

**EMPIRICAL ANALYSIS OF MACROECONOMIC INSTABILITY
AND FOREIGN DIRECT INVESTMENT INFLOW IN NIGERIA**

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DECEMBER, 2015

TITLE PAGE

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**A RESEARCH PROJECT PRESENTED TO THE DEPARTMENT OF
ECONOMICS, UNIVERSITY OF NIGERIA, NSUKKA IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER
DEGREE IN INTERNATIONAL ECONOMICS.**

DECEMBER, 2015.

APPROVAL PAGE

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DEDICATION

This research work is dedicated to Almighty God, the giver of good and perfect things.

ACKNOWLEDGEMENTS

I am greatly indebted to Rev. Fr. Prof. H.E. Ichoku, my supervisor, who gave me the opportunity to write this thesis and made many constructive criticisms and valuable suggestions. I am also indebted to Prof. (Mrs.) S. I. Madueme, Head of Economics Department University of Nigeria Nsukka (UNN), who read through the typescript and made many helpful suggestions. From Prof. C. C. Agu, Dr. J. O. Chukwu, Dr. Asogwa, Dr. Nwosu Emmanuel, Dr. N. Urama and other senior lecturers in Economics Department University of Nigeria Nsukka, I received helpful comments on particular sections of the thesis.

Very importantly, I appreciate my friends and colleagues at University of Nigeria Nsukka, who with their comments and general reactions helped me, improve the exposition of several parts of the thesis, Nnamdichukwu, Aneke Chika, and Asogwa Stanley deserve special mention. I have also benefited from the detailed comments two anonymous referees. Any mistakes and defects, however, are my responsibility.

Finally, I acknowledge with humility and much gratitude to Almighty God for seeing me through this work and for my dream come true.

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ABSTRACT

Most economic rationale for granting special incentives for attracting Foreign Direct Investment (FDI) is based on the belief that FDI bridges the 'idea gaps' between rich and the poor nations in addition to the generation of technological transfers and spillovers. This study seeks to carry out an empirical investigation of the impact of macroeconomic instability on FDI inflow in Nigeria covering the period 1970 to 2013. The linear regression analysis was applied and it was revealed that macroeconomic instability has negative and significant impact on FDI inflow in Nigeria for the period under analysis. The result also shows that there exists a long-run relationship between FDI and macroeconomic instability variables in Nigeria. it is therefore the recommendation of this paper that the Central Bank of Nigeria (CBN) should cooperate with the fiscal branch of the economy to ensure that macroeconomic stability is ensured through the application of fiscal and monetary tools.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Historical antecedents indicate that until the First World War, capital to developing countries came directly from countries to their colonies. By 1950s the United States of America (USA), other industrial nations and multinational agencies started official assistance to less developing countries (LDCs). Currently, the number of claimants to foreign assistance has increased going by World Development Report, WDR, (1990).

Regardless of the above scenario capital flow whether in form of foreign assistance or Foreign Direct Investment (FDI) has generated various debates. Such debates offer reasons for the failure of past efforts.

The role of FDI in LDCs is a controversial issue. Dependency thinkers argue that FDI is a conduct for neo-imperialist exploitation of developing countries by the wealthy countries while some other theorists see FDI as a source of value, practices and economic goods that would help the developing countries to break into the modern world practically and economically (Reserick, 2003).

FDI can be beneficial to the investors and the host country. To investor free flow of capital across national boarder allows capital to seek out the highest rate of return, reduce risk faced by owners of capital, creates new market for investment, among others. While to the host country, FDI creates job for the populace, possibility of technology transfer, improvement in labour skills and management skills, better wages for workers, provision of scholarship, among others, as suggested by Sjoholm, (1999); Ohwona (2001, 2004); Otakpa (2004).

Most countries strive to attract foreign direct investment (FDI) because of its acknowledged advantages as a tool of economic development. The growth and development of African and indeed Nigeria's economy depends largely on FDI, which has been described as the major carrier for transfer of new specific innovation. The need

to step-up Nigeria's industrialization process and growth calls for more technology spill-over through foreign investment. As a result, African countries and Nigeria in particular joined the rest of the world in seeking FDI as evidenced by the formation of the New Partnership for Africa's Development (NEPAD), which has the attraction of foreign investment to Africa as a major goal, United Nations Conference on Trade and Development (UNCTAD, 2007).

According to Ayanwale (2006) many countries and continent especially less developed countries now see attraction of FDI as an important element in their strategy for economic development. This is most probably because FDI is seen as an amalgamation of capital technology, marketing and management.

However, Dornbush et al (1996) were of the view that investment spending is usually volatile, because it depends on multiple factors and is responsible for much of the fluctuation of GDP over the business cycle. The instability of investment led Keynes (1936) to conclude that the economy is inherently unstable, and there is need for government intervention to activate and regulate the saving and investment behavior of the society.

The great depression of the 1930s left in its wake, the breakdown of autarky and subsequent global financial liberalization. Demir (2009) found that, in most developing countries, the financial liberalization gradually led to sharp fluctuation in key macroeconomic indicators, over the years. National Bureau of Statistics (2004) asserts that Nigeria's macroeconomic indicators have been fluctuating since 1980, due to the debt crisis and global shock. From early 1980s to the second half of the 1990s, Nigeria annual inflation has average around 30% percent. Subsequently, average inflation came down to one digit rate. However, since 2001 inflation is back in the two digit domain, with an average of about 18 percent within 2000 to 2002 while average inflation between 2004 and 2008 is about 10 percent.

Batini (2004) advocated that "the combination of liquidity surprise with the ability of federal government to finance large budget deficits by borrowing freely from the CBN at below market-clearing interest rates has severely impaired the CBN in its conduct of

short-run and long run strategy during the past two decades, and has indeed been a major driver of the instability evolution of inflation in Nigeria since 1950.

Batini further stressed that emerging market economies like Nigeria face more volatile macroeconomic environment and typically have weaker institutions that enjoy less credibility than their developed economies counterparts. According to National Population Commission (2006), between 1980 and 2002, Nigeria's broad macroeconomic aggregates Growth, Terms of trade (TOT), Real Exchange Rate (RER), Government Revenue and spending were among the volatile in the developing world. This has made the economy to be in a low growth trap, made up of low savings and investment equilibrium. Hence, our economy is still far below the minimum investment rate of about 30 percent of GDP required for significant economic development, (CBN, 2004). Addison and Quentin (2007) pointed out that when compare to other developed economies, Nigeria can be found that most GDP differentials can be attributed to Nigerians higher macroeconomic instability. They also noted that high level of under-development in Nigeria was largely due to macroeconomic instability that depressed investment and economic growth.

In the continent of Africa, one of the pillars, on which the New Partnership for Africa's Development (NEPAD) was launched is to increase available capital to US\$64billion through a combination of reforms, resources mobilization and conducive environment for FDI (Funke and Nsouli, 2003). The effort by several African countries stems from the desire to attract FDI. Sub-Saharan Africa as a region now has to depend very much on FDI for so many reasons, some of which include productivity gain and the introduction of new process as amplified by Asiedu (2001).

Further, the CBN blames the drop in FDI inflow into the country on poor state of infrastructure and the global economic uncertainty. Ifueko (2011) notes that, foreign direct investment is positively associated with GDP and greater inflows of foreign direct investment will spell a better economic performance for the country that government should provide an enabling economic environment for influx of FDI. Aside from that, there must be transparency and accountability in the system.

Nigeria, being an active participant in Africa economy, intends to develop her economy by embarking on policy that will attract FDI. The Nigerian Enterprise Promotion Decree (NEPD) of 1971 was to regulate FDI but not to promote it due to the indigenization intention of the government. Only a maximum of 60% foreign participation was allowed. This resulted in a decline in foreign investment and slowed down the pace of economic activities in all sectors of the economy (UNCTAD, 2007).

Some of government policies targeted to attract FDI are: the Structural Adjustment Programme (SAP) of 1986; Industrial Development Coordinating Committee (IDCC) of 1988; Nigeria Investment Promotion Commission (NIPC) of 1995; and the Export Processing Zone (EPZ) of 1999 were put in place. All these policies are intended to attract FDI.

Nigeria rebased its GDP from 1990 to 2010, resulting in an 89% increase in the estimated size of the economy. As a result, the country now boasts of having the largest economy in Africa with an estimated nominal GDP of USD 510 billion, surpassing South Africa's USD 352 billion. The exercise also reveals a more diversified economy than previously thought. Nigeria has maintained its impressive growth over the past decade with a record estimated 7.4% growth of real gross domestic product (GDP) in 2013, up from 6.5% in 2012. This growth rate is higher than the West African sub-regional level and far higher than the sub-Saharan Africa level. The performance of the economy continues to be underpinned by favourable improvements in the non-oil sector with real GDP growth of 5.4%, 8.3% and 7.8% in 2011, 2012 and 2013, respectively. Agriculture ó particularly crop production ó trade and services continue to be the main drivers of non-oil sector growth. The oil sector growth performance was not as impressive with 3.4%, -2.3% and 5.3% estimated growth rates in 2011, 2012 and 2013, correspondingly. Growth of the oil sector was hampered throughout 2013 by supply disruptions arising from oil theft and pipeline vandalism, and by weak investment in upstream activities with no new oil finds. Going forward, there are prospects of strong economic growth although downside risks remain entrenched. Such prospects are expected to hinge on continued recovery of the global economy, favourable agricultural harvests and a possible boost in energy supply arising from the power sector reform, as well as on expected positive outcomes from the

Agricultural Transformation Agenda. Comprehensive economic and structural reforms are also expected to improve economic growth. Nevertheless, the country's ongoing GDP rebasing may influence the growth figures, possibly making them lower going forward since the expected result is a larger economy. Risks to Nigeria's economic growth are the sluggish recovery of the global economy, security challenges in the northeastern part of the country, continued agitation for resource control in the Niger Delta and possible distraction from the ongoing reforms as a result of the upcoming 2015 general elections. Negative growth of the oil sector may also continue to drag down overall growth until a lasting solution is found to the challenge of oil theft and weak investment in exploration due to the uncertain state of play in the sector as a result of non-passage of the Petroleum Industry Bill.

One of the most remarkable landmarks in the development of economic co-operation and regional integration in the Economic Community of West African States (ECOWAS) was the adoption of the five-band Common External Tariff (CET) in October 2013, which will become operational on 1 January 2015. The highlight is a reduction of the most-favored nation import tariff (MFN) from 12.0% to 11.5%. This is a milestone achievement given the earlier controversies and disagreements amongst ECOWAS member states since the commencement of negotiations in 2004. Reduction of the MFN import tariff should contribute to relaxing trade restrictions, harmonizing and strengthening the common market of ECOWAS member states, a necessary condition for a customs union and common trade policy with a view to deepening economic co-operation and integration in the sub-region. Success hinges on full compliance by all members, which entails the need of effective monitoring to ensure that the rules of origin are not violated. There is also need to build capacity to undertake such monitoring and implementation of the CET at both national and regional levels. There are concerted efforts to implement the CET by ECOWAS member countries. Nigeria tends to protect the agricultural sector in accordance with the ECOWAS Common Agricultural Policy in agreement and consistent with its Agricultural Transformation Agenda. Merchandise exports and imports continued to be dominated by the oil sector in 2013. The share of oil exports remained at an average of 96.7% of total exports. The share of refined oil-product imports, on a steady increase from 26.7% in 2008 to 35.8% in 2012, settled around 30%

in 2013. The imports share of total trade declined slightly to an estimated 23.2% in 2013 from 25.2% in 2012. Risks include the continued challenges within the oil sector: sluggish global economic demand due to slow recovery, discoveries of alternatives to oil and gas such as shale oil and the invention of alternative-energy-consuming automobiles such as electric and hybrid vehicles.

Today, the FDI story of Nigeria is dominated by the oil industry. It was not always so. At independence, in 1960, there was a widespread FDI presence in the economy. Policy design thereafter narrowed the scope for FDI and decades of political instability, economic mismanagement and endemic corruption further reduced Nigeria's ability to attract and retain FDI. This was compounded by a relentless deterioration of the country's social conditions and physical infrastructure, in spite of increased public revenues generated by the oil sector.

While oil has played an important role in Nigeria, data show that over 70 per cent of the population lives on less than one dollar a day (this represents a quarter of all Africans living in this condition). The manufacturing sector, the focus of the FDI strategy of this report, has hardly progressed and only 3 per cent of agriculture is mechanized. The return to democracy in 1999 has created the opportunity for economic renewal and associated measures with a view to improve the investment climate. The reform process also takes into account the potential role that could play the Diaspora (close to 5 million Nigerians live abroad). The policy changes have started bearing fruits and if sustained, they will certainly provide an environment more conducive to private investment and contribute to enhance the attractiveness to FDI of Nigeria's large and growing market.

1.2 Statement of the Problem

The pursuit of economic growth and development has been the front burner of economic policy of most developing countries. This, however, is often hindered by the non-availability of resources that would drive the process of achieving the required economic growth. The need for foreign capital arises when the desired investment exceeds the actual savings, and also due to investments with long gestation periods that generate non-monetary returns, growing government expenditure that are not tax-financed; and when

actual savings are lower than potential savings due to repressed financial markets and even capital flight (Essien & Onwioduokit, 2009)

For Nigeria, meaningful, long-lasting economic growth and development is almost entirely contingent upon securing substantial amounts of foreign direct investment. FDI, as it is called, is crucial for the Nigerian economy, as it permits the transfer of technology and facilitates improvements in productivity. Ultimately, this can help alleviate Nigeria's widespread poverty by increasing per capita income and elevating overall standards of living.

To be sure, Nigeria has a difficult road ahead should it want to achieve the economic growth and stability that it seeks. Nigeria's development plan is simple in theory, yet rather difficult in practice given its poor track record. Due to its long history of macroeconomic instability, economic mismanagement, corruption, incompetent leadership, political instability, and poor infrastructure, Nigeria has numerous obstacles that collectively deter foreign investment. Thus, at a fundamental level, Nigeria needs to create an environment that is conducive to foreign investment and healthy economic growth.

Foreign Direct Investment in Nigeria decreased to 723.49 USD million in the first quarter of 2015 from 1030.06 USD million in the fourth quarter of 2014. Foreign Direct Investment in Nigeria averaged 1434.26 USD million from 2007 until 2015, reaching an all time high of 3084.90 USD million in the fourth quarter of 2012 and a record low of 667.88 USD million in the first quarter of 2007. Can this variability of FDI inflow into Nigeria be attributed to the state of macroeconomic instability in Nigeria?

