
GROWTH IN NIGERIA**



Master Thesis

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Supervisor

Asst. Prof. Dr. EDMUND NTOM UDEMBA

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DECLARATION

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ABSTRACT

This research study aimed to investigate the empirical justification for foreign direct investments' relationship with economic growth in Nigeria. The study utilized time series data ranging from 1972-2020, with gross capital formation (GCF), labor proxied by population aged 14-65, and foreign direct investment (FDI) as the explanatory variables of the study and GDP growth (annual; %) as the response variable of the study. The Autoregressive distributive lag (ARDL) estimation technique was employed to ascertain the presence of cointegration among the variables, to estimate the short-run and long -run coefficients and check for the significance of their individual impacts on economic growth in Nigeria. Findings showed FDI to have a positive and significant impact on economic growth on the long run, however it had negative and insignificant impact in the short run. GCF was seen to only have a positive significant impact on economic growth in the short run but its positive effect on the long run was insignificant. Labor was seen to have positive significant impact on economic growth in Nigeria both in the short run and on the long run. VAR Granger causality test was used to investigate the existence of causal relationships in among the variables and results showed the existence of unidirectional causality between FDI and economic growth, labor and economic growth, economic growth and GCF as well as FDI and labor. However, a bi-directional causal relationship was seen between FDI and GCF. It was concluded that GCF, labor and FDI are significantly influential to economic growth in Nigeria.

Keywords: *Foreign direct investment, economic growth, ARDL, Granger causality*

ÖZET

Bu araştırma çalışması, Nijerya'da doğrudan yabancı yatırımların ekonomik büyüme ile ilişkisinin ampirik gerekçesini araştırmayı amaçlamıştır. Çalışma, çalışmanın açıklayıcı değişkenleri olarak brüt sermaye oluşumu (GCF), 14-65 yaş arası nüfus tarafından temsil edilen işgücü ve doğrudan yabancı yatırım (FDI) ve GSYİH büyümesi (yıllık; %) ile 1972-2020 yılları arasında değişen zaman serisi verilerini kullandı.) çalışmanın yanıt değişkeni olarak. Nijerya'da değişkenler arasında eşbütnleşmenin varlığını tespit etmek, kısa ve uzun dönem katsayılarını tahmin etmek ve bunların bireysel etkilerinin ekonomik büyüme üzerindeki önemini kontrol etmek için Otoregresif dağılım gecikmesi (ARDL) tahmin tekniği kullanılmıştır. Bulgular, DYY'nin uzun vadede ekonomik büyüme üzerinde pozitif ve anlamlı bir etkiye sahip olduğunu, ancak kısa vadede negatif ve önemsiz bir etkiye sahip olduğunu göstermiştir. GCF'nin ekonomik büyüme üzerinde yalnızca kısa vadede pozitif anlamlı bir etkiye sahip olduğu, ancak uzun vadede pozitif etkisinin önemsiz olduğu görülmüştür. Emeğin Nijerya'da hem kısa vadede hem de uzun vadede ekonomik büyüme üzerinde olumlu ve önemli bir etkiye sahip olduğu görüldü. Değişkenler arasında nedensellik ilişkilerinin olup olmadığını araştırmak için VAR Granger nedensellik testi kullanılmış ve sonuçlar DYY ile ekonomik büyüme, işgücü ve ekonomik büyüme, ekonomik büyüme ile GCF ve DYY ile işgücü arasında tek yönlü nedenselliğin varlığını göstermiştir. Ancak, DYY ile GCF arasında çift yönlü bir nedensellik ilişkisi görülmüştür. Nijerya'da ekonomik büyüme üzerinde GCF, işgücü ve DYY'nin önemli ölçüde etkili olduğu sonucuna varılmıştır.

Anahtar Kelimeler: Doğrudan yabancı yatırım (DYY), ekonomik büyüme, ARDL, Granger nedenselliği

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ABBREVIATIONS

ARDL:	Autoregressive distributive lag
ECOWAS:	Economic Community of West African States
FDI:	Foreign direct investment
GCF:	Gross capital formation
GDP:	Gross domestic product
GMM:	Generalized method of moments
ILO:	International Labor Organization
MENA:	Middle East and North Africa
MOERT:	MENA-OECD Economic Resilience Task Force
OECD:	Organization for Economic Co-operation and Development
OLS:	Ordinary Least Square
UNCTAD:	United Nations Conference on Trade and Development
UNSDGs:	United Nations Sustainable Developments Goals
VAR:	Vector autoregressive
VECM:	Vector Error Correction Model

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CHAPTER ONE

INTRODUCTION

1.1. INTRODUCTION OF THE STUDY

Adam Smith identified capital accumulation as food for economic growth (Butler 2012). The Solow-Swan neoclassical growth theory, widely used as a theoretical framework of series of scientific researches on nations' productivity also supports Adam Smith's theory as it establishes economic growth as a function of capital, labor and technological improvements (Solow-Swan, 1999). However, given the insufficiency of domestic capital, foreign direct investment is seen as an alternative source of capital inflows and a positive influencer of economic growth in host countries (Sarbu and Carp, 2015; Amighini et al., 2017; Vidhya and Ahamed, 2019).

The global stock of FDI was valued at \$15 billion U.S. dollars in 1914 and accounted for 40% of the GDP of developing countries (at the time a great proportion of the global FDI was channeled to developing countries) with United Kingdom as the major source followed by USA and Germany (Koluman, 2020). However, it has seen tremendous decline and recoveries over time induced by notable events such as world wars, financial crisis i.e., the great depression of 1930s and great recession of 2009. Most recently, the global FDI stock saw a huge decline due to the covid-19 pandemic of 2020, but have seen tremendous recovery in 2021, i.e., a 77% increase currently valued at \$1.65 trillion U.S. dollars, and USA being the major source. (Lipsey, 2001; Koluman, 2020; United Nations Conference on Trade and Development, UNCTAD, 2021).

Understanding the concept of foreign direct investment as a source of external financing, developing economies commonly plagued with insufficient domestic capital have consciously made efforts towards creating partnerships at regional and global levels, as well as implementing policies such as favorable tax incentives and building sound macroeconomic framework, aimed at attracting foreign direct investment (see; Asian Development Bank, 2007; Sjöholm, 2013; Diaconu, 2014; Dar, 2015). However, they have not been without challenges as factors such as; low GDP growth rates, local customs, level of corruption, lack of transparency, dangers of conflicts and war in the region, etc., are seen to be significant

limitations to foreign direct investment inflows to these regions (see; Almounsor, 2007; Khoury and Wagner, 2010; Force M.O.E.R.T, 2018; Organization for Economic Cooperation and Development, OECD, 2021).

Africa has seen tremendous increase in FDI inflows from the 1980s which gained momentum in the late 1990s. Africa joined the rest of the world in seeking FDI substantiated by the formation of the New Partnership for Africa's Development (NEPAD), having a major aim of increasing FDI inflows into Africa (Imoughele and Ismaila, 2014). FDI inflows to Africa fell by 10% in 2019 and further 16% in 2020 due to the covid-19 pandemic. The top five host economies of FDI inflows to Africa as of 2020 are Egypt, Republic of the Congo, South Africa, Nigeria, and Ethiopia respectively (UNCTAD, 2021). Though Africa has been plagued with recurrent issues of political & economic instability, weak governance, and infrastructural deficit, she has been successful in attracting FDI. However, this success is not reflected in her economic growth when compared with other developing regions like Asia.

1.2. TREND OF FOREIGN DIRECT INVESTMENT IN NIGERIA

Nigeria, a key regional player in West Africa, accounts for about half of West Africa's population with approximately 217 million people, the most populous country in Africa and the seventh-most populous country on the planet. She is Africa's largest economy, the 26th largest economy globally by nominal GDP, and is ranked 4th amongst the top 5 African countries by FDI inflows between 2019 to 2020 with gross FDI inflow at US\$5.7 billion. (Terawase et al., 2014; Abdullahi, 2018; UNCTAD, 2021).

Regularly alluded to as the "Giant of Africa", inferable from its huge populace and economy, Nigeria's FDI inflows has significantly increased over three decades from 1970s. The government introduced the New Industrial Policy in 1989 and established National Investment Promotion Commission in 2004 aimed at stimulating FDI (Zakari et al., 2012). There is no doubt most nations endeavor to draw in FDI due to its recognized potential benefits as an instrument of economic growth. Nigeria had an average of \$1.6 billion in FDI inflows between 2000 and 2005, after which she recorded significant increase. At the end of 2007, the recorded FDI inflows was valued at US\$6.09 Billion. (Enisan, 2017).

In 2015, foreign direct investment in Nigeria stood at US\$926.1 million, a huge decline of 54.5% from US\$2.03 billion in 2014, after a consecutive decline between 2011-2013 (US\$6 billion, US\$4.1 billion respectively). The decrease in foreign direct investment was due to the impact of declining oil prices and accompanying poor macroeconomic conditions of the country. By 2019, FDI inflows to Africa already declined by 10 percent to US\$45 billion (Giroud and Ivarsson, 2020; Aberu et al., 2021).

Nigeria has a high potential to draw in significant foreign investment given her vast natural resources and market size. Though Nigeria's FDI inflows have seen significant increase over the years, it is hardly reflected on the country's economic growth as she is still plagued by declining productivity, high inflation and unemployment rates, a volatile exchange rate, and balance of payments disequilibrium.

1.3. STATEMENT OF PROBLEM

The plague of insufficient domestic capital in developing countries is evident in Nigeria, as the percentage of gross capital formation in Nigeria, formally known as domestic investment have seen significant decline over the course of 49 years (see; figure 4.1). This decline can be attributed to macroeconomic disproportions (such as high rate of unemployment, double-digit inflation, high rate of corruption in the public sector, declining foreign exchange rate, high interest rate), lack of economic diversification (i.e., the absolute dependence on the oil and gas sector which has been plagued by oil theft and corruption at all levels, neglecting other core real sectors like agriculture), inadequate economic infrastructure, as well as the government's inadequate capital expenditures (i.e., accession and adoption of improved and current technologies and innovations).

1.4. RESEARCH QUESTIONS

On the premise of the outlined issue of domestic capital insufficiency, foreign direct investment being a source of physical capital, employment creation, human capital development as well as technology transfers is proposed as a viable alternative, aimed at increasing the nation's economic productivity. Thus, the study aims to answer the question

of “whether there exists any empirical justification for the relationship between FDI and economic growth in Nigeria?”

1.5. OBJECTIVES OF THE STUDY

Given the research question, the study aims to empirically explore the relationship between foreign direct investment inflows and economic growth in Nigeria and ascertain FDI's impact on economic growth in Nigeria overtime.

1.6. SIGNIFICANCE OF THE STUDY

This study serves as a tool for educating economic policymakers on FDI's significance to the nation's economic growth i.e., the nature and effect of the relationship between foreign direct investment and Nigeria's economic growth. This understanding will aid the decision-making process of policymakers towards the creation of policies to attract and maximally utilize FDI inflows to Nigeria, for the achievement of increased economic productivity. Thus, the implemented policies will promote economic diversification and impact economic growth, as maximum utilization of FDI inflows will directly influence the economic productivity of the nation.

