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DETERMINANTS OF FOREIGN DIRECT INVESTMENTS IN DEVELOPING COUNTRIES:
EVIDENCE FROM KENYA AND NIGERIA

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DECLARATION

This research project is my original work and has not been previously submitted and approved for the award of a degree in any other University. To the best of my knowledge and belief, the Research project contains no material previously published or written by another person except where due reference is made in the Research project itself.

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ABSTRACT

Foreign direct investment has a direct relationship with technological change, public policy and level of economic activity. However, in some countries with unfavourable conditions such as high levels of corruption and diseases; foreign direct investment thrives despite this. This study investigates the determinants of foreign direct investment in developing economies using the cases of Kenya and Nigeria. The reason for the choice of these two countries is because of their odd foreign direct investment trends. The purpose of the study is not only to investigate the determinants of foreign direct investment in both countries, but to also enable the comparison of the determinants.

The different methodology employed include: the use of the Vector Autoregressive model, Impulse response functions, Granger causality, Variance Decomposition, and the Ordinary Least Squares regression. The period of study is from 1970 to 2014 with the dependent variable being foreign direct investment and the independent variables being: growth in Gross Domestic Product, Exchange rate, inflation, Balance of Trade, growth in exports and trade openness.

The findings of the study were that the most significant determinants of foreign direct investment in Kenya were exports and trade openness while in Nigeria the most significant variables were found to be inflation and trade openness as well.

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CHAPTER ONE: INTRODUCTION

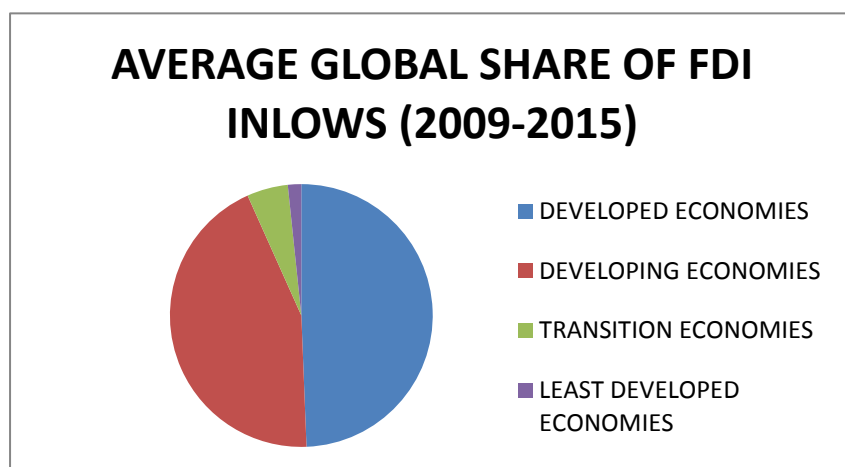
Background to the problem

The importance of foreign direct investment (FDI) cannot be overemphasised. It is significant to both host (recipient) and home (investing) countries. It is a key driver of international economic integration and in the presence of the right policy framework, FDI is capable of providing financial stability, promote economic development, and enhance the well-being of societies. Moreover, it provides a means for creating direct, stable and long lasting links between economies. This may help improve the competitive position of both the host and the home economy. In addition, FDI is a stimulant of technology and know-how transfer; an opportunity for promotion of the hosts products in international markets and a source of capital for both host and home economies. (OECD, 2008)

Direct investment, according to the IMF and OECD definitions, is an investment by a direct investor made to acquire a lasting interest in another economy; where lasting interest implies existence of a long-term relationship where the direct investor owns at least 10% of the voting power. Direct investment may be classified based on the aspects: the direction of investment, the instrument used and on the sector breakdown. In the direction, which is the focus of this paper is where we obtain the definition of FDI as, financing extended by non-resident parent companies to their resident subsidiaries, associates or branches recorded in the country of residence of the affiliated companies.

Global Foreign Direct Investment Trend

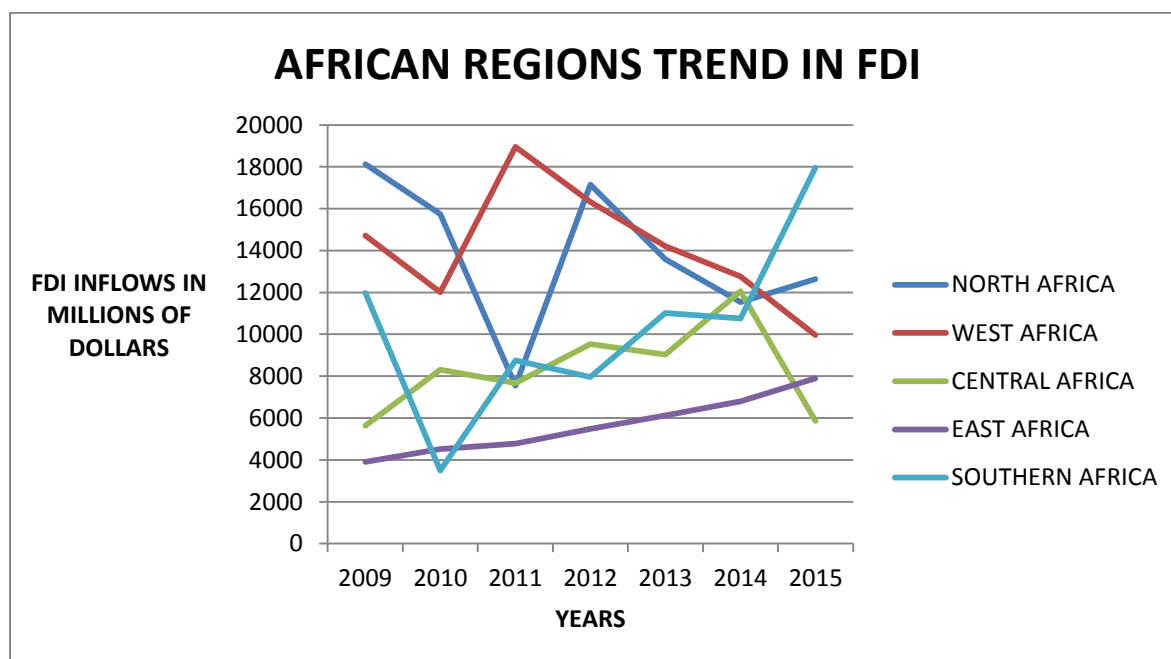
With reference to the 2016 reports, the global FDI jumped by 38% to \$1.762 billion, the highest level since the global economic and financial crisis of 2008-2009. This increment was mainly attributable to an increase in cross-border mergers and acquisitions. Of the global FDI, 55% went to developed economies which leapt from 41% in 2014, reversing a five year trend in which developing and transition regions had become the main recipients; the transition economies FDI flows fell by 38% in 2015. FDI flows to developing economies increased by 9%, reaching \$765 billion, thereby continuing to be half of the top 10 host economies for FDI. Developing Asia remained the largest FDI recipient region in the world with its FDI flows surpassing half a trillion dollars. FDI Inflows to Africa fell to \$54 billion, a 7% decline as compared to the previous year. Lastly, FDI flows to the least developed economies (LDC's) rose by 33% to a record high in 2015.



Source: (UNCTAD, World Investment Report, 2016)

Foreign Direct Investment in African Regions

Historically, the trend of FDI in the African Regions has followed the trend in the figure below.



Source: (UNCTAD, World Investment Report, 2016)

North Africa's foreign direct investment trend has been the most volatile with sharp increases and decreases. The lowest FDI allocation was experienced in 2011 at \$7.548 billion and the highest in 2009 at \$18.134 billion. According to the latest statistics, there was a 15% decline in the FDI allocation to the region in 2014 to \$12 billion dollars and a 9% increase in 2015 to \$12.6 billion. Despite the region's high volatility, it received the second highest allocation of FDI in 2015 among the African regions.

West Africa's FDI has been less volatile as compared to North Africa. Since 2011 it has been on a decline. Recent statistics indicate a 10% decrease in 2014 to an estimated \$13 billion dollars and a further 18% decline in 2015 to \$9.9 billion. The 10% decline in 2014 in West Africa was expressed as being attributable to Ebola, regional conflicts and falling commodity prices which affected the countries in this region. However, this was not a satisfactory explanation because in the same region Guinea and Sierra Leone, West African countries also affected by Ebola in 2014 saw their FDI inflows more than triple. Although the region has been on a declining trend, it still received the highest allocation of FDI in 2014 and third highest in 2015.

In Central Africa, FDI had been on a general upward trend since 2009 till recently in 2015 where a 33% decline to \$5.8 billion was reported; previously the region had experienced a 33% increase in FDI in 2014 to \$12 billion. Overall, the region received the lowest FDI allocation in 2015.

East Africa's FDI has been increasing since 2009, and this has been with the least volatility. The region had an 11% increase in its share of FDI in 2014 to \$7 billion and a further 2% increase in 2015 to \$7.8 billion. Nevertheless, despite its minimal variance in its FDI inflows, the region had the lowest FDI allocation in 2014 and the fourth highest in 2015 in Africa.

Lastly, Southern Africa had a sharp decline in FDI between the years 2009 to mid-2010. However, the region's FDI has ever since been on an upward trend. The volatility of the historical trend had been low and negatively correlated to Central Africa. An interesting thing to note is that, this was the only region in the year 2010 that did not experience a decline in FDI while the other 4 Africa regions were on a decline; this is besides East African region which was fairly stable in its FDI at that point. Moreover, the region experienced a slight decline of 2% in 2014 to \$11 billion and a 2% increase in 2015 to \$17.9 billion. It improved from being the third highest FDI allocation region in 2014 to the highest in 2015.

Nigeria

In Africa, Nigeria is one of the top 5 host economies and it is the top West African economy. The country however experienced a 16% decline in its FDI flows as it moved away from overdependence on oil to diversification into non-oil sectors in 2014. This decline was also explained by decreasing commodity price which has translated to a weakening growth prospect in the region. Nevertheless, outward investment by Multi National Enterprises (MNE) in 2014 was largely in financial services in Nigeria. The finance sector accounted for 63% of the FDI attracted while transport, storage and communications took 26% and construction 9%. In 2015, the country experienced a further slump in its FDI allocation owing to lower commodity prices, weaker demand from the aim trading partners and depreciating national currencies.

The decline in FDI in Nigeria is of a major concern especially with the weakening growth prospects.

Kenya

In the East African region, Kenya's FDI has been on a general upward trend. It experienced a mild decline between 2011 and 2012 and has since grown at an increasing rate. In the East Africa, Kenya's FDI inflows are the lowest among Uganda and United Republic of Tanzania.

A large share of the FDI attracted into Kenya was from financial Services, with Kenya Commercial Bank and Guaranty Trust Bank being at the forefront of Kenya's industry. Kenya alongside Nigeria and other countries, received a large share of FDI due to financial services; 38% was accountable to retail banking alone in 2014. Another sector of interest for Kenya is food and beverages; Brookside Dairy, East Africa's largest milk processor based in Kenya was part of a major deal in this sector in 2014. Lastly, the year seems bright for this country as Greenfield investment projects added to its portfolio of countries, Kenya in 2014. In 2015, FDI flows to the country reached the highest at \$1.4 billion as a result of renewed investor interest and confidence in the business climate and domestic consumer market. Moreover, FDI flows are expected to increase further in Kenya since it has now permitted 100% foreign ownership of companies listed on the Nairobi Stock Exchange.

The reasons for the comparison between Kenya and Nigeria are as follows:

- i. Nigeria is the largest economy in Africa (with \$594.257 billion), and also a major exporter of oil. However, the economic performance of the country has been on a decline. Recently according to the World Investment Report 2016, the West African region dropped from being the highest ranking foreign direct investment host country to the third highest; this deterioration was largely contributed to by Nigeria's worsening foreign direct investment flows.
- ii. Kenya on the other hand, is the largest East African economy, the second largest in Eastern Africa and the ninth largest economy in Africa (with \$56.3 billion). The country has been

underperforming in terms of the foreign direct investment allocation with countries like Tanzania surpassing it. When compared to Nigeria, Kenya is well-diversified and relies on more economic sectors for example agriculture, tourism and financial services; unlike Nigeria which is mainly focussed on the oil sector.

A study of the two countries side by side would enable to understanding and comparison of the determinants of foreign direct investment between the two countries.

The aim of this paper is to look into developing economies, particularly Kenya and Nigeria in terms of their foreign direct investment. The study will focus on the determinants of FDI inflows in Nigeria in order to understand why the country's FDI has been on a decline and how it still remains a top host economy despite this fact. Also, the determinants of foreign direct investment in Kenya will also be looked into, to understand the country's upward trend in foreign direct investment and why it has the lowest FDI in East Africa.

Statement of the Research Problem

Investment varies positively with production and negatively with real interest rate; moreover, investment decisions depend on expectation of future incomes and interest rates. Other determinants of investment include technological change, public policy, and level of economic activity. Technological change brings about efficiency which boosts investment; favourable public policies stimulate investment in a country and lastly, increasing economic activity encourages investment as there is demand for ones products or services. In the same way, foreign direct investment requires the same favourable conditions to thrive.

According to recent economic reports, there have been some puzzling trends in foreign direct investment trends, for instance Nigeria has been experiencing a declining foreign direct investment yet it remains a top host country of FDI in Africa. In some Western African countries, although there are unfavourable conditions such as diseases or high levels of corruption, foreign direct investment continues to increase. In addition, while Nigeria is also experiencing a drop in its FDI allocation due to movement away from the oil sector, other oil producing giants, such as Saudi Arabia and United Arab Emirates, still experienced declining FDI while remaining in the same sector. This is a complete deviation from the ordinary and the theoretical.

This study centres on developing economies which receive a significant share of Global foreign direct investment. In addition, developing economies unlike developed economies and transmission economies were the only ones that experienced an increase in FDI at 2% in 2014. In addition, in 2015, the developing economies continued to be half of the top 10 host economies.

This study seeks to investigate the odd trends mentioned, particularly for the case for Nigeria. Also, Kenya's foreign investment determinants will be looked into to understand why although it has been on an upward trend; it remains the lowest FDI recipient in East Africa. The study will use more advanced econometric models as compared to the methods used in the existing body of knowledge; mostly Ordinary Least Squares method. This will give results that are more robust hence fulfilling the need for finer results as expressed in past research studies.

Research Objectives

General Objective

The overall objective of this study is to find out the determinants of foreign direct investment in developing economies using the cases of Kenya and Nigeria.

Research Questions

The specific objectives of this study are:

- i. What are the determinants of foreign direct investment in Nigeria that explain the declining trend in foreign direct investment in the country and why does Nigeria remain a top host economy?
- ii. What are the determinants of foreign direct investment in Kenya that make sense of the increasing trend in foreign direct investment?
- iii. What are the differences in the determinants of foreign direct investment in Kenya and in Nigeria?

Significance of the Research

This study is important in that it will contribute to the body of knowledge on foreign direct investment in existence. It will prove useful to academics since it has timely information inclusive of recent statistics. This will help in the analysis of recent trends of developing economies which for the first time in five years has received a lower allocation of foreign direct investment as compared to developed economies.

Moreover, it will also be relevant to policy makers in that it will give guidance on the significant variables to be addressed in order to improve foreign direct investment flows into the countries. This will be of use to Kenya which now permits 100% foreign ownership of companies listed on the Nairobi Stock Exchange; since foreign direct investment flows are expected to be on the rise. Also, this information will be of help to Nigeria to improve its economic performance in terms of foreign direct investment, as it has been on a decline since 2011.

Lastly, the study is appropriate since Africa has great potential and is emerging as a frontier for investment in the developing economies.

CHAPTER TWO: LITERATURE REVIEW

INTRODUCTION

This chapter will look at past literature based on the topic of study, as a base to build on. The chapter will be divided into two main sections, the theoretical literature review and the empirical literature review.

THEORETICAL LITERATURE REVIEW

Capital flow also known as capital movement is the movement of money for investment. When it moves into a country it is referred to as capital inflow while if it moves out of a country it is referred to as capital flight. This section will look at the various theoretical studies and theories put forth based on capital movement. The theoretical literature review is therefore further divided into three sub-headings: International Capital Movement, Growth Theory Approach to Capital Flows in Developing Countries and Capital Flight.