In Nigeria, despite the observed increasing though fluctuating inflows of FDI, there has not been any satisfactory attempt to assess the effect if any; of macroeconomic instability on FDI inflow, (IMF, 2008). This will also form part of the concern of this study.

It is in view of the above development and against this background therefore, that the study seeks to find plausible answers to the following imposing research questions stated below.

1.3 Research Questions

- i. What level of impact do volatile macroeconomic variables have on FDI inflow in Nigeria?
- ii. What is the decomposed contribution of volatile macroeconomic variables to the behaviour of FDI inflow to Nigeria?
- iii. Can the behavior of the volatile macroeconomic variables predict or forecast the magnitude of FDI inflow to Nigeria?

1.4 Research Objective

In a broad framework, this research is aimed at carrying out an empirical analysis of macroeconomic instability and Foreign Direct Investment inflow in Nigeria. Specifically, this study seeks to actualize the following:

1. To estimate the impact of volatile macroeconomic variables on Foreign Direct Investment (FDI) inflow in Nigeria.
2. To ascertain the decomposed contribution of volatile macroeconomic variables to the behaviour of FDI inflow to Nigeria.
3. To evaluate the forecasting effectiveness of volatile macroeconomic variables to FDI inflow in Nigeria.

1.5 Research Hypotheses

Based on the above objectives of this study, the following hypotheses are formulated

- i. Volatile macroeconomic variables have no significant impact on FDI inflow in Nigeria.
- ii. The decomposed variability of volatile macroeconomic variables to FDI inflow is not high in Nigeria.
- iii. The predictability of FDI inflow to the behaviour of volatile macroeconomic variables is not effective.

1.6 Significance of the Study

Evidence from previous work on the effect of macroeconomic instability on FDI inflow in Nigeria shows that there exist no consensus among researchers on the magnitude of effect of macroeconomic instability on FDI inflow. However, few studies are not in Nigeria context but rather cross country based, therefore this study which examined the Nigerian experience would be of great importance in policy making and explain more importantly the reason behind poor performance of most developing countries in foreign sector. Moreover, subsequent research carrying out an investigation in similar studies will find this research highly relevant.

1.7 Scope of the Study

This research will be focused on carrying out an empirical analysis on Macroeconomic Instability and FDI Inflow in Nigeria. The study covers the period of 1970 to 2013. The choice of this time period is based on data availability. Proposed proxies for macroeconomic instability are proven volatile macroeconomic variables such as: Inflation, Exchange Rate, Interest Rate and other control variables namely Trade Openness and Growth Rate of Gross Domestic Product.

CHAPTER TWO

2.1 Macroeconomic Policy Reform in Nigeria Economy to Attract FDI

The trend of FDI inflows into Nigeria from 1970 to 2011 as a percentage of GDP clearly shows the downward spiral of FDI inflow in the aftermath of the official restrictive policy manifested in the Nigeria Enterprises Promotion decree of 1972 and 1977. These decrees ensured that the FDI inflow was kept to the barest minimum of below 2% of the GDP. The crash of world oil prices in 1980 caused a massive disinvestment from the nation and the low level of inflow obtained until 1986. Before the concerned period, other government legislative such as the companies tax Act of 1961, exchange control Act 1962 and immigration Act also served to discourage FDI.

The adoption of the structural Adjustment programme (SAP) in 1986 marks the beginning of a gradual increase in the FDI inflow to Nigeria. The economic package entails the inauguration of the Industrial Development Coordination Committee (IDCC), the Companies Allied Matters Decree 1990, financial liberalization and the debt equity Swap programme. These steps were targeted to wooing FDI inflow. In this perspective, the programme was largely successful, but the inflow was not sustainable. The period 1990-1993 witnessed a drop in the rate of inflow largely due to a protracted political impasse that disrupted productive activities and created a region of uncertainty, which dully supported capital flight from the country.

The promulgation of Nigeria investment promotion council (NIPC) which took over from IDCC was an attempt directed towards liberalizing the country investment climate. The outcome was a fast increase inflow in the country's FDI especially in the non-oil sector. Further government policies like foreign exchange decree, guided deregulation of 1999, and the Export Processing Zone (EPZ) Calabar establishment, are all aimed at providing an improved business environment in the country. The privatization and commercialization policy of government whereby public Enterprises (PEs) are put for sale to the investing public pivoted the present sustained increase in the nation's FDI inflow. This policy has attracted considerable inflows since the recent democratization process in 1999. For instance, the deregulation of the telecommunication sector by

granting licenses for Global System for Mobile communication (GSM) operations in 1999 increased the FDI inflow in the telecommunication sector from mere US\$4.5 billion in 2005 (Aremu, 2005) of this increase, over 75% was attributed to GSM investment in the sector. In the analysis of FDI inflow, the oil sector holds the dominant position in the early 70s. The level of FDI inflow in the entire sector experiences an increase after the adoption of SAP economic package. The industrial policy of 1981, SAP of 1996, the commercialization and creation of EPZ by the government pivoted a dramatic upsurge in the manufacturing sector.

Since the inception of the present civilian administration in 1999, there has been increase in the FDI inflow into the country, though not sustainable.

2.2 Pattern of Macroeconomic Policy Evaluation in Nigeria

The Nigerian macroeconomic policy stance has been accommodating in recent time. Most of the parameters for evaluating policy performance include exchange rate stability, favourable balance of payment and trade flows, adequate capital formation, and low inflation. The demand for low inflation is highly desirable given that an economy will always work best with predictable prices. According to IMF (2013), Nigeria annual inflation increased from 10.3 percent (end-of-period) in 2011 to 12.3 percent in 2012, owing mainly to the adjustment of administrative prices of fuel and electricity; large increase in import tariffs on rice and wheat; and impact of floods.

The fiscal policy stance was tightened in 2012 and fiscal buffers are being rebuilt. The non-oil primary deficit of the consolidated government is estimated to have narrowed from about 36 percent of non-oil GDP in 2011 to 30.5 percent in 2012, mainly due to expenditure restraint. Monetary policy remained tight in 2012 in response to inflationary pressures. The central bank kept its policy rate unchanged during the year but raised the cash reserve requirement for banks from 8 percent to 12 percent and lowered allowable open foreign exchange position for banks. Financial soundness indicators point to continued improvements in the health of the banking system (IMF, 2012).

In 2013, growth is expected to recover to above 7 percent. Inflation is projected to decline below 10 percent, supported by the tight monetary policy stance and ongoing

fiscal consolidation. The key downside risks are a large drop in world oil prices; and slow progress in building consensus around key fiscal reforms.

Once the prevailing macroeconomic policy is not friendly, foreign investors do not hesitate to withdraw funds from the domestic economy. The exchange rate volatility of the naira has been maintained at a plus and minus of 3 percent and there has been greater convergence of rates in the foreign exchange market (IMF, 2012). In 2012, the CBN found it desirable to protect the value of the naira; it reduced the net open positions of banks and introduced limited exchange controls. In fact, there has been an increase in the inflow of portfolio funds, that is, hot money to U\$12 billion (Omotor, 2007; Sanusi, 2012). Between 1980 to 1985, total government expenditure growth shows discretion in fiscal stimulus which according to Egwaikhide (2003) attributed to the pooled effects of the tax reforms and policy response to sharp decline in crude oil prices as put across under the Economic Stabilization Act of 1982 (IMF, 2012). In fact, the Nigerian economy embarked on the course of economic depression in the 1980s given the total collapse of crude oil prices in the international market. In what follows, fiscal deficits become mammoth due to excessive government spending (IMF, 2012). The peak of the fiscal policy shift was the implementation of the IMF and World Bank forcefully induced SAP in 1986. The SAP of 1986 led to a review in some macroeconomic policy related economic fundamentals. For example, the banking sector became deregulated, the determination of the Naira ó US dollar exchange rate became more flexible and the trade sector was indeed liberalized. This led the CBN to broaden its monetary policy indicator. So, rather than set targets for the narrow monetary stock, the broad money stock became the principal monetary policy target. In 2001, narrow money target was 4 ó 3 percent but rose by 28.1 percent (Akingloye, 2006). There has been a problem also hitting the inflation target. There is relatively an ample difference between policy targets and policy outcomes, for example, the target for inflation in 2007 was 7 percent but the performance was about 17 percent. However, despite the increase in the velocity of circulation of money, growth in intermediate aggregate of money supply has been low-keyed, while the inflation is yet to be kept relatively under control. Indeed, regardless of the reforms in financial sector, the capability of macroeconomic policy to achieve policy objectives further deteriorated and inflationary pressures became intensified (Olaloye and Ikhide,

1995; Soludo, 1998; Guobadia, 2002). These resulted in a deeper collapse in the growth of the real sector of the domestic economy and the snowballing effect on aggregate investment now became a moribund.

CHAPTER THREE

LITERATURE REVIEW

3.1 Conceptual Framework

The concept of FDI has been misjudged by many people but it does not include all investments across border. There are some features that make foreign direct investment different from other international investments and these are discussed below.

FDI is the investment made by a company outside its home country. It is the flow of long term capital based on long term profit consideration involved in internal production (Caves, 1996). This definition is correct but not complete as the important issues of control and management are not included in it. International investment can take two forms. It could either be portfolio investment, where the investors buy some non-controlling portion of the stock, bond or any other financial security, or direct investment where the investor participates in the control and management of such business venture. This is the type of investment by multinational companies and it tends to contribute more to economic growth than portfolio investment.

Lipsey and Chrystal (2009) said internationalized production arises from foreign direct investment. According to him, this is the investment that involves some degree of control of the acquired or created firm which is in any other country apart from the investor's country. This involvement in the control of the investment is the main feature that distinguishes FDI from portfolio investment.

Foreign Direct investment as put forward by Artige and Nicolini (2005), is the capital transaction that a "direct investor" carries out in a foreign "direct investment enterprise" (affiliate) to obtain a lasting interest in this foreign firm and a significant degree of influence on its management. Foreign Direct investment (FDI) according to World Bank (1996) is an investment made to acquire 10% lasting management interest in a business enterprise operating in a country other than that of the investor and as defined according to residency. Such investment may take the form of either "Green field" investment or merger and Acquisition (M and A), which entails, the acquiring of existing business

entity rather than new investment (Ayanwale, 2007). The threshold of 10% or more ownership of a firm, capital is in general, required to be accounted for as a direct investment. Ownership of less than 10% is recorded as portfolio investment. FDI can also be viewed as the investment of earning, loan and similar capital transfer between parents companies and their affiliation. Countries could be both host to FDI projects in their own country and a participant in investment projects in other countries. A country's inward FDI positions is made up of the hosted FDI projects while outward FDI comprise those investment project owned abroad.

However, this study focused on effect of macroeconomic instability on FDI inflow in Nigerian economy.

Hence, the concept of macroeconomic instability is widely used in the policy-oriented literature. Although, this concept is almost never really defined, it seems to refer in turn to high inflation, overvalued currency, unstable real exchange rate, balance of payment deficit, or fiscal deficit, among others. In other words, any shock that affect the macroeconomic state of the country could be referred to as macroeconomic instability. It is then implicitly entailed that what a country suffering from these ills ought to do is to implement a stabilization policy. Few authors have attempted to define precisely what macroeconomic instability is, but it is evident that this notion plays a useful role for indicating a situation of economic malaise, where the economy does not seem to have settled in a steady position, and where, eventually, something needs to be done for putting it back on track. An exception to this rule is provided by Elbadawi and Schmidt-Hebbel (1998), where an indicator of macroeconomic instability is produced for a large number of countries, with an interesting econometric application, showing how this instability is bad for long-term growth. However, this empirical construct does not have the required theoretical underpinnings for clarifying the analysis and leading to precise policy conclusions.

Macroeconomic Instability can be regarded as a situation of economic malaise, where the economy does not seem to have settled in steady equilibrium position, thereby, making it difficult to make prediction and good planning (Azam 2001).

Following Skousen (2015) gross domestic product (GDP) is a monetary measure of the value of all final goods and services produced in a period of time (quarterly or yearly). GDP estimates are commonly used to determine the economic performance and standard of living of a whole country or region, and to make international comparisons.

GDP is not a complete measure of economic activity. It accounts for final output or value added at each stage of production, but not total output or total sales along the entire production process. It deliberately leaves out business-to-business transactions in the early and intermediate stages of production, as well as sales of used goods. In the United States, the Bureau of Economic Analysis (BEA) has introduced a new quarterly statistic called gross output (GO), a broader measure that attempts to add up total sales or revenues at all stages of production (Skousen 2015). Mark Skousen (2015) was the first economist to advocate GO as an important macroeconomic tool. Other countries are following suit, such as the United Kingdom, which now producing an annual statistic called Total Output.

Jorgenson, Landefeld and Nordhaus (2006) conclude that "Gross output (GO) is the natural measure of the production sector, while net output (GDP) is appropriate as a measure of welfare. Both are required in a complete system of accounts."

Walgenbach, Dittrich and Hanson (1973) view inflation as a sustained increase in the general price level of goods and services in an economy over a period of time. When the price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money ó a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the consumer price index) over time. The opposite of inflation is deflation.

Going by Robert and Vittorio (1994) Inflation affects an economy in various ways, both positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation were rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive

effects include reducing the real burden of public and private debt, keeping nominal interest rates above zero so that central banks can adjust interest rates to stabilize the economy, and reducing unemployment due to nominal wage rigidity.

According to Krugman (2007) an interest rate is the rate at which interest is paid by borrowers (debtors) for the use of money that they borrow from lenders (creditors). Specifically, the interest rate is a percentage of principal paid a certain number of times per period for all periods during the total term of the loan or credit. Interest rates are normally expressed as a percentage of the principal for a period of one year, sometimes they are expressed for different periods such as a month or a day. Different interest rates exist parallelly for the same or comparable time periods, depending on the default probability of the borrower, the residual term, the payback currency, and many more determinants of a loan or credit. For example, a company borrows capital from a bank to buy new assets for its business, and in return the lender receives rights on the new assets as collateral and interest at a predetermined interest rate for deferring the use of funds and instead lending it to the borrower.

Interest-rate targets are a vital tool of monetary policy and are taken into account when dealing with variables like investment, inflation, and unemployment. The central banks of countries generally tend to reduce interest rates when they wish to increase investment and consumption in the country's economy. However, a low interest rate as a macro-economic policy can be risky and may lead to the creation of an economic bubble, in which large amounts of investments are poured into the real-estate market and stock market. In developed economies, interest-rate adjustments are thus made to keep inflation within a target range for the health of economic activities or cap the interest rate concurrently with economic growth to safeguard economic momentum (Sepehri et al., 2004)

The concept of trade openness according to Karen (2015), refers to the outward or inward orientation of a given country's economy. Outward orientation refers to economies that take significant advantage of the opportunities to trade with other countries. Inward orientation refers to economies that overlook taking or are unable to

take advantage of the opportunities to trade with other countries. Some of the trade policy decisions made by countries that empower outward or inward orientation are trade barriers, import-export, infrastructure, technologies, scale economies and market competitiveness.