Furthermore, this study is an essential tool for scholars and academic researchers as it contributes to already existing literatures, providing more information on the topic with respect to its literature contents, empirical results, and recommendations for further research on the topic.

1.7. DEFINITION OF KEY TERMS

1.7.1. Foreign Direct Investment

FDI is defined as the establishment of a lasting interest in, and significant degree of influence over the operations of an enterprise (ownership of 10% or more of the voting power) in one economy by an investor in another economy. FDI serves as an important source of capital inflow, foreign exchange, increased market competitiveness (Falki, 2009; Insaah, 2013; Sarbu and Carp, 2015). FDI-led theories show FDI to have an indirect influence on human capital

of the host country in terms of trainings and skill acquisition which directly impacts the economic growth of the nation (Sokang, 2018).

1.7.2. Economic Growth

Growth in an economy is measured by change in the volume of its output or in the real expenditure or income of its residents. Growth in the economy is measured by the change in GDP at constant price. Economic growth is a precondition for the improvement of living standards and lifetime possibilities for the “average” citizen of the developing world (Rodrik, 2013).

The Industrial revolution between 1760 to 1850 ushered the global economy into an era of sustained economic growth, and technological advancement was the vehicle of the industrial revolution, and innovations in technology in the 19th century made possible increase economic growth. (Allen, 2011). However, events as wars (e.g., world wars 1 & 2), financial crises (e.g., the great depression of 1929-39, the Asian crisis of 1977 and the financial crisis of 2007-08) and pandemics (e.g., Spanish flu of 1918-20 and most recently, the covid-19 pandemic of 2019 -present) have taken a toll on the global economy.

1.7.3. Sub-Saharan Africa (Nigerian Perspective)

Nigeria is a country located in West Africa consisting of 36 states, and her capital named Federal Capital Territory (Abuja) is where the headquarters of the Economic Communities of West African States (ECOWAS) is located. She got her independence from British colonial rule on 1st October 1960 and became a Republic on 1st October 1963. Though Nigeria has experienced civil war (1967-1970) and military coups/ rule (1966-1978, 1983-1988), she has adopted and practices democracy (Falola et al., 2018).

Regularly regarded as Africa’s largest market with a populace over 200 million, Nigeria remains one of Africa’s key oil producers. Having an export-oriented economy, crude oil exports in 2021 accounted for 85% of the country’s export earnings and about 50% of the total government revenues (International Trade Administration, ITA, 2021).

The Nigerian economy can be classified into three main sectors; primary sector (agriculture, oil & gas, mining), secondary sector (manufacturing and infrastructure) and tertiary sector (financial, ICT and services) (see; Obi, 2018).

Plagued with infrastructural deficit, inadequate domestic capital formation and economic stagnancy, Nigeria amongst other developing nations have governments, policymakers and scholars researching routes to achieving sustainable economic growth and development in line with the United Nations Sustainable Development Goals-8, (UNSDG, 2015; Olorogun, 2021).

1.8. ORGANIZATION OF THE THESIS

1.8.1. Chapter One:

This is the current introductory chapter discussing briefly about FDI as an alternative source of capital accumulation (Sarbu and Carp, 2015; Amighini et al., 2017; Vidhya and Ahamed, 2019), the trend of global FDI from the 19th century and the policies and challenges of FDI attraction in developing economies. This chapter also briefly discusses recent trends of FDI in Nigeria as well as the problem of capital accumulation in Nigeria, and the empirical exploration of FDI's relationship with economic growth in Nigeria as the objective of this research study.

1.8.2. Chapter Two

This chapter includes the review of previous theoretical and empirical literatures on foreign direct investment and economic growth. There is an existing discord regarding the nature of FDI's effect on economic growth as some find it to be positive, some find it to be negative, while some detect a neutral effect. It covers discussion of both the theoretical and conceptual framework of this study as well as revision of pertinent theoretical and empirical literatures on FDI, its impacts on economic growth in Nigeria and other parts of the world.

1.8.3. Chapter Three

This chapter contains discussions on the research methodology, which brings to light the systematic approach taken by the researcher to provide answers to the research question. It

explicitly discusses the research design, which is the road map of the study, which includes the data used for the study [gross capital formation (GCF), foreign direct investment (FDI), labor, and gross domestic product (annual %)] and the source being World bank databank. The model for the study was clearly discussed and method of analysis [descriptive statistics, correlation analysis, unit-root test, autoregressive distributive lag (ARDL) estimation procedures, Granger causality test and diagnostic tests].

1.8.4. Chapter Four

This chapter contains detailed discussions of the results of the series of empirical methods employed in the research with respect to the research objective. The study found GCF, labor and FDI to have significant relationships with economic growth at different levels and diagnostic tests confirmed that the model is in line with the assumptions of regression estimation.

1.8.5. Chapter Five

This chapter contains a comprehensive summary of the study, authors' concluding remarks identifying GCF, labor and FDI as effective tools for enhancing economic growth in short run and long run basis, policy recommendations, and recommendations for future research on the topic.

1.9. CONCLUSION

FDI from studies have been shown to be an external source of financing due to the insufficiency of domestic capital and is an influencer on the economic prosperity of the host economies. Tax benefits as well as strong macroeconomic frameworks are tools used to attract FDI by host countries however, insecurity and corruption remains deterring factors for FDI. Though Nigeria tends to attract substantial amount of FDI inflows, it is barely reflected on her economic growth which have given rise to investigating the theoretical justification and empirically exploring FDI's impact on the buoyancy of the Nigerian economy.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

The influence and significance of foreign direct investment to the economic growth of the host countries remains one of the most argued topics among economic policy researchers with regards to achieving sustainable economic growth, especially in developing economies. Proof of this can be seen in the existence of several research studies ranging from literatures on FDI theories (Rugman, 1980; Kim and Lyn, 1985; Dinkar and Choudhury, 2014; Musabeh, 2018; Marandu and Ditshweu, 2018; Sivickiene, 2019; Paul and Feliciano-Castero, 2021) to empirical literatures of FDI's influence on the economic growth in Nigeria (Sarbu and Carp, 2015; Ogbebor and Ohiomu, 2018; Kolade, 2019, Olorogun, 2020).

The reviewed literatures provide insights into economic growth theories and FDI theories as well as empirical evidence of the FDI's relationship with the host nation's economy. Clearly, there exists a discord in the empirical results of the reviewed literatures on the relationship between FDI and the economic growth of the host nation as some studies (see; Nistor, 2014; Sarbu and Carp, 2015; Ogbebor and Ohiomu, 2018; Kolade, 2019; Orji et al., 2021; Mohammed and Nasiru, 2021) found FDI to have significant positive impact on GDP (proxy for economic growth), some found the positive relationship to be insignificant (see; Uwabanmwun and Ajao, 2012; Olukoyo, 2012; Ugochukwu et al., 2013; Okumoko et al, 2018; Vidhya and Ahamed, 2019), while others found FDI to have negative impact on GDP (see; Almsafir et al., 2014; Dinh et al., 2019; Hamed and Okunoye, 2021).

2.1 THEORETICAL FRAMEWORK

2.1.1 Theories of Economic Growth

Sustainable economic growth remains one of the goals of nations, and several theories have been proposed over the years, providing insights into factors that determine economic growth in nations.

2.1.1.1 *Classical Growth Theories*

Adam Smith postulated that capital accumulation is food for economic growth of nations (Butler, 2011). The classical growth theory posits economic growth as a function of capital accumulation and reinvestment of profits obtained from trade, division labor and a nation's pursuit of comparative advantage. The classical school (Adam Smith, David Ricardo among others) believe that the market will always move to equilibrium on its own, without any form of coercion, stressing the importance of market competition for this belief, as well as discouraging monopoly and government interventions. The classical growth theory encourages the adoption of free trade by nations, private property accumulation and individual enterprise (see; Kurz and Salvadori, 2003; Sharipov, 2015).

2.1.1.2 *Keynesian Growth Theories*

John M. Keynes proposed government intervention (fiscal and monetary policies) as the solution to the great depression in the 1930's, opposing the classical belief that the market will always return to its natural equilibrium. He posited that in a depressing economy, in which investments and savings are low due to low income, increased aggregate demand can be achieved through government intervention i.e., monetary policy such as reduced interest rate and fiscal policies such as tax cuts and increased government spending (i.e., investment in infrastructure) (see; Sharipov, 2015).

Harrod-Domar's (1946) growth theory was built on John M. Keynes' economic theory positing that for any economy to grow, a proportion of its GDP must be saved and invested, with the assumption that only capital influences economic growth of nations (see; Oyegoke and Aras, 2021).

2.1.1.3 *Neoclassical growth theories*

The Solow-Swan neoclassical growth theory (developed by Robert Solow and Trevor Swan in 1956) which is adopted as the framework of this study, was built on the classical theory, identifying economic growth as a function of three main factors: capital, labor, and technological improvements (Solow, 1999). The theory acknowledged the boundless ability of technological advancements (an exogenous factor) to cause economic growth, and identified technical progress as the only way to achieve economic development (better standard of living). The mathematical model for this theory is presented by the Cobb-Douglas production function.

$$Y_t = A_t K_t^\beta L_t^{(1-\beta)}$$

Where Y_t represents total production, K_t represents capital, L_t represents labor, A represents total factor productivity (Solow residual), t represents time and $0 < \beta < 1$ the elasticity of output with respect to capital (see; Masoud, 2013; Sharipov, 2015; Mahone et al., 2018).

2.1.1.4 *Endogenous Growth Theory*

Though built on the classical theory, the endogenous growth theory posits that long term economic growth is a direct result of endogenous factors as human capital and technological progress contrary to the neoclassical views which treats technological progress as an exogenous factor. Economists in this school of thought (Paul Romer, Robert Lucas among others) believe that human capital is a vital component of growth, and investments in human capital will bring about innovations. In contrast to the neoclassical theory, the endogenous theory posits that the government and the private sector have active roles to play to achieve long term productivity in a nation, through investment in research and development, which brings about fast innovations in the form of new products, processes, and markets; and investment in human capital development (see; Howitt, 2010; Sharipov, 2015).

2.1.2 **FDI Theories**

The insufficiency of domestic capital avails FDI to be seen as an alternative source of capital inflows. There exist theories aimed at explaining concepts behind foreign direct investment (see; Denisia, 2010; Sivickiene ,2019).

2.1.2.1 The Production Cycle Theory of Vernon

This theory proposed by Raymond Vernon in 1966 argues that comparative advantage shifts from one nation to another as product matures through its life cycle. The theory assumes that a product's life cycle has four main phases; introduction, growth, maturity, and decline (See; Denisia, 2010; Marandu and Ditshweu, 2018).