International capital movement

The phenomenon of capital inflows is better understood if the savings-investment-capital accumulation theories are considered to be the basic economic variables behind these flows. Of the theories of saving, capital accumulation and investment, Adam's Smith's theory, Ricardo's theory, Harrod-Domar model, Marxian theory and Lewis model will serve as a starting point.

According to Adam Smith's theory, the rate of investment depends upon the rate of saving. The ability to save and invest is limited by the income of a person and as long as there are profits over and above the compensation for risk of investing, capital accumulation will continue. That is,

$$\frac{dk}{dt} = k(\Pi - \Pi^*, y)$$

$$\frac{dk}{dt} > 0,$$

Π = the rate of profit at time t,

Π^* = Minimum profit needed to cover risk

He also advances that growth is directly related to the rate of investment; therefore, if a country has fixed capital stock it is likely to suffer stagnation. In the same way, any increments in the capital stock of a country will lead to greater than proportional increase in the output given division of labour is growing constantly. Moreover, Adam Smith also agreed that capital accumulation increases the marginal efficiency of capital decreases, resulting in a negatively sloping marginal efficiency curve. However, he did not consider the possibility of leakage in the system of investment and savings given that activities were being performed by different sets of people.

Ricardo like Adam Smith also believed that the rate of capital accumulation is dependent on the rate of saving. According to Ricardo's theory, he believes that capital accumulates due to two reasons; an increase in income and a reduction in consumption; consequentially, the rate of capital accumulation is therefore determined by the ability to save and the willingness to save. Saving depends on profit

(II). Therefore, when profit declines over time, savings decline as well and as a result capital accumulation slows down and reaches zero, until $\Pi = \Pi^m$.

(Where Π = rate of profit and Π^m = minimum profit)

The Harrod-Domar model like Adam Smith and Ricardo states that the rate of economic growth in an economy is dependent on the level of saving and the capital output ratio. If there is a high level of saving in a country, funds for borrowing and investing are provided and this leads to increase in the capital stock of an economy; thus leading to economic growth through the incremental production of goods and services. It addresses the conditions required for smooth real national income growth. A key role is assigned to investment in the process of economic growth and capital accumulation is seen to have a dual role; for income generation through investment and for increasing the productive capacity of the society by enlarging the capital stock. Thus the demand and investment side of investment is considered. The implication of this model to developing economies is that governments in the economies should encourage saving to achieve economic growth and technological advancement in order to decrease the economy's capital output ratio.

Karl Marx did not expound much on the relationship between savings and capital accumulation. Instead, according to his theory, he believes that the surplus value produced by labour leads to profit accumulation which consequentially this leads to capital accumulation. In addition, capital accumulation leads to reinvestment of profits into the economy. He understood capital to be expressed in money, in this case however; capital does not refer to money but to economic value. With time there is the downfall of capitalism which is due to over-accumulation of capital. Where the profit rate exceeds the new profitable investment outlets due to increasing productivity, the wage bill is greatly depressed, leading to stagnant wages and high unemployment rates for the working class; as the excess profit seeks new profitable investment opportunities. Therefore, capital accumulation was the major factor behind the rise and fall of capitalism.

Lastly, the Lewis model borrows aspects from Marxian theory in terms of labour supply. It puts forth that many underdeveloped countries conform to the classical model in which the labour supply is perfectly elastic at the current wage level. The postulation is that economic development takes place when capital accumulates as a result of withdrawal of surplus labour from the subsistence sector to capitalist sectors. The rate of profit therefore stimulates the incentive to invest and the process of reinvestment continues. This model, like the Marxian theory also puts economic development in a capitalist setting.

[Growth theory Approach to Capital flows in Developing Countries](#)

Foreign capital is beneficial for developing economies as their capital requirements exceed their savings capacity. The models of capital mobility that will expound on the allocation of resource to the most productive opportunities will include: the Neo-Classical Growth Model and the augmented Neo-classical Model. Lastly, the Modified Lucas Model (1988) will look at international capital flows in a model of endogenous growth.

Under the neo-classical growth model, the implications of capital movement are derived and the model mainly focuses on three variables: technology, labour and capital which aid in prediction of capital movements. The model most renowned for the relationship between labour, capital and efficiency (in terms of technology), is the Solow model and in the most basic form may be represented as:

$$Y_t = A \cdot K^\alpha \cdot L^{1-\alpha}$$

Where Y= output of homogenous good

K= physical capital

L= labour capital

A= technical efficiency

The rate of growth of per capita income is determined to be an increasing function of the growth rate of K. The main result of the Solow model is that there exists an exogenous steady state growth rate which neither depends on taste nor on policy variables. The implication of the Solow model for international capital movement is that:

Whenever, $r^* = r_d$ (international interest rate = domestic interest rate); there is perfect capital mobility.

$r^* > r_d$ (International interest rate > domestic interest rate); there is net capital outflow

$r^* < r_d$ (International interest rate < domestic interest rate); there is net capital inflow.

Therefore, where interest parity conditions are fulfilled, net capital flows do not occur. In conclusion, the Solow model predicts that the amount of capital inflow is inversely related to K and hence capital should move from capital rich to capital poor countries.

Building on capital, the augmented classical model whose main proponents were Mankiw, Romer and Weil (1992), stated that countries with low levels of physical capital and high levels of human capital will benefit from net capital inflows and that capital movement will persist until: $r^* = r_d$. However in reality, developing economies cannot reap much benefit from the capital inflows, because of the underdeveloped capital and money markets. They are yet to develop these and other economic sectors to enable much to be derived out of capital flows.

Lastly on capital, the Modified Lucas model (1988) asserts that as far as capital movements are concerned, countries with low levels of physical capital and high level of human capital will benefit from net capital inflows. This is provided that the physical capital is the only internally mobile input.

Capital flight

Colier (1999) discusses capital flight in the context of portfolio choice focussing upon the proportion of wealth that is held abroad. This is a reverse of the study at hand on the determinants of foreign direct investment; Colier (1999) instead looks at what leads to capital flight from a region. For the African region, 22 Sub-Saharan African countries were included in a study and descriptive statistics of capital (and real wealth) per worker and flight capital ratios for region were looked into. The results of the study were striking and were as follows. First, the differences between the regions capital per worker were found to be far larger than those in public capital. Second, by 1990 Africa was short of private capital both absolutely and relatively to public capital. Third, Africa had the highest incidence of capital flight. The study went on to also include three models of capital flight based on portfolio considerations such as tax and tax-like distortions that lower returns and add risk to domestic financial

and physical assets; which hence leading to capital flight. As a starting point, a standard portfolio model by Sheets (1995) in terms of capital flight decision was looked at. According to the standard portfolio model, capital flight arises from portfolio diversification incentives, return differential incentives and relative risk incentives. The two other theoretical models considered were: Khan and Haque (1985) which show that two-way capital flows, private capital flight occurring simultaneously with private foreign borrowing, can arise in a model where domestic and foreign investors face asymmetric risk of expropriation. Moreover, domestic investors face a higher risk of expropriation, so they invest abroad, and domestic investment is consequently financed with foreign funds. Lastly, Dooley (1988) similarly focussed on the notion that domestic and foreign investors face asymmetric risk. The source of risk here however, was broadened to a wide range of implicit taxes, which may be generated by rapid inflation or exchange rate depreciation. Overall, with regard to capital flight, it was found that residents deposit capital abroad and this allows the domestic investor to arbitrage the yield and risk differential between resident and external capital.

EMPIRICAL LITERATURE REVIEW

This section of the literature review is organised according to cross-sectional data analysis and panel data analysis. The papers are also arranged chronologically through the years from the oldest to the latest. Lastly, there are four sub-sections which move from a broad scope to a narrow scope in this manner: first, general studies on developing economies; second, developing countries case studies are presented; third, literature on African countries inclusive of some case studies and lastly, studies on Nigeria and Kenya.

Studies on Foreign Direct Investment in Developing Countries

Shamsuddin (1994), conducted a cross-sectional study which empirically examined the determinants of FDI across cross-section data for 36 developing countries, in order to find out why some less developed countries appear to be more successful in attracting private foreign direct investment (FDI) than other less developed countries (LDC's); for example Egypt, Brazil and Malaysia who experience higher FDI than countries like Bangladesh, Kenya and Pakistan at the time. The choice of countries was based on availability of data and the model specified used an OLS technique. The uniqueness of their study was based on different fronts: One, the variance of the price level which was used to measure economic instability (instead of the inflation rate over one year, as was used in previous studies). Two, in addition to wage costs, another location-specific advantage; the availability of energy in the host countries was factored in the model. Third, the model accounted for structural stability of the economic model of FDI which had been previously neglected. The model was found to explain 82% of the variation in per capita foreign direct investment across the LDC's. The observations were that the flow of per capita FDI into the less developed countries was correlated with their GDP but not with growth of GDP. The conclusions of the study were that; the most important factor in attracting FDI is the per capita GDP in the host country, the wage cost, per capita debt, per capita inflow of public aid, volatility of prices and the availability of energy in the recipient country in that order of importance. The only limitation of the model was the existence of the endogeneity problem, which greatly interferes with the OLS technique. Future research may be directed to solve this problem using a full scale macro-economic model for each of the host countries.

Demirhan (2008) also used a cross-sectional form of study. However, unlike the Shamsuddin (1994) who concluded that FDI is correlated with GDP not growth of GDP; growth rate per capita is observed to be a statistically significant determinant of FDI in this study. Demirhan (2008) estimated a cross-sectional econometric model in which the influential factors of foreign direct investment (FDI)

inflows in developing countries over the period 2000-2004 would be determined. The study was based on a sample of cross-sectional data on 38 developing countries. The average value of all the data for the period 2000-2004 was used. The independent variables were: growth rate per capita, inflation rate, telephone main lines per 1000 people (which was measured in logs), labour cost per worker in manufacturing industry (measured in logs), degree of openness, risk and corporate tax rate. The econometric results showed that growth rate per capita, telephone main lines and degree of openness had a positive sign and were statistically significant. Labour cost also had a positive sign while risk had a negative one; however, both were insignificant.

In another study, panel this time, conducted by Yasmin (2003), in cohesion with Shamsuddin (1994), GDP per capita was found to be a significant variable that affects FDI in low income countries and upper middle countries. The study by Yasmin (2003) analysed the volume and determinants of Foreign Direct Investment (FDI) in developing countries of the world. The study was based on a sample of 15 developing countries with 5 from each: upper middle, lower middle and lower income countries spanning between the periods 1970 to 1997. The analysis made use of panel data through an econometric model that took into consideration the common intercept, random effects model and fixed effects model to clearly identify the factors affecting FDI in developing countries with different levels of income. The analysis showed that urbanization, GDP per capita, standard of living, inflation, current account and wages affect FDI significantly in low income countries. In lower middle countries: urbanization, labour force, domestic investment, trade openness, standard of living, current account, external debt and wages affected FDI and in upper middle countries: urbanization, labour force, GDP per capita, domestic investment, trade openness and external debt. Also, they found out that structural differences affected the levels of FDI in the different countries. In conclusion, countries interested in attracting increasing flow of FDI on a sustained basis must adopt suitable policies.

In the same year, Yasmin (2003) conducted another panel study to find out: the determinants of FDI, the economic factors affecting FDI, the role of institutional quality (for example corruption) and policy orientation factor (openness). Also, it tested whether foreign investment responds to changes in levels of economic freedom. It used cross-country growth regression for the sample of developing countries. The variables included in the study were: GNP per capita, average annual growth rate of GNP, literacy rate and population. The data set from which the study was performed was in between the years 1990 to 1998. The finding was that FDI varied positively with increases in certain components of economic freedom and that increasing protection of property rights, reducing government intervention, and lowering barriers to capital flows and foreign investment are likely to increase FDI.

Similarly, Cevis (2007) conducted a panel study which was in unison with Yasmin (2003) on trade openness as being a determinant of FDI through lowering of trade barriers as suggested by Yasmin (2003). The study's main purpose was to develop an empirical framework to estimate the economic determinants of FDI inflows by employing a panel data set of 17 developing countries and transition economies for the period of 1989. Seven explanatory economic variables were used: the previous full FDI (the pull factor for new FDI), GDP growth (to measure market size), wage (unit labour costs), trade rate (to measure the openness of countries), the real interest rates (a measure of macroeconomic policy), inflation rate (as country risk and macroeconomic policy), domestic investment (this was to represent the business climate). It took into consideration UNCTAD's 2002 classification of FDI determinants and the IMF's determinants of FDI 2002. The methodology used was panel analysis which was careful to first test whether the series was stationary or not. The dependent variable was the percentage of GDP (FDI) and the explanatory being the seven variables mentioned earlier. The frequency of the data was quarterly and was chosen on the basis of availability. The results of the

model used indicated that FDI is positively related to interest growth rates, trade (openness) rate and the previous FDI period but inversely related to inflation rates. The conclusion therefore, was that the main economic determinants of FDI inflows are: inflation, interest rates, rates of trade (openness) and growth (by means of market-related economic determinants). It should be noted that previous period FDI is directly related to the host countries economic resources and is thereby another important economic determinant.

Foreign Direct Investment in Developing Countries Case Studies

Balasubramanyam (2011) using cross sectional data studied the complementarity between aid and foreign direct investment (FDI). For some time, studies had previously concluded that aid should come to an end and that FDI and trade should replace aid as the engine of development. The study therefore, took a different position by advancing that aid complements FDI and it also enhances the efficacy of FDI in promoting growth and development in developing countries. The reason Vietnam was chosen as a case study was because it appeared to have forged a complementarity between aid and FDI which may have been a factor that contributed to the substantial growth and development it had achieved in recent years. The paper used an econometric exercise to investigate whether foreign aid has had an impact on the volume of FDI in the various provinces of Vietnam. The data used for estimation was a cross section of 58 provinces, where the data on FDI was the accumulated FDI stock by the end of April 2000. The dependent variable was FDI and the independent variables chosen were: GDP, growth rate of GDP, infrastructure and human capital. The results suggested a positive relationship between FDI and growth. While aid had a negative impact on growth, it had a positive significant impact on growth in conjunction with FDI. Provinces that received higher levels of aid attracted higher FDI than provinces that didn't. An explanation to this could be that the provinces used the foreign investment to promote infrastructure facilities and labour skills which in turn attracted foreign investors. Another possible explanation was that aid donors may have tied aid to specific projects which facilitated the operations of the firms from their countries which invest in Vietnam. Also, it was seen that it is possible that both aid allocation and FDI are influenced by the population and income levels of the provinces. The implication therefore, may be that aid monies should be invested in public goods such as education, transport and communication facilities which are sought by foreign investors. Moreover, vocational training is likely to promote labour productivity.

Summary (1995) using panel data, presented an empirical analysis of the United States Foreign Direct Investment (FDI) in developing countries to address the insufficiency, through incorporation of independent variables designed to represent economic and political influences upon foreign direct investment. It contributed to prior studies through analysing US FDI in developing countries as compared to total foreign direct investment as had been the focus before. However, the selection of independent variables based on availability, was aligned to past studies in order to provide a stronger basis for the empirical analysis. To be specific, the dependent variable was the positive change in the US direct investment position abroad and the independent variables were: per capita GNP, distance, education, labour costs, military aid, economic aid, exchange rate, foreign registrants, western hemisphere and OPIC assistance. Economic and military assistance measured the effect of political variables; OPIC assistance (the total amount of insurance plus loans granted by Overseas Private Investment Corporation to US companies) indicated the degree of friendliness to the US; foreign registrants' variable measures the number of foreign agents registered with the US. The model used was that of cross section, time series analysis for the years 1978 to 1986. The results of the model were that high labour costs and exchange rates have a negative effect on FDI. Distance and education levels are not significant deterrents to foreign investment flows. Foreign registrants' variable is the

only significant political variable while OPIC assistance, military and economic aids are insignificant. As for the distance variable, evidence showed that Latin America does not receive more foreign aid by virtue of geographical location. In conclusion, both economic and political variables have a statistically significant effect on U.S. direct investment in developing countries and over time. The study also advances the potential areas of study such as the direction of causation of flows the other way; empirical analysis of the neo-imperialist model as the study has used the neo-mercantilist view and building of a complete model which incorporates the two way causation between foreign direct investment and American foreign policy. The reason for the movement away from the neo mercantilist view was due to the presence of the multicollinearity problem which rendered the regression results insignificant.

