

Determinants of Foreign Direct Investment in Nigeria: An Empirical Investigation

Wada Isah

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Elvan Yilmaz
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Economic.

Prof. Dr. Mehmet Balcilar
Chair, Department of Economics

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Economics.

Assoc. Prof. Dr. Cem Payasliogu
Supervisor

Examining Committee

1. Assoc. Prof. Dr. Cem Payasliogu
2. Assoc. Prof. Dr. Salih Katircioglu
3. Asst. Prof. Dr. Cagay Coskuner

ABSTRACT

This thesis examines the long-run determinants of Foreign Direct Investment in Nigeria based on empirical evidence. The research covers a period between 1970 and 2009 and utilizes the Vector Error Correction Mechanism (VECM). Our result provide evidence which indicates that the size of Nigeria domestic market size, the liberalization policy and openness of the economy as well as a stable domestic currency are significant in attracting FDI. We found evidence for higher inflation in the long run. We present the result of the impulse response and the forecast error variance that is due to exogenous shocks of the variables in the VECM model. If we ignore the own shock, the shocks of the model in response to RGDP (Real Gross Domestic Product), INF (Inflation), REER (Real Effective Exchange Rate), OPP (Openness) are found to be significant and positive over the forecast period.

Recommendations to strengthen the Nigerian investment environment by reducing the obstacle to doing business, improving Nigeria's economic management, repositioning the Nigerian investment agencies and export promotion schemes are proffered as important and significant in attracting FDI in Nigeria and increasing her share of FDI as a percentage of world FDI stock.

Keywords: Foreign Direct Investment, Impulse response, Vector Error Correction Mechanism, Nigerian investment agencies, export promotion, forecast error variance.

ÖZ

Bu tez çalışmasında Nijerya'ya doğrudan yabancı sermaye yatırımlarını (DYSY) etkileyen faktörler ampirik olarak incelenmektedir. Çalışma, 1970-2009 yılları arasındaki dönemdeki veriler kullanılarak vektör hata düzeltme metodu yöntemi (VECM) ile yapılmıştır. Sonuçlar Nijerya iç pazarının büyüklüğü, liberalleşme politikaları ve ekonominin dışa dönüklüğü ve güçlü yerel para birimi gibi faktörlerin DYSY'ni çekmekte etkili olduğunu göstermektedir. Aynı zamanda yüksek enflasyonun varlığı ortaya konmaktadır. VECM modelinin etki tepki işlevi ve değişirlik ayrıştırması uygulamasında kullanılan değişkenlerin maruz kaldığı dışsal şokların sonuçları da ayrıca sunulmaktadır. Kendi içsel şokları hariç tutulduğunda RGDP (Reel GSYİH), INF (Enflasyon), REER (Reel Etkif Döviz Kuru), OPP (Dışa Açıklık) değişkenlerinden kaynaklanan şokların öngörü dönemi boyunca anlamlı ve pozitif olduğu görülmektedir.

Bu bulguların ışığı altında Nijerya'daki yatırım ortamının geliştirilmesi, iş ortamındaki bazı engellerin ortadan kaldırılması, ekonomik yönetimin ülkedeki yatırımcı kuruluşları yeniden yapılandırması, ihracat desteğininin yeniden düzenlenmesi Nijerya'nın DYSY'ni çekmesinde ve bu ülkenin dünyadaki toplam DYSY stoğu içindeki payını artırmasında etken faktörler olarak önerilmektedir.

Anahtar Kelimeler: Doğrudan Yabancı Sermaye Yatırımı, Vektör Hata Düzeltme Yöntemi, Nijerya Yatırım Kurumları, İhracat Desteği, Değişirlik Ayrıştırması, Etki Tepki İşlevi.

To my parents

Late Abu Wada and Rabi Abu Wada

And

My siblings

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LIST OF ABBREVIATIONS

AMU

BIPPA

EBA

EFCC
EP
FDI
GARCH
GDP
GFCF
IDCC
IS
M&A
MDG
NEED
NEPD
NIPC
NIPO
OECD
OLS
ROI
SAP
SSA
VECM

Chapter 1

INTRODUCTION

1.1 A Background to the Study

This study will examine the determinants of Foreign Direct Investment (FDI) based on empirical evidence from Nigeria. The effort of most African countries to attract FDI has not been quite successful in recent times. This is despite the perceived and obvious importance of FDI in the economic growth and development of a country. The Nigerian economy with her large natural resources and large market size qualifies to be a top most recipient of FDI in Africa (Ayanwale, 2007). FDI has therefore continued to play major role in the economic growth and development of the Nigerian economy.

The linkage between the determinants of FDI inflows which can eventually translate into economic growth has been the subject of considerable research for many decades. This linkage has been subjected to empirical scrutiny and investigation and has remained a subject of debate (Balasubramanyam et al, 1996; Alfaro 2003, Bello and Adeniyi, 2003, keterina et al,2004, Carkovic and Levine,2008).

The Nigerian economy has recorded some appreciable and moderate economic growth and FDI inflows in recent times (Bello and Adeniyi, 2010). World Bank Development Report (2010) indicates that on the average, Nigerian GDP grew by 6.64 percent

between 1970 and 1980, 1.4 percent between 1981 and 1990, 2.8 percent between 1991 and 2000 and 6.4 percent between 2001 and 2009. The same report further indicates that FDI net inflow was 2 percent of GDP in 1970 and 3 percent of GDP in 1971 but in 1980 fell to negative one percent of GDP. However it has remain positive since 1981 and was 2 percent of GDP in 2000 and 3 percent in 2009 (World Bank report, 2010). The low and negative trend in FDI inflows into the country between 1970 and 1980 was the result of the indigenization policy of the government adopted in 1972 and 1977. But with the structural adjustment programme embraced between 1986 and 1988 and investment promotion decree of 1995 as well as the new national economic empowerment development strategy adopted by the Nigerian government in 2003, the pace of FDI inflows have significantly improved.

Ajala (2010) for instance sited from the UNDP report in (2005) showing that the Nigerian government embarked on a thorough and comprehensive review of its investment policy framework, the expected output of which was to among other things explore how FDI inflow into the Nigerian economy can be increased on a sustained basis. This measure and several factors appeared to have contributed to the phenomenal growth in GDP in Nigeria during this period such as; trade liberalization, concerted efforts to diversify the economy productive base and a substantial increase in FDI into the economy (Era Dabla et. al 2010). Thus FDI propels the engine of growth for developing economies including Nigeria by not only increasing their opportunity towards integration into the global financial and capital flows, expanding employment and export stimulations. It also generate the of building technological capabilities and efficiency spillover to indigenous firms and the entire economy, the bridging of the internal resource and saving gap,

reduction in foreign exchange shortages and improvements in balance of payment as well as serving as a catalyst to economic development (OECD, 2002; keterina et al, 2004; Alfaro et al, 2006; Bello and Adeniyi, 2010).

1.2 Nigerian Economy and FDI Trend: An Overview

The Nigerian economy has been described as a dual economy with a modern sector dependent on oil earnings and overlaid by a traditional agricultural and trading economy (Thomas and Canagaph, 2008) in Dutse (2005). At independence in 1960, agricultural production accounted for well over half of GDP; that is about 63 percent of real GDP (CBN bulletin, 2008) and was the main source of export earnings and public revenue.

The oil sector explorations in Nigeria which date back to 1956 and firmly established in 1970 remain of great significances to the Nigerian economy (Dutse, 2005). It has contributed immensely to government revenues and foreign earnings leading to the decline in the contribution of the agricultural sector to GDP to about 44.7 percent in 1970 (CBN bulletin, 2008). Despite the contribution of the oil sector to federally generated revenues, economic growth in Nigeria since the early 1970 has been described as erratic, primarily driven by the fluctuations of the global oil market (Dutse, 2005). Thus upon realizing the very important role FDI can play in economic growth, Nigeria competes aggressively with other countries of the world and Africa in particular in attracting FDI into its economy.

FDI is widely accepted as a vehicle of economic growth and development (Bertels and Combruggshe, 2009). Foreign Direct Investment is also viewed as a major stimulus to

economic development and it contributes in a substantial manner because it is more stable than other forms of capital flows (Mwilima, 2003;Ajayi, 2008). It has a perceived ability to deal with major obstacles such as shortages of financial resources, technology, and skills (Mwilima, 2003 FDI is seen as an engine of growth as it provides the much needed capital for investment, increases competition in the host country industries, and aids local firms to become more productive by adopting more efficient technology or by investing in human and/or physical capital. It also aid the integration of the economy with the rest of the world and provide management knowhow.(Alfaro, 2006;Pradhan, 2009; Olayiwola and Okodua, 2009, Ajayi, 2008;Bello and Adeniyi, 2010).

FDI has come to largely be seen as source of economic growth and development, modernization, employment and income growth by developing economies, emerging market countries and nations in transition. Thus they have liberalized their FDI regimes and investment frameworks and vigorously pursue policies to attract foreign investment (OECD, 2002). For instance the challenge of how best to pursue domestic policies to optimize the benefits and gains of foreign presence in their domestic economy in the form of FDI has received a lot of attention. However despite the impact of FDI, empirical evidence on the determinants of FDI inflows and host country economic improvement has been elusive.

According to Ajayi (2006) there are quites a lot of studies on the theoretical determinants of FDI which have among others factors emphasized governance failures, problems of policy credibility, macroeconomic policy failures, and poor liberalization policies etc. as deterrents to FDI flows. In a survey of the evidences on the various

determinants of FDI in Africa, Ajayi (2004) in Ayayi (2006) identifies the following market size and growth, labour force skills and cost, good infrastructure, country risk factor, economy openness, institutional environment, natural resources availability, investors concentration (agglomeration), return on investment, contract enforceability and judicial transparency, macroeconomic stability and sweetener policies.

An x-ray of literature on FDI shows the combination of factors that have been identified as responsible for FDI inflow in an economy. These have been revealed from the empirical determinants of FDI literature in economic growth and development nexus. These factors according to FDI literature include; capital accumulations and productivity growth, human capital, macroeconomic stability, political stability, policy credibility, increased openness of an economy. Others are infrastructural development, appropriate size of government sector, international competitiveness and outward oriented trade policiess, education attainment, economic development, financial development, trade openness, sound macroeconomic policy and per capita income.

Furthermore, a survey of literature also reveals that the role of government infrastructure, market size, market growth, established bilateral trade, openness of the host country bilateral investment policies, cultural proximities, corporate tax and quality of institution are also important determinants of FDI.

From the literature surveyed, the factors which applied to the Nigerian economy as important determinant of FDI inflows include market size, real exchange rate, political factors, endowments of natural resources, openness of the economy, macroeconomic

risk factors in terms of inflation and exchange rate, deregulation of the economy, political stability, trade openness, infrastructural development, appropriate size of government sector and international competition as well as government investment policies.

1.3 Aims and objectives

The role of FDI in stimulating economic growth is well documented and generally accepted. Most earlier studies on FDI in Nigeria has always focused on the relationship between FDI and economic growth while other researchers attempt to focus on FDI and economic development and quite a few focused on the determinants and impact of FDI on economic growth and development.

This thesis will seek to generally investigate FDI in the Nigerian economy. Specifically, it will focus on the long-run empirical determinants of the FDI inflow into the Nigeria economy. This thesis contributes to FDI literature in the sense that it critically investigates the major determinant of FDI in the Nigerian economy on the base of empirical literature of FDI in Nigeria. These include market size, the openness of the economy in terms of its bilateral trade policies, variables of macroeconomic risk factors such as inflation rate, real effective exchange rate, interest rate, deregulation and political stability. A major innovation of the research study is the utilization of JMulTi in the model estimation process.

Chapter 2

REVIEW OF EMPIRICAL AND THEORETICAL LITERATURE

2.1 Introduction

Explaining economic development remains one of the fundamental questions in economics and has generated quite a large volume of empirical research. Foreign direct investment has been described as an integral part of an open and international economic system and a major catalyst to development (OECD, 2002). It is natural to argue that FDI can convey great advantages to host country thereby stimulating an FDI lead – Economic development (Ayanwale, 2007). It is nowadays accepted that FDI plays a key and significant role in the industrial development of both developed and developing economies and help in boosting the growth in their economies through for example through growth in total factor productivity (Bartels and Crombrughe, 2009).

Despite the perceived merit of FDI, empirical evidences on the determinants of FDI remain ambiguous and debatable. A plethora of studies have been conducted on the determinant of FDI inflows in developing economies over the past decade. The first group of studies has provided the theoretical rationale for the effect of FDI inflow on the host country economic growth and development which is known as the FDI –Led growth nexus (Balasurbramanyam, 99; Alfaro, 2006; OECD, 2002; Ahmed et al 2007;

Pradhan,2009, Olayiwola,2006). The second group of studies focus on the determinants and impact of FDI on GDP in the host economies (Akinlo, 2004; Asiedu, 2005; Ajayi,; Ayanwale,2007; 2008; Dinda, 2009; Nurudeen 2010).

2.2 Empirical Studies on the Determinant of FDI

A wide range of studies is available in literature on the determinants and impact of FDI on a host country economic improvement. Most of the studies focus on the overall effect of FDI on macroeconomic growth and other welfare-enhancing processes, and on the channels through which these benefits take place and is transmitted (OECD, 2002).

It is important to note that the review of literature will explore studies on the empirical determinants of FDI inflows in host country economies and the FDI led Economic improvement nexus. It is in this nexus that the major and significant determinants of a FDI are revealed.

De mello (1997) in Bello (2010) conducted time series test using a panel data of a sample of 15 developed and 17 developing countries from 1970 to 1990. He reported a strong positive relationship between FDI, capital accumulation and productivity growth. Borenszten et al (1998) according to Pradhan (2009) identified the availability of human capital in host countries as an important determinant of FDI to that country. Obwona (2001) in Bengoa and Rhodes (2003) suggest that for FDI to have positive impact on an economy, the host economy must have macro economic and political stability, policy credibility and increase in the openness of the economy.

Norris et al (2010) noted that the reduction in borrowing costs and positive real-side external factors are increasingly important driver of FDI outflows to low incomes economies. Norris et al (2010) also identified economic fundamentals, the strength of economic reforms, and a commitment to macroeconomic discipline as crucial determinants of the growth dividends of FDI.

Udoh and Egwaikhide (2008) in their studies on FDI in Nigeria between 1970 and 2005 using the GARCH model found that exchange rate volatility and inflation uncertainty exerted significant negative effect on FDI. Their study also revealed that infrastructural development, appropriate size of government sector and international competitiveness are crucial determinant of FDI inflows into the Nigerian economy.