The degree of global trade openness existing in countries is measured on a number of economic issues and tracked in the Open Markets Index (OMI).

Exchange rate is also known as a foreign-exchange rate, forex rate, FX rate or Agio between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in terms of another currency (O'Sullivan et al., 2003)

According to Will (2015) Exchange rates are determined in the foreign exchange market, which is open to a wide range of different types of buyers and sellers where currency trading is continuous: 24 hours a day except weekends. The spot exchange rate refers to the current exchange rate. The forward exchange rate refers to an exchange rate that is quoted and traded today but for delivery and payment on a specific future date (John Markin, 2010).

Following Mouhamed (2014), the retail currency exchange market, a different buying rate and selling rate will be quoted by money dealers. Most trades are to or from the local currency. The buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell the currency. The quoted rates will incorporate an allowance for a dealer's margin (or profit) in trading, or else the margin may be recovered in the form of a commission or in some other way. Different rates may also be quoted for cash (usually notes only), a documentary form (such as traveler's cheques) or electronically (such as a credit card purchase). The higher rate on documentary transactions has been justified to compensate for the additional time and cost of clearing the document, while the cash is available for resale immediately. Some dealers on the other hand prefer documentary transactions because of the security concerns with cash.

3.2 Macro and Micro-Economic Theories of FDI

❖ Macro-level foreign direct investment theories

For a macroeconomic point of view, FDI is a particular form of capital flows from countries of origin to host countries and these capital flows are found in the balance of payments. According to Lipsey (2002) macroeconomic theories try to explain the motivations of the investors for investment in foreign countries. The macro-level determinants that affects the host country's FDI flows are market size, economic growth rate, GDP, infrastructure, natural resources, political situation etc. (Woldemeskel, 2008). The macro-level theories are discussed below.

❖ Capital market theory

This is one of the oldest theories of FDI. According to this theory, FDI is determined by interest rates. Capital market theory is a part of portfolio investment (Iversen, 1935; Aliber, 1971). Boddewyn (1985) Capital market theory talked about three positions which attract FDI to the less developed countries (LDCs). First is the undervalued exchange rate, which allows lower production costs in the host countries. Second position said that since there is no organized securities exists, therefore long term investments in LDCs will often be FDI rather than purchase of securities. And the third position is that since there is limited knowledge about host countries securities that is why it favours FDI which allows control of host country assets.

❖ Dynamic Macroeconomic FDI Theory

This theory emphasizes that the timing of investments depends on the changes in the macroeconomic environment (Sanjaya Lall 1997). The macroeconomic environment consists of gross domestic product, domestic investment, real exchange rate, productivity and openness which are the determinants of FDI flows. The theory states that FDI's are a long term function of multinational company's strategies (Baker, 1993). Similar to these two theories, FDI theories based on exchange rate tried to show the relationship between FDI and exchange rate (Campa, 1993). The theory tries to explain how the flow of FDI's

affect the exchange rates (Faruquee, 1992; Serven, 1998; Jenkins and Thomas, 2002; and Accum, 1997).

❖ **Economic Geography**

This focuses on countries and explained why internationally successful industries emerge in particular countries (Porter, 1990; Nachum 1999). These explanations were based on the differences among countries in terms of availability of natural resources, nature of labour force and local demand, infrastructure, the FDI theories based on economic geography also covers the ways in which governments can affect the resources within the jurisdiction by various policy actions since economic unit of analysis is defined by political boundaries. Again the theory explains why some regions or cities within countries are economically successful (Storper 1996, 1997; Sassen 1991, 1994).

❖ **The Gravity approach to FDI**

The theory explores that if two countries are very close in terms of geographical, economical, and cultural, then the FDI flows between the countries is the highest. The theory includes traditional gravity variables such as size, level of development, distance, common language and other institutional variables such as shareholder protection (Pagano and Volpin, 2004, La Porta et al., 1998) and openness to FDI flows (Shatz, 200) as the determinant of FDI flows.

FDI theory based on Institutional Analysis

This theory was developed by Saskia Wilhelms (1998). It explores the importance of institutional framework on the flows of FDI. The theory said that political stability is the key factor of a healthy institutional framework. According to this theory, FDI is determined more by institutional variables viz. policies, laws, and their implementation and less by intransigent fundamentals. The four institutions contributing to FDI flows are governments, markets, education and socioculture (Wilhelms, 1998).

Wheeler and Mody (1992) used country risk indices to demonstrate that there exists a strong correlation between economic and political stability, and investment inflows. Sachs and Sievers (1998) study, point to political stability as one of the most important

determinants of FDI distribution. According to Singh and Jun (1996) socio-political instability is a complex phenomenon whose effect is difficult to define, since the determination of the link between political instability and FDI most often vary with the political risk indicators used.

❖ **Micro-Level Foreign Direct Investment Theories**

The Micro level FDI theories try to provide the answers of why MNCs prefer opening subsidiaries abroad rather than exporting or licensing their products, how MNCs choose their investment locations and why they invest where they do (Woldemeskel, 2008). The micro-level theories are discussed below.

❖ **Existence of Firm specific Advantage theory**

According to Hymer (1976) firms invests abroad because of certain firm specific advantages such as, access to raw materials, economies of scale, intangible assets such as trade names, patents, superior management, low transaction costs among others. If markets work effectively and there are no barriers in terms of trade and competition, international trade is the only way to participate in the international market. Therefore the realisation of direct investment is determined by some certain distortions, and these distortions were first noticed by Hymer. He believes that local firms will always be better informed about local economic environment and for FDI to take place there must be some conditions. These are- foreign firms must possess certain advantages that allow them such investments to be viable and markets of these benefits has to be imperfect (Kindleberger, 1969). Hymer said that market imperfections lead to divergence from perfect competition in the final product market and multinational enterprise (MNE) appears. MNEs face some adjustments costs when they made investments abroad and these are firm level costs. Hymer recognises FDI as a firm level decision rather than a capital market decision. He saw FDI as a means of transforming knowledge and firm assets both tangible and tacit in order to organize production abroad (Sethi et al., 2003).

❖ **FDI and Oligopolistic Markets**

This implies that, in a two-tier oligopoly model, there are two foreign investors one produces intermediate products and other produces final products. The two investors decide independently whether or not they will enter a host country. The entry of either of the firms incurs some fixed costs and generates technological spill over for the local firms of the same sector and reduces the marginal cost of production (Lin and Saggi, 2010). Hoenenand and Hansen (2009) said that FDI is a defensive move in oligopolistic markets. Knickerbocker (1969) argued that risk-averse firms follow their main competitors to avoid any distortions in oligopolistic equilibrium. When one firm in an oligopolistic market moves, the other firms also react with countermoves at both domestic and international levels (Schenk, 1996). In oligopolistic markets, firms follow the actions of the market leader, if FDI is a move of the market leader then other firms also reacts by investing abroad and oligopolistic equilibrium sustains. Buckley and Casson (1976) and Hennart (1982) developed the theory.

❖ **Theory of Internalization**

Due to market imperfections, firms aspire to make use of their monopolistic advantage themselves. Buckley and Casson (1976) suggest that firms can overcome the market imperfections by internalising their own markets. That means, internalisation involves a vertical-integration in the form of bringing new operations and activities under the governance of the firm. Earlier these activities were carried out by the intermediate firms. Initially, the theory was developed by Coase (1937) in a national context and Hymer (1976) in an international context. Hymer identified two major determinants of FDI one is removal of competition and the other is advantages which some firms possess in a particular activity (Denisia, 2010). Dunning (1980, 1988) considered the internalisation theory as very important and used it in his eclectic theory. But he argues that internalisation theory explains only part of FDI flows. He draws partly on macroeconomic theory and trade as well as microeconomic theory and firm behaviour. The eclectic theory of John Dunning is a mix of three different theories of FDI, i.e. Ownership advantage, Location advantage and Internalization (OLI) (Denisia, 2010). From OLI theory four types of FDI derived, they are

- a) Resource seeking FDI
- b) Market seeking FDI
- c) Efficiency seeking FDI and
- d) Strategic asset/capabilities seeking FDI

OLI stands for ownership advantages, locational advantages and internalisation. Ownership advantages refers to intangible assets which are possessed by the firm exclusively and may be transferred within MNCs at lower costs, leading to higher incomes or reduced costs. Ownership of limited natural resources, patents, trademarks among others, are some of the examples of ownership advantages. When the first condition is fulfilled, then location advantages determine who will become the host country for the activities of MNCs. Benefits of quantitative and qualitative factors of production, resource availability, lower costs of transportation, telecommunications, and large market size, common government policies, and distance from the home country, cultural relations are the location specific advantages. Although Ngowi (2001) argued that it is difficult to determine the exact quantity and quality of each of the determinants of FDI in a location to attract a given level of FDI inflow. With regard to Africa Countries, study identifies high risk characterized by a lack of political, institutional and policy stability as well as corruption, small and stagnant markets, poor infrastructure as some of the important factors hindering FDI in Africa. When the first two conditions are fulfilled, it must be profitable for the firm to use these advantages in collaboration of some of the factors outside the country of origin (Dunning, 1973, 1980, 1988). The eclectic paradigm of OLI shows that OLI parameters are different from company to company and it reflects the economic, political and social conditions of the host countries

❖ **Development Theories of Foreign Direct Investment**

The product life cycle theory was developed by Raymond Vernon in 1966. The theory can be used to analyse the relationship between product life cycle and possible FDI flows. Generally FDI can be seen in the maturity phase and then decline. It was developed as a response of the failure of the Heckscher-Ohlin theory of international trade. The theory said that firms set up production facilities abroad for those products

which are already standardised and matured in the home country (Sethi et al. 2003). The theory talked about a cycle where a product is produced by a parent firm, and then to catch the world market, the firm's foreign subsidiaries produced the product and finally the product is produced in any part of the world where the cost of production of the product is the least (Vernon: 1966, 1971; Wells: 1968, 1969). Furthermore the theory explains the invention of a product, become export worked through the life cycle and ultimately becomes an import as the product is produced in the least cost countries rather than the inventing country. The key factors of the theory are technological innovation and market expansion. Technology creates and develops a new product and the market size and market structure influenced the extent and type of international trade. This theory was used to explain certain types of FDI made by US companies in the Western Europe after the World War II in the manufacturing industry. Vernon talked about four types of production cycles viz. innovation, growth, maturity and decline. According to him, in the first stage MNCs create new innovative products for local consumption and export the surplus to serve the foreign markets. The theory said that after the Second World War, Europe had increased demand for manufactured products and US companies began to export, having the advantage of technology on international competitors. With the technological advantage, the product develops and the technologies become known. Manufacturer will standardise the product and foreign companies will imitate it. Thereby, European countries started initiating American products which are exported by the US companies to these countries. US companies were forced to perform production facilities on the local markets to maintain their market shares in those areas (Denisia, 2010).

❖ **Japanese FDI theories**

According to Bacek and Ozawa (2001), these theories analysed the relationship of FDI, competitiveness and economic development based on the ideas of Michael Porter. Terumoto Ozawa was the main representant of the theory and it was initially developed in the 1970s. He identified three main phase of development when he analysed the waves of FDI flows of a country. In the first phase of economic growth, the country is an underdeveloped one and it is targeted by foreign companies to use its potential advantages especially low labour costs. The country experienced the inflows of FDI and

there is no outflow of FDI from the country. In the second phase FDI inflows to the country increased. The labour costs raises and the standard of living of the people goes up. As the labour costs raises, outflow of FDI takes place. In the third phase, the country face serious completion and this completion is based on innovation. The incoming and outgoing of FDI are motivated by market factors and technological factors ((Kojima and Ozawa, 1985).

❖ **Five stage theories of John Dunning**

These suggest that countries tend to go through five main stages of development and these stages can be classified according to the propensity of those countries to be outward and inward direct investors. At the first stage, the country is unable to attract inward FDI since it has no specific advantages except the possession of natural resources. Its deficiency in location bound created assets may reflect limited domestic markets. Demands level is minimal because of its low per capita income, inappropriate government policies, inadequate infrastructure and unskilled labour force. At this stage, little outward FDI can be seen and foreign companies will prefer to export and import from the country. In the second stage, inward FDI starts rising and outward FDI remains low. Domestic markets may grow either in size or purchasing power, and making some local productions by the foreign firms. Initially this production by foreign firms takes the form of import substitution manufacturing investments. Low labour cost and growing infrastructure and government policies able to establish export oriented firms by the foreign investors. Outward FDI is still low in this stage as well. In the third stage marked by declining rate of inward investments and growing outward investment which results in raising Net Outgoing Investment. Large inward investments lead to high technological capabilities and standardized products. High labour costs leads to high income and demand high quality products. In the fourth stage, the comparative advantage of low labour costs deteriorated and outward investment will be directed to the low wage countries. Outflows of investments take place strongly and seek advantages in the foreign countries especially low labour cost. And in the final stage, the inflows and outflows of investments come into balance and the investment decisions are completely based on the strategies of MNCs.

3.3 Theories of Macroeconomic Instability

- ❖ **Classical Economics:** The macroeconomic theories stem from the groundbreaking work of Adam Smith, the father of modern economics. This theory is based on the notion that flexible prices ensure market equilibrium such that full employment production is maintained. The primary policy implication is that government intervention is not needed to maintain economic stability.

- ❖ **Keynesian Economics:** This theory developed by John Maynard Keynes was in response to the massive unemployment problems of the Great Depression of the 1930s. It rests on the presumption that aggregate demand for production is the primary source of business-cycle instability. The primary policy implication is that economic instability runs rampant without government intervention. Such as inflation (Oshikoya, 1994); large external debt (Borenzten, 1990, Faruqee, 1992). According to Keynesian Economics IS-LM analysis provides insight into the role money and interest rates play in macroeconomic activity. In addition to this aggregate market (AS ó AD) analysis was created to help explain stagflation (high rates of both unemployment and inflation) that emerged in the 1970s. It represents the current, state-of-the-art macroeconomic theory.

3.4 Empirical Literature

Studies carried out in relation to the subject matter under study will be reviewed in this subsection. In the survey, Fiani and de Melo (1990) found that unstable macroeconomic environment constitutes one of the major impediments to investment in many LDCs. The authors estimate an OLS regression of the fixed country effect of total and private investment in 20 countries, using the standard deviation of the exchange rate as a proxy for instability. The study finds negative sign associated with the coefficient of exchange rate uncertainty.