More on political variables, Ferris (1997) also using panel data, studied the aspect of political risk and conducted a case study in foreign direct investment in Latin America with special focus on the Guyanese Economy. Using 20 years of international data, the importance of a number of FDI determinants was established. The GDP, imports, exports, infrastructure and political risk were found to be significant influences in the decision of multinational corporations to invest abroad. This finding was then related to the economic environment of Guyana economy in a bid to propose specific policy initiatives. Also, the recommendation to stimulate foreign capital inflows was to increase expenditure on infrastructure and capitalization on Guyana's natural resources and export potential. The model used was that of regression and it had the dependent variable as the net dollar amount of foreign direct investment, while the independent variables were: dollar amounts of imports, export, GDP divided by the country's population, the number of commercial vehicles used in the country (the chosen measure of infrastructure development) and the natural log of published political rights. The logic behind the use of registered commercial vehicles was that with the increase in number of commercial vehicles, there is increase in the miles of paved roads, fuel stations and other such measure of infrastructure. These in turn influence favourably commodity distribution and communication networks. The sample contained 11 Latin American countries: Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela and the period of analysis was between the years 1963 to 1985. The finding of the study was that the smaller the volume of exports from the developing country, the more likely that the country will receive FDI. The implication of this is that multinational corporations are strongly oriented towards cost reduction and hence, invest in countries with the largest potential for increases in exports; this is consistent with neoclassical theories. In countries with low levels of exports, the factors of production are not fully competing for price equalization on the international market; therefore, there are benefits to be exploited as a result of lower prices of the factors of production. Moreover, there was a positive estimated relationship between the number of vehicles (a proxy for infrastructure) and levels of FDI, this being the case because adequate infrastructure minimizes the transportation and distribution costs as well as permit penetration of new markets. The risk variable suggested that investors are risk averse and prefer to invest in countries which have social stability. In addition, a country's participation in international trade has a positive influence on its capital inflows. Another finding not indicated by the model is that countries with a low population are less likely to draw FDI for production of consumer goods due to limited available demand for the output. In conclusion, the Guyana government at the time was pursuing strategies that would enhance FDI.

On economic variables, Aqeel (2004), contributed to existing panel studies literature by empirically examining the response of FDI to selective policies, namely tax and tariff policy, fiscal incentives offered and exchange rate policies in Pakistan. The main objective of their study was to find out the effectiveness of the mentioned policies during the reform period. By this, they hoped to understand

which specific government policies attracted or repelled FDI in Pakistan. An econometric model was formulated to determine the impact of various selective government policies and other variables to attract FDI in Pakistan during the period 1961-2002. The dependent variable was growth in FDI inflows while the independent variables were: GDP per capita, average annual wages of factory workers in perennial industries, corporate tax as a ratio to total tax, share of credit of the private sector in total credit to the public and private sectors, average annual exchange rate and general share price index. The techniques employed were error-correction and co-integration analysis due to two reasons. First, it would enable use of error-correction models; which allow for separation of long run and short run impacts and second, to ensure OLS regression in levels which yields consistent parameters. Also, unit root tests were performed on the co-integration analysis. The empirical results of the model were that all the variables except the average wage and index of general share prices were statistically significant and had the expected signs. The insignificant behaviour of stock market index indicated that the stock market was not a contributing factor to the explanation of growth of FDI inflows in Pakistan. Also the short-run dynamics of inward FDI was influenced by the previous development of FDI inflow by means of the agglomeration or clustering effect. Evidence showed that reducing import tariffs and corporate tax rate would positively affect the growth of FDI. In addition, the co-efficient of exchange rate was positive implying that appreciation of rupees would lead to FDI increases as investor took it as a good sign for the economy and expected high returns. On the same, devaluation would decrease the cost of assets in Pakistan and thereby attract FDI. Another factor that would encourage FDI inflows would be the generous credit policy and liberalisation measures.

Also, from a different perspective of legal issues but from panel data as well, Bouoiyour (2007) studied the determining factors of FDI in Morocco by estimating an econometric model for the period 1960-2001. The dependent variable was FDI without privatisation, while the independent variables were: market size measure using GDP, minimum wage, ratio of national investment on GDP, the stringency of regulatory policies that affect FDI, secondary school enrolment ratio, deflator of GDP approximated by consumer prices, ratio of exports on GDP, real exchange rate of Morocco against all commercial partners, ratio of imports on GDP. The size of the sample was 41 observations hence co-integration analysis may not have been used. The results of the model were that market size and ratio of national investment on GDP have a positive effect on FDI and both reflect the dynamism of Moroccan economy. Inflation variable was found to be significant and implied that macroeconomic stability is an important determinant of investment influx. The coefficient on economy growth (GDP) showed a negative sign and was not found to be significant and would hence suggest that the instability of Moroccan economy growth can be a handicap for FDI inflows. The study concluded that; first, the flow of capital in the form of direct investment quickened since Morocco's adjustment plan implementation; second, there was preference of investors for the manufacturing sector and the increase in popularity of finance sector owing to privatization of operations. Lastly, three strategic sectors (textile, electronic equipment and chemical products) were identified by the Moroccan authorities to have real potentialities of competitiveness and export growth and to which FDI should be channelled.

In agreement with Summer (1995) on high unit costs being a deterrent of FDI inflows and with Aqeel (2004) that tax should be reduced to promote FDI: Basu (2007) conducted a panel study whose aim was to look into the qualitative shift in the FDI inflow in India in-depth. The study made use of panel data which made use of fixed and random effects model to give a holistic view. Also, Seemingly Unrelated Regression (SUR) model would give a detailed view of the changes taking place in the FDI space in India. The study covered the post-reform period of 1991 to 2004 for 8 technology-intensive manufacturing industries. The study revealed that the country is not only cost-effective but also a hot

destination for research and development (R&D) activities and that higher unit costs and tax act as deterrent to FDI. The potential area of study mentioned was the issue on the Indian government, which has promoted highly capital-intensive pattern of industrialisation while directly going against the country's comparative advantage in labour –intensive sectors.

Studies on Foreign Direct Investment in Africa

Asiedu (2002) investigated the factors that affect FDI in developing countries in Sub-Saharan Africa and how different they were as compared to other regions. The simple OLS techniques was used for all estimations of the regression model used. The study span ten years from the period 1998 to 1997; over this period the variables were averaged over three sub-periods i.e. 1988-1990, 1991-1993 and 1994-1997. The dependent variable was FDI while the explanatory variables included: return on investment in the host country, infrastructure development, political risk, openness of the host country, financial depth (using ratio of GDP to liquid liabilities), size of government (using ratio of government consumption to GDP) and economic stability (by using inflation rate). The findings of the study were that: first, countries in SSA have received on average a lower share of FDI than other regions by virtue of their geographical location (a negative effect on FDI by being an African country). Second, higher returns on capital promotes FDI to non SSA, but has no significant impact on FDI flows to SSA countries. Third, openness to trade promotes FDI to both SSA and non-SSA countries. However, the marginal benefit from increased openness is less for SSA suggesting that trade liberalisation would generate more FDI to non-SSA countries than SSA countries. Lastly, infrastructure development promotes FDI to non-SSA countries, but no significant impact on FDI flows to SSA countries. In conclusion, the results implied that Africa is different and that policies that may flourish in other regions may not be equally successful in Africa.

Also on the determinants of foreign direct investment on a narrower scope, Akinlo (2004) using panel data empirically studied the determinants of Foreign Direct Investment inflows to ten African countries (Nigeria, Mozambique, South Africa, Congo democratic, Ghana, Morocco, Egypt, Sudan and Equatorial Guinea); between the period 1995-2011. The ten countries were chosen on the basis of the United Nations Conference on Trade and Development (UNCTAD) report released in July 2013. The sample of countries selected the higher receivers of FDI inflow in 2012. The model used was that of econometrics using a simple logarithmic transformation. The dependent variable was FDI while the independent variables included: real GDP per capita, domestic endowed investments, trade openness, inflation and exchange rate volatility. The findings of the study were that endowment of natural resources, openness, macroeconomic risk factors and natural resource accounted for the bulk of FDI inflow to Africa as both variables were positive and significant in the estimates used.

In unison with Akinlo (2004) on openness being a significant determinant of FDI, Onyeiwu (2004) studied the economic and institutional reforms in Africa in the past decade and the flow of FDI to the region. Fixed effects model and random effects model were made use of to explore whether the stylized determinants of FDI affect flows to Africa in conventional ways. The study took a panel data set approach with 29 African countries from the period 1975 to 1999. The factors identified as significant for FDI flows were: economic growth, inflation, openness of the economy, international reserves, and natural resource availability. Contrary to conventional wisdom, political rights, infrastructure were found to be unimportant for FDI flows to Africa in this study. The significance of a variable for FDI flows to Africa was found to be dependent on whether country-and-time-specific effects are fixed or stochastic.

On political rights and property rights, a study by Fedderke (2004) was carried out to determine the growth impact and determinants of FDI in South Africa. Time series data that span between 1960

and 2003 was used and the Johansen VECM structure was employed in its methodology. The variables considered were: real GDP, total employment, private sector fixed capital stock, real FDI liabilities (stock, corporate tax rate, labour capital ratio, average wage rate, property rights index, political rights index, political stability and exports and imports) as a percentage of GDP. There were two sets of result; one, the growth impact of FDI is positive in South Africa. There is a complementarity of FDI and domestic capital in the long run which implies a positive technological spill-over from foreign to domestic capital. Also a positive spill-over effect of FDI on capital and labour is also felt and thereby influencing South African output in the long run. Second, market size, exports and improved property rights contributed positively to FDI while an increase in corporate taxation crowds-out FDI investment liabilities. Wage costs and increased imports also had a negative impact on FDI. The implications of the findings was that the determinants of FDI in South Africa lie in the determinants of the net rate of return as well as the risk profile of the FDI investment liabilities. Further on, the paper recommended the study of how FDI might come to switch from the predominance of horizontal to increased vertical FDI as a research gap.

In addition to the study of property rights, Gwenhamo (2009) examined the impact of property rights on FDI in Zimbabwe from 1964- 2005. This contributed to the investigation the role of institutional factors such as the protection of property rights and the efficiency of the legal system. It also employed the standard Johansen estimation techniques, like in Fedderke (2004), for multivariate cointegration to estimate the long-term determinants of FDI in carrying out its analysis. The dependent variable was real FDI stocks while the independent variables in the model included: real gross GDP, capital-labour ratio, external debt to GDP ratio, post-secondary education, imports and exports as a ratio of GDP and property right index for Zimbabwe. The findings of the study were that secure property rights and GDP, significantly affect FDI positively; there was no evidence of effects of property rights index on FDI and that external debt burden, capital intensity and political instability have negative effects of FDI. Also, human capital was found to affect both FDI and the GDP positively. The main implication of the study is that the political elite should strive to ensure the institutional structure protects the property rights of the broad cross-section of the society to promote FDI. One recommendation was prescribed, that policy should aim at achieving macroeconomic institutional and political stability to improve attractiveness of the country to foreign investors.

In agreement with Akinlo (2004) on natural source endowment being a determinant of FDI, Moreira (2009) provided an analysis of the recent studies that focus on Africa and the examination of the various factors that attract or deter FDI in Africa. The study was of a qualitative nature and the range of information gathered from economic journals present in Econlit database was from 1969 to 2007. Two remarks stood out; first, the common perception among many observers is that FDI in Africa is largely driven by their natural resources or aimed at the local market. However, these are not the only determinants of FDI to the region. Although the countries with the highest levels of natural and mineral resource endowment have been able to attract the highest levels of FDI, many other factors influence investment decisions. Second, if the impediments of FDI to Africa are made aware to government agencies, it would enable reverse of Africa's poor FDI record by devising concrete strategies.

Building on the argument of natural resource endowment as a determinant of FDI, Anyanwu (2011) conducted a study to find out the determinants of Foreign Direct Investment (FDI), an understanding which would enable policy makers to formulate and execute policies that encourage FDI. The data collected was from the period 1980 to 2007 and an econometric model was used; more specifically, regression analysis. The independent variable was Foreign Direct Investment while the independent

variables were: urban population, gross domestic product, financial development, annual inflation rate, exchange rate, infrastructure, government consumption expenditure, international remittances, political rights and oil exporters. The regions considered in this panel study were: Central Africa, East Africa, North Africa, Southern Africa and West Africa. The variables were all expressed in natural logarithmic form. The results of the estimation indicated: first, a positive relationship between market size and FDI inflows. Second, openness to trade has a positive impact on FDI flows. Third, higher financial development had negative effect on FDI inflows. Fourth, high government consumption expenditure attracts FDI inflows to Africa. Fifth, higher FDI follows international remittances in Africa. Sixth, Agglomeration has strong positive impact on FDI inflows to Africa. Seventh, natural resource endowment especially for oil and exploitation attracts huge FDI into Africa. Eighth, East and Southern Africa appear positively disposed to obtain higher levels of inward FDI. The implications of the results above followed that: enhanced regional cooperation and integration increase market size in Africa and can help attract investors currently constrained in part by the small size of some domestic African markets. This proved true in the model where market size was a factor that attracted FDI. Moreover, African countries should improve the quality of domestic financial systems (including integrating them) to make economies more attractive to MNC's to invest in them.

In addition to Akinlo (2004), Moreira (2009) and Anyanwu (2011) on natural resource endowment; Olatunji (2015) undertook a qualitative study on the determinants of FDI in Sub-Sahara Africa. Looking through UNCTAD reports from 1998 to 2011 the following conclusions were arrived at. FDI flows to Sub-Saharan African economies unaffected by conflict and political instability exceeded those with crisis. While Africa is a region rich in natural resources, it must ensure conflict resolution and political stability for FDI inflows to thrive. Political stability was found to be a necessary but not a sufficient condition to ensure large access to large FDI flows. Moreover, the following were also found to be important factors in attracting FDI: successful implementation of privatization, regional integration, good infrastructure, sound human capital development, consistent policies and a predictable macroeconomic environment.

Lastly on a natural resource endowment, Sichei (2012) conducted a panel study on the evidence of the determinants of FDI for a sample of 45 African countries over the period 1980-2009. Dynamic panel data estimation techniques were used. The independent variable in the regression model applied was FDI stocks while the independent variables were: real GDP growth rate, degree of openness, number of bilateral investment treaties, the number of double taxation treaties, the existence of FDI-specific regulatory regime, the number of years the current president has been in power and the participation in economic regions particularly COMESA, SADC, ECOWAS and EAC. Several factors were identified as factor significant to the FDI inflows to Africa. These include: agglomeration economies, natural resources, real GDP growth and international investment agreements. The study also indicated that the Africa-wide environment has become more conducive to FDI since the year 2000.

[Studies on Foreign Direct Investment in Nigeria](#)

Obadan (1982) undertook an empirical analysis of direct foreign investment in Nigeria. It was primarily done to provide knowledge of the underlying determinants of foreign investment which would aid the formulation and implementation of rational policies toward foreign investment. Moreover, the study tested some of the known hypotheses on direct foreign investment with respect to Nigeria's foreign investment position. A regression model was used with the dependent variable being the annual change in direct foreign investment in Nigeria and the independent variables: Nigeria GNP, level of tariffs using annual changes in proportion of tariff proceeds, measure of growth hypothesis in absolute annual change in Nigeria GNP and the weighted average of the index of industrial production. The data used was from 1962 to 1974. The results supported the market size hypothesis

and the growth hypothesis (market's growth rate) of the country. Also, it confirmed the role of factors such as tariff barriers and the need for raw materials in stimulation foreign investment. The nature of foreign investment in the country was found to be partly demand oriented and partly supply oriented. It concluded that increased tariffs may stimulate tariff factories and that the present civilian government appears to have a favourable attitude toward foreign investment despite the model's result; also, the expectation of the Nigerian economy is a slowdown, or equalisation of the rates of growth of income in Nigeria and abroad hence a negative effect on the flow of foreign investment to the country.