2.1.2.2 The Theory of Exchange Rates on Imperfect Markets

This theory identified exchange rates i.e., the strength of currency as a determining factor for FDI. Given the assumptions of an imperfect capital market, the depreciation of the currency of the host countries is foreseen to have positive impact on the inward flows of FDI to the host country (See; Phillips and Ahmadi-Esfahani, 2008; Nayak and Choudhury, 2014).

2.1.2.3 The Internalization Theory

Buckley and Casson in 1976 developed the internalization theory which was later extended by Hymer in 1976 introducing the concept of firm-specific advantages. The internalization theory postulates multinational enterprises (MNEs) as a response to overcome externalities, government regulations and market imperfections. Firms create internal markets to maximize ownership advantages of superior technologies, greater capital and advanced management skills as well as transact efficiently at lower cost (See; Rugman, 1980; Salimath, 2009; Denisa, 2010; Marandu and Ditshweu, 2018).

2.1.2.4 The Dunning's Eclectic Paradigm (OLI) Framework

The Eclectic theory, developed by John H. Dunning in 1979, is an integration of three theories of FDI:

- i. Ownership advantages: refers to competitive advantages a firm exploit in the foreign market given its ownership of resources.
- ii. Location advantages: refers to advantages a firm gets because of the geography of the host country as well as other factors as availability of cheaper raw materials, low-cost skilled labor, low operations cost and taxes, etc.

iii. Internalization advantages: refers to advantages derived from outsourcing some of the value chain activities (creating internal markets) performed firm mainly with the objective of minimizing costs. (See; Denisia, 2010; Marandu and Ditsheuwu, 2018).

2.2 REVIEW OF SOME EMPIRICAL LITERATURES ON FDI AND ECONOMIC GROWTH

With the goal of achieving sustainable growth in economies, FDI has been the topic of several research investigating its impact and significance to economic prosperity of host economies. Ek (2007) scrutinized the impact of FDI on the level of GDP in China with the period of study being 1994-2003. Agrawal and Khan (2011) having the same objective but making comparison in level of impact between China and India with period of study being 1993-2009. Both studies applied the OLS regression estimation which indicated that FDI had a statistically significant positive relationship with GDP being proxy for economic growth (Ek, 2007; Agrawal and Khan, 2011).

Omri and Kahouli (2013) conducted research to estimate an economic model for analyzing the interrelationship among FDI, domestic capital and economic growth in 13 countries of the Middle East and North African (MENA) region using generalized method of moments (GMM). Result of the study acknowledged the existence of positive and significant impact of stock of FDI, stock of national capital and trade openness on economic growth in MENA countries. Further test displayed a bi-directional causality between FDI and economic upsurge, and a unidirectional causality between domestic capital and economic upsurge for MENA region (Omri and Kahouli, 2013).

Vinya Kumar (2014) discussed further in his study which found that the flow of FDI to India exhibited a positive trend which was a very positive signal for the Indian economy, he further concluded that FDI was contributing positively to the Indian economic development with a correlation coefficient of 0.6 with the country's GDP (Vinya, 2014).

An ordinary least square regression estimation approach and Durbin Watson test was employed by Nistor (2014) to probe the existence of a link between FDI inflows and economic affluence in Romania. Result from analysis asserted that FDI had a statistically

significant positive effect on growth in Romania. Sârbu and Carp (2015) further analyzed the trends and impact of FDI inflows on the economic growth of Romania using the Johansen co-integration and ordinary least square estimation technique. The result of the study showed the existence of a positive and significant relationship between FDI and economic growth in both long and short run which agrees with the Nistor's result (Nistor, 2014; Sârbu and Carp, 2015).

Similar result was gotten in the study of Alzaidy et al. (2015) on FDI's impact on the growth of Malaysian economy outlining the role of financial development in bringing about this growth. The study utilized the Auto Regressive Distributive Lag (ARDL) estimation to test the long run equilibrium between FDI, GDP, and financial development. FDI was seen to have a positive and significant impact on economic growth of Malaysia and an even greater impact on growth when interacting with financial development. This points to the importance of financial institutions and their allocation of FDI inflows to the productive sectors thus stimulating economic buoyance. (Alzaidy et al., 2015).

The panel studies of Ogbebor and Ohiomu (2018) investigated the relationship between FDI and GDP alongside trade openness in the ECOWAS bloc using panel regression analysis, panel cointegration and system generalized method of moment (GMM). Results of the study confirmed the existence of positive and significant long run relationship between the variables FDI, trade openness and GDP. It was further concluded however, that foreign trade is one of the major drivers of economic growth in the ECOWAS bloc (Ogbebor and Ohiomu, 2018).

Trang T.H. Dinh et al. (2019) in their research study on short and long run impact of FDI on economic growth for 30 developing countries with period of 2000 - 2014 showed that FDI helps in stimulating economic growth in the long run especially for emerging and developing countries but hinders economic growth in the short run. (Trang T.H. Dinh et al., 2019).

Utilizing ARDL estimation technique alongside Granger causality, Mansoor and Bibi (2019) probed the effect of exchange rate, inflation, import and export on FDI and relationship with RGDP in Pakistan. As the ARDL bound test showed the existence of long

run relationship among the variables, the study however acknowledged FDI's impact on RGDP as statistically significant and positive on both short run and long run basis. The study further showed the existence of a unidirectional relationship between FDI and RGDP. Inflation was seen to have a negative impact on RGDP both in the short and long run. The same was seen for real exchange rate in the short run, however its impact on RGDP was positive on the long run (Mansoor and Bibi, 2019).

Baiashvili and Gattini (2019) conducted a panel study investigating FDI's impact on economic growth and its effect mediated by income levels and the quality of institutional environment across 111 countries. Employing panel generalized method of moments estimator, results showed FDI to positively contribute to economic growth, however its relationship with economic growth was statistically insignificant. A significant U-shaped relationship was shown to exist between countries' income level and the size of FDI's impact on growth, and FDI was concluded to have a higher impact on growth for developing economies that have higher demand for investments, and larger needs for advanced technologies compared to developed countries (Baiashvili and Gattini, 2019).

Adeniyi (2020) employed the ordinary least square estimation to analyze the impact of FDI and inflation on the economic growth of five randomly selected countries in Africa (Egypt, South Africa, Nigeria, Tanzania, and Kenya) for the period of 1996-2013. FDI was seen to have a significant positive impact on economic growth across all five countries, implying FDI inflows as favorable to all five countries, and is more effective in Nigeria and Tanzania. However, inflation was seen to have a negative but significant effect on economic growth in four of the countries except Egypt. Thus, the study acknowledged FDI's tendency to stimulate economic growth in Africa while high inflation hinders it (Adeniyi, 2020)

Though several research papers have produced empirical evidence of FDI having positive and significant impact on economic growth, there also exists research with contradictory results. Almsafir et al. (2014) employed Granger causality test and vector autoregressive impulse response to analyze the impact and direction of causality between flows of FDI to Qatar and her economic buoyance. Though the result of analysis showed FDI inflows to Granger cause GDP, it was seen that FDI had negative influence on the economic

prosperity of Qatar. Similar result was obtained by Vidhya and Ahamed (2019) who utilized similar techniques in addition to Johansen cointegration to examine the association among exchange rate, real interest rate, FDI and economic growth in China proxied by GDP. The study showed an existing causal relationship between FDI and GDP but concluded from results that the Chinese economic growth was not driven by FDI and that with sufficient domestic capital, FDI has little or no long run impact on the Chinese economy (Almsafir et al., 2014; Vidhya and Ahamed, 2019).

Olorogun (2021) using an ARDL approach, examined the relationship between foreign direct investment and the economic progress of Ghana. The study however found a neutral influence of FDI on GDP growth in Ghana, however, stated that the private sector through FDI impacts economic growth (Olorogun, 2021).

2.3 REVIEW OF EMPIRICAL LITERATURE ON FDI'S IMPACT ON NIGERIA'S ECONOMIC GROWTH

Empirical literatures on FDI's impact on economic growth in Nigeria are not void of contradictory results. Some research finds FDI to have positive impact on Nigeria's economic buoyance, as others find it to be of negative effect.

Esther and Folorunso (2011) probed the effect of FDI on economic growth in Nigeria and found a statistically significant positive relationship between FDI and economic prosperity, which level is limited by human capital (Esther & Folorunso, 2011).

In a study which probed the nexus between FDI, exchange rate along with economic growth in Nigeria, Adigwe et al. (2015) made use of the Pearson correlation test, and the result verified the existence of a significant relationship between FDI, exchange rate and economic growth indicating that economic growth in Nigeria is directly related to FDI and exchange rate. (Adigwe et al., 2015).

Umaru et al (2015) probed the FDI-growth nexus in Nigeria from 1981-2013 using VECM (Vector Error Correction Model). Results showed a statistically significant positive relationship between FDI and economic growth in Nigeria. A slight contradiction of this result is seen in the Uwabanmwun and Ogemudia (2016) study investigating FDI-led growth

within the context of the Nigeria economy in concurrence with five other macroeconomic variables for a period of 1979-2013. The study utilized similar estimation techniques as Umaru et al. (2015). Though FDI was found to granger cause GDP with unidirectional causality and had statistically significant positive short-run relationship with GDP, it was discovered that FDI had a neutral effect on GDP on the long run (Umaru et al., 2015; Uwabanmwun and Ogemudia, 2016).

Akpan and Eweke (2017) examined the long run impact of FDI and the performance of the industrial sector in Nigeria on her economic growth from 1981-2015. Though the results of Johansen cointegration test showed no long run relationship between the three variables, it however showed existing bidirectional relationship between FDI and industrial sector output, GDP and the industrial sector output and a unidirectional causality for GDP and FDI. Furthermore, the VAR result showed that both FDI and Industrial sector output had significant positive impact on GDP which was only in present times for the industrial sector output, as VAR estimate revealed negative relationship in prior periods. The study concluded that FDI's contribution to GDP though significantly positive is very low, and the contribution of the industrial sector of Nigeria is not enough to boost economic growth of the country (Akpan and Eweke, 2017).

Okumoko et al. (2018) investigated FDI's influence on economic growth in Nigeria alongside other macroeconomic variables as gross fixed capital formation and real exchange rate using OLS estimation, Johansen cointegration and error correction model estimation. They had results agreeing to the conclusion of Uwabanmwun and Ajao (2012) who had similar objective of study and methodology. Both studies confirmed the existence of long run relationship among FDI and other macroeconomic variables. FDI was found to have a positive but insignificant relationship with economic growth in Nigeria and Granger cause GDP with a unidirectional causality (Uwabanmwun and Ajao, 2012; Okumoko et al., 2018)

Kolade (2019) employed the ordinary least square estimation technique to examine the impact of FDI on economic growth in Nigeria. Results from his showed FDI to exhibit a positive and significant impact on Nigeria's economic growth. However, a slightly different result was obtained by Abur (2020) who applied same techniques in examining the impact

of FDI on economic growth in Nigeria for the period of 2007-2017. His results found FDI to exhibit a positive relationship with economic growth, however, the relationship was statistically significant indicating that FDI did not contribute much to the economic growth of the country. This result is an agreement with the results of Olukoyo (2012) and Ugochukwu et al (2013) who also found FDI to have a positive but insignificant relationship with GDP in Nigeria in their studies which applied the same estimation technique (Olukoyo, 2012; Ugochukwu et al., 2013; Kolade, 2019; Abur, 2020).