Serven and Solinano (1992) studies economic adjustment and investment performance for 15 developing countries, using the pooled cross-section time series data from 1975 to 1988. The investment equation estimated in the study used exchange rate and inflation as proxies for instability, and in each case, instability was measured by the coefficient of the

variation of the relevant variable over three years. The two measures were found to be jointly significant in producing negative effect on investment. This finding is constant with the Hadjimichael et al (1995) study on growth savings and investment performance of 41 developing countries between 1986 and 1993.

Goldbery (1993) considers the effects of exchange rate uncertainty on investment using conditional measure of volatility. The paper suggests that, the sign of the effect of price variability on investment and industry profitability is unresolved in the theoretical literature primarily because the sign of the relationship depends on the balance of (i) Negative effect of risk aversion of investors (ii) Negative effects from investment irreversibility (iii) Positive effects from profit convexity in prices (iv) Negative effects from a profit and price uncertainty relationship that is possible under imperfect competition. The author concludes that, the direction of effect of exchange rate uncertainty on investment activity remains an empirical question.

Blomstrom et al (1994) observe that FDI inflows had significant positive effect on the average growth rate of per capita income (PCI) for a sample of 78 developing and 23 developed countries. However, when the samples of developing countries were not statistically significant, they still have positive sign. They argue that least developed countries gain marginally from multinational enterprises (MNEs) because domestic enterprises are too far behind technologically to be either imitators or suppliers to MNEs.

Using panel data regression model Neaime (2004) studies international financial integration on macroeconomic volatility in developing countries of MENA region over the period, 1980 to 2002. The empirical results show that financial openness is associated with an increase in consumption volatility contrary to the nations of improved international risk sharing opportunities through financial integration.

Nocke and Yeaple (2004) developed an assignment theory of foreign direct investment by either engaging in green field investment or in cross-border acquisitions. The work indicates that most FDI takes the form of cross border acquisitions when factor price difference between countries are small. While green field investment plays a more important role for FDI from high wage into low wage countries. Artige and Nicolini

(2005) investigated the determinants of foreign direct investment among three European regions. The originality of the work lies in the use of disaggregated regional data. Developing a quantitative description of the data base on econometric analysis indicates that, in spite of choosing regions presenting economic similarities, regional FDI inflows rely on a combination of factor that differs from one region to another.

Clan and Gamayel (2004) examined risk instability and the pattern of foreign direct investment in the Middle East and North African region using dynamic panel model. Their results support the hypotheses, that standard deviation and interquartile range are used as a measure of instability. Jordaan 2005 investigates FDI and neighboring influences with data ó drawn from three groups. Consisting of developed, emerging and Africa countries with primary emphasis on African countries, Results indicate that, an improvement in civil liberties and political rights improved infrastructure, higher growth rates and high degree of openness of the host country, lead to increase in FDI. Higher levels of human capital attract FDI to developed country but deter FDI to emerging and African countries, indicating cheap labour as a determinant of FDI. The result further show oil endowed countries in Africa attract more FDI than non oil endowed countries, emphasizing the important of natural resources in attracting FDI in Africa

Desia et al (2005) evaluates the impact of outbound foreign direct investment on domestic investment rate on OECD economies. With times series data results show that, OECD countries have high rate of outbound FDI in the 1980 and 1990s exhibited lower domestic investment than other countries which suggest that FDI and domestic investment are substitute. Their time series data show that, year in which America multinational firms have greater foreign capital expenditures, coincides with greater capital spending by the same firms. One dollar of additional foreign capital spending is associated with 3.5 dollars of additional domestic capital spending in the time series, implying that foreign and domestic are complements in production by multinational firms. This effect is consistent with cross sectional evidence, that firms whose foreign operations expand simultaneously, expand their domestic operation. It therefore, suggests that interpretation of the OECD cross sectional evidence may be confounded by omitted

variables. Motivated by the macroeconomic fluctuation and policy regime switches frequency observed in developing countries.

Jinjarak (2007) carries out a cross country examination of the risk link between a host country's macro risks and foreign direct investment activities. Using a panel sample data over the period of 1989 to 1999, an estimation of each country's vertical FDI share as ratio of exports to a parent country, relative to local sales by foreign affiliates is carried out. The results reveal that FDI activities of US multinationals industries with higher share of vertical FDI, respond inappropriately more to negative effects of macro level demand, supply and sovereign risks. The results also show that when institutional quality and total FDI share of the host country are sufficiently low, the merits of cross δ industry vertical versus horizontal FDI in response to macro risk disappear.

Many studies in Nigeria have emphasized the effect of macro economics instability on economic variables such as exports, foreign domestic investment, and the stock market performance. Most of these studies however, paid much of attention to exchange rate instability, these ignoring the instability of other variable such as GDP, inflation and interest rate. Also, there studies emphasize how instability of exchange rate affects trade particularly exports. However, this research work shall review these studies and show how the gaps in the existing domestic literature help to shape the present study.

For example, Oyejide (1986), Omolola (1992), Akanji(1992), Ihimodu (1993) Osuntogun, et al (1993) World Bank(1994), Aliyu (1994 & 2001) discovered that exchange rate depreciation caused significant changes in the structure and volume of Nigerians' product. Egwaikhid (1999) in his dynamic specification model of import determination in Nigeria from 1953 to 1989 discovered that short run changes in the availability of foreign exchanges earnings, relative prices and real output (income), significantly explained the growth in total imports in Nigeria on exchange rate instability, Nnanna (2002) links exchange rate instability in Nigeria to adverse monetary policy outcome, inflation, interest rate and growth in money supply, and the failure of monetary policy was linked to fiscal dominance in the economy.

Aliyu (2007) showed that exchange rate significantly affects import more than, exports due largely to the monocultural nature of Nigeria's exports and inexhaustible and multifarious nature of its imports. According to a study by the CBN (2007) using fundamental variables, TOT, nominal effective exchange rate (NEER) and lagged real exchange rate, findings suggest that, the three variables accounted for 22.5 and 99 percent of variable in the dependent variable respectively.

Aliyu (2008) assesses the impact of exchange rate volatility on non- oil export flows in Nigeria. Theoretically, volatility rate link is ambiguous, although a strand of studies reported inverse link between export flow and volatility. The paper employed fundamental analysis where the flow of non-oil exports from the Nigerian economy is assumed to be predicted on fundamental variables the naira exchange rate instability, the US dollar instability, Nigeria's term of trade (TOT) and index of openness (OPN). Empirical results showed presence of unit root at level, however, the null hypothesis of non- stationary was rejected at first difference. Cointegration results revealed that, a stable long run equilibrium relationship exists between non-oil exports and the fundamental variables. Using quarterly observation for twenty years. Vector cointegration estimate revealed that, the naira exchange rate instability decreased non-oil exports by 3.65% while the same estimate for the US dollar instability increased export of non-oil in Nigeria by 5.2% in the year 2003. The paper recommends measures that, would promote greater openness of the economy and exchange rate stability in the economy.

Alaba (2003) investigates exchange rate uncertainty and foreign direct investment in Nigeria. The paper attempts, to estimate the relationship between the behaviour of exchange rate, as one of the most important anchor of recent global economic process, and foreign direct investment (FDI), with respect to Nigeria. Their results confirm the controversy in the literature about the extent and direction of effects of instability. They also found that parallel market exchange rate is an important driver of real economic process in Nigeria.

Ayanwale (2007) investigates the empirical relationship between non extractive FDI and economic growth in Nigeria and examined the determinates of FDI inflow to the Nigerian economy.

Secondary data were sourced from the Central Bank of Nigeria, international monetary fund and the federal office of statistics. The period of analysis was 1970 ó 2002. An augmented growth model was estimated via the ordinary least squares and the 2SLS methods to ascertain the relationship between the FDI, its components and economic growth. Results suggest that the determinants of FDI inflow in Nigeria are market size, infrastructure development and stable macroeconomic policy, openness to trade and available human capital, however, are not FDI including. FDI in Nigeria contributes positively to economic growth. Although the overall effect of FDI on economic growth may not be significant, the components of FDI do have positive impacts. The FDI in the communication sector has the highest potential to grow the economy and is in multiples of that of the oil sector. The manufacturing sector FDI negatively affects the economy, reflecting the poor business environment in the country. The level of available human capital is low and there is need for more emphases of training to enhance its potential to contribute to economic growth.

Dinda (2009) studies the factors attracting FDI to Nigeria. Applying vector error correction model, this study empirically investigates the determinants of FDI inflow to Nigeria during 1970 ó 2006. The study suggests that, the endowment of natural resources, openness, macroeconomic risk factors like, inflation and exchange rate are significant determinants of FDI inflow to Nigeria. Trading partners like the US economy has strong influence on FDI inflows to Nigeria and its exchange rate, however emerging economies like China and India influence heavily on Nigeria economy.

Emerging South Africa has influence in FDI inflow to Nigeria and foreign exchange rate also. Asiedu (2006) examines the determinants of FDI to Africa. She suggests that low inflation and efficient legal system promotes FDI but corruption and political instability have opposite effect. Using least squares approach on annual data for 1962 ó 1974, Obadan (1982) supports the market size hypothesis confirming the role of protectionist policies tariff barriers. The study suggests taking the cognizance factors such as market

size, growth and tariff policy when dealing with policy issues relating to foreign investment to the country.

Anyanwu (1998) study of the economic determinants of FDI in Nigeria also confirmed the positive role of domestic market size in determining FDI inflow into the country. This study noted that, the abrogation of the indigenization policy in 1995, significantly encouraged the flow of FDI into the country and that more efforts is required in raising the nation's economic growth, so as to attract more FDI, Igoha(2001) examined the effects of macroeconomic instability and uncertainty, economic size and external debt on foreign private investment inflows. He shows that market size attracts FDI to Nigeria whereas inflation discourages it. The study confirms that unsuitable macroeconomic policy acts to discourage foreign investment inflows into the country.

Other empirical studies on FDI in Nigeria centered on examination of its nature, determinants and potentials. For example, Odozi (1995) submitted that foreign investment in Nigeria was made up of mostly "Green Field" investment, that is, it is mostly utilized for the establishment of new and some through existing enterprise. Aremu (1997) categorized the various types of foreign investment in Nigeria into time: Wholly foreign owned; joint ventures; special contract arrangements; technology management and marketing arrangement; and subcontract coproduction and specialization.

Assessing the magnitude, direction and prospects of FDI in Nigeria, Jerome and Ogunkola (2004) noted that while the FDI regime in Nigeria was generally improving, some serious deficiencies remain. These deficiencies are mainly in the area of corporate environment (such as; corporate law, labour law, bankruptcy, etc.) and institutional uncertainty as well as the rule of law. The establishment and the activities of the Economics and Financial Crimes Commission (EFCC), the Independent Corrupt Practice Commission (ICPC) and the Nigeria Investment Promotion Commission (NIPC) are efforts to improve the corporate environment and uphold the rule of law.

3.5 Limitations of Previous Studies

There exists an avalanche of studies on the concept of Foreign Direct Investment and corresponding and related variables. As earlier, noted, empirical studies on FDI flows

abound but its interaction with macroeconomic instability, has suffered serious neglect. Few studies, both domestic and foreign focused more on exchange rate instability, domestic investment and FDI, while many emphasized on the determinants of FDI.

Alaba (2003) investigates exchange rate uncertainty and foreign direct investment in Nigeria. The paper attempts, to estimate the relationship between the behaviour of exchange rate, as one of the most important anchor of recent global economic process, and foreign direct investment (FDI), with respect to Nigeria. His results confirm the controversy in the literature about the extent and direction of effects of instability. He also found that parallel market exchange rate is an important driver of real economic process in Nigeria.

Aliyu (2008) assesses the impact of exchange rate volatility on non- oil export flows in Nigeria. Theoretically, volatility rate link is ambiguous, although a strand of studies reported inverse link between export flow and volatility.

Specifically, the existing literature firstly; reveals that no study has been able to focus on the estimation of the variance decomposition of FDI behaviour to the fluctuation of selected macroeconomic variables in Nigeria, also reveals that there is dearth of empirical studies in Nigeria linking macroeconomic volatility to FDI. This is a serious literature gap despite the fact that, the era which witnessed rapid flow of FDI to Nigeria was also the most turbulent period in Nigeria's macroeconomic environment. It would be very interesting to understand if, FDI inflow in Nigeria is affected by macroeconomic instability and in what magnitude. This study is motivated by these gaps in the existing literature.

CHAPTER FOUR

METHODOLOGY

4.1 Methodological Framework

Theoretical linkage between FDI and macroeconomic instability has been pointed out in various existing literature. Although it is almost commonly approved that FDI positively affect economic growth, there is no general consensus among economists on the determinants of FDI .In other words the empirical assessment of the connection between macroeconomic variables and FDI inflow is not conclusive. However, one hypothesis that has been held firmly by all literature is that, countries with stable macroeconomic and political climate are more likely to receive more FDI. Specifically, countries with more obvious volatile macroeconomic variables are not likely to be competitive destination for FDI. This approach, in measuring macroeconomic fluctuation is not different from what previous empirical works have followed. In order to properly locate and situate the effect of macroeconomic fluctuation on FDI inflow in Nigeria economy an ordinary least squares (OLS) estimation techniques is used to estimate the effect of macroeconomic fluctuation on FDI inflow in Nigeria economy. Furthermore, the Variance Decomposition and the Vector Autoregression (VAR) will accompany the OLS technique to accomplish the objectives.

In measuring the volatility of the financial macroeconomic variables, we begin the process of econometrically deriving a statistical measure of volatility:

$$Y_t = FMV \dots\dots\dots(1)$$

$$Y_t^* = \log \dots\dots\dots(2)$$

$$dY_t^* = Y_t^* - Y_{t-1}^* \dots\dots\dots(3)$$

$$\overline{dYt^*} = \text{mean} \dots\dots\dots(4)$$

$$X_t = dY_t^* - \overline{dYt^*} \dots\dots\dots(5)$$

By definition:

FMV = Financial Macroeconomic Variable

$Y_t = \log \text{ of FMV}$

(3) = Relative change in the given Financial Macroeconomic Variable

(4) = Mean of (3)

(5) = Mean-Adjusted relative change in the lag of Financial Macroeconomic Variable.

Using X^2_t as a measure of volatility, being a squared quantity, its value will be high in periods when there are big changes in the given financial macroeconomic variable and its value will be comparatively small when there are modest changes in the variable.