Balasarbramanyam et al (1999) examined the role which FDI can play in the growth process in the context of developing countries with divergent trade regime within a growth theory framework. The study utilizes a cross sectional data relating to a sample of 46 developing countries to test the hypothesis according to which the beneficial and positive effects of FDI in terms of enhanced growth is stronger in those countries that pursue an outward oriented trade policy than in those that adopts an inwards oriented policy. The result shows that the growth enhancing effect of FDI are stronger in countries which pursue an EP policy than in those that follow an IS policy.

Carkovic and Levine (2008) examine the acceleration effect of FDI using a generalized method of moment panel estimator (GMM) from 1960 to 1995 and dynamic panel procedure with five year averaged data. They examined if the growth effect of FDI

depends on the recipient country's level of education attainment, economic development, financial development and trade openness. They noted that while sound macroeconomic policies may spur both growth and FDI, their result indicated an inconsistency with the view that FDI exert a positive impact on growth that is dependent on other growth determinants.

Furthermore Shan et al (1997) studied separately FDI led growth hypothesis using econometrics evidence from China. Their study re-examined FDI led growth hypothesis in the case of China, a country which has become one of the major recipient of FDI in the world. They employed a quarterly time series data and a vector auto regression model (VAR) applying the granger no-causality procedure. Their result indicates a two causality running between industrial growth and FDI inflow for China.

Herzer (2006) using a time series and panel co integration test on FDI and growth with the aid of a bi-variate model revealed that there is no clear association between the growth impact of FDI and the level of per capita income, the level of education, the degree of openness and the level of financial market development in the developing countries. Ahmed et al (2007) however using evidence from Sub-Saharan African country on the causal link between export, FDI and output observed a causal link between FDI- export and FDI income. He noted that FDI has contributed to higher economic growth directly and indirectly.

Ajayi (2006) in his study on FDI and economic growth in Africa underscore the significance of FDI from the perspective of bridging the gap of Africa's low saving rate

and need to meet the millennium development goals (MDG). The study showed that FDI in African is influenced by push factors mainly growth and interest rate in the industrialized countries while the pull factors consist mainly of the host countries characteristics. Bartel et al (2007) also found that third country effects are significant in attracting FDI lending support to the existence of various modes of FDI. Globerman and Shapiro (2002) revealed the role of government infrastructure and human capital as important determinants of FDI while Antonakakis and Tond (2010) emphasized the role of market size, market growth, established bilateral trade, openness of the host country bilateral investment policies, cultural proximities, corporate tax and the quality of institution as important determinants of FDI. Some studies also reveal that FDI inflow is influenced largely by natural resource endowments in their host countries (Haile, 2006; Asiedu 2005).

Barthel (2008) also in his studies on the characteristic and determinants of FDI in Ghana using a qualitative and quantitative method based on data from the World Bank emphasis the growth enhancing capability of FDI and noted that the most important factor attracting FDI to a country are macroeconomic and political stability. In the same vein Abosi (2008) using OLS and error correction model highlighted GDP per capita and openness as having positive impact on FDI while infrastructure like telephone have negative impact on FDI in Ghana.

Preferment and Madarassy (1992) in Maclean et al (2008) outlined the following as some of the determinants of foreign direct investment; the domestic market size of the recipient country, capacity utilizations of existing plants, the level of fiscal deficits, price

level or inflation rate, exchange rate volatility, general level of interest rates and macroeconomic policies and institutional factors.

Demirhan and Masca (2008) in their studies on the determinants of FDI inflows to developing countries using a cross sectional analysis identified the growth rate per capital, telephone main lines and degree of openness to be positive and significant determinants of FDI while inflation and tax rate to be negative determinants.

Furthermore, Chakrabarti (2001) in his research on the determinants of FDI using sensitivity analysis of cross country regression provided strong support for the explanatory power of the market size, tax, wage, openness, exchange rate, tariff, growth rate of GDP, trade balance as key and highly significant to attracting FDI.

Cleeve (2004) in his study on the effectiveness of fiscal incentive to attracting FDI to Sub-saharan African countries using a multiple regression analysis provided support for fiscal incentive to attracting FDI to SSA after controlling for the traditional, political, institutional and policy variables.

Alba and Garde (2008) in the work on a new look at host countries determinants of FDI inflows a log model regression analysis observes that inward FDI is determined by economic factors, quality of business environment and the quality of governance.

Hasen and Glanluigi (2007) using a panel data and a regression technique in their studies on the determinant of FDI in AMU countries noted that trade openness and foreign

market are not significant for FDI inflow in the AMU countries and exchange rate also has a negative impact while growth of market size and existing stock of FDI are significant. Asiedu (2002) also in her research indicated a mixed result for the determinant of FDI in developing countries. But Numenkamp and Spatz (2002) using a spearman correlation coefficient and panel data regression model identified traditional market determinants as dominants factors of FDI. Also lankhuizen (2009) using a gravity model and panel data in his study on the determinants of FDI identified market size, institutional quality, human capital, climate and macroeconomic factor as important determinant. Lvna and Highfoot (2006) using a multiple regression as highlighted market size, labour quality, progress of reforms and the degree of openness as important determinant of FDI.

Haile and Assefa (2006) using a time series analysis revealed that the growth rate of real GDP, export orientation and liberalization also have a positive impact on FDI while macroeconomic instability and poor infrastructure has negative impact on FDI. Abdul (2007) using panel data and regression analysis further reveal that large domestic market, high growth rate, modern infrastructure and friendly business environment are important in attracting FDI. In the same vein, Mottaled and Kalirajan (2010) using a panel data analysis also support the view that countries with larger GDP and high growth rate, higher proportion of international trade and more business friendly environment are more successful in attracting FDI.

In another separate study, Rusikees (2007) using the johansen cointegration identify openness, exchange rate and financial development as important long run determinants

of FDI and regarded market size as a short run determinants while Villanger (2007) using a panel data analysis, identified institutional quality and democracy as important determinants of FDI in the services sector than investment risk and political stability.

Thus Ibrahim and Sadiat (2009) in their research on the determinants of FDI in Nigeria between 1970 and 2006 using a co integration test reveal that the major determinants of FDI in Nigeria are market, real exchange rate, political factor thereby validating theoretical positive expectation on the FDI-growth nexus. Dauda (2009) in his empirical investigation into the factors attracting FDI to Nigeria also between 1970 and 2006 applying a vector error correction model noted that endowment of natural resources, openness, macroeconomic risk factor like inflation and exchange rate are significant determinants of FDI in Nigeria.

Nurudeen (2010) in his own studies on the determinants of FDI in Nigeria also employed a vector correction technique to analyze the relationship between FDI and growth and its determinants in Nigeria. The study further reveals that market size of host country; deregulation, political instability and exchange rate depreciation are the main determinants on FDI in Nigeria.

Adelopo et al (2010) examined the impact of FDI in Nigeria using time series analyses from 1996 to 2006 and however observed a negative relationship between the size of Nigeria and the inflows of FDI. Although Adelopo et al (2010) notes that Nigeria is one of the highest recipients of FDI in Africa, they noted that her share is still low compared to other countries of its size and richness in natural resources. Their findings indicated

that a macro economic indicator such as the level of inflation, exchange rate movement and trade openness have positive impact on FDI in Nigeria.

According to Ajayi (2006) there are many studies on the theoretical determinants of FDI and with a large though inconclusive econometric literature on the determinants of FDI. He notes that the studies have among others emphasized governance failures, problems of policy credibility, macroeconomic policy failures, and poor liberalization policies etc. as deterrents to FDI flows. In a survey of the evidences on the various determinants of FDI in Africa, Ajayi (2004) in Ayayi (2006) identifies some array of factors as important determinant of FDI.

The review of literature thus shows the multitude of factors that have been identified as responsible for FDI inflows in an economy which has been revealed from studies on the empirical determinants of FDI and FDI -led economic growth and development nexus.

Finally Udoh and Egwaikhide (2008) opine that the flow of FDI to developing countries is influenced by numerous factors which a complex and interrelated. Their investigation indicates that the determinants of FDI can be grouped into two broad categories; ‘push factors’ and the ‘pull factors’.

The ‘push factor’ focuses on the direction of capital flows on the international front such as a fall in international interest rates, business cycles in industrial countries and a rise in international diversification (Calvo and Reinhart, 1998 and Calvo, et al, 1996) in Udoh and Egwaikhide (2008). The ‘pull factors’, on the other hand, trace the causes of capital flows to domestic factors such as autonomous increases in domestic money

demand and increases in the domestic productivity of capital (Haque, Mathieson and Sharma, 1997), improvement in external creditor relations, adoption of sound fiscal and monetary policies and neighbourhood externalities (Calvo, et al, 1996) in Udoh and Egwaikhide (2008). On the domestic front, macroeconomic performance, the investment environment, infrastructure and resources and the quality of institutions have been identified as the key determinants of FDI (Udoh and Egwaikhide, 2008).

Table 1: Summary of past finding and result.

| Author. | Estimation Technique. | Model Variable | Result/Determinant Of FDIS. |
|--|--|--|--|
| Borenszten et al (1998) in pradhan (2009) | Cross country Regression Framework (69 countries) | FDI,stock of human capital, initial GDP per capital, government consumption, foreign exchange and distortion | Availability of human capital in host country |
| Udoh and Egwaikhide (2008) | GARCH model (1970-2005) | RGDP, Trade, interest rate, inflation, volatility, general government final consumption, political stability, credit, phone(telephone per1000), Real domestic interest rate | Infrastructural development, appropriate size of government sector and international competitiveness |

| | | | |
|--|---|--|---|
| Balasurebramanya m et al (2008) | Cross sectional data approach (46 countries) | Labour input, domestic capital stock, stock of foreign capital, export, technical progress. | FDI are attracted more in EP policy oriented countries than in IS policy oriented country. |
| Carkovic and Levin (2008) | Moment panel estimator (1960-1995) | Real GDP, conditioning Set of variables. | Recipient country's level of education attainment, economics development, financial development, trade openness |
| Barthel et al (2008) | Probit model Qualitative and qualitative method (54) | Ln(employee,), formal training, education, experience, finance, ban credit, value added per worker, investment, export, market share, import | Macroeconomics and political stability |
| Ibrahim and Sadiat (2009) | Co integration test (1970-2006) | RGDP(market size), GGDP (growth potential), openness, real exchange rate, exchange rate, political factor | Real exchange rate and political factors |

| | | | |
|-----------------------------|---|--|--|
| Dinda (2009) | Vector Error Correction. (1970-2006) | market size, exchange rate, inflation rate, openness, macroeconomics risk factor, inflation rate, exchange rate, openness, natural resources | Endowments of natural resources, openness and macroeconomics risk factor (inflation and exchange rate) |
| Nurudeen (2010) | Vector Correction Technique (1977-2006) | Market size, deregulation, political regime, openness, inflation rate, exchange rate, infrastructure development | Market size of host country, deregulation, political instability and exchange depreciation |
| Adelopo et al (2010) | Time Series Analysis | GDP(market size), GGDP (growth potential), Inflation, Exchange rate, openness and indicators for corporate governance | Macroeconomic indicator such as the level of inflation and exchange rate movement and trade openness |

| | | | |
|----------------------------|-----------------------------|---|--|
| <p>Ajayi (2004)</p> | <p>Qualitative Analysis</p> | <p>Push factor-growth and interest rate Pull factor-host country characteristic</p> | <p>Size of the market, growth cost and skill of labour force, availability of good infrastructure, country risk, openness of the economy, institutional environment, availability of natural resources, concentration of other investors, return on investment, enforceability of contract and transparent of judicial system, macroeconomic stability and availability of sweetener policies.</p> |
|----------------------------|-----------------------------|---|--|

| | | | |
|---------------------------------|--|---|--|
| Ayanwale (2007) | OLS and SLS method (1970-2002) | ROI on capital, infrastructure development, openness, political risk factor, government size, human capital, inflation | Market size, infrastructure development, stable monetary policy are FDI inducing but openness and available human capital are not FDI inducing |
| Demirhan and Masca(2008) | Cross Sectional Analysis of 34 countries. (2000-2004) | Growth rate of per capita GDP, inflation rate, Telephone line per 1000 people measured in log, labour cost per worker, degree of openness, risk and corporate tax rate. | Growth rate per capita, telephone main line and degree of openness have positive signs and statistically significant; inflation rate tax rate present negative sign and statistically significant. |
| Chakrabarti (2001) | EBA and Cummulative distribution function. (135 countries) | x-variable shost country per capita GDP, market size. I-variables- host country wage, openness, real exchange rate, | Significant support for the explanatory power of the market size, tax rate, wage, openness, exchange rate, tariff, growth rate |

| | | | |
|------------------------------|--|---|---|
| | | tariff, trade balance, growth rate, of real GDP and tax rate. Z-Variables- all I-variables and inflation, budget deficit, domestic investment, external trade, government consumption, political stability. | of GDP and trade balance. |
| Cleeve (2004) | Multiple regression analysis using pooled data (16 SSA countries, 1990-2000) | Fiscal incentive, market size and growth, physical and human capital development, policy and institutional variable. | Provide support for the fiscal incentive to attract FDI after controlling for the influence of traditional, political, institutional and policy variable. |
| Alba and Garde (2008) | Regression Analysis (Log model) | Variable on doing business, inflation rate, real exchange rate, | Inward FDI is determined by economic factor, quality of |

| | | | |
|-----------------------------------|---|---|--|
| | (113 countries) | interest rate, productivity indicator, governance indicator. | business environment and the quality of governance. |
| Hasen and Glanluigi (2007) | Panel data study using simultaneous equation regression. (1970-2006) | Domestic real GDP, import as % of GDP, trade openness, Government expenditure as a proportion of GDP, exchange rate and inflation | Trade openness and foreign market are not significant for FDI inflow but the growth rate of market size and existing stock of FDI are significant. exchange rate have opposite sign. |
| Asiedu (2002) | OLS Estimation with panel study and cross sectional analysis (cross sectional data 1988-1997, panel data 3 years) | Return on investment in the host country, infrastructure development, openness of host country, political risk, financial depth, size of government, inflation rate and growth rate of GDP. | Estimation result indicate a mixed result. |