A different line of study from determinants of foreign direct investment was undertaken in Adelegan (2000). The aim of the study was to find out whether foreign direct investment contributed in a substantive and sustained way to financing needs and economic growth of Nigeria and whether the activities and cost of funds were well-suited to long term development. The data used for the study was mainly secondary time series data obtained for a twenty-five year period (1970- 1995). The variables used were: data for personal consumption, government consumption, exports, imports and GDP at 1984 factor prices (taken from Central Bank of Nigeria, Internal Monetary Fund and International Financial Statistics). The model used was that of Seemingly Unrelated Model adopted by Mahdavi Saeid model of 1990. Estimation of the model used Seemingly Unrelated Regression (SUR) also known as multivariate regression or Zellner's method. The conclusions drawn from the findings were as follows: first, the change in per capita income, growth rate of population, foreign direct investment, external public debt outstanding and growth in import price index are the most important determinants of redistribution of GDP towards economic growth in Nigeria. Second, FDI is pro-consumption and pro-import and negatively related to GDI. Hence, FDI is not channelled to productive use but rather used to supplement consumption, substitute for domestic savings and purchase foreign consumer's good and services, and repatriation of profits by investors. Third, another reason for the weak FDI-growth linkage may lie in its failure to significantly raise exports. Fourth, FDI has a significant negative effect on gross domestic investment as crowding-in effect of FDI on investment provides an explanation for the ineffectiveness of FDI in promoting growth in Nigeria. Therefore in conclusion, although the study revealed a negative FDI-growth linkage, the effectiveness of FDI inflows can improve if they are reapportioned in favour of productive activities such as investment and export at the expense of non-productive consumption and import.

Similarly, Akinlo (2004) also carried out a study to investigate the impact of foreign direct investment (FDI) on economic growth in Nigeria for the period 1970-2001. The results showed that both private capital and lagged foreign capital have small and statistically insignificant effects on economic growth. The results supported the proposition that extractive FDI might not be growth enhancing as much as manufacturing FDI. Moreover, the results showed that export has a positive and statistically significant effect on growth which might be due to high capital flight it generates. Finally, the results also showed that labour force and human capital have significant positive effect on growth while the findings suggested the need for the labour force expansion and education policy which would raise the stock of human capital in the country.

In the same line of thought as Adelegan (2000) and Akinlo (2004), Danja (2012) examined the applicability of FDI and the impact it makes to the Nigerian economy hypothesis using empirical evidence. Data was collected for a period of more than 30 years and both econometric and statistical methods were applied. To evaluate the relationship between FDI and major economic indicators, the method of ordinary least squares was used. The dependent variables were: Gross Fixed Capital Formation (GFCF), Gross Domestic Product (GDP) and Index of Industrial Production (IIP) while the independent variable was Foreign Direct Investment (FDI). A system of 3 linear equations was

formed for the regression analysis. The model revealed a positive relationship between FDI and the variables GDP, IIP and GFCF, which are major economic indicators. However, FDI was found not to contribute much to the growth and development of the Nigerian economy. Evidence showed that this was due to repatriation of profits, contract fees and interest payment on foreign loans. The recommendation was that human capacity building, infrastructural facilities and strategic policies be enhanced to attract FDI inflow.

In agreement with the conclusion made by Danja (2012) that FDI did not contribute much to the growth and development of the Nigerian economy, Omowumni (2012) went further and examined the effects of FDI on the development of the Nigerian economy. The aim of the study was to find out what the FDI determinants in Nigeria are and how they affect the Nigerian economy. The method of Ordinary Least Squares regression model was used to study time series data from 1970-2007. The data was collected from the Central Bank of Nigeria statistical bulletin. The dependent variables were: real gross domestic product (RGDP) while the independent variables were: balance of payments (BOP), FDI and official exchange rate (EXR). The Cochrane-Orcutt iterative method was also used to correct for autocorrelation. The model used the hypothesis that there is a functional relationship between the economy development of Nigeria using the real gross domestic product (RGDP) and Foreign Direct Investment. The results of the regression analysis revealed that there is not much support for the view that there is a link between FDI and economic growth in Nigeria as suggested by previous literatures. Also, although the result does not imply FDI is unimportant, the model analysis reduces the confidence in the belief that FDI has exerted an independent growth effect in Nigeria. Balance of payments was seen to have a negative effect on the value of GDP and was the most insignificant variable. More so, the exchange rate also has a negative impact on the value of the GDP and was also statistically insignificant. In conclusion, it was found that FDI is majorly driven by natural resources and that governments can play an important role in promoting and developing its natural resources to encourage investments to Nigeria. In addition, the enhancement of the internal economy, especially stability of the economy should be pursued by the Nigerian government for the enhancement of the productive base of the economy, which would be better than more appeal for foreign direct investment. Also, FDI alone cannot lead to sustainable economic growth except if combined with appropriate structures and infrastructures. Further on, the paper suggested the employment of extensive qualitative analysis in future studies. The inclusion of more variables other than the three may also be used to establish more robust results.

Due to the establishment that FDI does not contribute to the growth and development on the Nigerian economy, Adejugbe (2013), sought to undertake an in-depth analysis of the various challenges hampering the flow and progress of Foreign Direct Investment (FDI) within the economy of the country. Particularly, it focussed on regulatory bottlenecks which the successive governments have allowed to stunt the growth of FDI as well as other factors contributing to these challenges. Also, focus was also put on how the challenges can be overcome to turn Nigeria into an investment friendly nation. Some of the legal challenges expressed vary from restrictions on obtaining expatriate quota, embargo on importation of certain goods and clearing, obtaining business permits from the relevant authorities, issues of securing landed property, resolution of disputes and effectiveness of the judiciary and intellectual property related issues. The study took a qualitative analysis approach with the examination of existing literature on the issues mentioned. The conclusion of the study was that while FDI may have a positive economic impact on developing economies, it may also serve as a tool to develop technology and production skills of host countries. The economic, legal and social policies implemented by such economies play a huge role in determining how FDI can impact such

economies. Moreover, some policies undertaken by the Nigerian government need to be revisited to suit these needs.

Studies on Foreign Direct Investment in Kenya

Kinano (2006) using cross sectional data, studied the key factors that influence FDI decisions in Kenya. The study employed an econometric technique for analysis. The dependent variable was foreign direct investment while the independent variables were: human capital, real exchange rate, annual inflation and openness of the economy. The Johansen cointegration technique was used to ascertain the cointegration of the series and robustness of the model. Afterwards, the Henry log type model was designed and put in an error correction model and lastly estimation by Ordinary Least Squares method. The results of the model showed that economic openness and human capital effects affected FDI positively in the short run while inflation and real exchange rate had a negative influence on FDI inflows both in the short run and long run respectively.

Similarly, like Kinano (2006) who concluded inflation had a negative effect and economic openness was a significant variable in determination of FDI flows in Kenya; Manyasa (2006) also carried out a panel study whose objective was to examine the factors that influence FDI flows in Kenya, specifically the wage rate, exchange rate, trade balance, savings rate, external debt, GDP growth rate, inflation, openness of the economy, policy incentives and macroeconomic reforms. The flexible accelerator model by Chenery was used and time series data within the period 1970-2009 was collected. Ordinary Least Squares estimates were also made use of in the model. The results revealed that the exchange rate was the most significant variable in determining FDI inflows. Other significant variables included: trade balance, wage rate, savings rate, openness of the economy and policy incentives. The variables with a negative effect on FDI were: trade balance, wage rate, inflation rate, GDP growth rate, external debt and macro-economic reforms. The only recommendation was for the Kenyan economy to ensure a conducive investment climate, an area that requires further research.

However, with regard to inflation, unlike Kinano (2006) and Manyasa (2006), inflation was found to be an insignificant variable by Muthoga (2012). Muthoga (2012) conducted an empirical panel study to find out the determinants of FDI in Kenya.

The study used data that span between the years 1967-1999. The model used for interpretation was the generalized least square model (GLS) and a linear regression model was used to determine the determinants. The results of the study were that economic openness is the most significant factor that determines FDI into Kenya. Other factors included: GDP growth rate, credit availability from the monetary authority, domestic investment, exchange rate and internal rate of return. Factors found to be statistically insignificant were: trade balances, inflation rate, external debt, university enrolment and domestic savings. The implication of the findings is that ensuring promotion and sustainability of FDI as a tool to enhance Kenya's economic growth is a big challenge to policy makers.

In a different panel study, Njoroge (2015), undertook a study to determine the FDI determinants in Kenya's manufacturing sector. The approach of a cross-sectional analysis for the period 2009-2013 was used and the framework employed for the study was ownership, location and internationalization (OLI) and institutional determinants. The findings of the study indicated significant positive relationship between governance and FDI growth. Moreover, evidence presented the relation between a good political environment and good corporate governance to be positive in attracting foreign investment into a country.

Within the same sector, Njoroge (2016) conducted a similar panel study as Njoroge (2015) and examined the determinants of growth in Kenya and the extent. The purpose of the study was to analyze the influence of a few group of determinants of FDI in Kenya and present new evidence. The group of determinants included: corporate governance elements, political governance, trade openness, market size, exchange rate and inflation rate. A multiple regression model was used to carry out the analysis on the specified variables. The significant variables were found to be: corporate governance, political risk, trade openness, exchange rate and the size of GDP. The recommendation made to attract FDI into the manufacturing sector was that more effort should be put into improving governance , manage political risk and open the economy to trade. The only research gap mentioned was that the same study be conducted in other sectors since the study mainly focussed on the manufacturing sector.

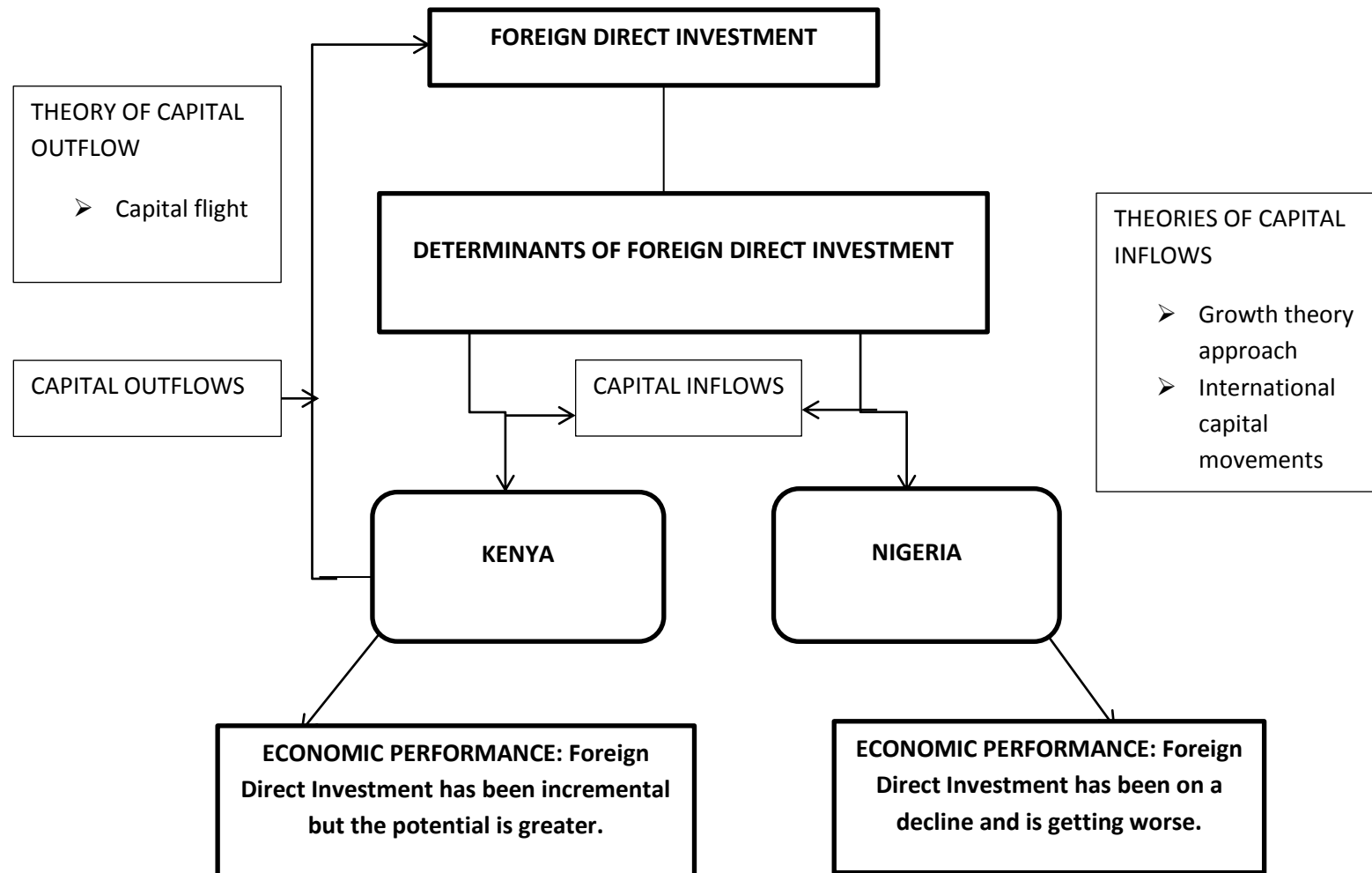
RESEARCH GAPS IN THE LITERATURE

The main gaps identified in the literature review based on this study of determinants of foreign direct investment for the case of Nigeria and Kenya are three. First, for both Kenya and Nigeria most past literature has used the simple Ordinary Least Squares method of regression. Some of the authors expressed the need for more robust results and this is where this study becomes relevant. By use of cointegration analysis, the same study of the determinants of foreign direct investment will be carried out and refined results will be produced through the use of more advanced econometric methods.

Second, for the case of Nigeria, most of the literature was from studies conducted before the year 2015. Moreover, the declining trend in Nigeria's foreign direct investment has not been discussed in most of the literature. Therefore, this study will not only give more results using the latest reports but also take keen consideration of the fact that Nigeria's foreign direct investment is on a decline.

Lastly, for Kenya, most of the recent literature has focused narrowly on the manufacturing sector and made use of simple econometric methods; mostly Ordinary Least Squares has been used. It is for this reason that this study like mentioned earlier will use recent statistics to find out the determinant of foreign direct investment with special consideration to the fact that although Kenya's foreign direct investment has been increasing; the country still performs lower than its potential.

CONCEPTUAL FRAMEWORK



The above conceptual framework captures the essence on this study. It starts at the top with Foreign Direct Investment which is the main area of study. It flows down to the determinants of foreign direct investment which is the aspect of FDI in consideration. To link the literature review with the study, the aspect of capital inflows and outflows is brought in. capital inflows as is illustrated flow into the countries in this case Kenya and Nigeria while capital outflows move in the reverse direction. The theories of capital inflows discussed in the theoretical literature are illustrated on the right and include the growth theory approach and the theory of international capital movements. Capital outflow is also based on one theory, the theory of capital flight as is illustrated on the left. The main objective of the study is to study the determinants of foreign direct investment into Kenya and Nigeria. For Kenya, this is in order to understand why the country is performing below its potential given that its economy is greatly diversified. For Nigeria, the study is in order to understand why foreign direct investment into the country has been deteriorating.

STATEMENT OF HYPOTHESIS

Below are the main hypotheses this study seeks to test.

H_0 : The main determinants of foreign direct investment cannot be established to be any of the following variables: exchange rate, inflation rate, balance of payments, Gross Domestic Product (GDP), and exports.

H_1 : The main determinants of foreign direct investment may be one or more of the following variables: exchange rate, inflation rate, balance of payments, Gross Domestic Product (GDP) and exports.

The null hypothesis is on the variables that are determinants of foreign direct investment, with respect to past literature which remains in debate.

CHAPTER 3: METHODOLOGY

Introduction

This chapter will give the description of how the research was carried out. It outlines the research design, the data collection, the empirical model and the data analysis.

Research Design

The objective of this research is to investigate the determinants of foreign direct investment in developing economies using the case of Kenya and Nigeria. To achieve this, the choice of the research design was of both quantitative nature and a case study. The quantitative aspect comes in owing to the fact that the study will rely heavily on statistical and econometric methods in its analysis such as the vector autoregressive (VAR); while the case study approach applies because the study narrows down to two developing economies, Kenya and Nigeria. In these two countries, foreign direct investment will be looked into intensively in order to understand past and current trends.

The choice of both the quantitative and case study approach is justified given the gaps expressed in past literature. The quantitative aspect is necessary to obtain more robust results as has been expressed in past studies hence the study will use advanced econometric models which will fill this gap. In addition, the case study approach is also important for specificity. Focussing on Kenya and Nigeria will allow for more rigorous study as compared to a broader scope.

Data collection

Types of Data

The data that will be incorporated into this study will be of quantitative and secondary nature. The use of secondary data is due its availability and reliability.