On accepting X^2_t as a measure of volatility, we consider following AR(1) model, thus:

$$X^2_t = \beta_0 + \beta_1 X^2_{t-1} + U_t \dots \dots \dots (6)$$

The model postulates that volatility in the current period is related to its value in the previous period plus a white noise error term. Specifying an AR(p) model of volatility, we have:

$$X^2_t = \beta_0 + \beta_1 X^2_{t-1} + \beta_2 X^2_{t-2} + \dots + \beta_p X^2_{t-p} + U_t \dots \dots \dots (7)$$

: This model suggests that volatility in the current period is related to volatility in the past p periods. Model in equation (6) is an example of an ARCH(1) model and model 7 is an ARCH(p) model.

Given that the research under investigation is anchored quarterly times series data, we consider the k-variable linear regression model:

$$Y_t = \beta_1 + \beta_2 X_{2t} + \dots + \beta_k X_{kt} + U_t \dots \dots \dots (8)$$

On the assumption that conditional on the information available at time (t-1), the disturbance term is distributed as:

$$u_t \approx N[0, (\alpha_0 + \alpha_1 u^2_{t-1})] \dots \dots \dots (9)$$

That is; the error term is normally distributed with zero mean and $\text{var}(u_t) = (\alpha_0 + \alpha_1 u^2_{t-1}) \dots \dots \dots (10)$ that is the variance of the error term follows an ARCH(1) process.

Since its discovery in 1982, the ARCH modeling has become a growth industry, with all kinds of variations on the original model. One that has become popular is the generalized autoregressive conditional heteroscedasticity (GARCH) model. This was originally proposed by Bollerslev(1986) . In a simple framework, the simplest GARCH model is the GARCH(1,1) which is specified as:

$\sigma^2_t = \alpha_0 + \alpha_1 u^2_{t-1} + \alpha_2 \sigma^2_{t-1} \dots \dots \dots (10)$. The GARCH model depicts that the conditional variance of the error term at time t depends not only on the squared error term in the previous time period (as in ARCH[1]) but also on its conditional variance in the previous time period. Hence, to measure the volatility of the financial macroeconomic variables, the GARCH model will be adopted.

4.2 Model Specification

To actualize objective one of the research which is to estimate the impact of volatile macroeconomic variables on Foreign Direct Investment (FDI) inflow in Nigeria, the following model was specified:

$$FDI = f(INF, EXR, INTR) \quad . \quad . \quad . \quad (11)$$

With the inclusion of additional control variables as related to the theoretical framework, the model becomes:

$$FDI = f(INF, EXR, INTR, GDP, OPN) \quad . \quad . \quad . \quad (12)$$

Translating the model into an econometric version, we have:

Model 1

$$FDI = \beta_0 + \beta_1 INF + \beta_2 EXR + \beta_3 INTR + \beta_4 GDP + \beta_5 OPN + \mu \quad . \quad . \quad . \quad (13)$$

where:

FDI = foreign direct investment.

INF = Inflation Rate

EXR = Exchange Rate

INTR = Interest Rate

LogGDP = Growth Rate

OPN= Trade Openness

ϵ_t = error term.

$\phi_0, \phi_1, \phi_2, \phi_3, \phi_4, \phi_5$ are the coefficients of the explanatory variables. $\phi_1, \phi_3 = 0$, and $\phi_2, \phi_4, \phi_5 = 0$

Model II [Variance Decomposition Analysis]

The essence of this model is to estimate the second objective of the research which is to ascertain the decomposed contribution of volatile macroeconomic variables to the behaviour of FDI inflow to Nigeria. The instrumentality of the Variance Decomposition function will be used for the analysis and in a general form, the model is specified thus:

$$y_t = \bar{y} + \sum_{i=1}^{\infty} \phi_{11} \epsilon_{yt-i} + \sum_{i=1}^{\infty} \phi_{12} \epsilon_{zt-i} \quad (14)$$

$$z_t = \bar{z} + \sum_{i=1}^{\infty} \phi_{21} \epsilon_{yt-i} + \sum_{i=1}^{\infty} \phi_{22} \epsilon_{zt-i} \quad (15)$$

Where the z and y are the exogenous and endogenous variables respectively

Model III (Vector Autoregressive)

The third objective which is to evaluate the forecasting effectiveness of volatile macroeconomic variables to FDI inflow in Nigeria will be captured with the instrumentality of the Vector Autoregressive (VAR). The general form of the model is given as:

$$\begin{aligned}
V_{1t} &= \alpha + \sum_{j=1}^k \beta_j XV_{t-j} + \sum_{j=1}^k \phi_j XV_{t-j} + \Psi_{1t} \\
XV_t &= \Omega + \sum_{j=1}^k \theta_j V_{t-j} + \sum_{j=1}^k \phi_j V_{t-j} + \Psi_{2t}
\end{aligned}
\tag{16}$$

The explanatory variables included in the model are:-

1. Exchange rate : A country with relatively weak currency attracts more FDI than one with strong currency
2. Interest rate: the interest rate is a proxy for cost of capital, According to the neoclassical theory; an increase in the interest rate raises the cost of capital and therefore reduces the incentive to accumulate more capital. Similarly, a decrease in the interest rate reduces the cost of capital and stimulates investment. In respect of foreign investment, a decrease in international interest rate raises the amount of profit from owing capital even in foreign country and hence, stimulates foreign investment.
3. Inflation rate: Ayanwalo (2005) measured it as the overall economic stability of the country and opined that it has an indirect relationship with economic growth. Since economic growth attract more investment, it means that high inflation rate discourages FDI inflow
4. Output: (Market size or Demand): The market demand is one of the important determinants that have been used in empirical studies to explain the inflow of FDI to a host country. This is because investment opportunities in countries with large markets tend to be more profitable for foreign firms. The variable that has been widely used to proxy market size is per capita income of a country. The GDP per capita reflects the income level of the whole economy (Chakrabarti, 2001).
5. Trade Openess: This is the ratio of the addition of Imports and Exports to GDP. It is derived by adding the exports and imports and then dividing by the level of Gross Domestic Product. The more a country is open to trade with other countries, the more level of international investment (FDI)

Justification of Variables

The variables are justified because there are volatile variables: interest rate, exchange rate, inflation rate.

Unit Root Test

In order to avoid spurious regression estimates, a time series data should be examined for stationarity or order of integration. Time series data is accepted to be stationary if it exhibits mean reversion in that it fluctuates around a constant long-run mean, has a finite variance that is time invariant and has a theoretical correlogram that diminishes as the lag length increases (Asteriou, 2006, p.247).

There are many tests trying to find the order of integration of series and among them Dickey-Fuller, Augmented Dickey-Fuller and Phillips and Perron tests are the most widely used ones in testing the presence of unit roots. Dickey-Fuller (DF) test is based on the following model:

$$\Psi_t = \lambda\Psi_{t-1} + \varepsilon_t \quad (17)$$

The model can also be expressed as:

$$\Delta\Psi_t = \varpi\Psi_{t-1} + \varepsilon_t \quad (18)$$

where $\varpi = (\lambda - 1)$. This model is called pure random walk model. Null hypotheses are $H_0 : \lambda = 1$ for model (3.4.1) and $H_0 : \varpi = 0$ for model (3.4.2). The corresponding alternative hypotheses are $H_a : \lambda < 1$ and $H_a : \varpi < 1$ respectively. If DF test statistic (t-statistic of lagged dependent variable) is less than the critical value, we reject the null hypothesis and conclude that the series is stationary (there is no unit root). Model (3.4.2) can be extended by including a constant term and/or the trend.

The corresponding models are called random walk with drift and random walk with drift and time trend:

$$\begin{aligned}\Delta \psi_t &= \alpha_0 + \Omega \psi_{t-1} + \varepsilon_t \\ \Delta \Psi_t &= \alpha_0 + \beta_2 t + \Omega \Psi_{t-1} + \varepsilon_t\end{aligned}\quad . \quad . \quad . \quad (19)$$

where: $\Omega = (\lambda - 1)$. The two models have same testing procedures with the random walk model.

However, Equation (3.4.2) does not consider autocorrelation. Augmented Dickey-Fuller (ADF) test is used to test existence of unit root. The following three models represent pure random walk, random walk with drift and random walk with drift and trend used in Augmented Dickey Fuller tests:

$$\Delta \psi_t = \Omega \psi_{t-1} + \sum_{i=1}^p \beta_i \Delta \psi_{t-i} + \varepsilon_t \quad . \quad . \quad . \quad (20)$$

$$\Delta \psi_t = \alpha_0 + \Omega \psi_{t-1} + \sum_{i=1}^p \beta_i \Delta \psi_{t-i} + \varepsilon_t \quad . \quad . \quad . \quad (21)$$

$$\Delta \psi_t = \alpha_0 + \Omega \Psi + \beta_2 t + \sum_{i=1}^p \beta_i \Delta \psi_{t-i} + \varepsilon_t \quad . \quad . \quad . \quad (22)$$

where: $\Omega = (\lambda - 1)$ The null hypothesis is $H_0 : \Omega = 0$ and the alternative hypothesis is $H_a : \Omega < 0$. If ADF test statistic (t-statistic of lagged dependent variable) is less than the critical value, we reject the null hypothesis and conclude that the series is stationary (there is no unit root).

Co-integration Test and Error Correction Model

The co-integration technique allows for the estimation of a long-run equilibrium relationship. Economically speaking two variables can only be co-integrated if they have long-term or equilibrium relationship between them. The co-integration technique was pioneered by Engle and Granger (1987) and extended by Johansen (1990). It is a consensus that when cointegration is found, an error correction model is should be estimated to obtain the speed of adjustment. Thus, the Error Correction Model (ECM) will be estimated to reveal and correct the existence of short-run disequilibrium and the speed of adjustment mechanism.

The Error correction model is specified thus

$$\Delta Y_t = \theta_0 + \theta_1 z_{t-1} + \sum \theta_{2i} \Delta X_{t-1} + \sum \theta_{3i} \Delta Y_{t-1} + \varepsilon_t \dots (23)$$

Where \hat{e} denotes the first-order time difference (i.e. $\hat{e}y_t = y_t - y_{t-1}$) and where ε_t is a sequence of independent and identically distributed random variables with mean zero and constant variance.

The Test of Goodness of Fit [R^2]

To test for the explanatory power of the independent variable, the coefficient of determination; R^2 will be applied. The essence of the application of this statistic is that it will be used to measure the explanatory power of the independent variable(s) over the dependent variable. This statistic is thus used as a test of goodness of fit. R^2 lies between zero and one ($0 < R^2 < 1$). The closer R^2 is to 1 the greater the proportion of the variation in the dependent variables attributed to the independent variables.

T-Statistical Test of Significance

To carry out the test of individual regression coefficient, the t-statistics will be used. The justification of the t-statistics is that it will be employed to analyze the statistical significance of the individual regression coefficient. A two-tailed test will be conducted

at 5% level of significance. The null hypothesis H_0 will be tested against the alternative hypothesis H_1 .

F-Statistical test of Significance

To Test the statistical significance of the joint force regression plane, the f-ratio is used. The test will be conducted at 5% level of significance.

Note: t^* = computed t ó value

$t_{0.025}$ = tabulated t ó value

f^* = Computed f-value

$f_{0.05}$ = tabulated f ó value

Autocorrelation Test: (Second Order Test)

The presence of autocorrelation problem will be evaluated with the application of Durbin-Watson Statistic. The region of no autocorrelation remains:

$$du < d^* < (4-du)$$

Where:

du = Upper Durbin ó Watson

d^* = Computed Durbin-Watson

Normality Test

This test is justified on the grounds that it analyses the distribution status of the residuals. The normality test is normally carried out with the application of the Jarque-Berra Statistic. The Jarque Berra (JB) is given as:

$$JB = n [S^2/6 + (K-3)^2/24]$$

Where:

n = sample size

S = skewness coefficient

K = Kurtosis coefficient

Thus: the null hypothesis of the Jarque Berra test is that the residuals are normally distributed, and it is subject to test.

Granger Causality Analysis

To check the causal relationship between time series, Granger causality test, developed by Granger (1969) will be used. According to Granger, a variable X_t is said to Granger cause another variable Y_t if the past and present values of X_t helps to predict Y_t . The causality relationship can be evaluated by estimating the following regressions:

$$y_t = \sum_{j=1}^p \alpha_{1j} y_{t-j} + \sum_{j=1}^p \beta_{1j} x_{t-j} + \mu_{1t} \quad (24)$$

$$x_t = \sum_{j=1}^p \alpha_{2j} y_{t-j} + \sum_{j=1}^p \beta_{2j} x_{t-j} + \mu_{2t} \quad (25)$$

Vector Autoregression (VAR) Analysis

VAR which is a technical extension of granger causality will be used to carry out a multivariate forecasting task of the variables under analysis. This is because a VAR model is an n -equation, n -variable linear model in which each variable is in turn explained by its own lagged values plus current and past values of the remaining $n-1$ variables. It provides a systematic way to capture rich dynamics in multiple time series as well as offering the promise of providing a coherent and credible approach to data

description, forecasting, structural inference and policy analysis. The VAR analysis will be carried out by estimating the following equations:

$$\begin{aligned}
 Y_{1t} &= \alpha + \sum_{j=1}^k \beta_j Y_{t-j} + \sum_{j=1}^k \phi_j X_{t-j} + \Psi_{1t} \\
 X_{t} &= \Omega + \sum_{j=1}^k \theta_j Y_{t-j} + \sum_{j=1}^k \phi_j X_{t-j} + \Psi_{2t}
 \end{aligned}
 \tag{26}$$

VAR lag length selection

The Akaike Information Criterion (AIC) will be used to select the optimal lag length for the VAR estimation.

The VAR estimation will be carried out in 4 individual lags and the category that has the least AIC value will be selected on the basis of optimality.

Impulse Response Function

The Impulse Response analysis which is the centre piece of VAR will be used to measure the time profile of the effect of shocks on the future states of the VAR dynamical system in comparison of the two periods under investigation.

4.3 Data Sources and Software Used

The data to be used in the research will be sourced from the Central Bank of Nigeria Statistical Bulletin. The quarterly data representing the variables in question will be applied. Eviews econometric software will be employed for the analysis.

CHAPTER FIVE

PRESENTATION AND ANALYSIS OF RESULTS

5.1 Empirical Results

5.2 Unit Root test Results

In a research involving the use of time series data, it is ideal to carry out stationarity tests on the series to be used. This is justified on the grounds that data not found stationary has the tendency of yielding spurious regression results and thus mis-leading policy projections. Thus a unit root test was conducted and the results of the test is reported in the Table below:

VARIABLE	ADF STATISTICS	CRITICAL VALUE @ 5%	ORDER OF INTEGRATION
FDI	-8.869586	-1.9416	I(1)
INFLATION	-4.634483	-3.4368	I(1)
EXCHANGE-RATE	-3.094781	-2.8784	I(0)
INTEREST-RATE	-6.275551	-3.4370	I(1)
OPENNESS	-3.639218	-3.4368	I(0)

The unit root test above shows that Foreign Direct Investment, Inflation and Interest Rate are integrated at order one, which entails that they follow the I(1) process while Exchange Rate and Openness are stationary at level, meaning that they follow the I(0) process.