| | | | |
|--|--|--|--|
| <p>Numenkamp and Spatz (2002)</p> | <p>Spearman correlation coefficient and panel data regression (28 countries)</p> | <p>Traditional-GDP, population, GDP per capita, administrative bottlenecks, entry restrictions, risk factor, Non traditional-Traditional market related determinant are regarded as dominated factors. complement factor of production, average years of schooling, cost factor relating to taxes, employment conditions, labour market regulations and leverage of trade union, post entry restriction, technology related regulation</p> | <p>Traditional market related determinant are regarded as dominated factors.</p> |
|--|--|--|--|

| | | | |
|--------------------------------|--|--|--|
| Nurudeen (2010) | Error correction technique (1997-2006) | Market size of host country, deregulation, political regime, openness of the economy, inflation rate, exchange of host country and infrastructural development. | Market size of the host country, deregulation, political stability and exchange rate depreciation |
| Haile and Assefa (2006) | Time series analysis (1974- 2001) | Growth rate of real GDP per capita, export s % of GDP, annual rate of inflation, rate of adult literacy, gross fixed capita formation, telephone line per 1000 people, measure of liberalization | Growth rate of real GDP, export orientation and liberalization have positive impact On FDI. And macro economy instability and poor infrastructure has a negative impact. |
| Abdul (2007) | Panel data regression (60 countries) | Gross domestic product, annual growth rate of GDP per capita, industrial value added, internet | Large domestic market, high GDP growth rate, modern infrastructure, friendly business |

| | | | |
|------------------------------|--|---|---|
| | | <p>user(per 1000), telephone line (per 1000), time required to enforce contract(days), time required to start to a business(days), corruption perception.</p> | <p>environment.\</p> |
| <p>Rusikee (2007)</p> | <p>Johansen cointegration and VECM framework (1975-2005)</p> | <p>FDI liability as ratio of nominal GDP, nominal effective exchange rate, import as ratio of nominal GDP, government expenditure as a ratio of nominal GDP, consumer price index</p> | <p>Openness, exchange rate and financial development are important long run determinant and market size is short run determinant.</p> |

| | | | |
|--|--|---|--|
| <p>Villanger (2007)</p> | <p>Panel data analysis (57 countries, 1989-2009)</p> | <p>GDP per capita (logged), growth rate in GDP, trade(import and export) as % of GDP, inflation (logged), FDI secondary industry, time trend, political risk, democratic accountability</p> | <p>Institutional quality, democracy appear more important for FDI in service than investment risk or political stability.</p> |
| <p>Astatike and Assefa (2005)</p> | <p>Regression Analysis (1974-2001)</p> | <p>Market size, export, macroeconomics stability, infrastructure, human capital, liberalization</p> | <p>Growth rate of RGDP, export orientation and liberalization have positive impact on FDI while macroeconomics stability and poor infrastructure have negative impact on FDI</p> |

| | | | |
|--------------------------------------|--|---|---|
| Abosi (2008) | OLS and error correction model (1975-2005) | GDP per capita, economic openness, telephone lines, debt, consumer price index, exchange rate and political rights | GDP per capita and openness have positive influence on FDI and telephone line impacted negatively on FDI in the long run. |
| Mottaled and Kalirajan (2010) | Panel data analysis (68 countries) | Profit as ROI function model; $\Pi = F(\text{price, output, total cost})$. TC(input cost, operation cost, hidden cost) | Countries with larger GDP and high growth rate, higher proportion of international trade and more business friendly environment are more successful in attracting FDI |
| Lankhuizen (2009) | Gravity model using a panel (69 countries) | GDP, institutional quality, human capital and climate, macroeconomic instability (inflation), land locked | Market size, institutional quality, human capita and climate and macroeconomic factor |

| | | | |
|--------------------------------|--------------------------------|---|---|
| Lvna and Highfoot(2006) | Multiple regression model (30) | Market size(GDP),road concentration of economic), labour quality, labour cost(wage), degree of opennness and reform | GDP (market size), labour quality and the progress of reform or the degree of opennness |
|--------------------------------|--------------------------------|---|---|

2.3 Conceptual framework

Foreign direct investment (FDI) is described as one of the most dynamic phenomena in the recent wave of globalization (Baltagi et al, 2006). There is a vast pool of literature on foreign trade and investment dating as far back as the Smithian era (1776). While the mercantile economic system propagated hoarding and a close economy, the Smithian economic system was known for its proposition of the free trade and open market system (Adelopo, 2010).

The arguments for foreign investment also grow largely out of the traditional neo-classical and new growth theory analysis of the determinants of economic growth. For instance the neoclassicals hold the views that free trade and investment enhances the accumulation of capital stock provided that adequate consideration is given to factor prices and technology.

Foreign direct investment (FDI) is seen as a major and integral part of an open and international economic system and a major catalyst to development (OECD, 2002).

It refers to investment made to acquire a lasting management interest (usually at least 10 % of voting stock) and acquiring at least 10% of equity share in an enterprise operating in a country other than the home country of the investor; it can take the form of either “greenfield” investment (also called "mortar and brick" investment) or merger and acquisition (M&A), depending on whether the investment involves mainly newly created assets or just a transfer from local to foreign firms (Mwilima, 2003).

It involves the mobilization of investment funds from foreign investors into the host economy. It may be in the form of transfer of ownership from domestic to foreign investors, or in the form of expansion in productive capacity and capital formation in a country (Adelopo, 2010).

FDI is also an investment in real assets where real assets consist of physical things such as factories, land, capital goods, infrastructure and inventories (Adeleke,2010)

FDI is also seen as an engine of growth as it provides the much needed capital for investment, increases competition in the host country industries, and aids local firms to become more productive by adopting more efficient technology or by investing in human and/or physical capital (Ajayi, 2006).

The Organization for Economic Cooperation and Development (1983) defines Direct Investment enterprise as an incorporated or unincorporated enterprise in which a single foreign investor either Controls 10 percent or more of the ordinary shares unless it can be established that this does not allow the investor an effective representation in the management of the enterprise or controls less than 10 percent (or more) of the ordinary shares or voting power of the enterprise but has an effective representation in the management of the enterprise.

FDI may also be seen as any form of investment that earns interest in enterprise which functions outside the domestic territory of the investor (Kamaraj, 2008).It requires a business relationship between a parent company and its foreign subsidiary. This foreign

direct business relationship gives rise to multinational corporations and for an investment to be regarded as an FDI, the parent firm needs to have at least 10 percent of the ordinary shares of its foreign affiliates. The investing firm may also qualify for an FDI if it owns voting power in a business enterprises operating in a foreign country.

FDI works as a means of integrating under developed countries into the global market and rising capital availability for investment (Dinda, 2006).

FDI is further seen to be investment involving a long-term relationship and reflecting a lasting interest and controlled by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate). It implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy.

FDI may equally be undertaken by individuals as well as business entities. (UNCTAD,2008).

It is generally well known that the modest levels of, and disparity in, the distribution of FDI inflows, are due to factors such as a deficient regulatory framework, a poor business environment and opportunities, weak FDI policies and incentives, poor institutional frameworks, limited market access, unfavorable comparative costs and lack of political stability (UNCTAD, 2009).

The Nigerian Government in recognizing the merits of FDI adopted several policies to attract FDI into the Nigerian economy in recent times. Particularly, the government implemented the IMF tailored liberalization of its economy, received foreign investors in the manufacturing sub-sector and grant incentives for equity ownership in all industries except key industry like military equipment (udoh and Egwaikhide, 2008; Dinda, 2009,OECD, 2009).

2.4 Anatomy of Foreign Direct Investment in Nigeria

According to Udoh and Egwaikhide (2008) in the 1960s and 1970s, when the dependency thesis flourished, FDI was perceived as a tool for political and economic domination of Nigeria which prompted the policy thrust of government to limiting foreign investment in the country through the Nigerian Enterprises Promotion Decree (NEPD) promulgated in 1972 (amended in 1977).

This indigenization policy strictly regulated FDI inflows and only allow only a little participation of foreign investors resulting in a decline in foreign investment and slowing down the pace of economic activities in all sectors of the economy (Ayanwale, 2007: udoh and Egwaikhide ,2008;OECD, 2009).

Furthermore the external debt crisis and shock in the global oil market which followed in the 1980s open up a long and protracted period of instability in macroeconomic policies with the attendant drop in foreign capital inflows (Ezirim,2006; udoh and Egwaikhide ,2008,Nuru, 2010).

In an attempt to rejuvenate the economy for sustained investment and growth, the Nigerian Government embarked on a Structural Adjustment Programme (SAP) in 1986. The programme incorporated privatization, market liberalization trade and exchange reforms reinforced by monetary and fiscal measures which were geared towards diversifying the mono-export base of the economy and attracting foreign investment (Ayanwale,2007; udoh and Egwaikhide ,2008;OECD, 2009).

The policies embarked upon by the Nigerian government to attract foreign investors as a result of the introduction of the SAP could be grouped into five; the establishment of the Industrial Development Coordinating Committee (IDCC), investment incentive strategy, non-oil export stimulation and expansion, the privatization and commercialization programme, and the shift in macroeconomic management in favor of industrialization, deregulation and market-based arrangements (Ayanwala, 2007).

Thus the Nigerian government implemented IMF monitored liberalization of its economy introducing incentives like tax relief to investors granting them concessions for local raw material development and in line with its economic reforms starting from the 1980s, undertook a far reaching privatization programme and which saw the adoption of the macroeconomic programme embedded in the SAP (Dinda, 2006;Ayanwale, 2007, OECD, 2009).

Thus, the policy embarked on by the Nigerian government to attract foreign investors as a result of the introduction of the SAP was a key determinant of FDI inflow in the country.

From 1989 and onwards due largely to these policies measure mention above the FDI inflow into the Nigerian economy which was low in pre- 1990's and post 1990's changed remarkably (Dinda, 2006).

According to Udoh and Egwaikhide (2008) the implementation was expected to bring about some improvements in the economy. With that the sharp depreciation in the exchange rate which was meant to discourage importation and make export-oriented multinationals gain on their investment lead to a wide fluctuation in exchange rate and uncertainty in inflation rate in the economy resulting in capital flight (Ayanwale, 2007; Udoh and Egwaikhide 2008). This the exchange rate volatility in the economy was driven largely by inflation, nominal and foreign reserves shocks and it was found that exchange rate volatility has a deleterious effect on FDI inflows, with FDI inflows further aggravating the exchange rate volatility in the economy (Ogunleye, 2008).

Ayanwale (2007) also noted that the difficult macroeconomic environment which encouraged capital flight in addition to the ineffective operations of the Nigerian's refineries occasioned by large reliance on imported refined petroleum products, were responsible for the decline of the oil FDI in the early 1990s.

Also, the era immediately after SAP was accompanied by political instability that negatively impacted every sector of the Nigerian economy limiting the gains from the reform programme under SAP (Udoh and Egwaikhide (2008). However the return to democracy in 1999 and adoption in 2003 of the NEED's strategy raised hopes for

redressing some of negative socio-economic trends and anomalies in the structure of the Nigerian economy.

This was marked by commitment of the Nigerian government to democracy, openness of the economy, potent macroeconomic policies, favourable investment climate and positive economic outlook (Dinda, 2006).

Finally, between 2003 and 2007 the Nigerian government attempted to implement the economic reform programme embedded in the National Economic Empowerment Development Strategy (NEEDs) the purpose of which was to raise the country's standard of living through a variety of reforms, including macroeconomic stability, deregulation, liberalization, privatization, transparency, and accountability (Ayanwale, 2007).

2.5 FDI and Economic Growth and Development Nexus

There are now considerable evidences that FDI can stimulate growth and development serving as a catalyst for economic development by complementing domestic investment and by undertaking trade, foreign investment and transfer of knowledge and technology (OECD, 2002; Ajayi, 2006).

FDI is seen as an engine of growth and development as it provides the much needed capital for investment, increases competition in the host country industries, and aids local firms to become more productive by adopting more efficient technology or by investing in human and or physical capital. It also generate technological capability

building and efficiency spillover to indigenous firms and the entire economy and bridge the internal resource and saving gap, reducing foreign exchange shortage and balance of payment improvement and serving as a catalyst to economic development (OECD,2002;keterina et al, 2004;Alfaro et al, 2006; Ajayi, 2006;Ajide and Adeniyi,2010). FDI not only boosts capital formation but also enhances the quality of capital stock Gorg and Greenaway (2004) in Ajayi (2006).

Developing countries, emerging economies and countries in transition have come increasingly to see FDI as a source of economic development and modernization, income growth and employment (OECD, 2002).

FDI propels the engine of growth for developing economies including Nigeria by increasing their opportunity towards integration into the global financial and capital flows, expanding employment and export stimulations. It contributes to economic growth and development in a substantial manner because it is more stable than other forms of capital flows (Ajayi, 2006).

The benefits of FDI include serving as a veritable source of capital, generating employment, facilitating easy access to foreign markets, and providing both technological and efficiency spillover to local firms (Ajayi, 2002).

It is expected that by providing easy access to foreign markets, facilitating the transfer of technology and the opportunity for capacity building in the host country firms, FDI will

inevitably improve and allow for the integration of the host country into the global economy and foster their economic growth and development.

FDI is thus seen as a key driver or booster of economic growth and development (Ajayi, 2006).

According to the OECD report (2002) the overall benefits of FDI for developing economies are well documented. Given the appropriate host-country policies and a basic level of development, a preponderance of studies shows that FDI triggers technology spillovers, assisting human capital formation, contributing to international trade integration, helping to create a more competitive business environment and enhancing enterprise development. Furthermore the report shows that all of these attributes contribute to higher economic growth and development which is the most potent tool for alleviating poverty in developing countries, social vices and infrastructural dilapidation. Moreover, beyond the strictly economic benefits, FDI may help improve environmental and social conditions in the host country by, for example, transferring cleaner technologies and leading to more socially responsible corporate policies (OECD, 2002; Dutse, 2005; Bello and Abimbola, 2010).

FDI also have negative effect or cost to the host economy. This mean that it can have undesirable and adverse outcomes in some cases (Ajayi, 2006). These are the results of distortions and inefficiencies in the domestic economy, which can be avoided through appropriate policy tools and a sound regulatory framework (Sun, 2002) in Ajayi (2006). The three negative effects that are mentioned in literature are: The crowding out effect

of FDI, the balance of payments problems of FDI and the enclaves economy created by FDI (Sun 2002) in (Ajayi 2006).