Sources of Data

The main sources secondary of data for this study included: World Investment Reports from the United Nations Conference on Trade and Development, National Bureau of Statistics in both countries, the International Monetary Fund and the World Bank.

Data collection Methods

The data was collected through examination of the World Investment Reports, and obtaining information from the World Bank, National Bureau of Statistics in both countries and the International Monetary Fund

Appropriateness of Data Collection Instruments

These methods of data collection above are appropriate as information gathered from all the mentioned sources is credible and reliable.

Empirical model

This study investigates the determinants of foreign direct investment in developing economies using the case of Kenya and Nigeria. To do this, the study will make use of econometric methods specifically time series analysis; which is the study of a series of data points over continuous time with similar intervals between the data points. The time series will span 44 years, from 1970 to 2014 in order to enable meaningful extraction of trends and other characteristics such as volatility of the data. The method of time series analysis that will be used will be of multivariate nature (observations of more than one variable).

The model will take the form below:

$$FDI_t = f(GDP_t, EXCH_t, BOT_t, EXPORTS_t, INFLATION_t, TRADEOP_t,)$$

Where:

FDI= growth in FDI inflows

GDP= growth in Gross Domestic Product

EXCH= exchange of rate of the local currency to the dollar

INFLATION= inflation rate in percentage terms (this will be used as a measure of macroeconomic stability)

BOT= Balance of Trade as a percentage of GDP

EXPORTS= growth of exports in dollars

TRADEOP= trade openness as a percentage of GDP

Vector auto regressive model

The estimation technique that will be used will be the Vector Autoregressive model (VAR), a multivariate framework, where each variable is explained by its own lagged values inclusive of current and historical values. It is a suitable model class for describing the data generation process of a small or moderate set of time series variables.

VAR models represent the correlations among sets of variables and are often used to analyse certain aspects of the relationship between the variables of interest. Variables within this model are often treated as being endogenous and thus allows for rich dynamics. It is important to note that the Vector Autoregressive model will be resulted to if there is no cointegration among non-stationary independent variables. No cointegration means that there is no long run trend that exists in the relation between the variables. Consequentially, the independent variables therefore wander apart as linear combinations remain non-stationary.

The basic Vector Autoregressive model of order p (VAR (p)) takes the form below:

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + A_3 y_{t-3} + \dots + A_p y_{t-p} + u_t$$

Where the A_i are ($k \times k$) coefficient matrices and u_t is the unobservable error term. It is usually assumed to be a zero-mean independent white noise process with time invariant, positive definite

covariance matrix $E(u_t u_t') = \Sigma_u$. This means that error term is an independent stochastic vector with $u_t \sim (0, \Sigma_u)$

Estimating of an unrestricted VAR

In estimating the k equations of the VAR model ordinary least squares is made use of. Under standard assumptions, the estimator of the ordinary least squares (OLS) is consistent and asymptotically normally distributed. In cases where data is normally distributed, the estimator is similar to the maximum likelihood estimator depending on the initial values.

Estimation of lag length of a VAR

In determining the lag order, sequential testing procedures and model selection criteria are applied. Usually, the starting point is a maximum lag length to which tests are applied sequentially for example on statistical software such as Eviews until a model order is determined. The quantity is chosen by either theoretical or institutional argument. If the order chosen is too small, the problem may be discovered later when the final model is subjected to a series of specification tests. On the other hand, if a large order is chosen, there may be a problem that will impact the overall error probability of a sequential procedure. This may result in an inadequate selection of p . The desired lag order should be chosen by observing the estimator of order p that minimizes the preferred criteria in selection. The most common criteria of selection include: Akaike Information Criteria (AIC), Schwartz Information Criteria (SC) and Hannan Quinn (HQ).

Model Checking

It is important to check the suitability of the VAR model to ensure it provides an adequate representation of the time series data. Many tests that check the model are based on the residuals of the model and check for defects such as residual autocorrelation which are signs that a model is a poor representation.

Diagnostic tests

The first diagnostic test will be the test for serial correlation; for this the LM autocorrelation test will be used. Second, the stability of the VAR will be checked. The VAR is considered reliable if it is stable and thus when the determinant of the autoregressive operator has no roots in and on the complex unit circle. If a polynomial has a unit root, meaning the determinant is zero then some or all of the variables are integrated. To ensure the system is stable the modulus in Eviews software will be used. Usually, a stable VAR representation exists for the first differences of non-stationary variables rather than in level.

Impulse response functions

After fitting the VAR model and ensuring it is stable (stationary), impulse response functions (IRF) that measure the behaviour of the dependent variables over time in response to shocks to the error term, will be derived. Impulse response functions may be modelled in discrete or continuous time. Considering the study will use time series data that is continuous in nature, the impulse will be modelled as a Dirac delta function which is most often used for continuous time systems.

The effect of an impulse is transitory and vanishes over time. The impulse responses are sometimes called *forecast error impulse responses*.

Granger Causality

To complement the impulse response functions, the granger causality test will be performed. The approach find the answer to the question of whether x granger causes y and how much of y can be explained by past values of y. this is done in order to determine whether addition of lagged values of x improve the explanation of y. y is said to be granger-caused (or not caused) by x if x helps in the prediction of y; in other words, if the coefficients on the lagged x's are statistically significant.

Variance decomposition

This is another complementary tool used besides the impulse response functions and the granger causality test. Variance decomposition is also known as forecast error variance decomposition and is used to explain more about the VAR model. To be specific, it explains how much of forecast error variance of each of the variable can be explained by exogenous shocks to other variables.

Johansen cointegration analysis

The study will use Johansen cointegration test, a cointegration analysis method, to investigate whether there is any long-run relationship between FDI inflows and the variables mentioned in the model. Cointegration simply means that there exists a stationary linear combination of non-stationary random variables. This analysis will help determine whether the series is cointegrated; which would mean that any deviations from possible long run relationships existing between the series would be stationary. If the series is not cointegrated, there is no long run equilibrium relationship between variables and any inference would be of no value.

To test for cointegration, we must first verify that all the mentioned variables in the model that we expect to be cointegrated with FDI each have a unit root test i.e. are $I(1)$. Otherwise, they would be stationary i.e. $I(0)$. In addition, it is important to note that the vector autoregressive model will need specification of the order of lags before undertaking the tests of cointegration.

The justification for the use of cointegration analysis is that investigation of whether variables are cointegrated enables the use of error-correction models which allow for the separation of short run and long run impacts. Moreover, the presence of cointegration between two variables ensures that any OLS regression would yield consistent parameter estimates, which would indicate whether there is a stable long run relationship between the variables.

Error correction models

An error correction model belongs to a category of multiple time series models where data is cointegrated. When variables in a VAR model are cointegrated, we use a vector error-correction (VEC) model. A VEC model restricts the long run behaviour of dependent variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. It is important to note that VEC is applied after the Johansen cointegration test has been run in order to determine the number of cointegrating relations.

Ordinary Least Squares

Lastly, the ordinary least squares will be used to understand the relationship between foreign direct investment and the independent variables. From this equation we will get to understand the magnitude and the direction of the relationship between all the variables independent and independent. A positive relation means that as one variable increases so does the other while an inverse means that for a unit increase in one variable, there must be a decrease in another.

The equation usually takes the form below:

$$y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_t X_t + u_t$$

y_t : represent the dependent variable

β_0 : represents the intercept term.

$\beta_1, \beta_2, \beta_t$: represent the coefficients estimated.

X_1, X_2, X_t : represent the independent variables.

For the model above to hold, the assumptions above must be satisfied.

- The model is linear in parameters
- The independent variables are non-stochastic
- The expected value of the error term u_t is always zero i.e. $E(u_t) = 0$
- The residuals have constant variance meaning no heteroscedasticity i.e. $Var(u_i) = \delta$
- There is no multicollinearity i.e. $Cov(X_i, X_j) = 0$
- There is no autocorrelation i.e. $Cov(u_i, u_j) = 0$
- There is no endogeneity i.e. $Cov(X_i, u_i) = 0$

Should any of the assumption be broken, the model's significance reduces. There are some tests that may be used to correct some of the defects. These include:

- The Breusch Godfrey test LM test for detecting serial correlation.
- The use of a correlation matrix to detect and correct multicollinearity problems; this is by dropping one of the highly correlated variables.
- The use of white test to detect heteroscedasticity. The problem may be solved by transforming the variables into logs.
- Normality tests for checking whether the data follows a normal distribution. If normality is not the case, dummy variables may be made use of for any outliers in the observation.

CHAPTER FOUR: RESULTS AND ANALYSIS

Introduction

This chapter constitutes two main sections, the findings in Kenya and in Nigeria. Further on, there are four subsections: first, the descriptive analysis of the variables under study. In this section the univariate and multivariate analysis of the variables will be described.

The second part will present the steps taken to come up with the Vector Autoregressive model along with the diagnostic and significance tests that ensure the model is stable.

The third part will look into the modelling of impulse response functions, granger causality tests and variance decomposition.

Lastly, the Ordinary least Squares Regression for the differenced variables, after the OLS diagnostic tests have been carried out.

Descriptive statistics

The independent variables chosen to explain the determinants of foreign direct investment in both Kenya and Nigeria include: Gross Domestic Product (GDP) growth, the exchange rate in dollars terms, inflation as a percentage, Balance of Trade (BOT) as a percentage of Gross Domestic product and trade openness in percentage terms. The dependent variable is foreign direct investment as a per cent of Gross Domestic Product. For both periods the data was collected from the year 1970 to 2014.

Kenya

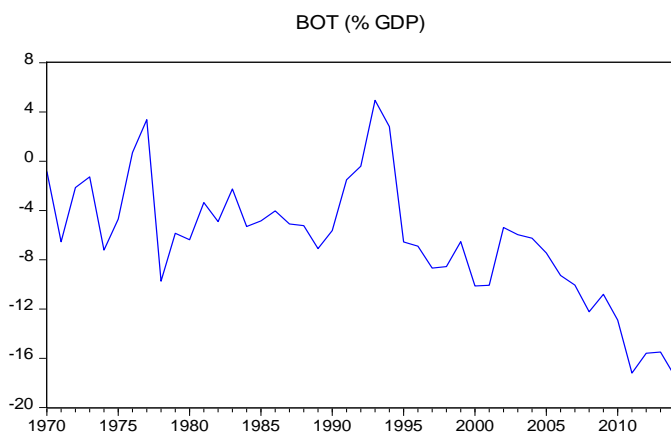
Univariate analysis

In the illustrations that follow, the nature of the variables as being stationary or non-stationary will be revealed. The importance of this is to avoid spurious regression as is often with the case with time series data that is non-stationary in nature. In addition, the analysis will help determine the suitability of variables in carrying out cointegration analysis. The Augmented Dickey Fuller test has been used to check whether the data had unit roots.

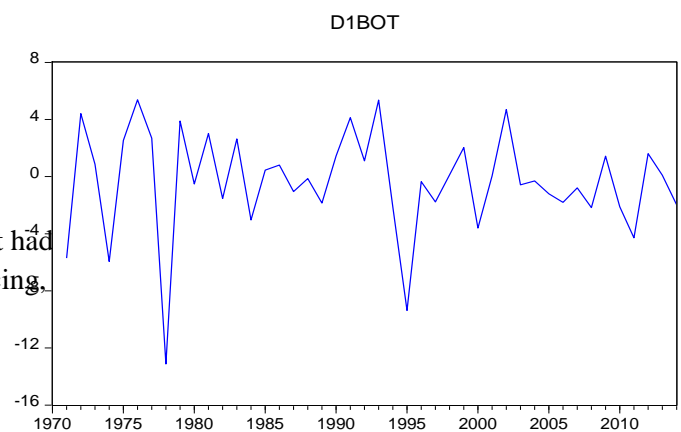
Non-stationary variables

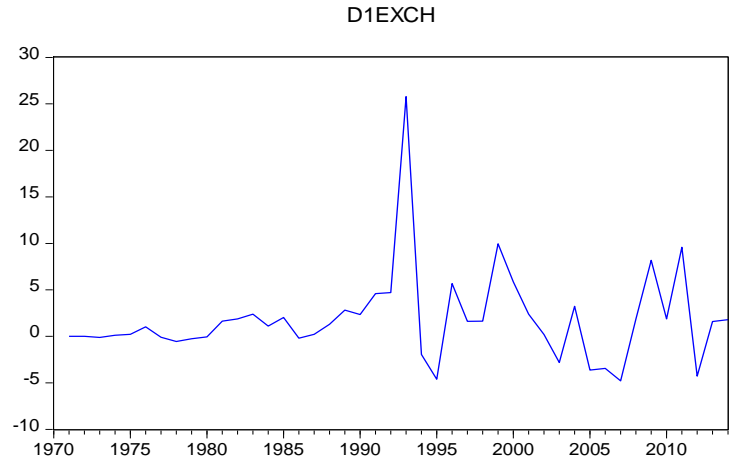
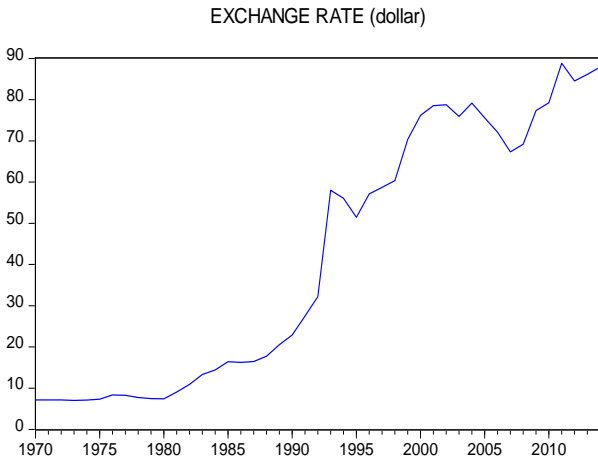
The four variables below were found to be non-stationary at level in Kenya. Therefore, to make the data stationary the first difference was taken as is indicated by the graphs on the right (labelled with the prefix 'D1')

i. Balance of trade



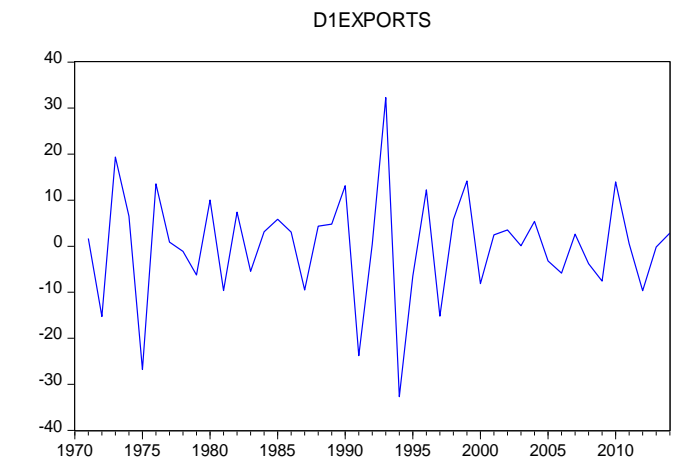
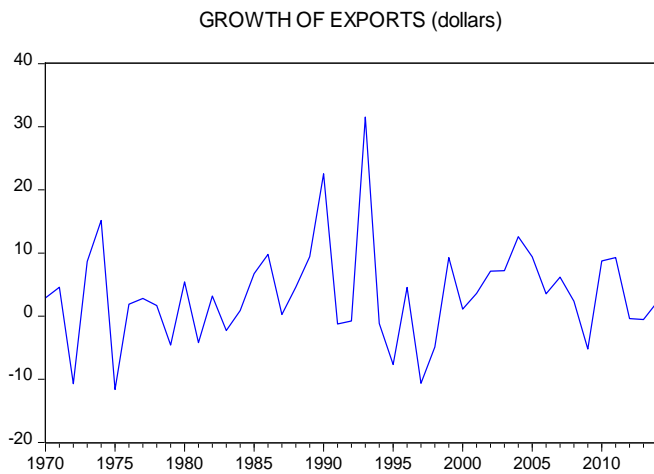
...y variable; it had
...fter differencing,
...in 1978.