5.3 Cointegration Test (Engel-Grangel Method)

ADF Test Statistic	-7.818580	1% Critical Value*	-3.4697
		5% Critical Value	-2.8784
		10% Critical Value	-2.5757

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID01)

Method: Least Squares

Date: 12/15/15 Time: 20:08

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
RESID01(-1)	-1.219602	0.155988	-7.818580	0.0000
D(RESID01(-1))	0.655049	0.130975	5.001350	0.0000
D(RESID01(-2))	0.258433	0.115124	2.244818	0.0261
D(RESID01(-3))	0.210935	0.091195	2.313001	0.0220
D(RESID01(-4))	0.133285	0.081645	1.632486	0.1045
C	-68.65777	6818.611	-0.010069	0.9920
R-squared	0.429764	Mean dependent var	1558.993	
Adjusted R-squared	0.412484	S.D. dependent var	116260.7	
S.E. of regression	89113.38	Akaike info criterion	25.66766	
Sum squared resid	1.31E+12	Schwarz criterion	25.77790	
Log likelihood	-2188.585	F-statistic	24.87077	
Durbin-Watson stat	1.966363	Prob(F-statistic)	0.000000	

The cointegration test was carried out with the application of Engel Granger methodology. This test involves the generation of the residuals and carrying out a unit-root analysis on it. The above result shows that the residuals are stationary at level, as the ADF Test statistic yielded -7.818580 with a corresponding critical value of -2.8784 at 5% level of significance.

5.4 Error Correction Mechanism (ECM) [Short-Run Dynamics]

Dependent Variable: D(FDI)

Method: Least Squares

Date: 12/15/15 Time: 20:51

Sample(adjusted): 1970:2 2013:4

Included observations: 175 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
	t			
C	-2837.931	9785.786	-0.290005	0.7722
D(INF)	-367.1805	532.2037	-0.689925	0.4912
D(EXCHR)	142.9009	149.2960	0.957165	0.3399
D(INTR)	390.6077	1698.755	0.229938	0.8184
D(OPN)	-0.000743	0.002081	-0.357030	0.7215
ECM(-1)	-0.534291	0.075796	-7.049080	0.0000
R-squared	0.227529	Mean dependent var	2469.843	
Adjusted R-squared	0.204675	S.D. dependent var	111122.7	
S.E. of regression	99100.32	Akaike info criterion	25.87934	
Sum squared resid	1.66E+12	Schwarz criterion	25.98784	
Log likelihood	-2258.442	F-statistic	9.955716	
Durbin-Watson stat	1.626712	Prob(F-statistic)	0.000000	

The ECM analysis carried out above shows that the ECN coefficient yielded -0.534291. This entails that the speed at which the short-run disequilibrium will be corrected to achieve the long-run equilibrium is 53.4%. This speed is however slightly above average and is considered fast.

5.5 Regression Analysis

Dependent Variable: LOG(D(FDI))

Method: Least Squares

Date: 12/15/15 Time: 20:57

Sample(adjusted): 1970:2 2013:4

Included observations: 154

Excluded observations: 21 after adjusting endpoints

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	3.049126	0.707900	4.307282	0.0000
D(INF)	-0.005566	0.010703	-0.520055	0.6038
LOG(EXCHR)	0.341166	0.095980	3.554541	0.0005
D(INTR)	-0.039294	0.037510	-1.047578	0.2965
LOG(OPN)	0.342710	0.069646	4.920727	0.0000
R-squared	0.471257	Mean dependent var	7.775387	
Adjusted R-squared	0.457062	S.D. dependent var	2.531676	
S.E. of regression	1.865448	Akaike info criterion	4.116808	
Sum squared resid	518.5043	Schwarz criterion	4.215410	
Log likelihood	-311.9942	F-statistic	33.20008	
Durbin-Watson stat	1.745399	Prob(F-statistic)	0.000000	

This regression analysis carried out above is anchored on the estimation of the impact of volatile macroeconomic variables on the inflow of Foreign Direct Investment (FDI) into Nigeria covering the period 1970Q1 ó 2013Q4.

The regression output shows that the contribution of Inflation to FDI inflow is negative. An increase in Inflation leads to a reduction in FDI inflow by 0.005566. This result conforms to economic a priori expectation because inflation reduces the value of money and hence no foreign investor would want to invest in an economy that will devalue its currency. The corresponding t-statistics which yielded -0.520055 however entails that Inflation has no significant impact on FDI in Nigeria.

The exchange rate coefficient shows that exchange rate contributes positively to FDI in Nigeria. An increase in exchange rate results to an increase in FDI by 0.341166. Hence, exchange rate increase facilitates the inflow of foreign investment. This conforms to economic a priori expectation because high exchange rate weakens the currency of the domestic economy and strengthens the currency of the foreign investor. The t-statistics

which yielded 3.554541 entails that exchange rate has significant impact on FDI in Nigeria.

Interest rate used in this context is the cost of accessing funds in banking institutions. If the cost of borrowing is high in a domestic economy, the foreign investments will reduce because investors frequently access funds. FDI inflows fall by 0.039294 if the rate of interest increases by a percentage. This conforms to economic a priori expectation. However, the t-statistics yielded -1.047578 and this entails that Interest Rate has no significant impact on FDI in Nigeria.

Trade Openness coefficient yielded a positive parameter at the magnitude of 0.342710. Trade openness leads to an increase in FDI by 0.342710. This conforms to economic a priori expectation because the more open an economy is, the more prospects of receiving inflow of foreign investments. The impact of trade openness is significant as the t-statistics yielded 4.920727.

5.6 Variance Decomposition Analysis

Variance Decomposition of FDI:

Period	S.E.	FDI	INF	EXCHR	INTR	OPN
1	88613.77	100.0000	0.000000	0.000000	0.000000	0.000000
2	109458.5	95.81467	0.058853	0.780590	0.271537	3.074348
3	114207.4	89.60206	0.222192	5.572347	0.406034	4.197367
4	119693.8	81.60903	0.340070	13.60424	0.590925	3.855733
5	126369.0	74.62779	0.731608	19.30317	0.616608	4.720823
6	134036.9	70.47418	1.616502	21.45559	0.554571	5.899155
7	140559.3	67.97220	2.601621	22.19232	0.505482	6.728380
8	145001.0	65.95165	3.266474	22.83399	0.476949	7.470944
9	148084.3	64.19286	3.616333	23.42136	0.458359	8.311089
10	150422.5	62.76976	3.816530	23.76245	0.446683	9.204578

The variance decomposition of FDI in response to the volatile explanatory variables show that on the basis of a quarterly series, in the 5th period INF accounts for 0.73% of the variability of FDI and 3.8% in the 10th period. In the 5th period, exchange rate accounts for 19.3% and 23.7% in the 10th period. Interest rate accounts for the variability of FDI in the 5th period 61.6% and 0.44% in the 10th period. On the average, Exchange rate contributes more to the variability of FDI than other corresponding volatile macroeconomic variables.

5.7 Vector Autoregression

Date: 12/15/15 Time: 21:31

Sample(adjusted): 1970:3 2013:4

Included observations: 174 after adjusting endpoints

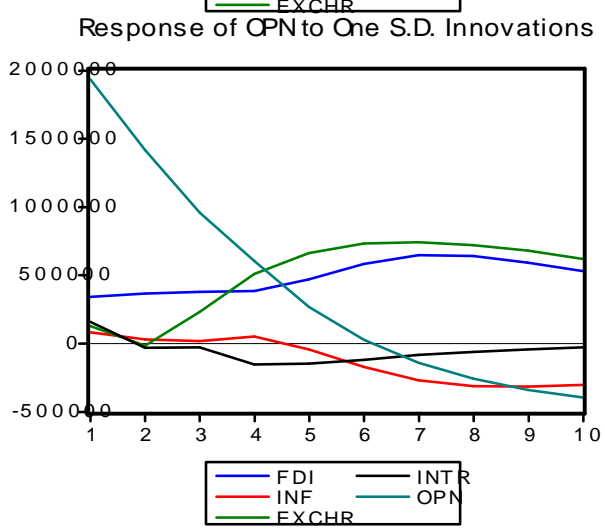
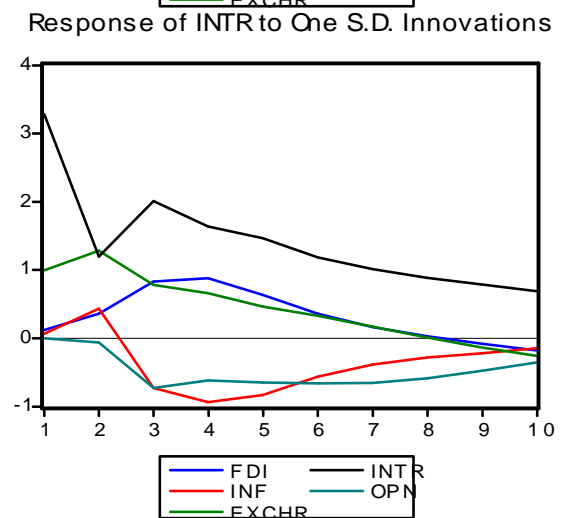
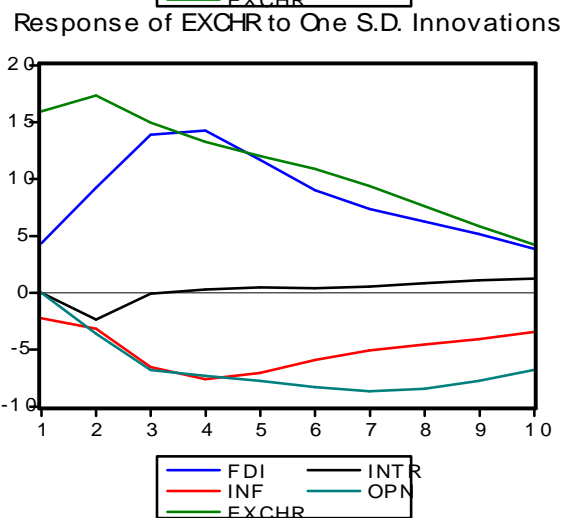
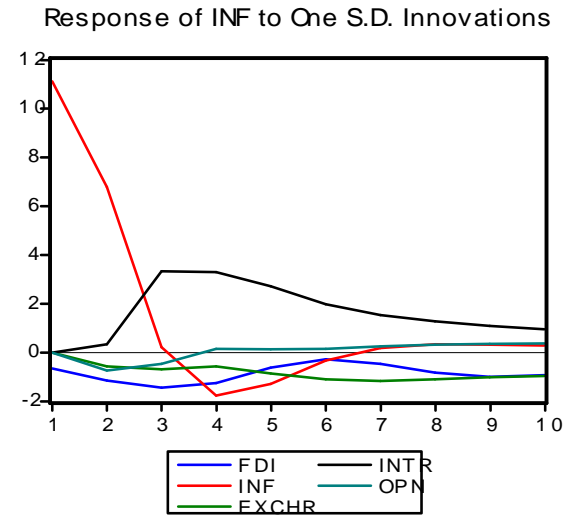
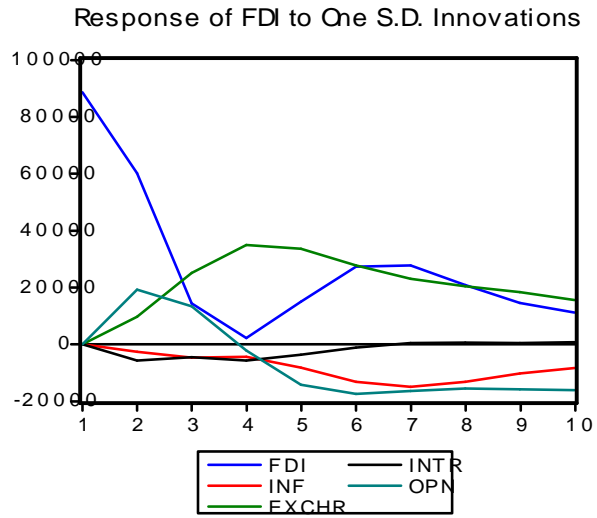
Standard errors & t-statistics in parentheses

	FDI	INF	EXCHR	INTR	OPN
FDI(-1)	0.610611 (0.07488) (8.15408)	-5.25E-06 (9.4E-06) (-0.55779)	5.58E-05 (1.4E-05) (3.95192)	1.20E-06 (2.9E-06) (0.41406)	1.535191 (1.66907) (0.91979)
FDI(-2)	-0.366219 (0.07970) (-4.59524)	-2.69E-06 (1.0E-05) (-0.26880)	2.60E-05 (1.5E-05) (1.72896)	4.72E-06 (3.1E-06) (1.52685)	-0.010175 (1.77631) (-0.00573)
INF(-1)	-163.4617 (582.012) (-0.28086)	0.605073 (0.07318) (8.26864)	-0.035997 (0.10967) (-0.32823)	0.048780 (0.02256) (2.16219)	-3257.867 (12972.3) (-0.25114)
INF(-2)	232.0819 (582.889) (0.39816)	-0.382286 (0.07329) (-5.21628)	-0.270393 (0.10984) (-2.46180)	-0.109141 (0.02259) (-4.83041)	7439.714 (12991.9) (0.57264)
EXCHR(-1)	664.8739 (427.472) (1.55536)	-0.039932 (0.05375) (-0.74296)	1.140012 (0.08055) (14.1529)	0.057811 (0.01657) (3.48885)	-3992.088 (9527.81) (-0.41899)
EXCHR(-2)	625.6017 (421.992) (1.48250)	-0.040728 (0.05306) (-0.76762)	-0.353826 (0.07952) (-4.44967)	-0.073306 (0.01636) (-4.48141)	21609.89 (9405.68) (2.29754)
INTR(-1)	-2217.262 (1901.33) (-1.16616)	0.122944 (0.23906) (0.51429)	-0.623613 (0.35827) (-1.74060)	0.366731 (0.07370) (4.97590)	-45166.87 (42378.3) (-1.06580)