An absent or the non-existence of positive connection with local communities, a potentially harmful environmental impact of FDI, especially in the extractive and heavy industries, social disruptions of accelerated commercialization in less developed countries, and the effects on competition in domestic markets are also identified as potential negative drawbacks of FDI.

According to the OECD report (2002) while the gross returns on investment can be very high in Africa, the effect is more than counterbalanced by high taxes and a significant risk of capital losses. As for the risk factors, macroeconomic instability; loss of assets due to non enforceability of contracts and physical destruction caused by armed conflicts are listed as pertinent.

Several other factors holding back FDI have been proposed in recent studies, notably the perceived lack sustainability of national economic policies, poor quality of public services and closed trade regimes (Dollar and esterly, 2009). FDI and especially green-field investment contains an important irreversible element. Where investors' risk perception is heightened the inducement to invest would have to be massive to make them undertake FDI as opposed to deferring their decision and the problem is further compounded where a deficit of democracy or of other kinds of political illegitimacy makes the system of government prone to sudden changes. (Servan, 1994; Odenthal, 2001 in OECD (2002) report).

Chapter 3

THE NIGERIAN ECONOMY AND FDI INFLOW

ANALYSIS

3.1 The Nigerian Economy

Nigeria is a country situated in West Africa sharing land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. It has coast which lies on the Gulf of Guinea in the south and it borders Lake Chad to the northeast. It is noted for some geographical features which include the Adamawa highlands, Mambilla Plateau, Jos Plateau, Obudu Plateau, the Niger River, River Benue and Niger Delta. The country has a geographical coordinates of 10°00 N 8°00. Nigeria has a total area of 923,768 km² of which 910,768 km² is land and water takes up 13 000 km². Nigerian has total boundaries of 4,047 km in length and it borders is said to account for the most of boundaries. It share a border is 773 km with Benin, Cameroon is 1,690 km, Chad 87 km, and Niger 1,497 km. It also has a coastline of 853 km.

Nigeria is located in the Tropics which makes the country a tropical country with a tropical climate type where seasons are damp and very humid. Nigeria is affected by four climate types which are distinguishable as one move from the southern part of the country to the northern part through the country's middle belt.

The country's economy has had a truncated history. In the early periods of 1960-70, Nigerian GDP recorded 3.1 per cent growth annually. During the oil boom era, between 1970 and 1978, GDP grew at a remarkable rate of 6.2 per cent annually. However, in the 1980s, the country recorded a negative growth rates in her GDP. In the periods between 1988 and 1997 noted as the period of structural adjustment and economic liberalization, there was a positive growth in GDP in response to economic adjustment policies. In the years following independence, the industry and manufacturing sectors had a positive growth rates except for the period 1980-1988 where industry and manufacturing recorded a negative growth rate of - 3.2 per cent and - 2.9 per cent respectively.

In the periods between 1960-70 and 1970-78, an unsatisfactory growth rate was recorded. In the early 1960s, a low commodity prices hit the agricultural sector while the oil boom in the 1970s negatively impacted the agricultural sector.

The agricultural sector contribution to GDP recorded at 63 percent in 1960 dropped to 34 per cent in 1988 due to the neglect of the agricultural sector rather than an increase in the share of the industrial sector in the GDP. Thus, by 1975, the economy had become a net importer of basic food items. The subsequent increase in industry and manufacturing from 1978 to 1988 was as a result of the activities in the mining sub-sector, especially petroleum. Capital formation in the economy was rather unsatisfactory. The share of Gross domestic investment GDP recorded at 16.3 per cent and 22.8 per cent in the periods between 1965-73 and 1973-80 respectively fell to almost 14 per cent in 1980-88 and increased to 18.2 per cent in 1991 -98 and Gross National Saving mostly consisting of public savings especially during the period 1973-80 has been low. According to

World Bank development report the inflation rate in Nigeria was estimated at 14% in 1970, 34% in 1975, 10% in 1980 and 7% in 1985. This subsequently peaked at 55% in 1988 and 50% in 1989. In the 1990 the inflation rate declined to 7% and in 1995 it rose to a record level of 73%. With new democratic reforms in the Nigerian economy the inflation rate declined drastically to 7% in the 2000. In 2005 the inflation rate rose to 18% and peaked at 12% in 2009.

Unemployment has been one of the most critical economic problems the country is grappling with. Years of corruption, civil war, military rule, and economic mismanagement have hindered economic growth of the country and has worsened the country's unemployment crisis. The rate of unemployment in the country was estimated at about 19.7 percent in 2009 and about 21.1 percent in 2010.

The country's oil wealth has not translated into a tangible upliftment in living standards, due to decades of economic mismanagement and poor governance structure. In comparison to the early 1960s, agriculture, manufacturing and even services have all shrunk as a percentage of the gross domestic product (GDP) over the years. For example, the export of manufacturing goods per capita has halved. Furthermore, while foreign direct investment (FDI) has been largely prominent in oil and gas sectors, it has remained quit low in other sectors of the economy and is said to be of marginal developmental value. The return to democracy in 1999 was marked by a fundamental reorientation of economic policy, expressed in what is now known as Nigerian home grown Nigeria National Economic Empowerment and Development Strategy (NEEDS).

Following this development, the Government has been gradually withdrawing from direct involvement in commercial activity to embrace a private sector-led growth strategy. Foreign investors were fully welcome to participate in the process. Though their response has so far been significantly evident in the utilities and telecommunication sector, there are signs that FDI inflows have increased throughout the economy (OECD, 2009).

3.2 FDI in Nigeria

Nigeria has been described as one of the few countries in Africa that have consistently benefited from the FDI inflows. For instance the UNCTAD 2003 report showed that Nigeria is the continent's second top FDI recipient after Angola in 2001 and 2002 (Ayanwale, 2007). Having reported a negative FDI trend in 1980s, Nigeria FDI as a percentage of African FDI stood at 24.19 percent and 21.07 percent in 1990 and 1995 respectively. The table below shows Nigerian's FDI as a percentage of African FDI between 1980 and 2003.

Table 2: Net FDI Inflow (*US \$ Million*) [Source: UNCTAD FDI online Data Base]

| YEAR | AFRICA | NIGERIA | PARCENTAGE |
|-------------|---------------|----------------|-------------------|
| 1980 | 392 | (188.52) | - |
| 1990 | 2430 | 588 | 24.19 |
| 1995 | 5119 | 1079 | 21.07 |
| 1997 | 10667 | 1539 | 14.43 |
| 1998 | 8928 | 1051 | 11.72 |
| 1999 | 12231 | 1005 | 8.22 |

| | | | |
|-------------|-------|------|-------|
| 2000 | 8489 | 930 | 10.96 |
| 2001 | 18769 | 1104 | 5.88 |
| 2002 | 10998 | 1281 | 11.65 |
| 2003 | 15033 | 1200 | 7.98 |

A breakdown of Nigerian FDI flows between 1970 and 2009 is presented in the table below.

Table 3: Nigeria FDI Inflows as a Percent of SSA FDI

| YEAR | SUB-SAHARAN AFRICA | NIGERIA | PERCENTAGE |
|-------------|-------------------------------|----------------|-------------------|
| 1970 | 832 | 205 | 24.64 |
| 1975 | 1305 | 470 | 36.02 |
| 1980 | 257 | (-739) | - |
| 1985 | 987 | 486 | 49.24 |
| 1990 | 1658 | 1003 | 60.50 |
| 1995 | 4439 | 1271 | 28.63 |
| 2000 | 6813 | 1310 | 19.23 |
| 2005 | 28008 | 4978 | 17.77 |
| 2009 | 20933 | 5851 | 28.00 |

Source: UNCTAD STAT online Data Base

A close analysis of the table reveal that Nigerian's share of FDI as a percentage of Sub-Saharan African FDI inflows was 24.64 percent in 1970 and rose to 36.02 percent in 1975. However, Nigeria recorded negative FDI flows in 1980. This later improved in 1985 and stood at 49.24 percent as a share of Sub-Saharan African countries. In 1990, it rose to approximately 60.50 percent. The negative trend in FDI recorded between between 1970 and 1980 was the result of the indigenization policy of the government in 1972 and 1977 (OECD, 2009).

The analysis of table 2 also shows that Nigeria recorded a negative FDI inflows in 1995, 2000 and 2005. However in 2009 Nigerian's FDI inflow rose to approximately 28.00 percent as a share of Sub-Saharan FDI inflows.

The drastic decline in FDI between 1994 and 1995 can be attributed to the reversal of the SAP policies by the Nigerian Federal government. This SAP policy was meant to among other things liberalize the Nigerian economy and encourage foreign participation. According to Ekpo (1997) the decline in FDI in Nigeria in the periods noted can be attributed to economic crisis, volatility in exchange rate, declining productivity, under utilization of capacity and policy reversal resulting in uncertainties to potential investors.

3.2 Sectoral Composition of FDI

Table 4: Sectoral share of FDI (=N= million)

| Years | Mining | Manufacturing | Agriculture | Transport&Com | Building &const. | Trade | Miscellaneous |
|---------------------|---------------|----------------------|--------------------|--------------------------|---------------------------------|--------------|----------------------|
| 1970- 74 | 3812.5 | 1889.6 | 64.6 | 71.5 | 172.7 | 1252.5 | 209.5 |
| 1975- 79 | 3857.4 | 4426.6 | 354.5 | 185.7 | 873.7 | 2635.7 | 840.6 |
| 1980- 84 | 3391.4 | 9369.5 | 617.8 | 349.8 | 1939.1 | 7841.4 | 1619.6 |
| 1985- 89 | 9554.3 | 17254 | 635.2 | 560.7 | 2391.9 | 12378.3 | 2475.8 |
| 1990- | 61065.7 | 51722.7 | 3527.3 | 1861.2 | 5400 | 8757.2 | 48362.6 |

| | | | | | | | |
|------------------|-----------|-----------|----------|----------|----------|----------|-----------|
| 94 | | | | | | | |
| 1995-99 | 291586.9 | 159566.3 | 6045 | 3042.5 | 12561.3 | 31672.9 | 172450.8 |
| 2000-04 | 307889.5 | 263782 | 6045 | 10683.5 | 22241.6 | 70234.6 | 234032.5 |
| 2005-09 | 496113.5 | 896376.3 | 8394.73 | 45849.5 | 48026 | 180212.7 | 1525214.4 |
| 1970-2009 | 147,158.9 | 175,548.4 | 3,210.52 | 7,825.55 | 11,700.8 | 38,278.5 | 248,150.7 |

Source: CBN statistical Bulletin 2009

Table 5: percentage composition of FDI by sector

| Year | Mining& Quarrying | Manuf. | Agriculture | Transport& Communication | Building& Construction | Trading& Business | Miscella neous |
|---------------------|----------------------------------|---------------|--------------------|---|---------------------------------------|----------------------------------|---------------------------|
| 1970- 74 | 52.1 | 25.1 | 0.9 | 1.0 | 2.2 | 16.9 | 2.7 |
| 1975- 79 | 30.8 | 32.4 | 2.5 | 1.4 | 6.4 | 20.4 | 6.1 |
| 1980- 84 | 14.1 | 38.3 | 2.6 | 1.4 | 7.9 | 29.2 | 6.5 |
| 1985- 89 | 19.3 | 35.3 | 1.4 | 1.1 | 5.1 | 32.6 | 5.2 |
| 1990- 94 | 22.9 | 43.7 | 2.3 | 1.7 | 5.7 | 8.3 | 15.4 |

| | | | | | | | |
|------------------|------|-------|------|------|------|-------|-------|
| 1995-99 | 43.5 | 23.6 | 0.9 | 0.4 | 1.8 | 4.5 | 25.3 |
| 2000-04 | 34.7 | 27.6 | 0.7 | 1.1 | 2.5 | 7.6 | 26.0 |
| 2005-09 | 22.6 | 40.7 | 0.4 | 2.1 | 2.2 | 8.2 | 23.9 |
| 1970-2009 | 30 | 33.34 | 1.46 | 1.28 | 4.23 | 16.00 | 13.89 |

Source: CBN statistical Bulletin 2009

A review of the percentage composition of FDI by sector revealed that the agricultural sector, transport and communication as well as the building and construction sector remained the least attractive host of FDI in the Nigerian economy. The table revealed that on the average the percentage distribution of FDI in Nigerian between 1970- 2009 in the mining and quarrying sector was about 30 percent and 33.34 percent in the manufacturing sector. The average percentage composition of FDI in the agricultural sector for the period under consideration was only about 1.46 percent while the transport and communication sector attracted about 1.28 percent.

The building and construction sector, trading and business as well miscellaneous sector attracted 4.23, 16.00, 13.89 percentage distribution of FDI on average respectively between 1970 and 2009. However, it is pertinent to note that the communication sector in the Nigerian economy have succeeded in attracting the interest of foreign investors since 2001 as a result of the deregulation of the sector by the Nigerian government. Thus, Nigeria has been described as the fastest mobile telecommunication market in the world (Ayanwale, 2007).

An analysis of FDI inflows into the Nigerian economy has been said to be relatively stable over years. This according to Ayanwale (2007) implies that when a crisis erupts, FDI do not flee the country as easily as other more liquid forms of capital such as portfolio investment and debt.

Chapter 4

DATA AND METHODOLOGY

4.1 Introduction

In order to critically explore the determinants of Foreign Direct Investment in Nigeria for the period under study, this thesis will seek to critically and effectively examine the link between FDI and certain key variable which have been found to account for the flows of Foreign Direct Investment in Nigeria. These variables include the degree of openness of the Nigerian economy, real effective change rate and the rate of inflation in the Nigerian economy. These variables have been found to be co integrated and significant in explaining the inflows of Foreign Direct Investment in Nigeria.

In addition, the study will also examine the impact of certain structural breaks or rigidity in the Nigerian economy significant in explaining the flows of Foreign Direct investment in the country.

4.2 Methodology

This thesis utilizes the Co integration and Error Correction Mechanism (ECM) in explaining the determinant of Foreign Direct Investment in Nigeria based on empirical analysis. The error correction Mechanism according to Gujarati and Porter (2009) was first used by Sargan in 1984 and made popular by Engle and Granger to correct for disequilibrium. Co integration means that despite been individually non stationary, a

linear combination of two or more time series can be stationary. Thus the co integration of two or more times suggests that there is a long run relationship between them. The Error correction mechanism (ECM) is a means of reconciling the short run behaviour of the identified economic variables of the model with its long run behaviour.

4.2.1 Cointegration Process

Engle and Granger (1987) gave a formal definition of co integration among two variables.