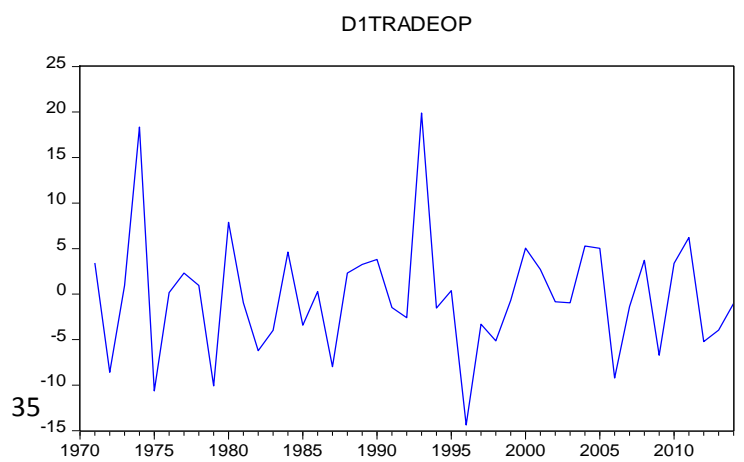
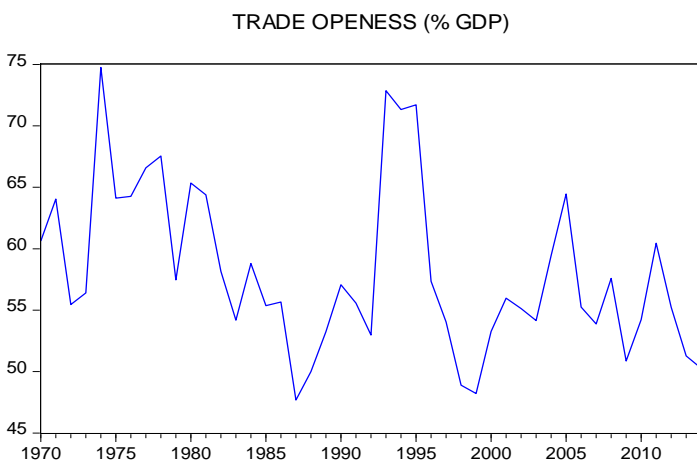
The non-stationary exchange rate data has an increasing trend, with the lowest point being in 1970 and the highest in 2014. After differencing the data became mean-reverting with the peak being in 1993 and the lowest in 1995.

iii. Growth of exports



The growth in exports in non-stationary form appears to be mean-reverting with a series of ups and downs. However, it is not stationary as seen from the unit root test; thus the need to difference the data. In stationary form, the data has a peak in 1993 followed quickly by an all-time low in 1995.

iv. Trade openness



Lastly, trade openness also seems to appear stationary. However, this is not the case if the unit root test is considered. After differencing, the new highest point is achieved in 1993 and the lowest in 1995.

Stationary variables

The remaining three variables below were found to be stationary at level in Kenya and there was no need for any transformation.

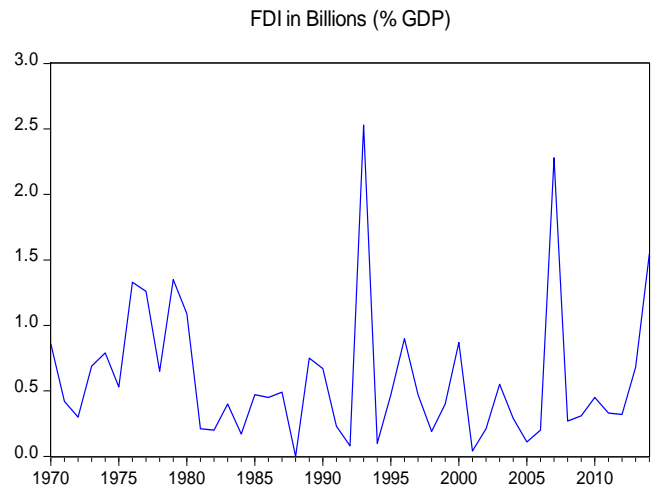
v. Foreign direct investment

Null Hypothesis: FDI has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.892470	0.0000
Test critical values:		
1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(FDI)
 Method: Least Squares
 Date: 10/31/16 Time: 15:36
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments



Foreign direct investment is stationary at level as illustrated by the unit root results. The highest peak is realized in 1993 and the lowest point in 1988.

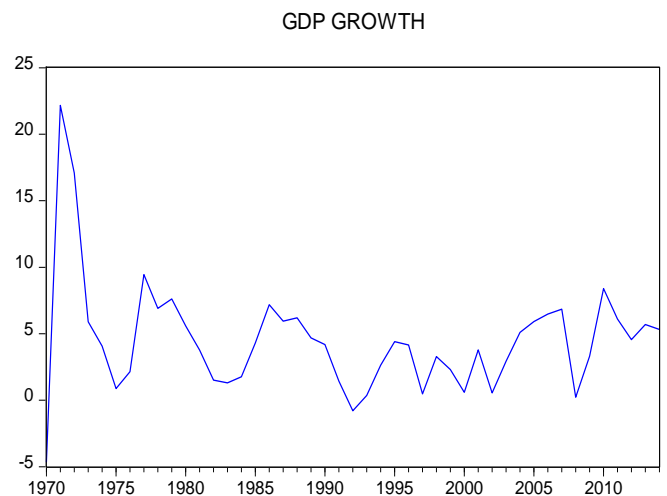
vi. Growth in gross domestic product

Null Hypothesis: GDP has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.311815	0.0001
Test critical values:		
1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GDP)
 Method: Least Squares
 Date: 10/31/16 Time: 15:42
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments



Growth in gross domestic product is stationary at level as evidenced by the unit root test. In the graph, it depicts the highest point as being achieved in 1972 and the lowest in 1992.

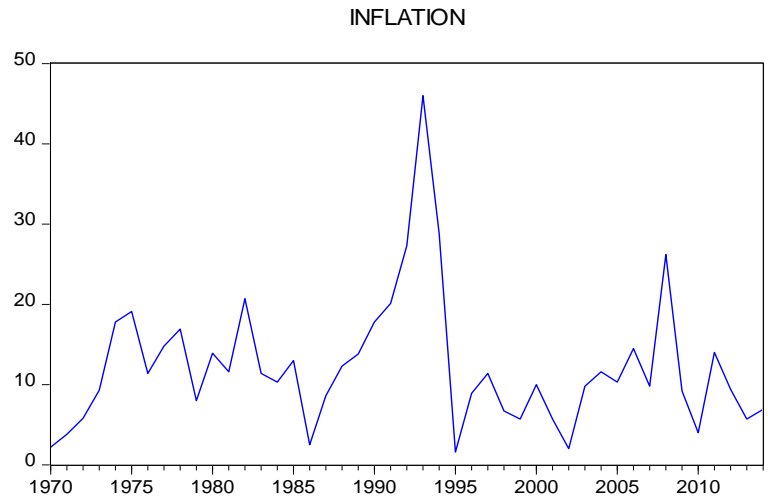
vii. Inflation

Null Hypothesis: INFLATION has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.932995	0.0039
Test critical values:		
1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(INFLATION)
 Method: Least Squares
 Date: 10/31/16 Time: 15:51
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments



Inflation is also stationary at level with reference to the unit root test. From the graph, the highest peak is in 1993 and the lowest point is in 1995.

The findings of the univariate analysis above are different from (Kirui, 2014) and (Mutuku, 2015) who found gross domestic product and inflation to be non-stationary at level. Nevertheless, there was similarity in the findings of exchange rates as a non-stationary variable at level. On the other hand, (Sichei, 2012) found inflation to be a stationary variable at level; this is line with the findings above.

Multivariate analysis

Univariate analysis lays ground for multivariate analysis by determining the nature of the variables and consequentially, the most suitable model to use. As was seen above, the non-stationary variables were: exchange rates, trade openness, growth in exports and balance of trade while the stationary variables were: foreign direct investment, gross domestic product and inflation. Due to foreign direct investment being stationary at level, cointegration analysis is not suitable as it requires non-stationary variables at level. Foreign direct investment is the most important variable and its omission in a cointegration analysis would not be effective in answering the research questions in chapter one. Therefore, the way forward is to use a vector autoregressive model.

Estimation of the Vector Autoregressive Equation

Modelling a vector autoregressive model {VAR (p)} begins with diagnostic tests such as the test of no autocorrelation, to narrow down the number of lag lengths (p) that are significant.

Next, EViews uses a range of criteria namely: Akaike Information Criteria, Final Prediction Error, Schwartz Information Criteria and Hannan-Quinn information criteria to select the most suitable lag in addition to the autocorrelation test.

a) Diagnostic tests

According to residual test specifically the LM autocorrelation test, a lag of 3 and 4 onwards is found to be sufficient to capture dynamics of the model. There is no first order autocorrelation since the probability is greater than any significance level (e.g. 5%).

Lags	LM-Stat	Prob
1	73.35090	0.0137
2	73.14323	0.0143
3	65.62969	0.0564
4	44.77130	0.6451

Probs from chi-square with 49 df.

By letting EViews to come up with the lag length structure, a lag of 3 is found to be suitable if a maximum restriction of 3 lag is imposed. This is if we follow the Akaike information Criteria, the final prediction error, the modified LR statistic and the hannan-quinn information criteria.

VAR Lag Order Selection Criteria

Endogenous variables: D1BOT D1EXCH D1EXPORTS D1TRADEOP FDI
INFLATION GDP

Exogenous variables: C

Date: 10/28/16 Time: 10:37

Sample: 1970 2014

Included observations: 41

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-763.5081	NA	49658982	37.58576	37.87832*	37.69230
1	-707.4338	90.26591	36434151	37.24067	39.58116	38.09295
2	-653.9022	67.89373	36154670	37.01962	41.40804	38.61764
3	-567.4615	80.11580*	10927354*	35.19324*	41.62959	37.53701*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

b) Check for stability of the system.

After the lag length has been determined, the stability of the system is checked to ensure that the Vector Autoregressive model captures all the dynamics of the model. For this the AR roots table is used. Observing the modulus below, we find that no roots lie outside the unit circle. This means that the VAR satisfies the stability condition when a lag of 3 is used.

Roots of Characteristic Polynomial

Endogenous variables: D1BOT D1EXCH D1EXPORTS D1TRADEOP FDI INFLATION GDP

Exogenous variables: C

Lag specification: 1 3

Date: 10/28/16 Time: 10:40

Root	Modulus
0.803789 + 0.372485i	0.885902
0.803789 - 0.372485i	0.885902
-0.405850 - 0.777738i	0.877263
-0.405850 + 0.777738i	0.877263
-0.063073 - 0.831677i	0.834065
-0.063073 + 0.831677i	0.834065
0.110655 + 0.811009i	0.818523
0.110655 - 0.811009i	0.818523
-0.723816 - 0.320189i	0.791473
-0.723816 + 0.320189i	0.791473
0.368299 + 0.674760i	0.768730
0.368299 - 0.674760i	0.768730
0.615205 - 0.452280i	0.763567
0.615205 + 0.452280i	0.763567
-0.728507	0.728507
-0.322243 - 0.577978i	0.661740
-0.322243 + 0.577978i	0.661740
-0.338347 + 0.298127i	0.450953
-0.338347 - 0.298127i	0.450953
0.447701	0.447701
-0.306878	0.306878

No root lies outside the unit circle.

VAR satisfies the stability condition.

The findings above on the lag length are different from (Mutuku, 2015), (Mwega, 2014) and (Cheng, 2006). (Mutuku, 2015) established a lag of 4 as the most suitable as evidenced by the Final Prediction Error, Modified LR test and Hannan-Quinn information criteria. In contrast, (Mwega, 2014) estimated a lag of 12 as the most suitable for monthly data spanning a year. In another contrasting study by (Cheng, 2006), a lag length of 5 was determined as the most suitable for monthly data spanning 9 years from 1997 to 2005.

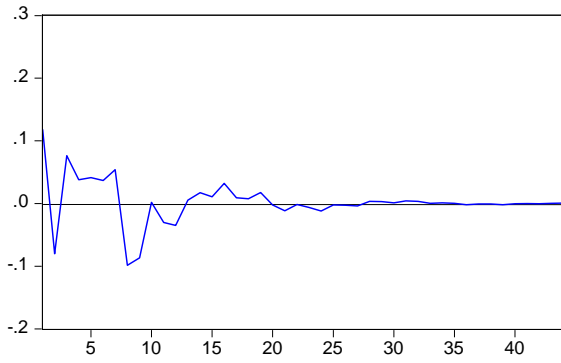
Modelling of impulse response functions

Impulse response functions (IRF's) are used to study the relationship between variables in a Vector Autoregressive model. In this case the reaction of foreign direct investment will be analysed when there is a shock to: balance of payments, exchange rate, growth in exports, trade openness, inflation and gross domestic product.

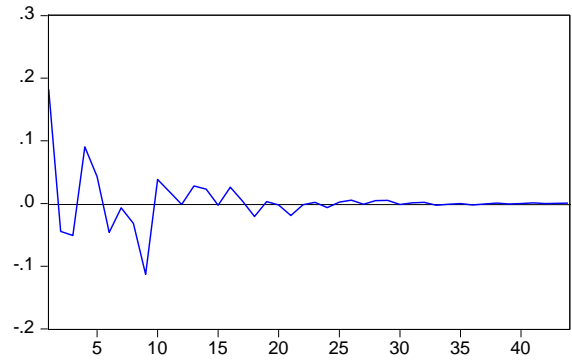
The graphs in the next page show the reaction of foreign direct investment to shocks in all the other variables in a bid to understand which variables affect FDI and how.

Response to Cholesky One S.D. Innovations

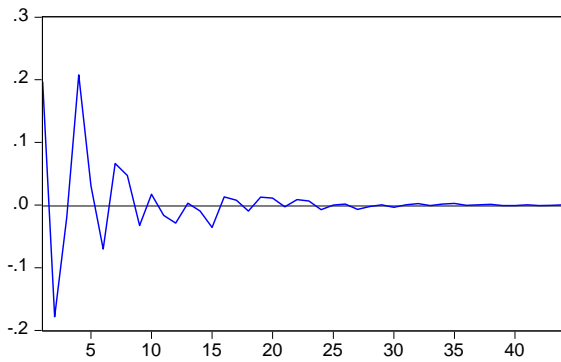
Response of FDI to D1BOT



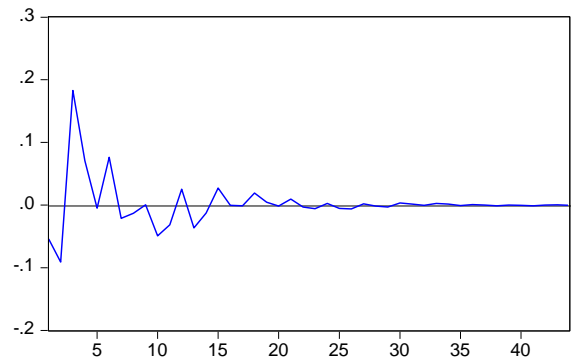
Response of FDI to D1EXCH



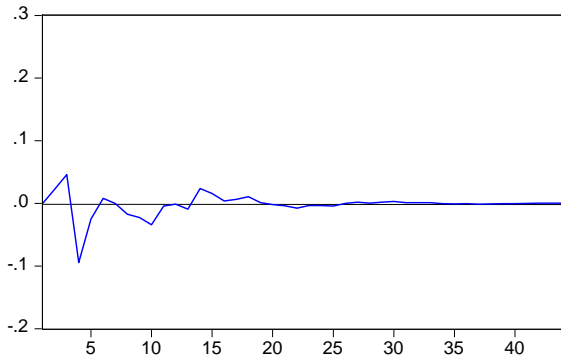
Response of FDI to D1EXPORTS



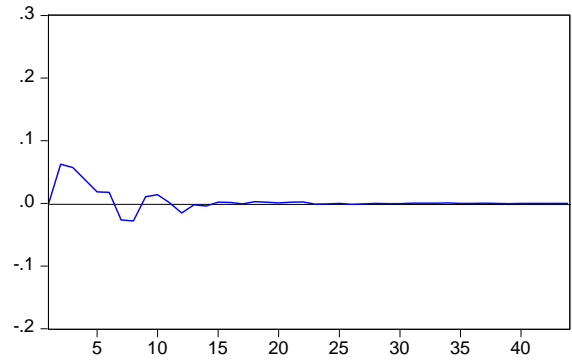
Response of FDI to D1TRADEOP



Response of FDI to INFLATION



Response of FDI to GDP



Interpretation

Balance of trade

A shock to balance of trade has a volatile effect on foreign direct investment within the first 25 years after which the shock decays from the 27th year. The magnitude of shock peaks at a unit increase from the onset and an equal unit decrease in the 7th year.