INTR(-2)	1338.933 (1888.54) (0.70898)	0.851027 (0.23745) (3.58405)	1.128254 (0.35586) (3.17046)	0.527241 (0.07321) (7.20218)	18141.17 (42093.3) (0.43098)
OPN(-1)	0.009929 (0.00354) (2.80808)	-3.83E-07 (4.4E-07) (-0.86096)	-1.85E-06 (6.7E-07) (-2.78124)	-3.28E-08 (1.4E-07) (-0.23965)	0.733662 (0.07881) (9.30917)
OPN(-2)	-0.005326 (0.00357) (-1.49299)	2.54E-07 (4.5E-07) (0.56533)	-6.29E-07 (6.7E-07) (-0.93636)	-2.25E-07 (1.4E-07) (-1.63034)	-0.067622 (0.07952) (-0.85038)
C	27181.49 (20224.5) (1.34399)	4.921407 (2.54284) (1.93540)	4.808784 (3.81096) (1.26183)	3.405966 (0.78396) (4.34456)	225834.8 (450778.) (0.50099)
R-squared	0.673198	0.489828	0.913049	0.724770	0.762925
Adj. R-squared	0.653149	0.458529	0.907715	0.707885	0.748381
Sum sq. residues	1.37E+12	21599.10	48513.93	2052.994	6.79E+14
S.E. equation	91554.99	11.51129	17.25200	3.548952	2040647.
F-statistic	33.57730	15.65001	171.1621	42.92317	52.45471
Log likelihood	-2229.111	-666.3529	-736.7532	-461.6112	-2769.221
Akaike AIC	25.74840	7.785665	8.594865	5.432313	31.95656
Schwarz SC	25.94811	7.985376	8.794575	5.632024	32.15627
Mean	111532.3	18.99368	44.67702	15.02529	2433619.
dependent					
S.D. dependent	155457.1	15.64359	56.79016	6.566332	4068142.
Determinant Residual		9.97E+27			
Covariance					
Log Likelihood		-6843.311			
Akaike Information Criteria		79.29093			
Schwarz Criteria		80.28948			

Source: Author's Computation

5.8 Impulse Response Function Analysis



The Impulse response analysis show that the response of FDI to one standard deviation innovation of Exchange Rate, Interest Rate and Openness is positive while the response of FDI to one standard deviation innovation of Inflation is negative. This is depicted in the graph of FDI response as every graph line above the zero echelon is regarded as positive while graphs below the zero echelon is regarded as negative.

5.9 Test of Hypothesis

Based on the F-statistics of the regression analysis, the f-statistic value yielded 33.20008 with a probability value of 0.00000. This entails the rejection of the null hypothesis (H_0) and the acceptance of the alternative (H_1). Hence, Volatile macroeconomic variables have significant impact on FDI inflow in Nigeria.

On the basis of hypothesis two, we accept the null hypothesis that the decomposed variability of volatile macroeconomic variables to FDI inflow is not high in Nigeria. This is because based on the variance decomposition analysis of FDI to the volatile macroeconomic variables under analysis; none of the explanatory variables yielded a value up to average (50%).

The third hypothesis which is hypothesized on the predictability of FDI inflow to the behaviour of volatile macroeconomic variables is not effective was analyzed with the Vector Autoregression. The VAR F-statistics yielded 33.57730. This is indeed high and on this note, we reject the null hypothesis and accept the alternative. Hence; the predictability of FDI inflow to the behaviour of volatile macroeconomic variables is effective.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Summary of findings

This research has been able to carry out an empirical analysis of the impact of macroeconomic instability on FDI inflow in Nigeria covering the period 1970Q1 to 2013Q4. On the course of the study, the concept of macroeconomic instability and its possible relationship with FDI inflow were analyzed. The results obtained from the analysis showed that:

1. Volatility in macroeconomic variables such as exchange rate, interest rate and inflation rate have a significant impact on FDI inflow in Nigeria.
2. On the basis of hypothesis two, we accept the null hypothesis that the decomposed variability of volatile macroeconomic variables to FDI inflow is not high in Nigeria. This is because based on the variance decomposition analysis of FDI to the volatile macroeconomic variables under analysis; none of the explanatory variables yielded a value up to average (50%).
3. The third hypothesis states that the predictability of FDI inflow to the behaviour of volatile macroeconomic variables is not effective. This hypothesis was examined using Vector Autoregressive model. The hypothesis was however rejected, indicating that the predictability of FDI inflow to the behaviour of volatile macroeconomic variables is effective in Nigeria

6.2 Policy Implications of findings

This study has examined the empirical analysis of macroeconomic instability and FDI inflow in Nigeria. The results on the average show that macroeconomic instability has significant impact on FDI inflow in Nigeria. Inflation, Exchange Rate and Interest Rate were used as proxies for macroeconomic instability and Trade openness was included as a control variable. Among the core macroeconomic instability variables, Inflation and Interest Rate were seen to contribute negatively to the inflow of FDI in Nigeria. The implications of this finding are as follows:

- i. On the average, macroeconomic instability does not enhance the inflow of FDI in Nigerian economy and this will adversely affect the level of national growth and development
- ii. The negative impact of interest rate on FDI implies that interest rate does not negatively affect domestic investment only, but also direct investment from foreign investors. Therefore policies that affect domestic investment may also affect direct investment from foreign investors.
- iii. The positive contribution of exchange rate to FDI inflow also implies that high exchange rate (increase in naira per dollar) makes domestic investment (investment in Nigeria) more cheaper compare to some foreign economies. This therefore attracts foreigners to invest in our economy. Thus leading to increase in FDI inflow.

6.3 Conclusion of the Study

This research has been able to X-Ray the impact of macroeconomic instability on FDI inflow in Nigeria covering the period 1970Q1 to 2013Q4. Based on the findings, the study concludes that macroeconomic instability contributes negatively to FDI inflow in Nigeria. The study also concludes that trade openness is a viable channel for the inflow of FDI and hence should be adequately harnessed. Based on the conclusion, the relevant policies and recommendations will be articulated.

6.4 Recommendation

In the light of the findings of the study, the following recommendations are articulated:

1. Nigeria should encourage improved domestic investment to accelerate growth rather than relying on FDI as a prime mover of the economy.
2. Nigeria should develop a code of conduct on multinational corporation to curb their restrictive business practice, limit their repatriation of profits from Nigeria and ensure that significant part of their profits are re-invested into the Nigerian economy.
3. The government should re-visit the issue of local content requirement and should also pursue guided trade liberalization

4. Nigeria should ensure a stable government by guaranteeing the sustainability of democratic rule devoid of unwarranted changes.
5. The results equally suggest the need to increase the degree of openness for greater growth performance. Undoubtedly, development policies that are aimed at ensuring greater private (domestic and foreign) participation in the economy will lead to increase in the level of openness. This tends to buttress the argument that the economy needs to be opened up through increased private participation. For example, foreign investors participating in the debt conversion programme could be encouraged to direct their investments to projects that significantly increased production capacity incorporate new technologies in the tradable sectors and improve the country's infrastructure base.
6. Policies to encourage private holders of external assets to repatriate their capital should be implemented. These possibly might include tax amnesties and raising the domestic interest rate. It needs be pointed out, however, that these policies could have adverse effects on already weak private sector in the economy, but then, it will intensify the flow of FDI into the domestic economy.
7. The Central Bank of Nigeria should cooperate with the fiscal branch of the economy to ensure that macroeconomic stability is achieved through the application of fiscal and monetary policy tools.

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APPENDIX I

UNIT ROOT TEST AT LEVEL FORM

ADF Test Statistic	-3.094781	1% Critical Value*	-3.4697
		5% Critical Value	-2.8784
		10% Critical Value	-2.5757

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(EXCHR)

Method: Least Squares

Date: 12/15/15 Time: 19:20

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCHR(-1)	-0.092109	0.029763	-3.094781	0.0023
D(EXCHR(-1))	0.367295	0.076178	4.821506	0.0000
D(EXCHR(-2))	-0.019948	0.081189	-0.245692	0.8062
D(EXCHR(-3))	0.020947	0.081317	0.257602	0.7970
D(EXCHR(-4))	-0.028708	0.083877	-0.342258	0.7326
C	4.202960	2.017260	2.083499	0.0387
R-squared	0.163858	Mean dependent var		0.000164
Adjusted R-squared	0.138520	S.D. dependent var		21.21996
S.E. of regression	19.69551	Akaike info criterion		8.833115
Sum squared resid	64005.63	Schwarz criterion		8.943349
Log likelihood	-749.2314	F-statistic		6.466977
Durbin-Watson stat	1.989149	Prob(F-statistic)		0.000016

ADF Test Statistic	-1.899534	1% Critical Value*	-2.5776
		5% Critical Value	-1.9416
		10% Critical Value	-1.6167

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FDI)

Method: Least Squares

Date: 12/15/15 Time: 19:21

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.090092	0.047429	-1.899534	0.0592
D(FDI(-1))	-0.010092	0.083427	-0.120969	0.9039
D(FDI(-2))	-0.396235	0.082216	-4.819456	0.0000
D(FDI(-3))	-0.100161	0.080382	-1.246061	0.2145
D(FDI(-4))	-0.098589	0.082955	-1.188457	0.2364
R-squared	0.196816	Mean dependent var	2522.887	
Adjusted R-squared	0.177462	S.D. dependent var	112421.9	
S.E. of regression	101959.8	Akaike info criterion	25.93135	
Sum squared resid	1.73E+12	Schwarz criterion	26.02321	
Log likelihood	-2212.130	Durbin-Watson stat	2.023448	

ADF Test Statistic	-4.634483	1% Critical Value*	-4.0143
		5% Critical Value	-3.4368
		10% Critical Value	-3.1423

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INF)

Method: Least Squares

Date: 12/15/15 Time: 19:23

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	-0.441495	0.095263	-4.634483	0.0000
D(INF(-1))	0.211646	0.095211	2.222915	0.0276
D(INF(-2))	-0.176612	0.091776	-1.924376	0.0560
D(INF(-3))	0.056356	0.079425	0.709549	0.4790
D(INF(-4))	-0.119681	0.077462	-1.545022	0.1243
C	9.358075	2.728904	3.429243	0.0008
@TREND(1970:1)	-0.009898	0.019229	-0.514756	0.6074
R-squared	0.286181	Mean dependent var	-0.046784	
Adjusted R-squared	0.260065	S.D. dependent var	14.41442	
S.E. of regression	12.39920	Akaike info criterion	7.913216	
Sum squared resid	25213.40	Schwarz criterion	8.041822	
Log likelihood	-669.5799	F-statistic	10.95833	
Durbin-Watson stat	1.978579	Prob(F-statistic)	0.000000	
ADF Test Statistic	-3.530381	1% Critical Value*	-4.0143	
		5% Critical Value	-3.4368	
		10% Critical Value	-3.1423	

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INTR)

Method: Least Squares

Date: 12/15/15 Time: 19:24

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INTR(-1)	-0.196450	0.055645	-3.530381	0.0005
D(INTR(-1))	-0.284750	0.083114	-3.426032	0.0008
D(INTR(-2))	0.027261	0.085815	0.317668	0.7511
D(INTR(-3))	0.260736	0.085123	3.063065	0.0026
D(INTR(-4))	0.025816	0.081427	0.317048	0.7516
C	3.055531	0.986737	3.096602	0.0023
@TREND(1970:1)	-0.000873	0.006319	-0.138132	0.8903
R-squared	0.258231	Mean dependent var	0.000000	
Adjusted R-squared	0.231093	S.D. dependent var	4.572541	
S.E. of regression	4.009540	Akaike info criterion	5.655304	
Sum squared resid	2636.531	Schwarz criterion	5.783910	
Log likelihood	-476.5285	F-statistic	9.515506	
Durbin-Watson stat	1.998183	Prob(F-statistic)	0.000000	

ADF Test Statistic	-3.639218	1% Critical Value*	-4.0143
		5% Critical Value	-3.4368
		10% Critical Value	-3.1423

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(OPN)

Method: Least Squares

Date: 12/15/15 Time: 19:26

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPN(-1)	-0.181740	0.049939	-3.639218	0.0004
D(OPN(-1))	0.073302	0.081054	0.904356	0.3671
D(OPN(-2))	0.021087	0.080346	0.262458	0.7933
D(OPN(-3))	0.015209	0.078972	0.192580	0.8475
D(OPN(-4))	0.174470	0.078400	2.225379	0.0274
C	261600.2	359853.3	0.726964	0.4683
@TREND(1970:1)	2550.763	3412.562	0.747463	0.4559
R-squared	0.097805	Mean dependent var	67472.87	
Adjusted R-squared	0.064798	S.D. dependent var	2267354.	
S.E. of regression	2192664.	Akaike info criterion	32.07921	
Sum squared resid	7.88E+14	Schwarz criterion	32.20781	
Log likelihood	-2735.772	F-statistic	2.963157	
Durbin-Watson stat	1.982603	Prob(F-statistic)	0.008983	

ADF Test Statistic	-2.686404	1% Critical Value*	-2.5776
		5% Critical Value	-1.9416
		10% Critical Value	-1.6167

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(OPN)

Method: Least Squares

Date: 12/15/15 Time: 19:27

Sample(adjusted): 1971:2 2013:4

Included observations: 171 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPN(-1)	-0.111972	0.041681	-2.686404	0.0080
D(OPN(-1))	0.035869	0.080568	0.445199	0.6568
D(OPN(-2))	-0.012902	0.080074	-0.161123	0.8722
D(OPN(-3))	-0.013466	0.079052	-0.170339	0.8650
D(OPN(-4))	0.149179	0.078674	1.896171	0.0597
R-squared	0.063505	Mean dependent var	67472.87	
Adjusted R-squared	0.040938	S.D. dependent var	2267354.	
S.E. of regression	2220458.	Akaike info criterion	32.09313	
Sum squared resid	8.18E+14	Schwarz criterion	32.18499	
Log likelihood	-2738.963	Durbin-Watson stat	1.973914	

UNIT ROOT AT DIFFERENCED FORM

ADF Test Statistic	-8.869586	1% Critical Value*	-2.5777
		5% Critical Value	-1.9416
		10% Critical Value	-1.6167

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FDI,2)

Method: Least Squares

Date: 12/15/15 Time: 19:22

Sample(adjusted): 1971:3 2013:4

Included observations: 170 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-2.098884	0.236638	-8.869586	0.0000
D(FDI(-1),2)	1.002933	0.201874	4.968112	0.0000
D(FDI(-2),2)	0.529235	0.166098	3.186280	0.0017
D(FDI(-3),2)	0.326045	0.119169	2.735983	0.0069
D(FDI(-4),2)	0.180186	0.081627	2.207437	0.0287
R-squared	0.603162	Mean dependent var	460.4935	
Adjusted R-squared	0.593542	S.D. dependent var	159802.1	
S.E. of regression	101880.3	Akaike info criterion	25.92996	
Sum squared resid	1.71E+12	Schwarz criterion	26.02219	
Log likelihood	-2199.046	Durbin-Watson stat	1.950559	