Olorogun et al. (2020) in their study explored the long run and causality connection between FDI, financial development and economic growth in Nigeria using an ARDL approach and Granger causality for analysis. The ARDL bound test confirmed the existence of long run equilibrium relationship among the variables. Result showed a positive and statistically significant relationship between FDI and GDP, and concluded that growth is assured by the presence of FDI in the long run through the financial sector. The studies of Mohammed and Nasiru (2021) and Orji et al. (2021) both employed an ARDL approach in their study examining FDI's relationship and influence on Nigeria's economic growth. Both studies had results which concurred with Olorogun et al. (2020) validating a statistically significant positive impact on economic growth of Nigeria on the short run and long run (Olorogun et al., 2020; Mohammed and Nasiru, 2021; Orji et al., 2021).

The studies of Oyegoke and Ara (2021) and Awa (2021) concur with the results of Kolade (2019) as they employed the same estimation techniques to examine the influence of FDI on economic growth in Nigeria for the period of 1989-2019. FDI was found to have a positive and significant relationship with economic growth in Nigeria for the period under study (Oyegoke and Ara, 2021; Awa, 2021).

Hammed and Okunoye (2021) applied OLS estimation and GMM techniques to examine FDI-growth nexus in Nigeria, and to understand how sustainable FDI inflows impacts economic growth over time. Though the results displayed statistically significant negative influence of FDI on real GDP, FDI interaction with human capital had a higher impact on growth than FDI amongst other findings. Thus, the input of human capital to FDI-led growth was highly significant and had greater impact on growth than FDI inflows alone.

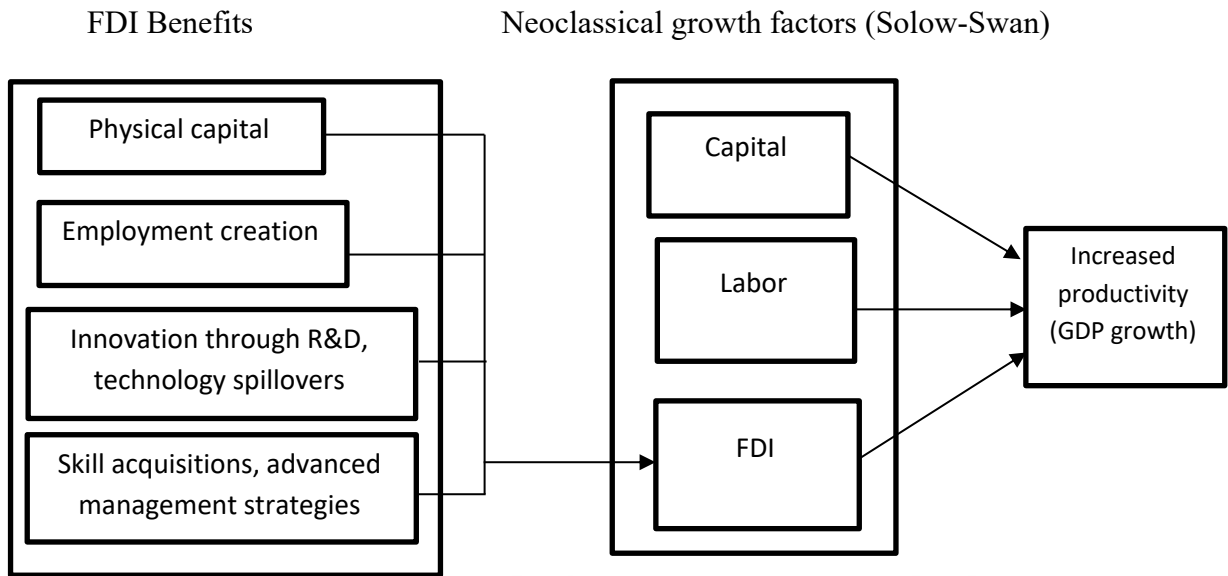
This agrees with the conclusion of the study of Esther & Folorunso (2011) (Hammed and Okunoye, 2021).

2.4 CONCEPTUAL FRAMEWORK

Being a topic of interest, direct views have been given on FDI and its significance to the economic growth of the host countries. Foreign direct investment is seen as an important source of capital inflows to the host country given the insufficiency of domestic capital and facilitate technology transfers from developed economies to developing and under-developed countries (Sokang, 2018). It is distinguished as a vital catalyst of economic development through technology transfer, vanguard management techniques among other advantages (Uwabanmwun and Ajao, 2012).

FDI is an important factor of growth emphasis on most economies especially in developing countries (Awa, 2021). However, for FDI to enhance economic growth, the host country ought to take advantage of spillovers and inflow of physical capital available from the inflow of FDI (Oyero, 2019). Thus, FDI's contribution includes being a source of both physical capital as well as human capital, creation of employment, increased market competitiveness and efficiency in local business given the spillover effect of technology transfers. Though FDI is seen to bring about impact on economic growth of the host nations, its effect is sometimes seen as insignificant (see Uwabanmwun and Ajao, 2012; Okumoko et al., 2018; Abur 2020). However, its interaction with human capital and financial development is seen to have higher impact on economic growth (see Alzaidy et al., 2015; Olorogun, 2021, Sabuur and Ismaila, 2021) thus, increasing productivity. Increased productivity also plays a pivotal role in attracting FDI to the host nation as well as other determinants (see UNCTAD; 2002, Asongu et al 2018).

Figure 2.1. *Conceptual framework of the research study*



2.5 CONCLUSION

There exists numerous research which have provided insights on the existing relationship between foreign direct investment and economic growth. Some of the previous studies which scrutinized the nexus between FDI, and growth of the Nigerian economy concluded on the existence of positive relationship between FDI and economic growth in Nigeria, some studies found FDI to have a negative effect on economic growth in Nigeria while others found FDI to be of neutral effect. Lack of consensus on the topic therefore creates a gap which this study intends to fill, as there remains need for accurate empirical justifications for FDI's effect on economic growth in Nigeria in recent times and this remains the motivation of this study covering a wider period being 1972- 2020.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

Research methodology is a vital part of a research work as it is a guide which sheds light on the systematic approach taken by the researcher towards solving the research problems i.e., achieving the set objectives of the research to answer the research questions. It discusses extensively the methods employed by the researcher with respect to the logic behind the employed methods in the context of the study, the reason behind the choice of techniques employed towards solving the research problem as well as the assumptions and limitations the choice methods pose for the research (see; Gondar, 2012; Mimansha Patel and Nitin Patel, 2019).

The importance of this chapter cannot be overemphasized as it inculcates the capacity to design a research study as well as assess and utilize research results at a reasonable confidence aiding effective decision making. It also enriches the research process and provides a chance for an extensive study and understanding of the subject matter (see; Igwenagu 2016).

Looking to justify FDI's relationship with Nigeria's economic growth, this chapter discusses extensively the research design and choice of empirical methods employed by the researcher.

3.1 RESEARCH DESIGN

The research design is the roadmap of the study depicting the structured process of the research from identifying the research problem to employing empirical methods towards providing solutions to the stated research problem.

3.1.1 Research Initiation

The researcher initiated the research study by introducing foreign direct investment being the topic under study with respect to the historical adaptation of FDI in developing economies alongside trends of FDI inflows to Nigeria. The introductory chapter exhibits the

identification of the research problem i.e., the challenges of capital accumulation in Nigeria, outlining various reasons for this and how it hinders economic growth in Nigeria.

Given the identified research problem, a research question was formulated, which prompted the set objective of the study.

Table 3.1: Research questions and research objectives

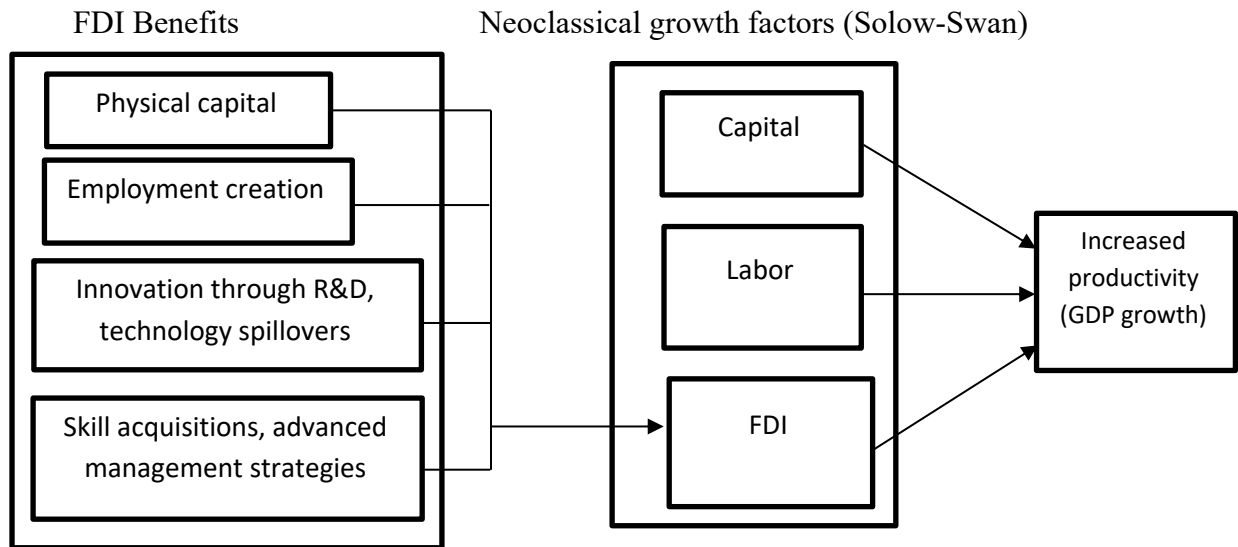
Research Questions	Research Objectives
Whether there exists any empirical justification for the relationship between FDI and economic growth in Nigeria?	To empirically explore the relationship between foreign direct investment inflows and economic growth in Nigeria and ascertain FDI's impact on economic growth in Nigeria overtime.

3.1.2 Review of Literatures

To achieve the set objectives of the study, thus answering the research question, existing relevant literatures were reviewed, both theoretical and empirical (Musabeh, 2018; Marandu and Ditshweu, 2018; Ogbebor and Ohiomu, 2018; Sivickiene, 2019; Kolade, 2019, Olorogun et al., 2020; Sabuur and Ismaila, 2021). This provided extensive knowledge of the theoretical and conceptual backgrounds of foreign direct investment as well as economic growth. It further exhibits the nature of FDI's relationship with economic growth from the perspective of previous studies.

Utilizing the extensive knowledge provided by these literatures, a conceptual framework was developed for this study.