A linear combination of Y_t and X_t can be obtained from estimating a regression

$$Y_t = \beta_1 + \beta_2 X_t + U_t \quad (4.2.1.1)$$

and taking the residuals;

$$\bar{U}_t = Y_t - \bar{\beta}_1 - \bar{\beta}_2 X_t \quad (4.2.1.2)$$

Thus if $U_t \sim I(0)$, then the variable Y_t and X_t are said to be co integrated. This means that if we consider a set of two variables that are integrated of order 1 i.e $\{Y, X\} \sim I(1)$ and suppose that there is a vector $\{\theta_1, \theta_2\}$ which gives a linear combination of $\{Y, X\}$ denoted by $\theta_1 Y_t + \theta_2 X_t = U_t \sim I(0)$ then the variable set $\{Y, X\}$ is called the co integration set, and the coefficient vector $\{\theta_1, \theta_2\}$ is called the co integrating vector. What we are interested in is the long run relationship, which for $Y_t^* = \beta X_t$. In order to see how this comes from the co integration method, we can normalize

$$\theta_1 Y_t + \theta_2 X_t = U_t \sim (0) \quad (4.2.1.3)$$

To give the following ; $Y_t = \frac{\theta_2}{\theta_1} X_t + e_t$, (4.2.1.4)

Where now $Y^* = \frac{\theta_2}{\theta_1} X_t$ which can be interpreted as the long run or equilibrium value of Y_t (conditional on the value of X_t).

If then Y_t and X_t are co integrated, by definition $\bar{U}_t \sim I(0)$. Thus we can express the relationship between Y_t and X_t with an ECM specification;

$$\Delta Y_t = a_0 + b_1 \Delta X_t - \pi \bar{U}_{t-1} + Y_t \quad (4.2.1.5)$$

This now have the merit of incorporating both long run and short run information. b_1 is the impact multiplier i.e the short run effect that measure the immediate impact that a change in X_t will have on a change in Y_t . π is the feedback effect or the adjustment effect that shows how much of the disequilibrium is being corrected.

$$\text{And } \bar{U}_t = Y_{t-1} - \hat{\beta}_t - \hat{\beta}_t X_{t-1} \quad (4.2.1.6)$$

from the equation 4.2.1.6 we have the β_2 being the long run response.

4.2.2 Cointegration and Error Correction Mechanism

The concepts of co integration and the error–correction mechanism (ECM) are very closely related. This gives a simple dynamic ARDL model describing the behaviour of Y in terms of X as follows;

$$Y_t = a_0 + a_1 Y_{t-1} + \gamma_0 X_t + \gamma_1 X_{t-1} + U_t \quad (4.2.2.1)$$

Where the residual $U_t \sim iid(0, \sigma^2)$. The parameter γ_0 denotes the short run reaction of Y_t after a change in X_t . The long run effect is given when the model is in equilibrium

$$\text{where: } Y_t^* = \beta_0 + \beta_1 X_t^* \quad (4.2.3)$$

$$\text{And for simplicity assuming that } X_t^* = X_t = \dots = X_{t-p} \quad (4.2.4)$$

$$\text{Then } Y_t^* = a_0 + a_1 Y_t^* + \gamma_0 X_t^* + \gamma_1 X_t^* + U_t \quad (4.2.5)$$

$$Y_t^*(1 - \alpha_1) = \alpha_0 + (\gamma_0 + \gamma_1)X_t^* + U_t \quad (4.2.6)$$

$$Y_t^* = \frac{\alpha_0}{1 - \alpha_1} + \frac{\gamma_0 + \gamma_1}{1 - \alpha_1} X_t^* + U_t \quad (4.2.7)$$

$$Y_t^* = \beta_0 + \beta_1 X_t^* + U_t \quad (4.2.8)$$

The long run elasticity between Y and X is captured by $\beta_1 = (\gamma_0 + \gamma_1)/(1 - \alpha_1)$. Here, we need to make the assumption that $\alpha_1 < 1$ in order that the short run model (4.2.2.)

converge to a long run solution.

We can then derive the ECM which is a re-parameterization of the original model

$$\Delta Y_t = \gamma_0 \Delta X_t - (1 - \alpha)[Y_{t-1} - \beta_0 - \beta_1 X_{t-1}] + U_t \quad (4.2.9)$$

$$\Delta Y_t = \gamma_0 \Delta X_t - \pi [Y_{t-1} - \beta_0 - \beta_1 X_{t-1}] + U_t \quad (4.2.10)$$

$$\Delta Y_t = \mu + \sum_{i=1}^{n-1} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{m-1} \gamma_i \Delta X_{t-1} - \pi \hat{\epsilon}_t + \epsilon_t \quad (4.2.11)$$

Where π is the error correction coefficient which tells us the speed of the adjustment, it tells us how much of the adjustment take place each period or how much of the equilibrium is corrected.

4.2.3 Testing for Co integration

This process is explained in stages (Asteriou and Hall, 2007)

Stage 1; test the variables for their order of co integration

By definition, cointegration implies that the variables be integrated of the same order.

The first step is then to test each variable to determine its order of cointegration. The Dickey-Fuller and the augmented Dickey-Fuller can be applied in order to infer the number of unit roots if any in each of the variables.

Stage 2; estimate the long run possible cointegration relationship

If the result of stage one indicates that both X_t and Y_t are integrated of the same order, the next step is to estimate the long run equilibrium relationship of the form:

$$Y_t = \beta_1 + \beta_2 X_t + e_t \quad (4.2.3.1)$$

and obtain the residuals of the equation.

If there is no cointegration, the result obtain will be spurious.

Stage 3; check for the order of integration of the residuals

In order to determine if the variables are actually cointegrated we denote the estimated residual sequence from this equation by e_t . Thus e_t is the series of the estimated residuals of the long run relationship. If this deviation from long run equilibrium are found to be stationary then X_t and Y_t are co integrated.

A Dickey-Fuller test is performed on the residual series to determine their order of integration.

Stage 4; estimate the error-correction model

Where the variables are co integrated, the residuals from the equilibrium regression can be used to estimate the error-correction model and to analyze the long run and short run effects of the variables. We can also see the adjustment coefficient which is the coefficient of the lagged residual terms of the long run relationship described in stage two above.

4.2.4 Unit Root Process

All series in econometric time series studies must be stationary. Stationary series implies a constant mean, same variance with mean normally and independently distributed over time, otherwise it is called a random walk or non stationary series. The unit root test whether a time series variable is non-stationary using an autoregressive model. Thus, the

difference between stationary and non stationary time series should be realized before examining the unit root process, Gujarati (1995).

The following model can be used to consider the unit root test;

$$Y_t = Y_{t-1} + \mu_t \quad (4.2.4.1)$$

Where μ_t is the stochastic error term that follows the classical assumption, namely, it has zero mean, constant variance (σ^2), and is none autocorrelated. Such an error term is also known as a white noise error term.

If the coefficient of Y_{t-1} is in fact equal to 1, we face what is known as the unit root problem, i.e. a non-stationary situation. Therefore, if we run the regression:

$$Y_t = \rho Y_{t-1} + \mu_t \quad (4.2.4.2)$$

And actually find $\rho = 1$, we say that the stochastic variable Y_t has a unit root. In (time series) econometrics, a time series that has a unit root is known as a random walk (time series). A random walk in turn is an example of a non-stationary time series. An alternative form of $Y_t = \rho Y_{t-1} + U_t$ is expressed as:

$$\Delta Y_t = (Y_t - Y_{t-1}) \quad (4.2.4.3)$$

Or

$$= \delta Y_{t-1} + U_t \quad (4.2.4.4)$$

Where $\delta = (\rho - 1)$ and where Δ , is the first difference operator. Note that $\Delta Y_t = (Y_t - Y_{t-1})$. However, the null hypothesis is that $\delta = 0$. If δ is in fact 0, we can write Eq. (3.9) as:

$$\Delta Y_t = (Y_t - Y_{t-1}) = U_t \quad (4.2.4.5)$$

Eq. (4.2.4.5) refers to the first difference of a random walk time series ($=U_t$) in a stationary time series because by assumption U_t is purely random.

According to Chou (2000) referring to Engle and Granger (1987); A stationary series by differencing d times is said to be integrated of order d . a time series X_t integrated of order d is denoted $X_t \sim I(d)$.

If $X_t \sim I(2)$, is the first difference of the first difference of X_t to achieve stationary;

$$\Delta \Delta X_t = \Delta(X_t - X_{t-1}) = (X_t - X_{t-1}) - (X_{t-1} - X_{t-2}) \quad (4.2.4.6)$$

The operation is termed second (order) differencing and the resulting series called second differences.

4.3 Model Specification

To investigate the nature of the long run determinants of Foreign Direct Investment inflows suggested in our model, we started by examining whether the series are co integrated. This implies that if there are any deviations from the long run equilibrium relationship the variables themselves will be stationary. Our reason for adopting the technique of co integration in this instance are; first, discovering that the variables are co

integrated allows for the use of error correction model (ECM) which should lead to the separation out of the long run and short run impact (Aqeel and Nishat,2005). Second, it ensures that the presence of co integration between the variable allow an OLS estimation in level yield super consistent parameter estimates. This should signify a stable long run relationship between the variables of our model.

According to Aqeel and Nishat (2005), an empirical work by Dickey, Jansen and Thornton (1991) indicates that a Johansen's (1998) maximum likelihood estimation of a Vector Auto regression (VAR) model is superior and suffices. Since using a stable equation model is problematic when we have more than one co integrating relationship exist.

4.3.1 Unit Root Test

To test for co integration, we began by verifying that all our variables are each individually non-stationary $I(1)$. In this regard we perform the unit root test for non-stationarity on the levels of the identified variables. The Augmented Dickey Fuller was utilized (ADF). The ADF with trend and intercept showed the existence of unit root and therefore non-stationarity in the level of FDI, REER, Openness, Inflation and the market size (RGDP). We found Interest to be stationary at level.

4.3.2 Cointegration Estimation; Johansen's Method

In order to identify a co integration relationship among our non-stationary variables, we employed the Johansen's co integration test approach. We started by specifying the relevant order of lags of the vector auto regressive model (VAR). The result of the rank and trace statistic based on the assumption of a linear deterministic trend obtained from the test indicates a co integration relationship between FDI, REER, Openness, market size and Inflation. This forms the basis of our model.

We specify the methodology for the estimation of the co integrating vector below;

$$X_t = A_0 + A_{1x_{t-1}} + A_{2x_{t-2}} + A_{3x_{t-3}} + A_{4x_{t-4}} + A_{5x_{t-5}} + e_{1t} \quad (4.3.2.1)$$

$$X_t = A_0 + A_{1x_{t-1}} + e_{2t} \quad (4.3.2.2)$$

$$\Delta X_t = A_0 + \pi X_{t-1} + \pi_{1\Delta} X_{t-1} + e_t \quad (4.3.2.3)$$

X_t = the $(n, 1)$ vector of the variables

A_0 = $(n, 1)$ matrix of the intercept terms

A_t = $(n, 1)$ matrices of the coefficients

e_{1t} and e_{2t} = $(n, 1)$ vector of error terms

4.3.3 Variance Decomposition

This is also known as the forecast error variance. It is an indication of the amounts of information each variable contributes to the other in a vector auto regression (VAR).

Variance decomposition determines the magnitude of the forecast error variable that can be explained by exogenous shock of the other variables in a VAR model. A shock to a variable of a model will indeed be transmitted to other variables through the dynamic structure of the VAR. Variance decomposition tells us how much of the s -step forecast error variance for a given variable is explained by innovation to each of the explanatory variable for $s = 1, 2, 3 \dots n$. It is usually the case that own series shock often explain most of the variance in the forecast error in a VAR system. Understanding the properties of the forecast error is important in unraveling the relationship among the variable in a model. The forecast error can be described in terms of (ϵ_t) sequence.

$$x_{t+n} = \mu + \sum_{i=0}^{\infty} \Phi_i \epsilon_{t+n-i} \dots$$

4.3.4 Impulse Response Function

An impulse response function describes the reaction of a dynamic system in response to some exogenous shock. The impulse response shows the response of the system as a function of time or the function of certain endogenous variable that parameterizes the dynamic behaviour of the system.

In macroeconomic modeling, an impulse response describes how the economy tends to react over a period of time to some external impulses which are exogenous shocks to the model. It is thus modeled in the context of a vector autoregression. Hence it presents the reaction of the endogenous macroeconomic variables at the time of the shock and over a subsequent time period. The impulse response in a VAR system is given by;

$$y_t = \sum_{i=0}^{\infty} b^i \epsilon_{t-i} \quad (4.3.4.1)$$

The impulse response and variance decomposition are jointly refer to as innovation accounting. They present an important mechanism to examine the correlation among economic variables. If the observed correlation in the various innovations are insignificant, the alternative ordering should yield a similar impulse response and variance decomposition.

Chapter 5

ANALYSES OF THE MODEL AND EMPIRICAL RESULT

5.1 Introduction

We begin the analysis of the model by first presenting the definition of the variables of the model based on empirical research. We identify and adopt the following variable as important determinants of FDI in Nigeria based on the empirical study surveyed. These are real effective exchange rate, inflation rate, openness of the economy, market size and interest rate. We also include two dummy variables to capture the effect of significant structural breaks in the Nigerian economy.

5.2 Definition of Variables

5.2.1 Market Size

A number of study surveyed emphasize the significance of the market size in explaining the determinants of FDI inflow in an economy (chakrabati, 2001; Ajayi, 2004; Cleeve, 2004; Astatike and Assafa, 2005; Lvna and Highfoot, 2006; Dinda, 2009; Ibrahim and Sadiat, 2009, Nurudeen,2010). In countries with large market size such as Nigeria particularly for the market seeking FDI, we expect the stock of FDI to be large and significant as a measure of the country RGDP. This should hold true when the country exploit the merit of import-substituting investment (Ajayi, 2006). Following the example of other numerous studies, we adopt RGDP as a proxy for the market size.

5.2.2 Openness of the economy

This is also mentioned in literature as key in attracting and determining FDI inflow in a country (Chakrabati, 2001; Asiedu, 2002; Ajayi, 2004; Haile and Assefa, 2006; Halen and Glanhuigi, 2007; Rusikee, 2007; Ayanwale, 2007; Demirhan and Masca, 2008; Dinda, 2009; Ibrahim and Sadiat, 2009; Nurudeen, 2010). We define the openness variable as presented in most literature surveyed as the ratio of export and import to RGDP. The significance of the variable depends on how open the economy tends to be. The more open the economy, the more the significance of the openness variable in the model.