Exchange rate

A shock to the exchange rate also results in a volatile effect on foreign direct investment. The highest magnitude is within the onset where there is a 1.5 increase. The lowest point is in year 10 with a decrease of slightly over a unit. The shock decomposes within the 25th year after a series of volatility clustering between year 10 and year 25.

Exports

A shock to exports results has a large impact on foreign direct investment. At onset there is an increase of 1.5 which declines rapidly to decrease if 1.8 by the 2nd year. The magnitude the peaks again to the highest point of 2 units by the 5th year followed by a series of increases and decreases as until the effect dissipates from the 25th year.

Trade openness

A shock to trade openness unlike the rest of the variables start a negative 0.5 units from the onset and eventually increases to 1.7 units by the 3rd year, the highest peak in the impulse. The shock is transmitted throughout the 5th to the 25th year with less volatility as compared to the other variables and finally disappears from the 25th year.

Inflation

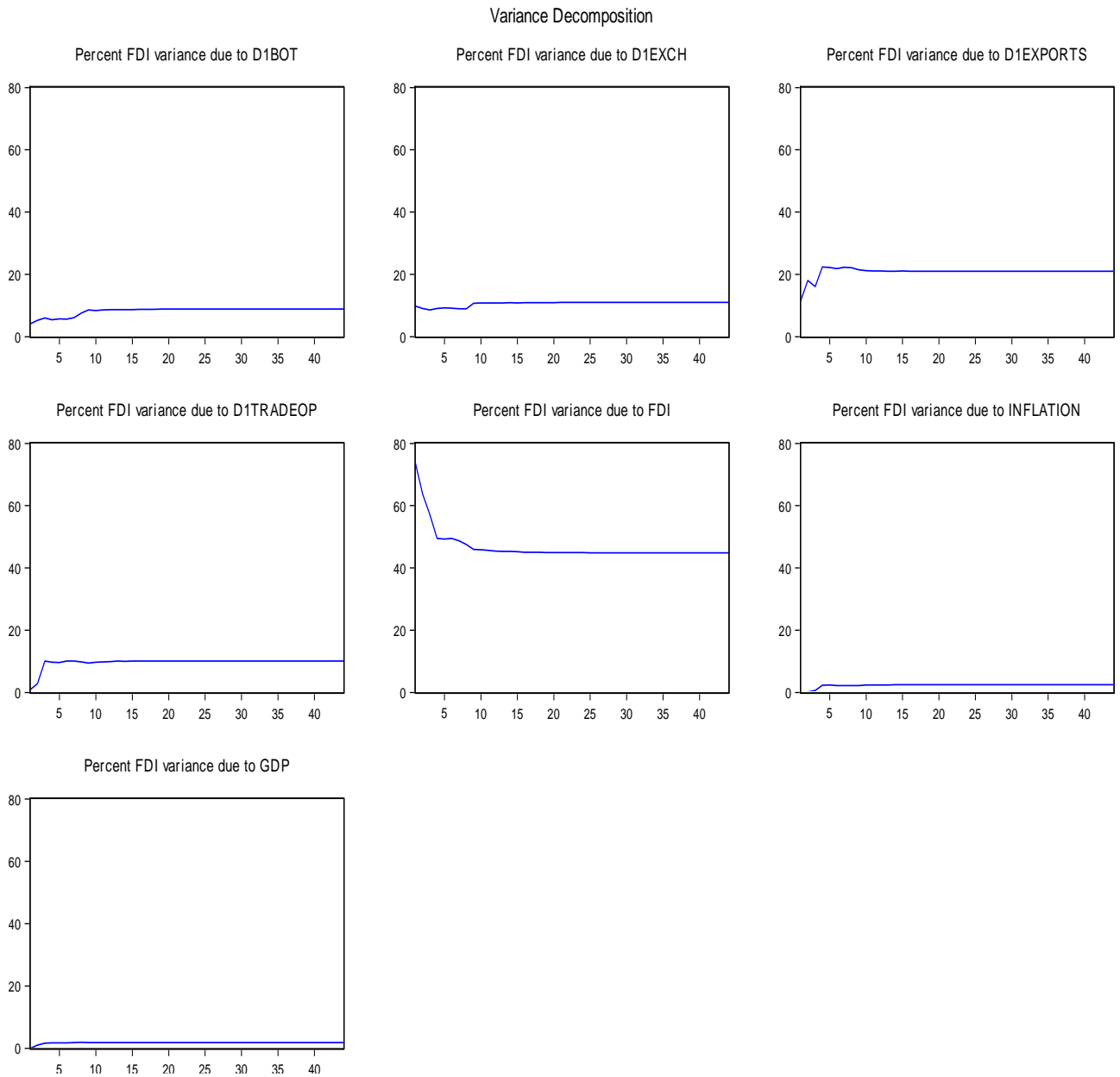
A shock to inflation has no effect on foreign direct investment at onset but increases slightly to 0.4 units in year 3. Afterwards, the impulse declines to the lowest point a unit decrease until the 5th year. Finally the impulse dissipates in year 25.

Gross domestic product

A shock to gross domestic product also has no effect on the onset. However, there is a 0.5 increase by the 2nd year which decreases to 0.3 units in the 7th year. The impulse decomposes by the 15th year.

Variance Decomposition

Variance decomposition complements impulse response functions. They measure the contribution of each type of shock to the forecast error variance. Moreover, they also help in the explanation of how much of the error variance of each variable of is attributable to exogenous shocks in other variables.



Interpretation

VARIABLE	TREND	CONTRIBUTION TO FORECAST ERROR VARIANCE
Balance of trade	Increase to 5% then stagnation	The variable contributes at most 7% with time
Exchange rate	Besides a very slight increase, it remains constant over time	The variable contributes about 10% with time
Inflation	There is a very slight increase to 2% followed by stagnation	The variable explains about 2% with time.
Trade openness	There is a sharp increase from 0 to 8% followed by stagnation	The variable explains about 8% with time
GDP	There is a slight increase from 0 to 2% followed by stagnation.	The variable explains 2% with time.
Exports	There is an initial sharp increase to 23% follow by a slight decrease to 20% followed by stagnation.	The variable contributes at most 20% with time.

GRANGER CAUSALITY

Pairwise Granger Causality Tests

Date: 11/22/16 Time: 20:00

Sample: 1970 2014

Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
D1BOT does not Granger Cause FDI	41	0.03544	0.9909
FDI does not Granger Cause D1BOT		0.62597	0.6032
D1EXCH does not Granger Cause FDI	41	0.64160	0.5936
FDI does not Granger Cause D1EXCH		0.66210	0.5811
D1EXPORTS does not Granger Cause FDI	41	2.97302	0.0453
FDI does not Granger Cause D1EXPORTS		2.38779	0.0861
D1TRADEOP does not Granger Cause FDI	41	2.13022	0.1146
FDI does not Granger Cause D1TRADEOP		1.20669	0.3221
GDP does not Granger Cause FDI	42	0.16106	0.9218
FDI does not Granger Cause GDP		0.50650	0.6803
INFLATION does not Granger Cause FDI	42	0.58893	0.6263
FDI does not Granger Cause INFLATION		2.64051	0.0646

Interpretation

Where the probability exceeds 5% we fail to reject the null hypothesis, therefore we accept.

In the table above we accept the following:

- Balance of trade does not granger cause FDI and FDI does not granger cause balance of trade.
- Exchange rate doesn't not granger cause FDI and FDI does not granger cause exchange rate.
- FDI does not granger cause exports although exports granger cause FDI
- Trade openness does not granger cause FDI and FDI does not cause tradeopeness
- GDP does not granger cause FDI and FDI does not granger cause GDP.
- Inflation does not granger FDI and FDI does not granger cause inflation.

In summary, exports is the only variable that granger causes FDI. This means that the past values of exports give information that may help in prediction of FDI.

Ordinary Least Squares Regression

The use of ordinary least squares is important in analysis of the short run trend since cointegration analysis could not be performed. The variables that will be used will be in differenced form in order to avoid spurious regression.

First, diagnostic tests will be carried out to ensure that there is no autocorrelation, heteroscedasticity and multicollinearity which would interfere with the model's overall significance. In addition, normality test will be carried out to find out if the data follows a normal distribution.

Initial estimation

In estimating the ordinary least squares (OLS) equation, the following output appears

Dependent Variable: FDI

Method: Least Squares

Date: 11/23/16 Time: 07:56

Sample (adjusted): 1971 2014

Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.569254	0.088796	6.410789	0.0000
D1BOT	0.022951	0.024387	0.941096	0.3523
D1EXCH	0.019689	0.018885	1.042582	0.3034
D1TRADEOP	0.019841	0.013925	1.424860	0.1620
R-squared	0.144250	Mean dependent var		0.592045
Adjusted R-squared	0.080069	S.D. dependent var		0.544907
S.E. of regression	0.522637	Akaike info criterion		1.626648
Sum squared resid	10.92597	Schwarz criterion		1.788847
Log likelihood	-31.78625	Hannan-Quinn criter.		1.686799
F-statistic	2.247549	Durbin-Watson stat		1.755770
Prob(F-statistic)	0.097585			

The problem with above equation is that the dependent variables, balance of trade and exchange rate are insignificant since they are both greater than 5%. Moreover, the R-squared is quite low meaning the model only explains 14.4% of variation in the model. In addition, the probability of the F-statistic is insignificant since it is greater than 5% meaning the independent variables have no joint influence on the dependent variable foreign direct investment (FDI).

To correct the above model, the tests below will be used to deduce which OLS assumptions have been violated.

Diagnostic Tests

a) Multicollinearity

To test for multicollinearity, a correlation matrix will be used. Variables with high correlations indicate the presence of multicollinearity.

	D1BOT	D1EXCH	D1EXPORTS	D1TRADEOP
D1BOT	1.000000	0.281447	0.060336	-0.213366
D1EXCH	0.281447	1.000000	0.424686	0.368213
D1EXPORTS	0.060336	0.424686	1.000000	0.461730
D1TRADEOP				
P	-0.213366	0.368213	0.461730	1.000000

From the table above, there seems to be no high correlation between variables, thus indicating there is no multicollinearity

b) Serial correlation

To check for the presence of autocorrelation, we use the Breusch-Godfrey LM test. The null is H_0 : no serial correlation

H_A : serial correlation

From the table below, the probability value of the chi square is greater than 5%, therefore we fail to reject the null meaning; there is no serial autocorrelation.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.193378	Prob. F(3,36)	0.9002
Obs*R-squared	0.697808	Prob. Chi-Square(3)	0.8737

c) Heteroscedasticity

To check for heteroscedasticity, the white test will be used. The null is

H_0 : homoscedasticity

H_A : heteroscedasticity

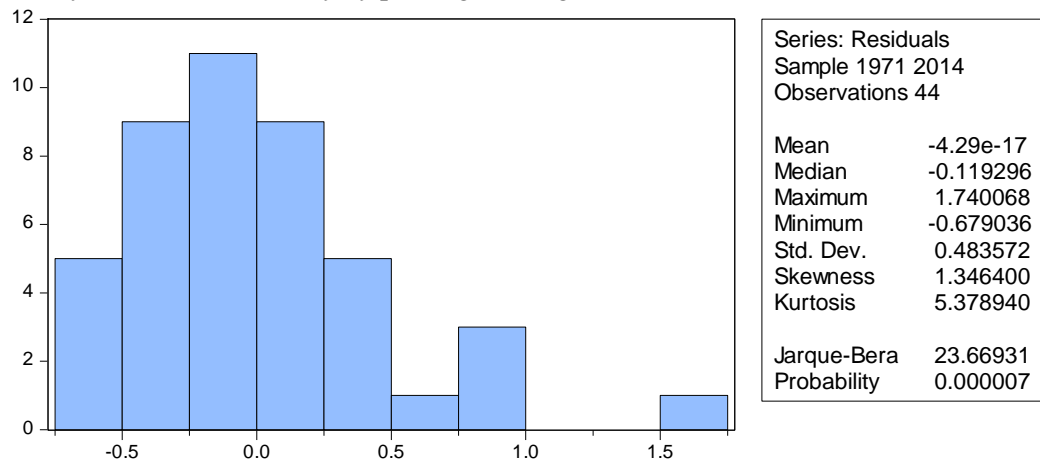
From the table below, the probability values are greater than 5% therefore, we fail to reject the null meaning; there is no heteroscedasticity.

Heteroskedasticity Test: White

F-statistic	0.862961	Prob. F(4,39)	0.4947
Obs*R-squared	3.577728	Prob. Chi-Square(4)	0.4662
Scaled explained SS	6.154180	Prob. Chi-Square(4)	0.1879

d) Test for normality

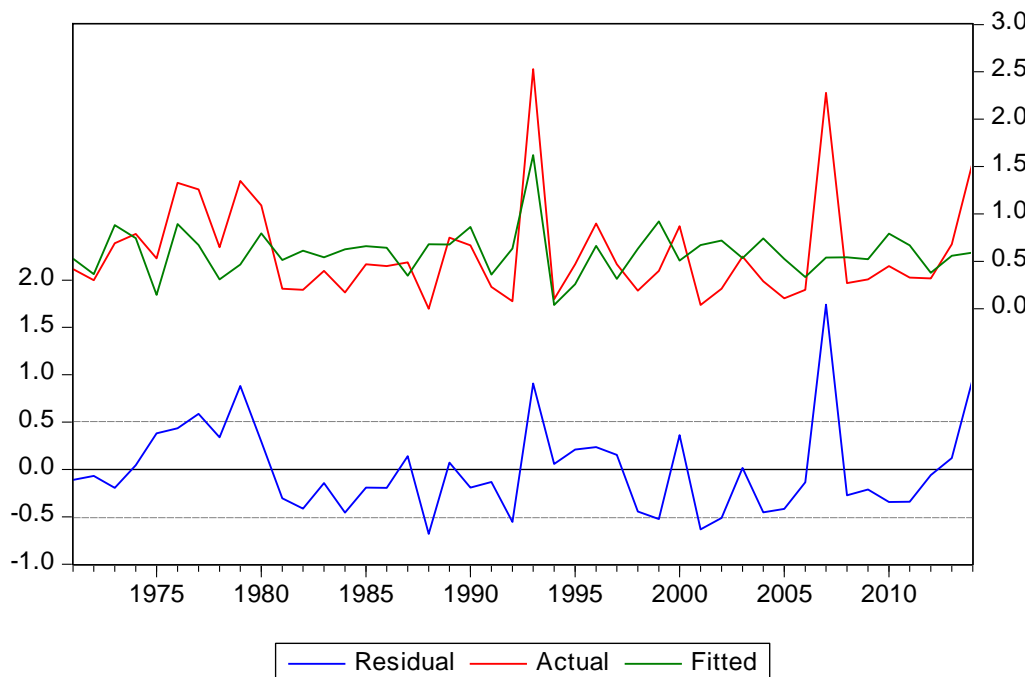
Lastly we test for normality by plotting a histogram.



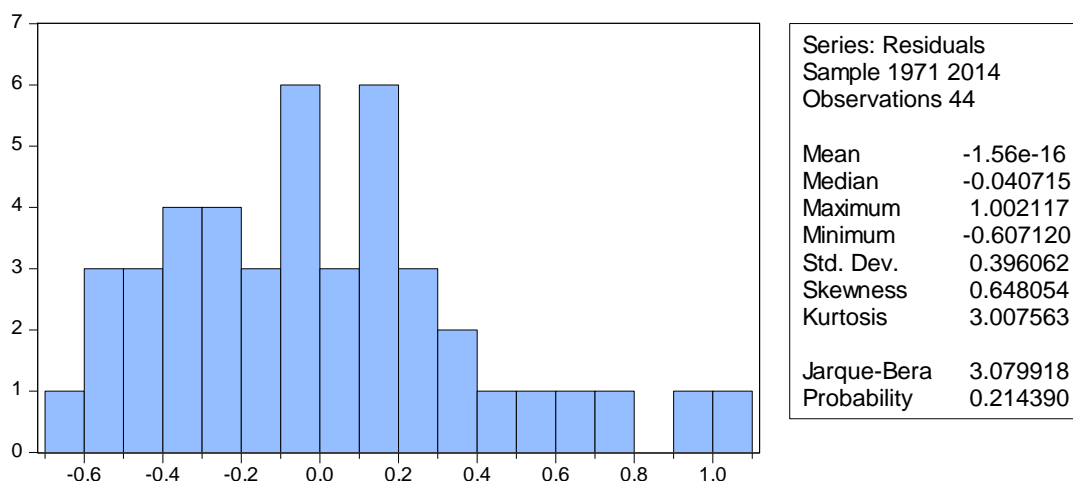
From the Jarque Bera and the probability value we see that it is less than 5% thus we reject the null, meaning the data is not normally distributed.