Figure 3.1. *Conceptual framework of the research study*



The conceptual framework of the study is a vital part of the research as it depicts the intentions of the researcher in line with the research objectives and research questions. Having developed the concept of the study, obtaining relevant data becomes priority.

3.1.3 Data Sources

This study employs the ex-post facto research design. This a quasi-experimental design where the variables under study have already occurred and are void of manipulation (see; Sharma, 2019; Awa, 2021).

Thus, research study utilizes timeseries data spanning from 1972-2020 on variables; gross domestic product growth (annual, %), gross capital formation (GCF; % of GDP), population aged 15-64 (% of total population), foreign direct investment net inflows (FDI, % of GDP). Data on the above listed variables were extracted from the world development indicators of the World Bank databank and the scope of the study as stipulated in the introductory chapter is Nigeria with study period being 1972-2020.

The obtained dataset is used in the designation of the research model which is empirically explored to achieve the objective of the study as well as answer the research question.

3.1.4 Model Specification

As the study aims to investigate the impact of FDI on economic growth in Nigeria, the study adopts an augmented Solow-Swan neoclassical growth model, assuming constant technological advancement (due to unavailability of the relevant data for the period of study).

In investigating the impact of FDI on economic growth in Nigeria, FDI was added as an endogenous factor to the Solow-Swan growth model. Thus, the model can be stated as:

$$EG_t = f(k, l, fdi)$$

where, k is capital which is proxied by gross capital formation (GCF)

l is labor, proxied by population aged 14-65 (% of total population)

fdi is foreign direct investment net inflows (% of GDP)

EG_t refers to economic growth proxied by GDP growth (annual, %).

The natural log transformation technique was applied to the variables to satisfy the linearity condition for regression. Thus, the growth model can be expressed as:

$$\ln EG_t = \alpha + \beta_1 \ln gcf_t + \beta_2 \ln labor_t + \beta_3 \ln fdi_t + \varepsilon_t \dots \dots \dots (i)$$

Here, α is the intercept, β_1 to β_3 , are the partial regression slope parameters to be estimated in this study, ε_t refers to the residual i.e., variations in the dependent variable unexplained by the independent variables and t refers to the period of study $t = 1972, 1973, \dots, 2020$.

3.1.5 Research Hypothesis

H₀: Foreign direct investments have no significant impact on economic growth in Nigeria.

H₁: Foreign direct investments have significant impact on economic growth in Nigeria.

3.1.6 Variables Under Study

3.1.6.1 Foreign direct investment (FDI)

FDI can also be known as cross-border investment made by an investor or enterprise who is resident of a country in businesses resident in another country, aimed at establishing lasting

interest. For this study, FDI net inflows (% of GDP) is used as an explanatory variable to explain changes in economic growth in Nigeria

3.1.6.2 Labor

Labor is one of the explanatory variables of the growth model which is proxied by population aged (15-64), like Olorogun (2021) given labor is a subset of the population (which accounts for labor and consumption). The age selection is in line with the International Labor Organization (ILO) minimum age convention 1973 (No. 138) which set the general minimum age for work at 14 years in developing countries.

3.1.6.3 Gross capital formation (GCF)

Gross capital formation (GCF) is formerly known as gross domestic investment measured by the total value of the fixed assets of the economy and net changes in the level of inventories (World bank, 2022). It is a proxy for domestic capital in the growth model and is an explanatory variable in the model.

3.1.6.4 Gross domestic product growth (annual, %)

This refers to the yearly growth rate of GDP at market price based on constant 2010 US\$ (World bank, 2022). In this study it is used as a proxy for economic growth and is known as the response variable of the model.

3.2 METHOD OF ANALYSIS

In line with the objective to empirically explore FDI's impact on economic growth in Nigeria, series of tests are carried out which are briefly discussed in this section.

3.2.1 Pre-Tests

This involves computing the descriptive statistics of the timeseries data, showing the mean, variance, skewness, and kurtosis which gives insight into the structure and properties of the dataset. Correlation analysis is also employed to show the existence of relationship among the variables of the model.

3.2.2 Unit Root Test

Timeseries data are sensitive to shocks which may create permanent fluctuations of the series resulting in biased estimations. On this note, it is vital to ascertain stationarity of the data (i.e., the series has a constant mean or reverts to its long-run mean value). The unit root test is a crucial test to ascertain the reliability of a timeseries (Olorogun, 2021).

Thus, this study adopted the Phillips-Perron (PP) unit root test to verify the stationarity of the dataset. Furthermore, the unit root test is vital for this study to verify that none of the variables under study are stationary at second difference $I(2)$ which is a necessary condition for the estimation technique used in this study. See; (Phillips and Perron, 1988; Nkoro and Uko, 2016).

3.2.3 Lag Length Test

After validating the stationarity property of the timeseries data, the study employs the vector autoregressive (VAR) lag selection criteria to select the optimal lag for the study which is void of serial correlation and order problems.

3.2.4 Granger Causality Test

Granger (1969) causality test is used to analyze the dynamic relationship between timeseries (see; Song and Taamouti, 2019). It provides information about the causal relationship between the time series variables (i.e., the explanatory variables and the response variable) of the specified models of this research study, thus its utilization for this study.

3.2.5 Cointegration Analysis

3.2.5.1 Auto Regressive Distributive Lag (ARDL) Methodology

The study employs an ARDL approach [proposed by Pesaran and Shin (1995) and Pesaran et al (1996b)] to investigate the short-run and long-run relationship between the dependent and independent variables given by equation (ii). The ARDL cointegration technique is pivotal when investigating or models integrated at different orders i.e., stationary at level $I(0)$ and first difference $I(1)$. This gives it an advantage over the Johansen cointegration technique

which can only be utilized when the series are cointegrated at the same order. However, a limitation of the ARDL cointegration technique is that it cannot be used when the series are cointegrated at second difference $I(2)$ (see; Nkoro and Uko, 2016).

Also, applying the right lag selection for the ARDL estimation accommodates autocorrelation and endogeneity among variables, thus resulting in robust estimates (Olorogun, 2021).

Equations (i) can be shown in terms of ARDL as:

$$\begin{aligned} \Delta \ln EG_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \ln gcf_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln labor_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln fdi_{t-i} \\ & + \sum_{i=1}^p \beta_4 \Delta \ln EG_{t-i} + \lambda_1 \ln gcf_{t-1} + \lambda_2 \ln labor_{t-1} + \lambda_3 \ln fdi_{t-1} \\ & + \lambda_4 \ln EG_{t-1} + \varepsilon_t \quad \dots \dots \dots (ii) \end{aligned}$$

Equations (ii) depicts the ARDL bound test. In furtherance to the equation (ii), the model is expanded below to include the error correct term connoting the speed of adjustment of the model to long run equilibrium given shocks among the variables.

$$\begin{aligned} \Delta \ln EG_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \ln gcf_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln labor_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln fdi_{t-i} \\ & + \sum_{i=1}^p \beta_4 \Delta \ln EG_{t-i} + \lambda_1 \ln gcf_{t-1} + \lambda_2 \ln labor_{t-1} + \lambda_3 \ln fdi_{t-1} \\ & + \lambda_4 \ln EG_{t-1} + ECT_{t-1} + \varepsilon_t \quad \dots \dots \dots (iii) \end{aligned}$$

$\Delta \ln gcf$, $\Delta \ln labor$, $\Delta \ln fdi$, $\Delta \ln EG$, are the respective individual variables at difference. β_1 to β_4 respectively are the short-run dynamic coefficients of the ARDL model equation, while the coefficients λ_1 to λ_4 are the long-run multipliers showing the long-run relationship between the explanatory and response variables in the equations (iii). β_0 is the intercept of the model, and ε_t is the residual term of the model. Furthermore, p represents the lag of the dependent and independent variable of the series.

The ARDL bound test is employed to investigate the existence of a long-run relationship between the response and the explanatory variables of the model with the null hypothesis being λ_1 to $\lambda_4 = 0$, connoting the non-existence of cointegration. The alternative

hypothesis is thus, λ_1 to $\lambda_4 \neq 0$, connoting the existence of cointegration among the variables. The rule of thumb for the ARDL bounds test states that; if the bounds test's F- statistic is less than the lower bound $I(0)$, the null hypothesis cannot be rejected, which can be interpreted as the non-existence of cointegration in the series, however, if the bounds test's F-statistic is greater than the upper bound $I(1)$, the null hypothesis is rejected which connotes the existence of cointegration in the series, However, the test is deemed inconclusive of the bounds test's F- statistic is between the lower and the upper bounds (see; Arawomo and Apanisile, 2018; Olorogun, 2021; Mohammed and Nasiru, 2021).

3.2.6 Diagnostic Tests

After conducting the ARDL cointegration analysis, it is crucial that residual diagnostic tests be performed to inspect the properties of the residual in line with the normality, serial correlation and heteroskedasticity conditions of regression estimation and inspect the stability of the estimated model.

3.2.6.1 Normality Test

The Jaque-Bera (1980) p-value is used as the focal point to check for the property of normality in the residuals of the estimated model which also ascertains the goodness of fit of the model.

The rule of thumb for this test states that; if the Jaque-Bera probability (p-value) is greater than 0.05, the null hypothesis (Skewness = 0) cannot be rejected, which implies normality of the residual and goodness of fit of the model. However, if the Jaque-Bera probability is less than or equal to 0.05, the null hypothesis is rejected, confirming that the residuals are not normally distributed (see; Büning and Thadewald, 2004).

3.2.6.2 Serial Correlation Test

It is a necessary condition for regression estimation that the model must be void of serial correlation i.e., the residuals must be uncorrelated. On this note, the Breusch-Godfrey (1978) serial correlation LM test is utilized to check for the presence of serial correlation in the model.

The rule of thumb for this test, states that; if the F-statistic of the B-G test is greater than 0.05, the null hypothesis ($\rho_1 = \rho_2 = \rho_3 = \dots \rho_n = 0$) cannot be rejected. This implies that the series is void of serial correlation to the order of p lags. However, if the F- statistic is less than or equal to 0.05, the null hypothesis is rejected, confirming the presence of serial correlation (see; Lopes, 2021)

3.2.6.3 Heteroskedasticity tests

The presence of heteroskedasticity in the timeseries model violates the assumption of homoscedasticity in regression estimation (i.e., residuals have constant variance). The effect of this violation results in biased standard errors and test statistics (see; Astivia and Zumbo, 2019). Therefore, it is paramount to check the model for heteroskedasticity. This study employs series of tests to validate the absence of heteroskedasticity in the model. They include Breusch-Pagan-Godfrey heteroskedasticity test, and Autoregressive conditional heteroskedasticity (ARCH) test.

The rule of thumb for the above-mentioned tests state that; if the F-statistic of the test is greater than 0.05, the null hypothesis ($\sigma^2_1 = \sigma^2_2 = \sigma^2_3 = \dots = \sigma^2_n$) cannot be rejected. This implies that the series is homoscedastic. However, if the F- statistic is less than or equal to 0.05, the null hypothesis is rejected, confirming heteroskedastic properties in the residual.