5.2.3 Macroeconomic Risk Factors in Terms on Exchange Rate and Inflation Rate

The factors are also mentioned in the FDI literature as important determinants of FDI. However, there are mixed evidences of the significance of exchange rate and inflation in determining FDI inflows. Evidences generally suggest that a low inflation rate and stable exchange rate are significant in attracting FDI inflows. We define exchange rate in terms of its real value as the real effective exchange.

5.2.4 1980s Dummy Variable

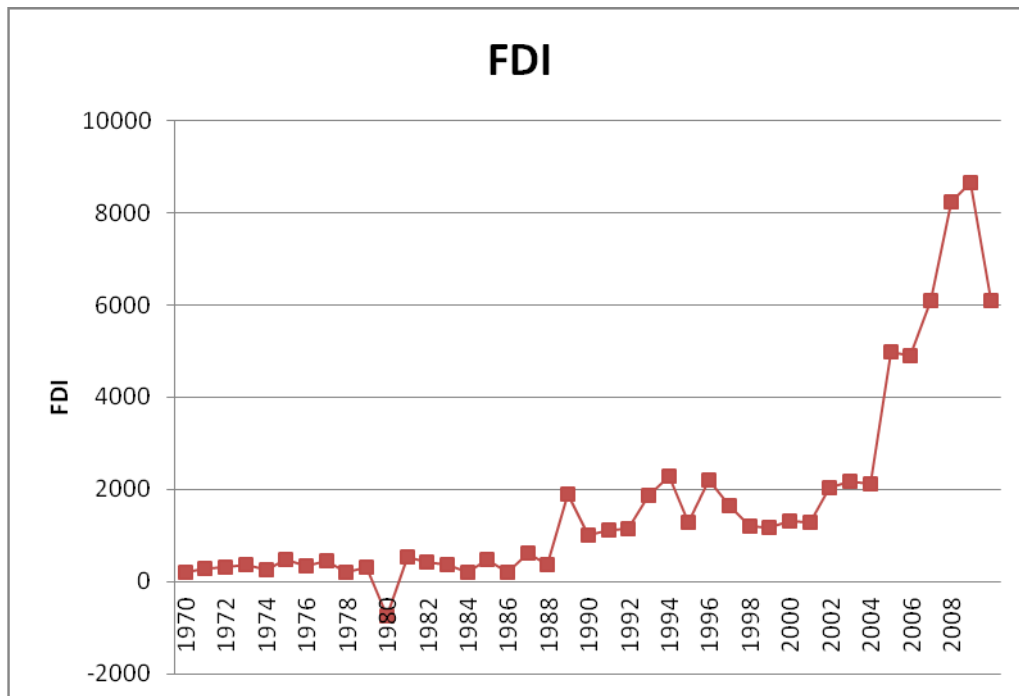
We adopt a dummy for 1980 to capture the impact of a structural break occasioned by a negative FDI trend in country to estimate the impact of the outlier observed in the model. This marks a significant contribution of this thesis to the existing pool of literature on FDI in Nigeria.

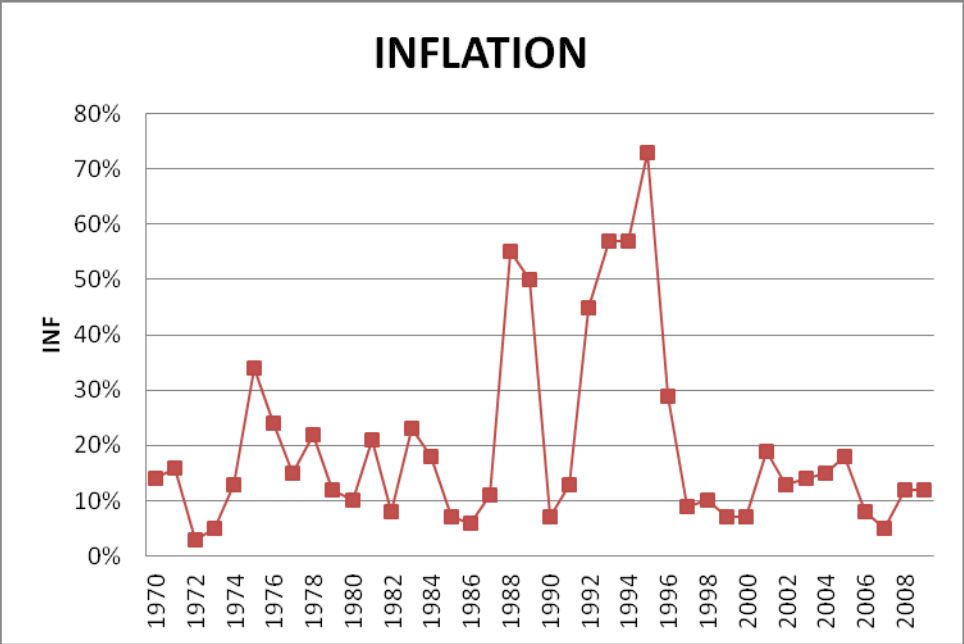
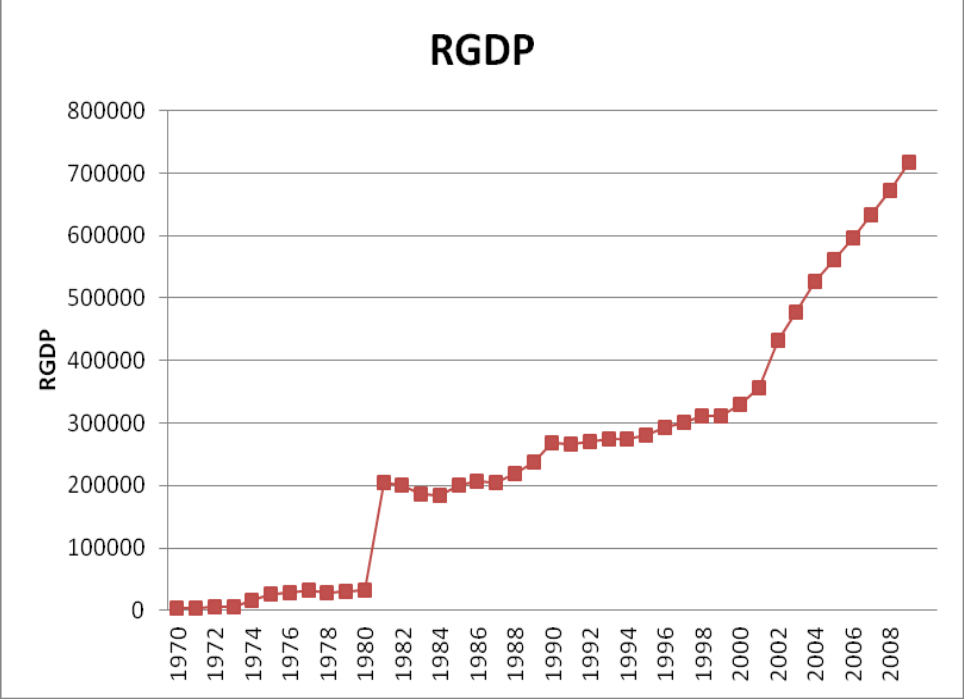
5.2.5 Deregulation Variable

Consistent with most FDI literature surveyed, we equally reckon with the deregulation effect in explaining the determinants of FDI inflow in Nigeria. This variable is defined

as a dummy to capture the liberalization of the Nigerian economy between 1986 and 1988(UNCTAD, 2009). The variable in effect captures the impact of the IMF monitored structural adjustment programme (SAP) in Nigerian in explaining FDI inflow into the country.

5.2.6 Graphical Representation of Model Variables





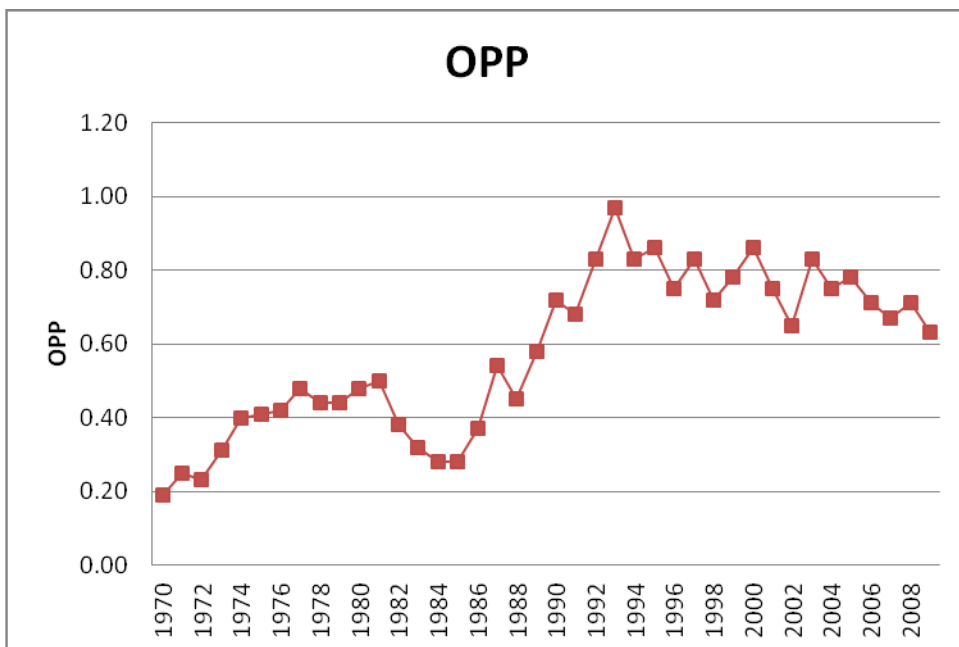
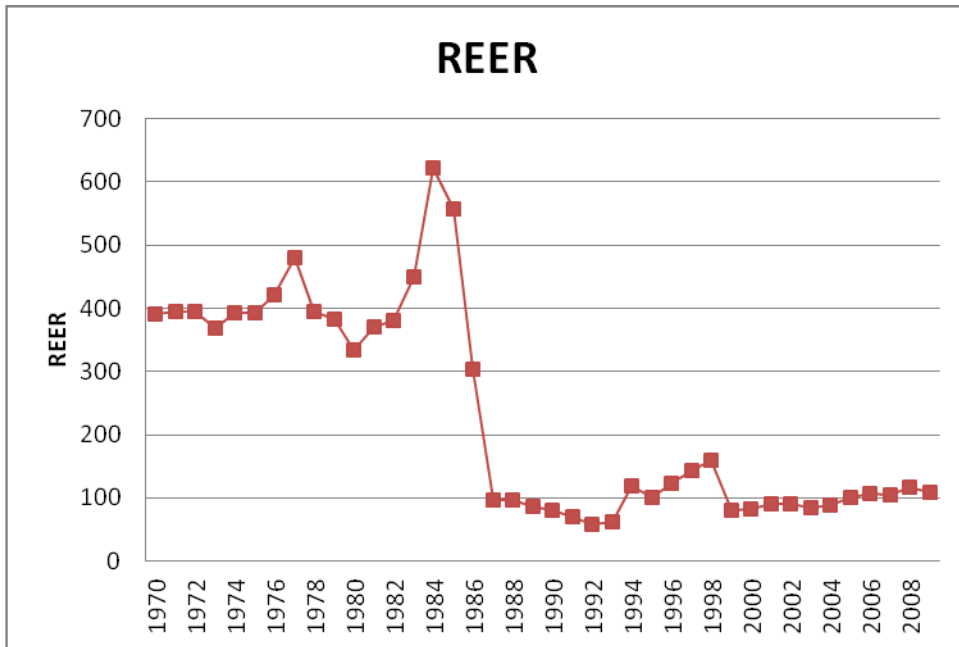


Figure 1: Graphical Representation of the model Variables

5.3 Source of Data

This thesis utilizes an annual data between 1970 and 2009. The data on FDI inflows is obtained from the UNCTAD data base expressed in dollar terms. For the purpose of this study, it is converted to the Nigerian naira by deflating it with the real exchange rate for periods under study. This is to allow for consistency in terms of monetary unit with other variable of the model.

Data on real effective exchange rate, RGDP, export and import are obtained from the Nigerian Central Bank statistical bulletin. The data on inflation is obtained from the World Bank development indicator defined as percentage of annual consumer price.

5.4 Unit Root Result

We begin the analysis of the model by first presenting the result of the unit root test for stationarity. Table 5 summarizes the result based on the Augmented Dickey-Fuller approach (ADF) for trend and intercept. The result indicates that the null hypothesis of unit root in the variables is not rejected and P-value is significant in all cases.

Table 6: ADF Test

| VARIABLE | ADF STATISTIC | TEST-CRITICAL VALUE | P-VALUE |
|-----------------|----------------------|--------------------------------|----------------|
| FDI | -3.107828 | 1% -4.211868 | 0.1187 |
| | | 5% -3.529758 | |
| | | 10% -3.196411 | |
| INF | -3.105601 | 1% -4.211868 | 0.1192 |
| | | 5% -3.529758 | |
| | | 10% -3.196411 | |
| REER | -3.250025 | 1% -4.219126 | 0.0903 |
| | | 5% -3.533083 | |
| | | 10% -3.198312 | |
| OPP | -1.136659 | 1% -4.211868 | 0.9094 |
| | | 5% -3.529758 | |
| | | 10% -3.196411 | |
| RGDP | -0.823212 | 1% -4.21186 | 0.9545 |
| | | 5% -3.529758 | |
| | | 10% -3.19611 | |

Source; E-views Estimation

5.5 Cointegration and Vector Error Correction Result

The cointegration and Vector error correction result is obtained using JMulti© estimation. JMulti is a time series package for econometrics analysis. We found one cointegration relationship among our variables suggesting that despite being individually non-stationary, the linear combination of our variables is stationary. This means that they have a long run relationship. The vector error correction mechanism is then applied to reconcile the short-run behaviour of the model with its long-run properties. In order to avoid scaling problem, we utilize Log transformation for some variable of the model such as FDI, RGDP and REER. Hence we have LOGFDI, LOGRGDP and LOGREER.