ADF Test Statistic	-6.275551	1% Critical Value*	-4.0146
		5% Critical Value	-3.4370
		10% Critical Value	-3.1424

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INTR,2)

Method: Least Squares

Date: 12/15/15 Time: 19:25

Sample(adjusted): 1971:3 2013:4

Included observations: 170 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INTR(-1))	-1.471023	0.234405	-6.275551	0.0000
D(INTR(-1),2)	0.059347	0.211409	0.280721	0.7793
D(INTR(-2),2)	-0.008370	0.185299	-0.045170	0.9640
D(INTR(-3),2)	0.151449	0.142043	1.066218	0.2879
D(INTR(-4),2)	0.072668	0.081822	0.888121	0.3758
C	0.451267	0.671945	0.671582	0.5028
@TREND(1970:1)	-0.004785	0.006531	-0.732662	0.4648
R-squared	0.713190	Mean dependent var		0.005882
Adjusted R-squared	0.702633	S.D. dependent var		7.629284
S.E. of regression	4.160355	Akaike info criterion		5.729383
Sum squared resid	2821.295	Schwarz criterion		5.858504
Log likelihood	-479.9975	F-statistic		67.55344
Durbin-Watson stat	2.016730	Prob(F-statistic)		0.000000

APPENDIX II

YEAR	FDI	INTR	EXCHR	INF	OPN
1970:1	1003.200	7.000000	0.714300	13.80000	910.1573
1970:2	1322.800	7.000000	0.695500	16.00000	1385.079
1970:3	1571.100	7.000000	0.657900	3.200000	1697.529
1970:4	1763.700	7.000000	0.657900	5.400000	2422.041
1971:1	1812.100	7.000000	0.629900	13.40000	5803.495
1971:2	2287.500	6.000000	0.615900	33.90000	4978.152
1971:3	2339.000	6.000000	0.626500	21.20000	7459.609
1971:4	2531.400	6.000000	0.646600	15.40000	8501.694
1972:1	2863.200	7.000000	0.606000	16.60000	4942.882
1972:2	3153.100	7.500000	0.595700	11.80000	13804.30
1972:3	3620.100	7.500000	0.546400	9.900000	15890.45
1972:4	3757.900	7.750000	0.610000	20.90000	11046.62
1973:1	5382.800	10.25000	0.672900	7.700000	4214.302
1973:2	5949.500	10.00000	0.724100	23.20000	6240.405
1973:3	6418.300	12.50000	0.764900	39.60000	2541.497
1973:4	6804.000	9.250000	0.893800	5.500000	12462.75
1974:1	9313.600	10.50000	2.020600	5.400000	11358.08
1974:2	9993.600	17.50000	4.017900	10.20000	-1221.502
1974:3	11339.20	16.50000	4.536700	38.30000	34107.52
1974:4	10899.60	26.80000	7.391600	40.90000	61997.19
1975:1	10436.10	25.50000	8.037800	7.500000	113397.7
1975:2	12243.50	20.01000	9.909500	13.00000	11246.76
1975:3	20512.70	29.80000	17.29840	44.50000	269071.1
1975:4	66787.00	18.32000	22.05110	57.20000	348380.0
1976:1	70714.60	21.00000	21.88610	57.00000	930824.5
1976:2	119391.6	20.18000	21.88610	72.80000	1299843.
1976:3	122600.9	19.74000	21.88610	29.30000	1437869.
1976:4	128331.9	13.54000	21.88610	8.500000	1541798.
1977:1	152410.9	18.29000	21.88610	10.00000	1037074.
1977:2	154190.4	21.32000	92.69340	6.600000	3262171.
1977:3	157508.6	17.98000	102.1052	6.900000	2126661.
1977:4	161441.6	18.29000	111.9433	18.90000	2028685.
1978:1	166631.6	24.85000	120.9702	12.90000	1815039.
1978:2	178478.6	20.71000	129.3565	14.00000	3291174.
1978:3	249220.6	19.18000	133.5004	13.45000	4792394.
1978:4	324656.7	17.95000	132.1470	13.72500	7676646.
1979:1	481239.1	17.26000	128.6516	8.500000	7840103.
1979:2	552498.6	16.94000	125.8331	6.600000	8916278.
1979:3	399841.9	15.14000	118.5669	15.10000	10990153
1979:4	441271.3	18.99000	148.9017	13.90000	9170759.
1980:1	2.300000	17.50000	150.2980	12.70000	11543665
1980:2	8.920000	18.67000	153.8616	13.80000	15255793
1980:3	354466.4	22.89000	98.94000	14.90000	16090110
1980:4	433225.7	7.000000	0.714300	13.80000	942732.0
1981:1	1003.200	7.000000	0.695500	16.00000	1323679.
1981:2	1322.800	7.000000	0.657900	3.200000	910.1573
1981:3	1571.100	7.000000	0.657900	5.400000	1385.079
1981:4	1763.700	7.000000	0.629900	13.40000	1697.529
1982:1	1812.100	6.000000	0.615900	33.90000	2422.041
1982:2	2287.500	6.000000	0.626500	21.20000	5803.495
1982:3	2339.000	6.000000	0.646600	15.40000	4978.152
1982:4	2531.400	7.000000	0.606000	16.60000	7459.609

1983:1	2863.200	7.500000	0.595700	11.80000	8501.694
1983:2	3153.100	7.500000	0.546400	9.900000	4942.882
1983:3	3620.100	7.750000	0.610000	20.90000	13804.30
1983:4	3757.900	10.25000	0.672900	7.700000	15890.45
1984:1	5382.800	10.00000	0.724100	23.20000	11046.62
1984:2	5949.500	12.50000	0.764900	39.60000	4214.302
1984:3	6418.300	9.250000	0.893800	5.500000	6240.405
1984:4	6804.000	10.50000	2.020600	5.400000	2541.497
1985:1	9313.600	17.50000	4.017900	10.20000	12462.75
1985:2	9993.600	16.50000	4.536700	38.30000	11358.08
1985:3	11339.20	26.80000	7.391600	40.90000	-1221.502
1985:4	10899.60	25.50000	8.037800	7.500000	34107.52
1986:1	10436.10	20.01000	9.909500	13.00000	61997.19
1986:2	12243.50	29.80000	17.29840	44.50000	113397.7
1986:3	20512.70	18.32000	22.05110	57.20000	11246.76
1986:4	66787.00	21.00000	21.88610	57.00000	269071.1
1987:1	70714.60	20.18000	21.88610	72.80000	348380.0
1987:2	119391.6	19.74000	21.88610	29.30000	930824.5
1987:3	122600.9	13.54000	21.88610	8.500000	1299843.
1987:4	128331.9	18.29000	21.88610	10.00000	1437869.
1988:1	152410.9	21.32000	92.69340	6.600000	1541798.
1988:2	154190.4	17.98000	102.1052	6.900000	1037074.
1988:3	157508.6	18.29000	111.9433	18.90000	3262171.
1988:4	161441.6	24.85000	120.9702	12.90000	2126661.
1989:1	166631.6	20.71000	129.3565	14.00000	2028685.
1989:2	178478.6	19.18000	133.5004	13.45000	1815039.
1989:3	249220.6	17.95000	132.1470	13.72500	3291174.
1989:4	324656.7	17.26000	128.6516	8.500000	4792394.
1990:1	481239.1	16.94000	125.8331	6.600000	7676646.
1990:2	552498.6	15.14000	118.5669	15.10000	7840103.
1990:3	399841.9	18.99000	148.9017	13.90000	8916278.
1990:4	441271.3	17.50000	150.2980	12.70000	10990153
1991:1	2.300000	18.67000	153.8616	13.80000	9170759.
1991:2	8.920000	22.89000	98.94000	14.90000	11543665
1991:3	354466.4	7.000000	0.714300	13.80000	15255793
1991:4	433225.7	7.000000	0.695500	16.00000	16090110
1992:1	1003.200	7.000000	0.657900	3.200000	942732.0
1992:2	1322.800	7.000000	0.657900	5.400000	1323679.
1992:3	1571.100	7.000000	0.629900	13.40000	910.1573
1992:4	1763.700	6.000000	0.615900	33.90000	1385.079
1993:1	1812.100	6.000000	0.626500	21.20000	1697.529
1993:2	2287.500	6.000000	0.646600	15.40000	2422.041
1993:3	2339.000	7.000000	0.606000	16.60000	5803.495
1993:4	2531.400	7.500000	0.595700	11.80000	4978.152
1994:1	2863.200	7.500000	0.546400	9.900000	7459.609
1994:2	3153.100	7.750000	0.610000	20.90000	8501.694
1994:3	3620.100	10.25000	0.672900	7.700000	4942.882
1994:4	3757.900	10.00000	0.724100	23.20000	13804.30
1995:1	5382.800	12.50000	0.764900	39.60000	15890.45
1995:2	5949.500	9.250000	0.893800	5.500000	11046.62
1995:3	6418.300	10.50000	2.020600	5.400000	4214.302
1995:4	6804.000	17.50000	4.017900	10.20000	6240.405
1996:1	9313.600	16.50000	4.536700	38.30000	2541.497
1996:2	9993.600	26.80000	7.391600	40.90000	12462.75
1996:3	11339.20	25.50000	8.037800	7.500000	11358.08
1996:4	10899.60	20.01000	9.909500	13.00000	-1221.502

1997:1	10436.10	29.80000	17.29840	44.50000	34107.52
1997:2	12243.50	18.32000	22.05110	57.20000	61997.19
1997:3	20512.70	21.00000	21.88610	57.00000	113397.7
1997:4	66787.00	20.18000	21.88610	72.80000	11246.76
1998:1	70714.60	19.74000	21.88610	29.30000	269071.1
1998:2	119391.6	13.54000	21.88610	8.500000	348380.0
1998:3	122600.9	18.29000	21.88610	10.00000	930824.5
1998:4	128331.9	21.32000	92.69340	6.600000	1299843.
1999:1	152410.9	17.98000	102.1052	6.900000	1437869.
1999:2	154190.4	18.29000	111.9433	18.90000	1541798.
1999:3	157508.6	24.85000	120.9702	12.90000	1037074.
1999:4	161441.6	20.71000	129.3565	14.00000	3262171.
2000:1	166631.6	19.18000	133.5004	13.45000	2126661.
2000:2	178478.6	17.95000	132.1470	13.72500	2028685.
2000:3	249220.6	17.26000	128.6516	8.500000	1815039.
2000:4	324656.7	16.94000	125.8331	6.600000	3291174.
2001:1	481239.1	15.14000	118.5669	15.10000	4792394.
2001:2	552498.6	18.99000	148.9017	13.90000	7676646.
2001:3	399841.9	17.50000	150.2980	12.70000	7840103.
2001:4	441271.3	18.67000	153.8616	13.80000	8916278.
2002:1	2.300000	22.89000	98.94000	14.90000	10990153
2002:2	8.920000	7.000000	0.714300	13.80000	9170759.
2002:3	354466.4	7.000000	0.695500	16.00000	11543665
2002:4	433225.7	7.000000	0.657900	3.200000	15255793
2003:1	1003.200	7.000000	0.657900	5.400000	16090110
2003:2	1322.800	7.000000	0.629900	13.40000	942732.0
2003:3	1571.100	6.000000	0.615900	33.90000	1323679.
2003:4	1763.700	6.000000	0.626500	21.20000	910.1573
2004:1	1812.100	6.000000	0.646600	15.40000	1385.079
2004:2	2287.500	7.000000	0.606000	16.60000	1697.529
2004:3	2339.000	7.500000	0.595700	11.80000	2422.041
2004:4	2531.400	7.500000	0.546400	9.900000	5803.495
2005:1	2863.200	7.750000	0.610000	20.90000	4978.152
2005:2	3153.100	10.25000	0.672900	7.700000	7459.609
2005:3	3620.100	10.00000	0.724100	23.20000	8501.694
2005:4	3757.900	12.50000	0.764900	39.60000	4942.882
2006:1	5382.800	9.250000	0.893800	5.500000	13804.30
2006:2	5949.500	10.50000	2.020600	5.400000	15890.45
2006:3	6418.300	17.50000	4.017900	10.20000	11046.62
2006:4	6804.000	16.50000	4.536700	38.30000	4214.302
2007:1	9313.600	26.80000	7.391600	40.90000	6240.405
2007:2	9993.600	25.50000	8.037800	7.500000	2541.497
2007:3	11339.20	20.01000	9.909500	13.00000	12462.75
2007:4	10899.60	29.80000	17.29840	44.50000	11358.08
2008:1	10436.10	18.32000	22.05110	57.20000	-1221.502
2008:2	12243.50	21.00000	21.88610	57.00000	34107.52
2008:3	20512.70	20.18000	21.88610	72.80000	61997.19
2008:4	66787.00	19.74000	21.88610	29.30000	113397.7
2009:1	70714.60	13.54000	21.88610	8.500000	11246.76
2009:2	119391.6	18.29000	21.88610	10.00000	269071.1
2009:3	122600.9	21.32000	92.69340	6.600000	348380.0
2009:4	128331.9	17.98000	102.1052	6.900000	930824.5
2010:1	152410.9	18.29000	111.9433	18.90000	1299843.
2010:2	154190.4	24.85000	120.9702	12.90000	1437869.
2010:3	157508.6	20.71000	129.3565	14.00000	1541798.
2010:4	161441.6	19.18000	133.5004	13.45000	1037074.

2011:1	166631.6	17.95000	132.1470	13.72500	3262171.
2011:2	178478.6	17.26000	128.6516	8.500000	2126661.
2011:3	249220.6	16.94000	125.8331	6.600000	2028685.
2011:4	324656.7	15.14000	118.5669	15.10000	1815039.
2012:1	481239.1	18.99000	148.9017	13.90000	3291174.
2012:2	552498.6	17.50000	150.2980	12.70000	4792394.
2012:3	399841.9	18.67000	153.8616	13.80000	7676646.
2012:4	441271.3	22.89000	98.94000	14.90000	7840103.
2013:1	2.300000	18.32000	133.5004	13.80000	8916278.
2013:2	8.920000	21.00000	132.1470	16.00000	10990153
2013:3	354466.4	20.18000	128.6516	3.200000	9170759.
2013:4	433225.7	19.74000	125.8331	5.400000	11543665

SOURCE: CENTRAL BANK OF NIGERIA BULLETIN AND FACTS. 2013