3.2.6.4 Stability Test

The study employs the cumulative sum (CUSUM) of recursive residuals and cumulative sum of squares (CUSUMSQ) test to inspect the stability of the model parameters. The CUSUM test ascertains the systematic changes in the regression coefficients. The CUSUMSQ test, however, detects sudden changes from constancy of the regression coefficients (see; Ravinthirakumaran et al., 2015).

3.3 CONCLUSION

This chapter is a very vital for the research as the research methodology shows the systematic approach taken by the research towards providing answers to the research questions. It discussed the research design, which is the roadmap of the study, showing the path of

formulating the research question and setting the objective of the study. The study employed the ex-post facto research design using time series data obtained from the World Bank with period of study ranging from 1972-2020. The study adopted an augmented Solow-Swan neoclassical growth framework using variables gross capital formation (% of GDP), labor proxied by population aged 15-64 (% of the total population) and foreign direct investments (% of GDP) to explain GDP growth (annual; %). To achieve the set objective of the study, pretest (descriptive and correlation analysis), Unit-root test, and ARDL procedures were employed to analyze the data. Findings and implications will be discussed in the next chapter of the study.



CHAPTER FOUR

RESEARCH RESULTS AND ANALYSIS

4.0 INTRODUCTION

This chapter exhibits the results of empirical methods applied using the obtained data for the study, aimed at achieving the set objective of this research. It also includes discussions of the outcomes of the series of empirical methods for the study in line with previous research findings, identifying the similarities and differences between outcomes of this study and outcomes of previous studies.

A comprehensive discussion of the empirical methods employed can be found in the previous chapter “Research methodology”. The pre-test methods include the descriptive statistics which depicts the nature and structure of the dataset, and the correlation analysis which gives us insight into the existing relationships between the variables of the specified model equation (i). The unit root test was employed to ensure stationarity of the time series and ascertain the non-existence of $I(2)$ integrations in the timeseries as that violates the assumption for Autoregressive distributive lag (ARDL) estimation.

The Vector autoregressive (VAR) lag length criteria aided the selection of the optimal lag for the models, void of serial correlation while the VAR Granger causality test provides insight into the causal relationships between the variables of the model, equation (i)

The ARDL procedure was used to estimate the long-run and short-run dynamics of the research models, equations (iii). Diagnostic tests such as normality test, serial correlation tests, heteroskedasticity tests and stability tests were further utilized to ensure that the model was in line with the assumptions of regression estimations as well as stable.

4.1 RESULT AND ANALYSIS FOR ECONOMIC GROWTH MODEL

4.1.1 Descriptive Statistics

Table 4.1: Summary statistics for economic growth model

	<i>LNEG</i>	<i>LNGCF</i>	<i>LNLABOR</i>	<i>LNFDI</i>
<i>Mean</i>	1.377881	3.464070	3.971173	0.114018
<i>Median</i>	1.731108	3.480585	3.973949	0.118528
<i>Maximum</i>	2.729757	4.492909	3.991139	1.756279
<i>Minimum</i>	-2.797779	2.701623	3.948878	-1.633819
<i>Std. Dev.</i>	1.053271	0.506344	0.011204	0.774327
<i>Skewness</i>	-2.123549	0.090184	-0.569380	-0.142716
<i>Kurtosis</i>	8.260520	2.144268	2.330571	2.578479
<i>Jarque-Bera Probability</i>	72.37559 0.000000***	1.274684 0.528696	3.562524 0.168425	0.518302 0.771706
<i>Sum</i>	52.35949	138.5628	194.5875	5.472843
<i>Sum Sq. Dev.</i>	41.04709	9.998967	0.006025	28.18036
<i>Observations</i>	38	40	49	48

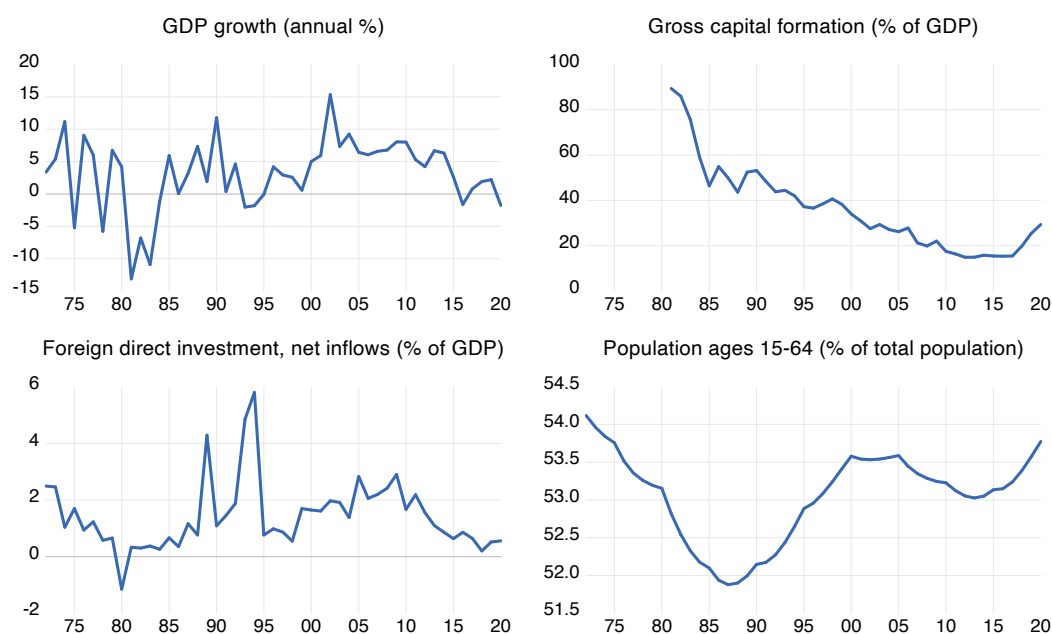
Notes: 1%, 5%, and 10% level of significance is denoted by asterisk ***, **, and * respectively. EG is the gross domestic product annual growth (%), GCF connotes gross capital formation as a % of GDP, Labor i.e., labor force is proxied by population aged 15-64 (% of the total population) and FDI is foreign direct investment (% of GDP).

Source: Computation done using EViews 10

From Table 4.1, we observe that the ratios of the mean and the median of LNGCF, LNLABOR and LNFDI respectively are approximately 1, indicating that the values of the mean and the median are equal. Thus, in agreement with Arawomo and Apanisile (2018), we conclude that LNGCF, LNLABOR and LNFDI are symmetrically distributed. However, an asymmetric distribution is observed in LNEG as the ratio of its mean and its median is significantly less than 1.

We also observe that the standard deviation of LNGCF, LNLABOR and LNFDI are less than 1 being 0.51, 0.01, and 0.77 respectively. This indicates stability in the series as standard deviation is a static method of measuring volatility in a model (Olorogun et al., 2020). The Kurtosis statistic (K) of LNGCF, LNLABOR and LNFDI indicates that the variables are platykurtic (i.e., having a flat distribution) as $K < 3$. However, LNEG is leptokurtic (i.e., having a peak distribution) as $K > 3$ (Abiola, 2019). The Jarque-Bera statistic indicates that LNGCF, LNLABOR and LNFDI are normally distributed as their p-values are insignificant. We observe a significant p-value for LNEG indicating a non-normal distribution for LNEG.

Figure 4.1: Graphical representation of variables under study



Source: Computation done using EViews 10

4.1.2 Correlation Matrix Test Results

Table 4.2: Correlation matrix test result for economic growth model

<i>Variables T-Statistic Probability</i>	<i>LNEG</i>	<i>LNGCF</i>	<i>LNLABOR</i>	<i>LNFDI</i>
<i>LNEG</i>	1.000000 ----- -----			
<i>LNGCF</i>	-0.292681 -1.648314 0.1101	1.000000 ----- -----		
<i>LNLABOR</i>	0.318254 1.807849 0.0810*	-0.621886 -4.276502 0.0002***	1.000000 ----- -----	
<i>LNFDI</i>	0.415835 2.462325 0.0200**	-0.018578 -0.100061 0.9210	0.139168 0.756809 0.4553	1.000000 ----- -----

Notes: 1%, 5%, and 10% level of significance is denoted by asterisk ***, **, and * respectively. EG is the gross domestic product annual growth (%), GCF connotes gross capital formation as a % of GDP, Labor i.e., labor force is proxied by population aged 15-64 (% of the total population) and FDI is foreign direct investment (% of GDP).

Source: Computation done using EViews 10

Table 4.2 presents a correlation matrix depicting the relationship among the variables of the proposed economic growth model for this study, equation (i). Here, we find an insignificant negative correlation between gross capital formation and economic growth. This implies that a change in gross capital formation may not cause a significant change in the Nigeria's economic growth. Significant positive correlation between labor, FDI, and economic growth at 10% and 5% significance level respectively is further observed, which implies that an increase in labor and FDI respectively will bring about significant increase in the economic growth of Nigeria implying that labor and FDI are good predictors of economic growth in Nigeria. Findings also shows correlation at 1% significance level between labor and GCF. This implies that shocks in either of the variable will result in significant changes in the other. This concurs with Olorogun et al. (2020) which finds positive significant correlation between labor, FDI and economic growth.

4.1.3 Unit-root Test Results

Table 4.3: Phillip–Perron unit-root test results for variables of the economic growth model

<i>Level</i>			
<i>Variables</i>	<i>T-statistics</i>	<i>Probability</i>	<i>Integration Order</i>
<i>LNEG</i>	-2.5830	0.0115**	<i>I</i> (0)
<i>LNGCF</i>	-1.5563	0.1111	
<i>LNLABOR</i>	-0.1819	0.6154	
<i>LNFDI</i>	-3.2922	0.0015***	<i>I</i> (0)
<i>First difference</i>			
Δ <i>LNEG</i>	-11.7874	0.0000***	<i>I</i> (1)
Δ <i>LNGCF</i>	-4.6269	0.0000***	<i>I</i> (1)
Δ <i>LNLABOR</i>	-1.9106	0.0542*	<i>I</i> (1)
Δ <i>LNFDI</i>	-10.9035	0.0000***	<i>I</i> (1)

Notes:

- 1%, 5%, and 10% level of significance is denoted by asterisk ***, **, and * respectively. EG is the gross domestic product annual growth (%), GCF connotes gross capital formation as a % of GDP, Labor i.e., labor force is proxied by population aged 15-64 (% of the total population) and FDI is foreign direct investment (% of GDP).
- Lag length based on SIC (Schwarz information criterion)
- Probability based on MacKinnon (1996) one-sided p-values.

Source: Computation done using EViews 10

Table 4.3 shows the results of the Phillip-Perron unit root test for the variables of the economic growth model equation (i). Results indicate a mixed order integration as some of the variables of the model are stationary at level $I(0)$ and others at first difference $I(1)$. The result satisfies the condition for the use of autoregressive distributive lag (ARDL) estimation due to mixed order integration and the non-existence of second order integration, $I(2)$ in the series.