5.6 Vector Error Correction Model Specification

$$\Delta Y_t = \pi Y_{t-1} + \pi_1 \Delta Y_{t-1} + BX_t + C^* D^*_t + U_t \quad (5.6.1)$$

$$\begin{bmatrix} \Delta LOGY_{1,t} \\ \Delta LOGY_{2,t} \\ \Delta LOGY_{2,t} \\ \Delta Y_{4,t} \\ \Delta Y_{5,t} \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \\ \alpha_4 \\ \alpha_5 \end{bmatrix} [\beta_1 \quad \beta_2 \quad \beta_3 \quad \beta_4 \quad \beta_5] \begin{bmatrix} LOGY_{1,t-1} \\ LOGY_{2,t-1} \\ LOGY_{3,t-1} \\ Y_{4,t-1} \\ Y_{5,t-1} \end{bmatrix} +$$

$$\begin{bmatrix} \pi_{1,11} & \pi_{1,12} & \pi_{1,13} & \pi_{1,14} & \pi_{1,15} \\ \pi_{1,21} & \pi_{1,22} & \pi_{1,23} & \pi_{1,24} & \pi_{1,25} \\ \pi_{1,31} & \pi_{1,32} & \pi_{1,33} & \pi_{1,34} & \pi_{1,35} \\ \pi_{1,41} & \pi_{1,42} & \pi_{1,43} & \pi_{1,44} & \pi_{1,45} \\ \pi_{1,51} & \pi_{1,52} & \pi_{1,53} & \pi_{1,54} & \pi_{1,55} \end{bmatrix} \begin{bmatrix} \Delta LOGY_{1,t} \\ \Delta LOGY_{2,t} \\ \Delta LOGY_{2,t} \\ \Delta Y_{4,t} \\ \Delta Y_{5,t} \end{bmatrix} + \begin{bmatrix} X_{1,11} & X_{1,12} & X_{1,13} \\ X_{1,21} & X_{1,22} & X_{1,23} \\ X_{1,31} & X_{1,32} & X_{1,33} \\ X_{1,41} & X_{1,42} & X_{1,43} \\ X_{1,51} & X_{1,52} & X_{1,53} \end{bmatrix}$$

$$\begin{bmatrix} D86,88_t \\ D80_t \\ const \end{bmatrix} + \begin{bmatrix} U_{1,t} \\ U_{2,t} \\ U_{3,t} \\ U_{4,t} \\ U_{5,t} \end{bmatrix}$$

5.7 Estimated Model Result

$$\begin{bmatrix} \Delta LOGY_{1,t} \\ \Delta LOGY_{2,t} \\ \Delta LOGY_{2,t} \\ \Delta Y_{4,t} \\ \Delta Y_{5,t} \end{bmatrix} = \begin{bmatrix} -0.302 \\ -0.017 \\ -0.007 \\ -0.032 \\ 0.022 \end{bmatrix} \begin{bmatrix} 1.000 & -2.074 & -0.995 & -0.311 & -27.451 \end{bmatrix} \begin{bmatrix} LOGY_{1,t-1} \\ LOGY_{2,t-1} \\ LOGY_{3,t-1} \\ Y_{4,t-1} \\ Y_{5,t-1} \end{bmatrix} + \begin{bmatrix} -0.514 & -3.492 & 2.800 & -0.347 & -3.556 \\ 0.012 & -0.0333 & -0.051 & 0.022 & -0.183 \\ -0.084 & -0.294 & 0.0578 & 0.000 & -0.123 \\ 0.121 & -0.121 & -1.166 & -0.161 & -0.984 \\ -0.021 & 0.057 & 0.101 & -0.007 & 0.334 \end{bmatrix} \begin{bmatrix} \Delta LOGY_{1,t} \\ \Delta LOGY_{2,t} \\ \Delta LOGY_{2,t} \\ \Delta Y_{4,t} \\ \Delta Y_{5,t} \end{bmatrix} + \begin{bmatrix} -0.677 & -15.104 & -3.485 \\ -0.772 & -0.161 & -0.203 \\ -0.130 & -0.002 & -0.029 \\ -0.859 & -0.746 & 0.412 \\ 0.186 & 0.013 & 0.248 \end{bmatrix} \begin{bmatrix} D86_t \\ D80_t \\ const \end{bmatrix} + \begin{bmatrix} U_{1,t} \\ U_{2,t} \\ U_{3,t} \\ U_{4,t} \\ U_{5,t} \end{bmatrix}$$

Table 7: VECM Result

| | LFDI | LREER | LRGDP | OPP | INF | D86,88 | D80 | CONST |
|-------------|------|----------|----------|----------|----------|----------|-----------|----------|
| VEC Eq | 1 | -2.074 | -0.995 | -0.311 | -27.451 | -0.677 | -15.104 | -3.485 |
| Std Error | | (0.848) | (0.416) | (0.104) | (3.217) | (1.130) | (1.433) | (0.799) |
| t-statistic | | [-2.446] | [-2.390] | [-2.995] | [-8.534] | [-0.599] | [-10.537] | [-4.362] |

The existence of a cointegration relationship among the variables of our model further provides evidence in support of most empirical literature on the significance of the model variables in explaining the long-run determinants of FDI inflows into the Nigerian economy.

The table above indicates that when the VEC equation is normalized on LFDI, we can safely transfer all other variables of the model to the right hand side. Hence we observe a

steady speed of adjustment of FDI to its long run equilibrium level at about 30 % on the average. LREER is positive which means that in the long run domestic currency depreciates. This means that in the long run, a stable exchange is essential in attracting FDI inflow. LRGDP is also positive which indicates that in the long-run the size of the Nigerian economy in terms of her market is essential in attracting FDI inflows. Specifically, its show that a 1% expansion in the size of the Nigerian market, all other things been equal FDI inflow should increase by 99.5%.

The model result also indicates that the openness of the Nigerian economy in terms of its liberalization remains a significant and positive attraction of FDI inflows in the long-run. The model further suggests that a high inflation rate in the long-run is a negative determinant of FDI. Thus a stable exchange rate and low or moderate inflation should signal a positive incentive to FDI. The deregulation dummy indicates the positive effect of deregulation of Nigerian economy in the long-run. It indicates that FDI inflows should increase significantly in the country over the long-run period. The positive sign of the 1980 dummy and its significant t-value justifies its inclusion in the model. It provides explanation for the break in the FDI inflows for the period due to the effect of the Nigerian government nationalization and indigenization policy vigorously pursued in the 1970's.

The constant term in the model is also significant and positive and might be attributable to the average of other factors in explaining FDI inflows such as political stability in the country.

5.8 Impulse Response and Variance decomposition

The impulse response and the forecast error variance are estimated using the JMulti[©] estimation technique. The impulse response result is presented over a 20 year period. That is over a 20 point estimate period. It indicates that LFDI response to itself is quite persistent. This means that considering the sign and magnitude of the innovation any shock to LFDI should have positive impact and the effect of the shock will remain significant over time. Shock to LFDI in response to OPP, INF and LRGDP are all positive and quite stable after the effect of their initial shocks but in response to OPP seems more persistent over time if own shock is ignored. The shock to LFDI in response to LREER is negative and persistent and does not die down quickly overtime. The impact of the innovations is presented in the table below.

Table 8: Impulse Response Result

| | <u>LFDI</u> | <u>LFDI</u> | <u>LFDI</u> | <u>LFDI</u> | <u>LFDI</u> |
|--------------------------|-------------|--------------|--------------|-------------|-------------|
| <i>Time</i> | <i>LFDI</i> | <i>LREER</i> | <i>LRGDP</i> | <i>OPP</i> | <i>INF</i> |
| Point estimate | 1.3940 | -0.0692 | 0.0781 | 0.2117 | 0.0333 |
| 1 point estimate | 0.8011 | -0.0434 | 0.0184 | 0.2159 | 0.0281 |
| 2 point estimate | 0.8552 | -0.0555 | 0.0268 | 0.2136 | 0.0349 |
| 3 point estimate | 0.8944 | -0.0512 | 0.0303 | 0.2083 | 0.0345 |
| 4 point estimate | 0.8848 | -0.0517 | 0.0282 | 0.2110 | 0.0333 |
| 5 point estimate | 0.8933 | -0.0510 | 0.0281 | 0.2136 | 0.0325 |
| 6 point estimate | 0.8844 | -0.0511 | 0.0272 | 0.2146 | 0.0323 |
| 7 point estimate | 0.8843 | -0.0512 | 0.0274 | 0.2143 | 0.0326 |
| 8 point estimate | 0.8837 | -0.0513 | 0.0275 | 0.2138 | 0.0327 |
| 9 point estimate | 0.8847 | -0.0513 | 0.0276 | 0.2136 | 0.0328 |
| 10 point estimate | 0.8850 | -0.0513 | 0.0276 | 0.2136 | 0.0327 |
| 11 point estimate | 0.8851 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 12 point estimate | 0.8850 | -0.0513 | 0.0276 | 0.2138 | 0.0327 |
| 13 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2138 | 0.0327 |
| 14 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 15 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 16 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 17 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 18 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 19 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |
| 20 point estimate | 0.8849 | -0.0513 | 0.0276 | 0.2137 | 0.0327 |

Source; VECM Orthogonal Impulse Response

5.8.1 Variance decomposition

Table 9: Proportions of forecast error in "LFDI" accounted

| Forecast horizon | LFDI | LREER | LRGDP | OPP | INF |
|-------------------------|-------------|--------------|--------------|------------|------------|
| 1 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 0.82 | 0.00 | 0.09 | 0.02 | 0.07 |
| 3 | 0.64 | 0.08 | 0.12 | 0.02 | 0.15 |
| 4 | 0.61 | 0.07 | 0.15 | 0.01 | 0.16 |
| 5 | 0.60 | 0.07 | 0.17 | 0.01 | 0.15 |
| 6 | 0.60 | 0.06 | 0.19 | 0.01 | 0.15 |
| 7 | 0.59 | 0.06 | 0.20 | 0.01 | 0.15 |
| 8 | 0.59 | 0.05 | 0.21 | 0.01 | 0.14 |
| 9 | 0.58 | 0.05 | 0.22 | 0.01 | 0.14 |
| 10 | 0.58 | 0.05 | 0.23 | 0.01 | 0.14 |
| 11 | 0.58 | 0.05 | 0.23 | 0.01 | 0.14 |
| 12 | 0.58 | 0.05 | 0.24 | 0.00 | 0.14 |
| 13 | 0.58 | 0.05 | 0.24 | 0.00 | 0.13 |
| 14 | 0.57 | 0.05 | 0.24 | 0.00 | 0.13 |
| 15 | 0.57 | 0.05 | 0.25 | 0.00 | 0.13 |
| 16 | 0.57 | 0.04 | 0.25 | 0.00 | 0.13 |
| 17 | 0.57 | 0.04 | 0.25 | 0.00 | 0.13 |
| 18 | 0.57 | 0.04 | 0.25 | 0.00 | 0.13 |
| 19 | 0.57 | 0.04 | 0.25 | 0.00 | 0.13 |
| 20 | 0.57 | 0.04 | 0.26 | 0.00 | 0.13 |

Source: VECM Forecast Error Decomposition

The table present the forecast error of the variables of the model as obtained from the estimation.

It shows the proportion of the forecast error variance that is associated with its own shocks and shocks or innovation to other variables of the model. We generally expect own shock to account for the largest variation of the forecast error in the model. On the average over 60 percent of the own innovation explain the variation in the model. If we ignore own innovation in the system, we observed that RGDP account for the major variation in the system over the forecast periods. It account for about 25 percent variation in the forecast error. The shock of the model in response to INF and REER are positive over the forecast period and cannot be neglected. The innovation in the model in response to OPP is significant and positive however it is very small and negligible over some estimate periods.

5.9 Summary of Result

A significant long-run relationship was found among the variables of the model which confirm the result of existing literature on FDI. The model diagnostic test also confirms the significance of the variables of the model. The result of the various test are presented in the appendix section of this study. We found a significant portmanteau test statistic at 1% and 5% respectively which indicates that the data set of the model variables match the estimated model. We also found a significant test statistic for the LM-Autocorrelation and ARCH-LM test. This LM-Autocorrelation request confirm the absence of serial autocorrelation in the innovation terms and hence no specification error in our model. The non-normality and Jarque-Bera test statistic suggest the possibly

inclusion of more dummy variable in the model. We however proceed to estimate the model on the basis of two dummy variables due to the inconsistencies in the Nigerian government policies and difficulty in defining the cause of certain outlier at some point in the series.

We found our data to be non-stationary on the basis of the unit-root test statistic using the ADF approach for intercept and trend. This gave us the justification to apply the Johansen co integration technique upon which we establish that despite observing non-stationarity, the linear joint combination of our series was stationary. We found a significant eigenvalue indicating a significant co integration relationship. A cointegration relationship was then established suggesting a long-run relation among the variables of our model. We then proceed to utilize the vector error correction technique to reconcile the short-run property of the model with its long-run relationship and we found a significant and steady speed in the adjustment process.

Chapter 6

CONCLUSIONS AND POLICY RECOMMENDATION

6.1 Conclusion

The central objective of this research thesis has been to empirically investigate the determinants of FDI inflow in Nigeria. We observe a positive and significant long-run relationship among the variables of our model which confirm the result of existing literature on FDI.

The estimated VECM result provides evidence in support of the empirical determinants of FDI inflows in Nigeria on the basis of the variable employed in the estimation process. We established evidence in support of a weak domestic currency in attracting FDI. Dinda (2005) also report evidence in support of a weak currency. Our result also provides evidence which indicates that in the long-run the size of Nigerian domestic market is very significant in attracting FDI inflows. This singular variable tends to explain a large amount of FDI inflows into the Nigerian economy in the long-run period. This may possibly be attributed to the fact that investment opportunities in economies with large target market tend to more profitable than those of smaller economies. This is particularly true for market seeking FDI. The estimated model also provides evidence in support of the liberalization or openness of the economy as a potent factor in attracting FDI inflows in Nigeria. This evidence provide support for the effort of the Nigerian

government to encourage sustained investment from foreign investors through policies that were aimed at market and trade liberalization. The result obtained further provides evidence for higher inflation in the long-run in the country. This may possibly be due to the effect of a weak domestic currency which may be the result of high volume of domestic money supply and the expansion in the economy. However, a weak domestic currency may attract more capital in the domestic economy, but a high inflation can increase the cost of business for foreign investors. This is because it may lead to an increase in the cost of factor inputs in the country.

The exogenous dummies included in the model were also found to be positive. The positive coefficient of the dummies justifies its inclusion in the model. The 1980 dummy provide sufficient explanation for the break in that year due to the outflows of FDI from the Nigerian economy. This it is attributable to the nationalization and indigenization policies of the government pursued in 1970's. The 1986/88 dummy also provide support for the IMF tailored structural reform programme in the Nigerian economy. It is also consistent with the measure taken in the attempt by the Nigerian government to rejuvenate the economy for sustained investment and growth. To achieve this, the government embarked on a Structural Adjustment Programme (SAP). The programme incorporated privatization, market liberalization trade and exchange reforms reinforced by monetary and fiscal measures which were geared towards diversifying the mono-export base of the Nigerian economy and attracting foreign investment (Ayanwale,2007; udoh and Egwaikhide ,2008;OECD, 2009).

The constant term in the model is also significant and positive and may possibly be attributable to the average of other factors in explaining FDI inflows such as political stability in the country.

For example Asiedu (2005) remark indicate that large local markets, natural resource endowments, good infrastructure, low inflation, an efficient legal system and a good investment framework all tend to promote FDI and conversely, corruption and political instability have the opposite effect.

This empirical study on the long-run determinants of FDI further provides evidence in support of the merit of FDI in bridging the gap in domestic saving and conveying great advantages to its host economy. The implication of this is that a sustainable FDI policy in Nigeria and a sustained and significant attraction of FDI into the Nigerian economy should allow for the greater integration of the country into the global economic and financial system and making the Nigerian economy much more competitive at the global economic arena. This should have a positive impact on employment, wealth creation and export stimulation in the country. The benefit of FDI inflows in terms of technological capabilities and efficiency spillover to Nigerian indigenous industries could also serve as a spring board for the growth and increase productivity in the Nigerian manufacturing sub-sector which has hitherto remained dormant and less competitive with other manufacturing industries in developed economies. The Nigerian economy should also witness significant reduction in foreign exchange shortages and significant improvement in her balance of payment position via the massive and sustained inflow of FDI.

6.2 Policy Recommendations

The oil industry or sector in Nigeria has dominated FDI inflows in the country since the 1970's while the inflows in the non-oil sector was hampered by restriction in favour of nationalization up until the 1990's when it was relaxed and coupled with an unattractive business climate as well as political and economic uncertainties. This research thesis recommends a sustained FDI policy and appropriate strategies and framework to continuously make the Nigerian economy an investment hub and hence attracting more FDI given the unprecedented inflows recorded in recent times. For instance, Nigeria has continued to be dominant recipient of FDI in West Africa and among the top three recipients in the continent.

The present Nigerian government is playing an appreciable role in attracting FDI inflow into the country having made FDI attraction a core of its foreign policy agenda. In the light of this effort, this study recommends the need to vigorously pursue trade liberalization policy in such a way that the domestic economy is not hampered and the openness of the economy is guaranteed and sustained as a potent and deliberate effort to attract FDI inflows especially in the manufacturing, agricultural and other non-oil sub-sectors of the Nigerian economy.

This thesis also recommends a sustainable macroeconomic management policies and to curb uncertainties within the Nigerian domestic economy as uncertainties tend to hamper FDI inflows.

In terms of FDI inflow absolute stock, Nigerian remains next only to South Africa with \$63 and \$93 billion FDI stock respectfully (UNCTAD, 2009). However in terms of per capita comparism, its relative underperformance is evident. Nigerian FDI stock at par is only \$424 compared to African average of \$405 and even smaller that of South Africa and Egypt and that of other oil producing countries. This research study therefore recommends that the Nigerian government implement sustainable policies and programmes that will allow the generality of its citizens to benefit from the positive welfare advantages of FDI inflow to the country.

Furthermore, FDI to Nigeria is a key contributor to the nation's economy capital formations. Between 2001 and 2007 for instance, it accounted for well over half of the gross fixed capital formation (GFCF) compared to an average of about 15% in the rest of Africa and 12% for other developing countries taken as a group (UNCTAD, 2009). Hence in view of the above, this thesis recommends that the value added in the Nigerian economy via FDI inflows be judiciously utilize in upgrading infrastructure particularly power and energy and other social amenities. This should along way to reduce the cost of doing business in Nigeria and could transform the country to a significant investment hub in Africa.

Although a more extensive analysis on the impact of FDI on the overall Nigerian economy is not possible because of data insufficiency, this research thesis recommends that FDI inflows should be translated into much more better standard of living, wealth creation and employment generation through sustainable and effective trade policies while guaranteeing the foreign investors a good return on their investment.

The Nigerian government has signed 22 Bilateral Investment Promotion and Protection Agreement since the 1990 with only 4 in force. The thesis further recommends a quick negotiations and ratifications of other pending BIPPA to stimulate and enlarge the stock of Nigerian FDI inflows.

The advanced fee fraud known as '419' is a known international financial scam which bilks huge amount annually and impact negatively on Nigeria's image internationally. Its severeness and pervasive nature has serious detrimental consequence on the Nigerian economy. It diminishes FDI inflows to Nigeria and makes it difficult prospecting for genuine investors. This study recommends the strengthening and re-positioning of the Nigerian financial and economic crimes commission (EFCC) to effectively deal with international financial scam which impedes FDI inflows to the country.

Furthermore, Nigerian is a signatory to the World intellectual Property Organization, Universal Copyright Convention, the Bern Convention, the Paris and Rome convention yet intellectual property infringement is a serious problem in the country and the country is describe as the largest counterfeiting market in Africa. The effect of these is a negative impact on the flows of FDI into the country. The thesis recommends that credible steps be taken to curb this practice and guarantee potential foreign investors a safe guard for their intellectual property. This will ensure the increased inflows of FDI to Nigeria.

The function of setting appropriate strategy, policy advocacy, country repackaging and marketing as well as investor support are generally accepted as important parts of FDI

policy (UNCTAD, 2009). For example the establishment of the Nigerian Investment Promotion Council (NIPC) in 1995 was in recognition of these. In this light, the study recommends a re-strengthening and re-positioning of FDI related institutions in the country to effectively pursue government investment strategies as relates to FDI attraction. Also the Nigerian Export Expansion Grant scheme which remains a vital incentive for the stimulation of export oriented economic activities in the non-oil sector be enlarged to effectively position the Nigerian economy to benefit from the perceived weakness of the domestic currency and while it pursue FDI attraction policies.

Nigeria has underperformed in attracting FDI compare to other economies of its size and resource abundance. This relates to the challenging and difficult investment environment, the long background of military, political and economic instabilities and the country image problem. With the return to democracy in 1999, the need to attract FDI inflow to the country took an added urgency. Hence we recommend a continuous commitment to sound democratic norms and good governance based on international best practice.

Finally, recommendations to strengthen the investment environment by reducing the obstacles to doing business, improving economic management, stemming the tide against international financial crimes, repositioning investment agencies and export promotion schemes, strengthening intellectuals property and commitment to democratic principles have been advocated in this research thesis as significant in attracting FDI .This is important to overcome barriers to FDI inflows and increase Nigerian's share of FDI as a substantial percentage of world FDI stock.

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APPENDICES

Appendix A: MODEL VARIABLES

| obs | FDI | INF | OPP | REER | RGDP |
|------|----------|------|----------|--------|----------|
| 1970 | 2052737 | 0.14 | 0.389213 | 390.31 | 4219 |
| 1971 | 2833787 | 0.16 | 0.503086 | 394.22 | 4715.5 |
| 1972 | 3020799 | 0.03 | 0.495483 | 394.61 | 4892.8 |
| 1973 | 3957560 | 0.05 | 0.659736 | 368.43 | 5310 |
| 1974 | 2550236 | 0.13 | 0.473131 | 393.83 | 15919.7 |
| 1975 | 4683248 | 0.34 | 0.318232 | 392.27 | 27172 |
| 1976 | 3145685 | 0.24 | 0.408268 | 421.18 | 29146.5 |
| 1977 | 4295605 | 0.15 | 0.46714 | 480.86 | 31520.3 |
| 1978 | 2087931 | 0.22 | 0.488701 | 394.61 | 29212.4 |
| 1979 | 3152203 | 0.12 | 0.61137 | 383.67 | 29948 |
| 1980 | 0 | 0.1 | 0.738025 | 334 | 31546.8 |
| 1981 | 4912756 | 0.21 | 0.116278 | 371 | 205222.1 |
| 1982 | 3919696 | 0.08 | 0.095034 | 380 | 199685.3 |
| 1983 | 3317817 | 0.23 | 0.088396 | 450 | 185598.1 |
| 1984 | 1671067 | 0.18 | 0.088614 | 622 | 183563 |
| 1985 | 4860674 | 0.07 | 0.093433 | 557 | 201036.3 |
| 1986 | 3723428 | 0.06 | 0.072361 | 304 | 205971.4 |
| 1987 | 41487118 | 0.11 | 0.235453 | 97 | 204806.5 |
| 1988 | 29203118 | 0.55 | 0.239401 | 97 | 219875.6 |
| 1989 | 2.12E+08 | 0.5 | 0.375244 | 87 | 236729.6 |
| 1990 | 76183538 | 0.07 | 0.581589 | 81 | 267550 |
| 1991 | 1.12E+08 | 0.13 | 0.795178 | 70 | 265379.1 |
| 1992 | 2.4E+08 | 0.45 | 1.285214 | 58 | 271365.5 |
| 1993 | 4.53E+08 | 0.57 | 1.398664 | 63 | 274833.3 |
| 1994 | 6.62E+08 | 0.57 | 1.339072 | 118 | 275450.6 |
| 1995 | 1.46E+09 | 0.73 | 6.061636 | 100 | 281407.4 |
| 1996 | 2.03E+09 | 0.29 | 6.373445 | 123 | 293745.4 |
| 1997 | 1.9E+09 | 0.09 | 6.911338 | 143 | 302022.5 |
| 1998 | 1.3E+09 | 0.1 | 5.112018 | 160 | 310890.1 |
| 1999 | 5.02E+09 | 0.07 | 6.57141 | 81 | 312183.5 |
| 2000 | 5.7E+09 | 0.07 | 8.903205 | 82 | 329178.7 |
| 2001 | 14654503 | 0.19 | 9.036936 | 91 | 356994.3 |
| 2002 | 21070592 | 0.13 | 7.518113 | 90 | 433203.5 |
| 2003 | 19929481 | 0.14 | 10.82254 | 85 | 477533 |
| 2004 | 17504589 | 0.15 | 12.49076 | 88 | 527576 |
| 2005 | 46752949 | 0.18 | 17.8801 | 100 | 561931.4 |
| 2006 | 46221537 | 0.08 | 17.58639 | 107 | 595821.6 |
| 2007 | 56714769 | 0.05 | 19.38451 | 105 | 634251.1 |
| 2008 | 81712928 | 0.12 | 22.54687 | 116 | 672202.6 |
| 2009 | 70388598 | 0.12 | 19.32434 | 109 | 716949.7 |

Estimated co integration relation(s):

=====

ec1(t-1)

LFDI (t-1)| 1.000

| (0.000)

| {0.000}

| [0.000]

LREER(t-1)| -2.074

| (0.848)

| {0.014}

| [-2.446]

LRGDP(t-1)| -0.995

| (0.416)

| {0.017}

| [-2.390]

OPP (t-1)| -0.311

| (0.104)

| {0.003}

| [-2.995]

INF (t-1)| -27.451

| (3.217)

| {0.000}

| [-8.534]

Deterministic term:

=====

d(LFDI) d(LREER) d(LRGDP) d(OPP) d(INF)

D86 (t) | -0.677 -0.772 -0.130 -0.859 0.186
| (1.130) (0.167) (0.171) (1.227) (0.099)
| {0.549} {0.000} {0.445} {0.484} {0.060}
| [-0.599] [-4.615] [-0.763] [-0.700] [1.880]

D80 (t) | -15.104 -0.161 -0.002 -0.746 0.013
| (1.433) (0.212) (0.216) (1.557) (0.126)
| {0.000} {0.447} {0.994} {0.632} {0.918}
| [-10.537] [-0.761] [-0.007] [-0.480] [0.103]

CONST | -3.485 -0.203 -0.029 0.412 0.248
| (0.799) (0.118) (0.121) (0.867) (0.070)
| {0.000} {0.086} {0.809} {0.635} {0.000}
| [-4.362] [-1.717] [-0.242] [0.474] [3.547]

Appendix B: MODEL CHECKING

PORTMANTEAU TEST ($H_0: \rho_h = (\rho_1, \dots, \rho_h) = 0$)

Tested order: 16
Test statistic: 276.2700
P-value: 0.9999
Adjusted test statistic: 360.1098
P-value: 0.6339
Degrees of freedom: 370.0000

LM-TYPE TEST FOR AUTOCORRELATION with 5 lags

LM statistic: 153.6566
P-value: 0.0417
df: 125.0000

TESTS FOR NONNORMALITY

Reference: Doornik & Hansen (1994)

Joint test statistic: 475.4815
P-value: 0.0000
Degrees of freedom: 10.0000
Skewness only: 87.3501
P-value: 0.0000
Kurtosis only: 388.1314

P-value: 0.0000

Reference: Lütkepohl (1993), Introduction to Multiple Time Series Analysis, 2ed, p. 153

joint test statistic: 439.6878

p-value: 0.0000

Degrees of freedom: 10.0000

Skewness only: 84.4533

P-value: 0.0000

Kurtosis only: 355.2345

P-value: 0.0000

JARQUE-BERA TEST

| Variable | test-stat | p-Value(Chi ²) | skewness | kurtosis |
|----------|-----------|----------------------------|----------|----------|
| u1 | 0.3832 | 0.8256 | -0.1360 | 2.5900 |
| u2 | 4.7650 | 0.0923 | 0.0512 | 4.7318 |
| u3 | 319.9408 | 0.0000 | 2.9823 | 15.9032 |
| u4 | 17.9198 | 0.0001 | 1.1325 | 5.4874 |
| u5 | 0.1406 | 0.9321 | 0.1429 | 2.9153 |

ARCH-LM TEST with 16 lags

| Variable | teststat | p-Value(Chi ²) | F stat | p-Value(F) |
|----------|----------|----------------------------|---------|------------|
| u1 | 14.7975 | 0.5395 | 2.8249 | 0.1278 |
| u2 | 7.6544 | 0.9585 | 0.7337 | 0.7105 |
| u3 | 7.3707 | 0.9654 | 0.6928 | 0.7377 |
| u4 | 19.6932 | 0.2344 | 11.7382 | 0.0064 |
| u5 | 16.3049 | 0.4319 | 3.9366 | 0.0684 |