4.1.4 Cointegration Analysis

4.1.4.1 Lag Length Selection

Table 4.4: VAR lag length selection criteria

<i>Lag</i>	<i>LogL</i>	<i>LR</i>	<i>FPE</i>	<i>AIC</i>	<i>SC</i>	<i>HQ</i>
0	20.26319	NA	3.20e-06	-1.301055	-1.106035	-1.246965
1	117.0256	154.8199	5.11e-09	-7.762049	-6.786948	-7.491598
2	152.3091	45.16281*	1.22e-09*	-9.304725*	-7.549544*	-8.817912*

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

Source: Author's computation with EViews 10

Table 4.4 shows the results of the vector autoregressive (VAR) optimal lag selection criteria. We find a uniform selection of 2 lags among all the criteria; thus, the study adopts the 2 lags.

4.1.4.2 ARDL Bounds Test

Table 4.5: Autoregressive distributive lag (ARDL) bounds test result

<i>F-Bounds Test</i>	<i>Null Hypothesis: No levels relationship</i>			
<i>Test Statistic</i>	<i>Value</i>	<i>Significance</i>	<i>I (0)</i>	<i>I (1)</i>
<i>F- statistic</i>	14.60978****	10%	2.37	3.2
<i>k</i>		5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Notes: ****, ***, **, and * show significance at 1, 2.5, 5, and 10% level respectively

Source: Author's computation with EViews 10

The result of the ARDL bounds test is shown in Table 4.5. We find the F- statistic is “14.60978” is greater than the upper bound $I(1)$ values across all levels of significance which signifies rejection of the null hypothesis, and the presence of cointegration. Thus, we conclude on the existence long run relationship between the response and the explanatory variables of the ARDL model equation (iii).

4.1.4.3 Short - Run and Long – Run Dynamics

Table 4.6: ARDL estimation findings and diagnostic reports

<i>Model variables</i>	<i>Coefficients</i>	<i>Std-error</i>	<i>t-statistic</i>	<i>p-value</i>
<i>Short-run analysis</i>				
<i>ECT (-1)</i>	-1.505985	0.156561	-9.619178	0.0000***
Δ <i>NEG (-1)</i>	0.240005	0.099444	2.413459	0.0291**
Δ <i>NGCF</i>	2.582855	0.926845	2.786729	0.0138**
Δ <i>NFDI</i>	-0.228705	0.148975	-1.535183	0.1456
Δ <i>NLABOR</i>	138.0400	77.16271	1.788947	0.0938*
<i>Long-run analysis</i>				
<i>LNGCF</i>	0.180977	0.318530	0.568164	0.5783
<i>LNFDI</i>	0.602633	0.182045	3.310361	0.0048***
<i>LNLABOR</i>	28.89890	9.958132	2.902040	0.0109**
<i>Constant</i>	-113.9805	40.28454	-2.829385	0.0127**
<i>Residual diagnostic tests</i>				
<i>Test</i>	<i>Coefficients</i>			<i>p-value</i>
<i>Normality</i>	0.911999			0.633814
<i>B-G Ser. Correlation</i>	1.029783			0.3845
<i>B-P-G Hetero.</i>	0.723226			0.6821
<i>ARCH</i>	0.294436			0.5934
<i>CUSUM</i>	Stable			
<i>CUSUMSQ</i>	Stable			
<i>Adjusted R²</i>	0.894165			
<i>Durbish Watson</i>	1.894526			

Notes: 1%, 5%, and 10% level of significance is denoted by asterisk ***, **, and * respectively. EG is the gross domestic product annual growth (%), GCF connotes gross capital formation as a % of GDP, Labor i.e., labor force is proxied by population aged 15-64 (% of the total population) and FDI is foreign direct investment (% of GDP).

Source: Computation done using EViews 10

Given the bounds test's validation of an existing cointegration relationship between the response and the explanatory variables of the ARDL model equation (iii), we examine

the short-run and the long-run estimates presented in Tables 4.6. From the results of the error correction regression for the ARDL model equation (iii), we find FDI to be statistically insignificant in the short run, having a negative slope (β) value of -0.23. This indicates that FDI has a negative but insignificant effect on economic growth in Nigeria on the short run. We also find gross capital formation (GCF) and labor to be statistically significant in the short run with positive slope values of 2.58 and 138.04 respectively. This implies that shocks in GCF and labor will result in significant increase in growth at different levels respectively in the short run. This entails a better standard of living in Nigeria in terms of GDP per capita and increased money supply which is advantageous to firms as they would have access to capital for expansion, thus creating jobs which reduces unemployment rate and increases productivity. This aligns with the observed relationship between growth in the previous year and current growth, as growth in the previous year has a significant positive influence on current growth of the economy with a slope estimate of 0.24. The result also shows a significant error correction term (ECT) of -1.50 which is acceptable, given the acceptable range being $-2 \leq \text{ECT} \leq 0$. This implies that the speed of adjustment of growth to long run equilibrium given shocks among variables is 150% (i.e., implies a dampening adjustment).

Findings for the long run estimates of the ARDL model equation (iii) exhibits FDI to have statistically significant positive effect on economic growth on the long run with its slope parameter (λ) being 0.6. This implies that shocks in FDI will result in significant increase in growth on the long run. This agrees with the conclusion of previous studies (Olorogun et al. 2020; Mohammed and Nasiru, 2021) which found FDI to have significant relationship with economic growth in the long run. Labor is seen to also have statistically significant positive long-run relationship with economic growth with its slope parameter of 28.9, which also implies that shocks in labor will result in significant increase in economic growth of Nigeria on the long run. However, we find GCF to have a positive but insignificant effect on economic growth in Nigeria on the long run, implying that shocks in GCF may result in increased growth on the long run, however insignificant. This contradicts Olorogun et al. (2020) result showing GCF having significant relationship with economic growth on the long run but agrees with its significant short run relationship with economic growth. This could be because of different period of study covered.

The Adjusted R squared statistic being 0.89 indicates a good fit model as it implies that 89% of the variations in the response variable of the ARDL model equation (iii) can be accounted for by the explanatory variables of the model. The Durbin-Watson statistic is acceptable at 1.89 (given acceptable range of 1.5 to 2.5) and connotes that the model is void of autocorrelation. The Jarque-Bera p-value for the normality test is seen to be insignificant (p-value > 0.05), thus we cannot reject the null hypothesis (skewness = 0). This implies that the residuals of the estimated model are normally distributed which is in line with the normality condition of regression estimation.

Result of the Breusch-Godfrey serial correlation LM test shows that the model is void of serial correlation as the F-statistic is insignificant. Thus, the null hypothesis ($\rho_1 = \rho_2 = \dots = \rho_n$) cannot be rejected, implying that there is no serial correlation in the model. Findings of the Breusch-Pagan-Godfrey heteroskedasticity test and ARCH test confirms that the model is not heteroskedastic as their F-statistic are insignificant respectively. Thus, null hypothesis ($\sigma_1^2 = \sigma_2^2 = \dots = \sigma_n^2$) cannot be rejected, implying that residuals of the model are homoscedastic which is in line with assumption of homoskedasticity in regression estimation.

Figure 4.2: Plot for cumulative sum (CUSUM) of recursive estimates

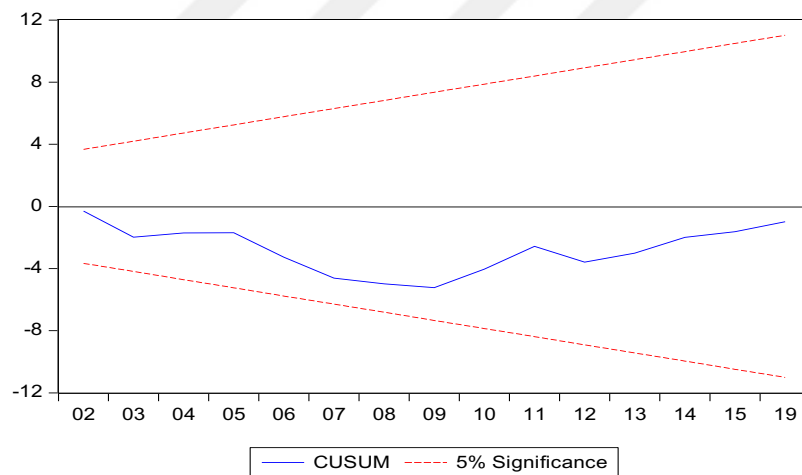
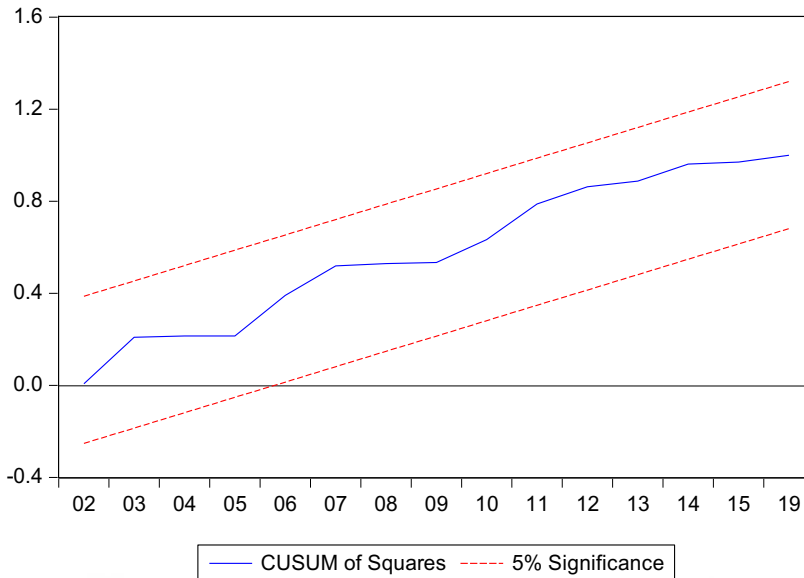


Figure 4.3: Plot for cumulative sum of squares (CUSUMSQ) of recursive estimates



Source: Author's computation with EViews 10

Figures 3 and 4 shows results of the stability tests (CUSUM and CUSUMSQ) respectively, used to inspect the stability of the estimated ARDL model equation (iii) both designed at 5% significance level. The results of each test validate the stability of the model as it lies between the lower and the upper bounds of the confidence level.

4.1.5 Granger Causality Test

Table 4.7: VAR Granger causality test result

<i>Excluded</i>	<i>Chi-sq</i>	<i>df</i>	<i>P-value</i>
<i>Dependent variable: LNEG</i>			
<i>LNGCF</i>	0.254207	2	0.8806
<i>LNFDI</i>	19.52601	2	0.0001***
<i>LNLABOR</i>	7.652863	2	0.0218**
<i>Dependent variable: LNGCF</i>			
<i>LNEG</i>	5.761595	2	0.0561*
<i>LNFDI</i>	8.927526	2	0.0115**
<i>LNLABOR</i>	3.751770	2	0.1532
<i>Dependent variable: LNFDI</i>			
<i>LNEG</i>	2.508086	2	0.2853
<i>LNGCF</i>	14.21080	2	0.0008***
<i>LNLABOR</i>	1.475528	2	0.4782

<i>Dependent variable: LNLABOR</i>			
<i>LNEG</i>	4.219449	2	0.1213
<i>LNGCF</i>	0.477674	2	0.7875
<i>LNFDI</i>	9.974014	2	0.0068***

Notes: 1%, 5%, and 10% level of significance is denoted by asterisk ***, **, and * respectively. EG is the gross domestic product annual growth (%), GCF connotes gross capital formation as a % of GDP, Labor i.e., labor force is proxied by population aged 15-64 (% of the total population) and FDI is foreign direct investment (% of GDP).

Source: Computation done using EViews 10

Table 4.7 exhibits the result of the vector autoregressive (VAR) Granger causality test which shows a unidirectional causality between FDI and economic growth as well as labor. The result implies that shocks in FDI inflows will significantly impact economic growth in Nigeria. This is consistent with previous studies (Uwubannwen and Ogiemudia, 2019; Okumoko et al., 2018; Mansoor and Bibi, 2019) which identified a unidirectional causality between FDI and GDP. Results also show unidirectional causality between labor and economic growth, as labor is seen to Granger cause economic growth, which implies that shocks in labor has significant impact on Nigeria's economic growth. A unidirectional causality is also seen from GDP growth to GCF which entails that GDP growth is an influential factor for capital accumulation in Nigeria. A unidirectional causality is also seen from FDI to labor, exhibiting the influence of FDI on labor, as previous research studies have proposed FDI to be a source of increased labor productivity in terms of employment creation and human capital development. Furthermore, the result shows an existing bi-directional relationship between FDI and GCF, thus, providing insight into the substitutional relationship between both variables in terms of physical capital, given the problem of insufficient capital in Nigeria. Thus, FDI can be seen as a tool for mitigating the problem of domestic capital insufficiency in Nigeria.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 RESEARCH SUMMARY

The research study set out to investigate the empirical justification for foreign direct investments' (FDI) relationship with economic growth in Nigeria. Reviewing both theoretical and empirical literatures provided insights into the theoretical backgrounds of FDI and economic growth as well as insights into empirically established relationships between FDI and economic growth by prior research studies.

The study adopted an augmented Solow- Swan neoclassical growth framework, assuming constant technological advancement (due to lack of data for the given indicators for the period under study), adding FDI to endogenous variables gross capital formation (GCF) and labor (proxied by population aged 15-64) which explains economic growth in the model. The study covered a period of 49 years (1972-2020).

The summary statistics showed the descriptive properties of the timeseries. Using the ratio of the mean to the median, results showed a symmetrical distribution for the natural log forms of GCF, labor and FDI as the values of the ratios were approximately 1. It further showed the natural log form of economic growth (annual %) to be asymmetrically distributed as the value of the ratio of its mean to its median was significantly below 1. The study found LNGCF, LNLABOR and LNFDI to be stable series as their standard deviation were less than 1 while LNEG was deemed volatile with standard deviation greater than 1. The Jarque-Bera statistic confirmed the normality of LNGCF, LNLABOR and LNFDI but not LNEG due to its significant Jarque-Bera statistic. The correlation matrix depicted significant positive relationship between LNLABOR, LNFDI and LNEG, implying that labor and FDI are good predictors of economic growth in Nigeria which agrees with Olorogun et al. (2020) which found significant positive correlation between labor, FDI and economic growth.

Phillip-Perron unit-root test for stationarity results indicated a mixed order integration in the series. Utilizing the vector autoregressive (VAR) optimal lag selection criteria, the study adopted the uniform selection of 2 lags by the five lag selection criteria.

The autoregressive distributive lag (ARDL) technique was employed to estimate the short run and long run dynamics of the model given existence of cointegration indicated by the result of the ARDL bounds test. The result of the ARDL estimation found FDI to have a negative and insignificant effect in the short run but having significant positive long run relationship with economic growth. This agrees with Mohammed and Nasiru (2021) which found FDI to have statistically significant positive long run relationship with economic growth but contradicts its significant short run relationship with economic growth as this study finds FDI to have a negative but insignificant effect on economic growth in the short run which could be due to the different period of study covered. Findings also showed GCF to have a significant positive short-run relationship with economic growth but an insignificant positive effect on the long-run. However, labor was seen to exhibit significant relationship with economic growth both in the short run and on the long run. The error correction term (ECT) is -1.50 indicating a 150% speed of adjustment of growth to long run equilibrium (dampening adjustment) given shocks in short run. The Adjusted R squared statistic being 0.89 indicates that the model is good fit and the Durbin Watson statistic indicates the absence of autocorrelation in the model.

VAR Granger causality test was used to investigate the existence of causal relationship among the variables. Findings showed unidirectional causality between LNFDI and LNEG, and between LNLABOR and LNEG, as both LNFDI and LNLABOR were seen to Granger cause LNEG. Findings also established unidirectional causality from LNEG to LNGCF as well as LNFDI to LNLABOR and a bi-directional relationship between LNFDI and LNGCF.

Findings show consistency comparing the results of the correlation test, Granger causality and ARDL long run estimates as we find that labor and FDI significantly influence economic growth in Nigeria. Diagnostic tests as Jarque-Bera normality test, Breusch-Godfrey serial correlation test, Autoregressive conditional heteroskedasticity (ARCH) test and Breusch-Pagan-Godfrey heteroskedasticity tests on the residual confirmed the normality properties of the residual, absence of serial correlation and homoscedastic property of the residual respectively. The cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) plots confirmed the stability of the model.

5.2 CONCLUSION

The knowledge of foreign direct investment being an influence of economic growth in the host nation drives the inquisition of adoptive measures to attract FDI inflows and the level of impact it has on the economy of the host country. It is seen in developing economies that solid macroeconomic framework and tax incentives are catalysts for FDI attraction. However, insecurity and corruption jeopardize the efforts put towards FDI attraction. With Nigeria being ranked among the top five African countries by FDI inflows between 2019 and 2020, she is expected to see economic improvements on this premise. Hence, the study provides information in this regard.

Existing literatures provided theoretical and empirical backgrounds with respect to the nexus between FDI and the growth of host economies. Although there was no consensus in the findings of empirical studies, there was a level of consistency as majority of the studies found FDI to positively influence economic growth of the host countries, Nigeria inclusive.

Aimed at investigating the empirical justification of FDI's relationship with Nigeria's economic growth, the study adopted the ex-post facto research design and an augmented Solow-Swan neoclassical growth framework, using gross capital formation, labor, and foreign direct investment as independent variables in the specified growth model to explain variations in economic growth.

The study employed a measure of empirical methods with respect to the nature and properties of the data set. These methods included descriptive statistics for the descriptive properties of the dataset, correlation analysis which confirmed the existence of a relationship between the variables of the model. Phillip-Perron unit-root test which confirmed the series to be non-stationary at first difference, ARDL bounds test which indicated the existence of long run relationship among the variables with evidence of two cointegration equations in the model, VAR lag selection criteria which produced a uniform selection of 2 lags as the optimal lag for the study, the ARDL procedures which estimated the long run and short run estimates of the growth model, VAR Granger causality test which indicated the existence of unidirectional causality between FDI and economic growth, labor and economic growth, economic growth and GCF, as well as between FDI and labor and a bi-directional

relationship between FDI and GCF. Diagnostic tests validated that the model is in line with the normality, no serial correlation and homoskedasticity assumptions of regression estimation while CUSUM and CUSUMSQ confirmed the stability of the model.

The study concludes that gross capital formation, labor and FDI are catalysts of economic growth in Nigeria. Labor plays a pivotal role in ensuring economic growth in Nigeria both on short run and long run basis. However, gross capital formation is found to be an effective tool for enhancing economic growth in the short run while foreign direct investments is found to be effective and influential towards economic growth on the long run. The conclusion draws similarities from the result of Olorogun et al. (2020) which saw GCF, labor and FDI to be significantly influential towards economic growth in Nigeria.

The significance of GCF in the short-run and insignificance on the long-run, and the insignificance of FDI in the short-run and significance on the long-run, as well as the bi-directional causality between FDI and GCF, provides insights into the substitutional relationship between both variables in terms of physical capital. The insufficiency of domestic capital in Nigeria being a limitation to economic growth can be seen in GCF's insignificance on the long-run, thus FDI provides a solution to this challenge as this can be seen in FDI's significance on the long-run.

The evidence of causality between FDI and GCF, FDI and labor as well as FDI and economic growth also indicates the pivotal role foreign direct investments play towards achieving sustainable economic growth in Nigeria.

As shocks in gross capital formation, labor and foreign direct investments enhance the growth of the Nigerian economy, the implications include a better standard of living for the citizens of Nigeria in terms of GDP per capita and increased money supply which benefits firms as they would have access to capital for expansion thus creating jobs which reduce unemployment rate in the country and increase productivity.

5.3 RECOMMENDATIONS

5.3.1 Policy Recommendations

Aimed at mitigating the problem of domestic capital insufficiency in Nigeria, this study has provided evidence of FDI being an effective source of external financing, given its long-run significant positive effect on economic growth in Nigeria, filling in the gap of GCF's insignificance on the long run. On this premise, it is highly recommended that the government and the economic team of Nigeria work hard towards the implementation of effective macroeconomic policies which would facilitate foreign direct investment inflows to Nigeria. These policies may include

- increased bilateral trade agreements with countries at regional and global level,
- effective and favorable tax policies as incentives to encourage foreign investment,
- increased effort in collaboration with the security agencies to combat all forms of insecurity, to make Nigeria an investment-friendly nation.

Furthermore, the ARDL results provided evidence that growth in previous year has a significant positive effect on current and future economic growth. Upon linking this finding to the evidence of unidirectional causality from economic growth to gross capital formation, there is the indication that increased productivity is influential on capital formation in Nigeria which may be in terms of increased money supply, aiding the acquisition of the factors of production as well as savings, which in turn results in further productivity. On this note, it is recommended that given growth, the government of Nigeria:

- is intentional about capital goods expenditure more than consumption expenditures,
- adopt the incentivization of savings in the public and private sector,
- adopt financial policies that promotes small and medium enterprises (SMEs). This involves providing access to loans (capital) for startups and existing businesses to aid creation and the expansion of the businesses. This will create jobs, thus reducing unemployment and increasing productivity in the nation.

It is also recommended that the government becomes more invested in research and development as inventions and innovations are measures of technological advancement which boost the productivity of a nation.

5.3.2 Recommendations for Future Research

The study failed to capture the sectorial composition of foreign direct investment inflows to Nigeria which will give further insight into how the sectorial utilization of FDI inflows contribute to growth of the Nigerian economy. Also, the absence of human capital as well as political stability in the growth was due to the unavailability of data for the period understudy. These should be considered for future studies as they both play vital roles towards economic growth and development.



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