H_0 : data is normally distributed.

To correct for this, we use a dummy variables for the outlier in 2007 as seen from the residual line in blue.



After inclusion of the dummy variable, the Jarque Bera and the probability value become greater than 5% thus we fail to reject the null, meaning the data is now normally distributed.



Overall OLS equation

Dependent Variable: FDI
 Method: Least Squares
 Date: 11/23/16 Time: 09:18
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.505800	0.074021	6.833206	0.0000
D1BOT	0.014887	0.019742	0.754094	0.4554
D1EXCH	0.027706	0.016266	1.703318	0.0967
D1EXPORTS	0.010784	0.006459	1.669457	0.1032
D1TRADEOP	0.008827	0.012051	0.732462	0.4684
DUM	1.902235	0.440508	4.318272	0.0001
R-squared	0.471700	Mean dependent var		0.592045
Adjusted R-squared	0.402187	S.D. dependent var		0.544907
S.E. of regression	0.421313	Akaike info criterion		1.235244
Sum squared resid	6.745186	Schwarz criterion		1.478542
Log likelihood	-21.17536	Hannan-Quinn criter.		1.325471
F-statistic	6.785762	Durbin-Watson stat		1.277384
Prob(F-statistic)	0.000131			

The new estimated regression indicates an improvement in the results. Despite the probability of the independent variables being insignificant; the model is significant overall since the probability of the F-statistic is less than 5%. The R squared also explains more about the model from the previous 14.4% to 47%.

Interpretation

The model may be written as:

$$FDI = 0.51 + 0.015 D1BOT + 0.028 D1EXCH + 0.009 D1TRADEOP$$

For a unit change in FDI, there must be an increase of 0.015 in trade openness, an increase of 0.028 in exports and an increase of 0.009 in balance of trade. All the independent variables are directly related to foreign direct investment. This means that policies favouring these variables should be put in place to increase foreign direct investment

For this section, the same procedures carried out in Kenya will be done in Nigeria in order to draw the similarities and differences between the two countries.

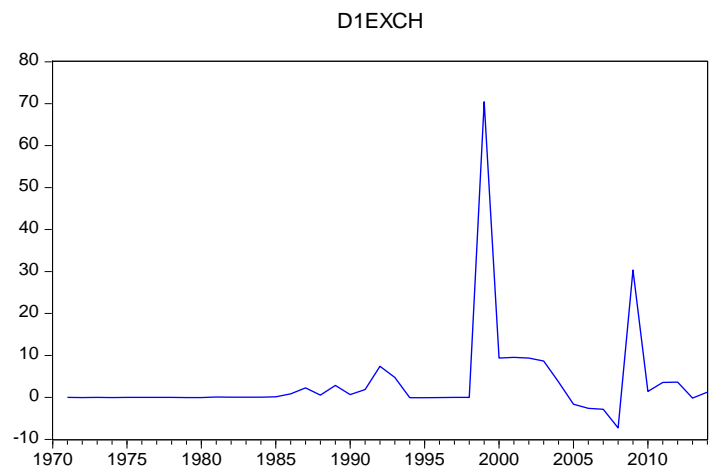
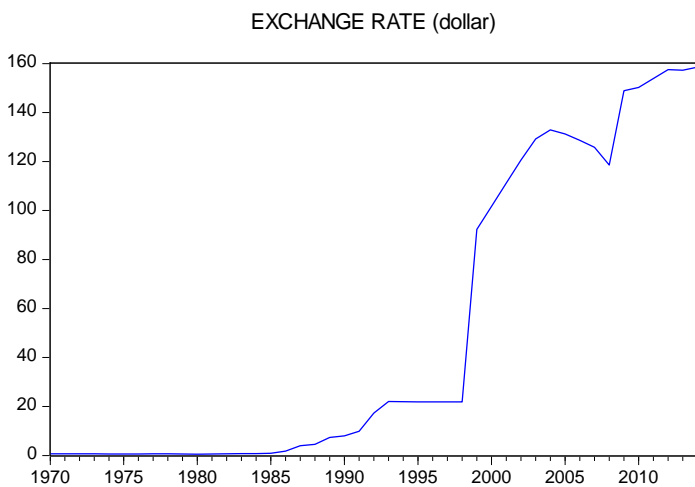
NIGERIA

Univariate analysis

The illustrations below show the nature of the variables as being stationary or non-stationary as was done previously, to avoid a spurious regression and to determine whether cointegration may be used.

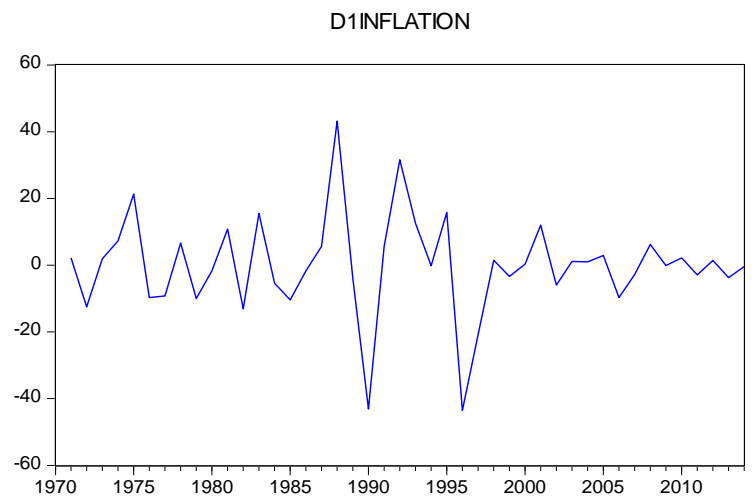
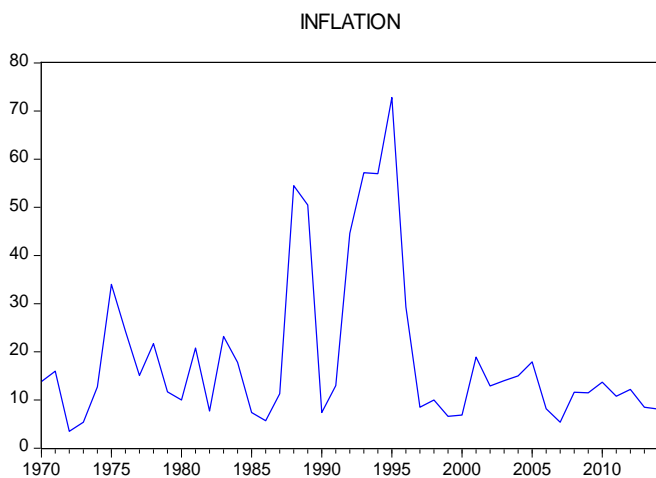
Non-stationary variables

i. Exchange rate



The exchange rate in non-stationary form has an increasing trend from 1983 to 2014. After differencing, the data becomes mean reverting. From 1970 to 1985, the graph was constant similar to the non-stationary graph. However, from 1986 the data forms peaks and troughs with the highest peak being in 1985 and the lowest point in 2008.

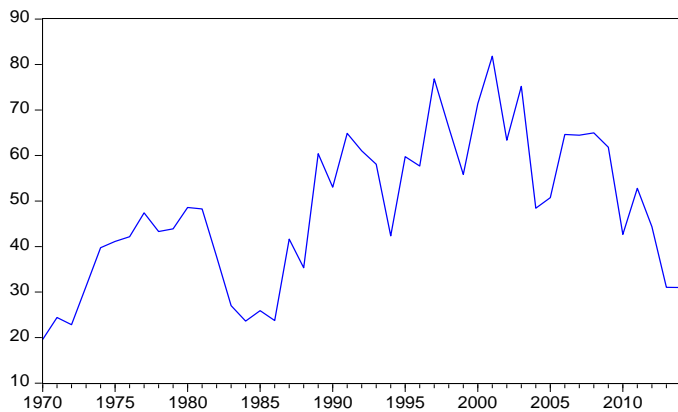
ii. Inflation



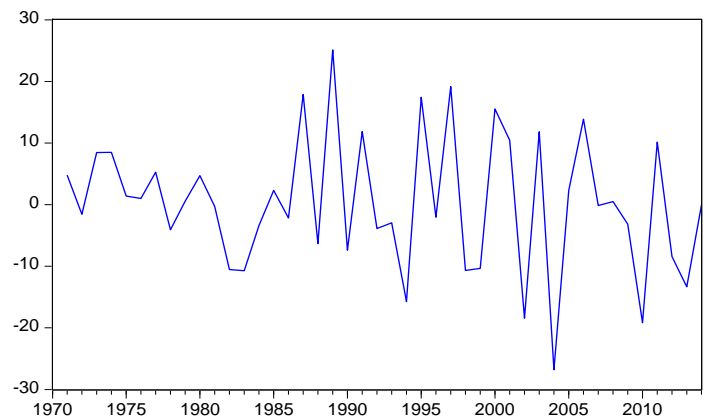
Inflation in non-stationary form appears stationary with the series of ups and downs. However, according to the unit root test, it is non-stationary at level and needs to be difference to achieve stationarity. In stationary form the highest point is seen in 1988 and the lowest in 1990.

iii. Trade openness

TRADE OPENESS (% GDP)



D1TRADEOP



Trade openness in non-stationary form appears to be of both increasing and a decreasing nature depending on the intervals looked at. From 1985 to 2000, there is a general increase while between 2000 and 2014 there is a general decrease. In stationary form, there is no general increase or decrease as the data becomes mean reverting.

Stationary variables

The remaining variables below were found to be stationary at level in Nigeria and there was no need for any transformation.

iv. Balance of trade

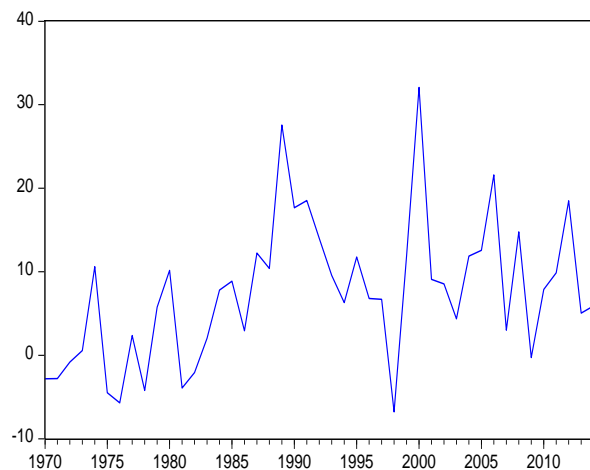
Null Hypothesis: BOT has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.639949	0.0005
Test critical values:		
1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(BOT)
 Method: Least Squares
 Date: 10/31/16 Time: 17:18
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments

BOT (% GDP)



Balance of trade is stationary at level as evidenced from the unit root test. The lowest point is seen in 1997 and the highest in 2000.

v. Growth of exports

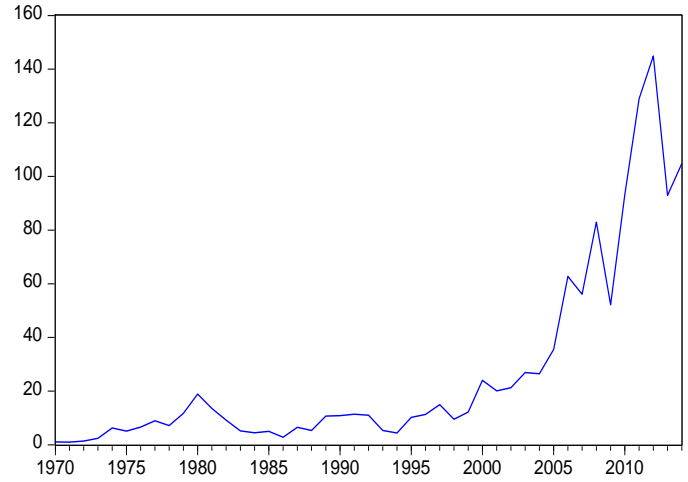
Null Hypothesis: EXPORTS has a unit root
 Exogenous: Constant
 Lag Length: 3 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	3.932630	1.0000
Test critical values: 1% level	-3.600987	
5% level	-2.935001	
10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(EXPORTS)
 Method: Least Squares
 Date: 10/31/16 Time: 17:20
 Sample (adjusted): 1974 2014
 Included observations: 41 after adjustments

GROWTH OF EXPORTS (dollars)



Growth of exports is also stationary at level, with reference to the unit root test. The graph depicts I to have an increasing trend from 1970 to 2014.

vi. Foreign direct investment

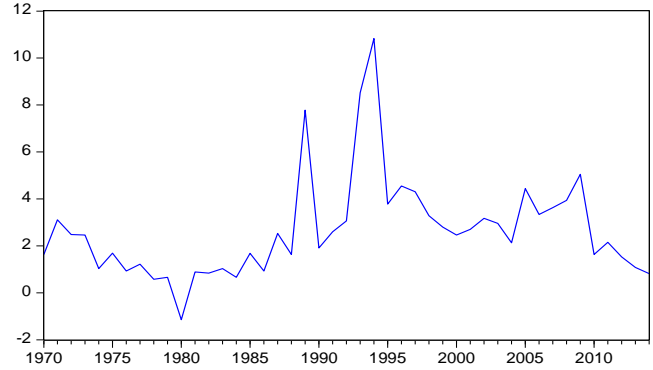
Null Hypothesis: FDI has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.630706	0.0089
Test critical values: 1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(FDI)
 Method: Least Squares
 Date: 10/31/16 Time: 17:21
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments

FDI in Billions (% GDP)



Foreign direct investment is stationary at level as well and its graph shows the lowest point as being in 1980 and the highest in 1995.

vii. Growth in gross domestic product

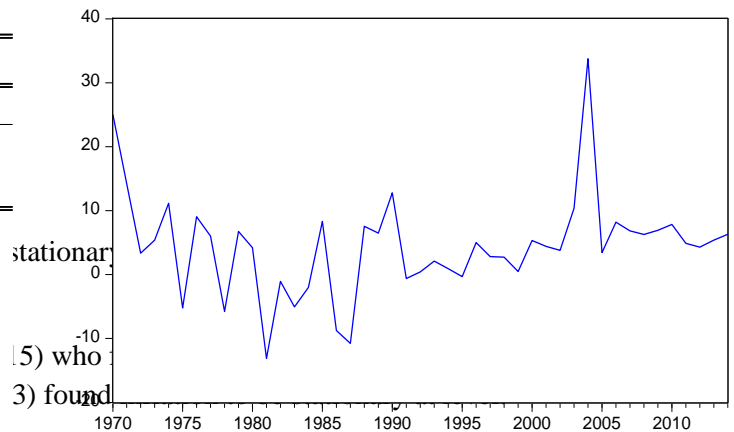
Null Hypothesis: GDP has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.798014	0.0000
Test critical values: 1% level	-3.588509	
5% level	-2.929734	
10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GDP)
 Method: Least Squares
 Date: 10/31/16 Time: 17:22
 Sample (adjusted): 1971 2014
 Included observations: 44 after adjustments

GDP GROWTH



With respect to foreign direct investment, the findings of (Taiwo, 2013) suggest that it is non-stationary at level, a finding that is in disagreement to our findings. Lastly, with respect to exchange rate (Obioma, 2015) and our findings are similar; exchange rate is non-stationary at level.

Multivariate analysis

Once again, after univariate analysis the most suitable model is determined; in this case is a Vector Autoregressive Model. Cointegration analysis is not possible as the most important variable; foreign direct investment, is stationary at level.

Estimation of the Vector Autoregressive Equation

As before, diagnostic tests will determine the most appropriate lags and later EViews will use its range of criteria to select the most significant lag in addition to the autocorrelation test.

a) Diagnostic tests

According to residual test specifically the LM autocorrelation test, a lag 1 is found to be sufficient to capture dynamics of the model. There is no first order autocorrelation since the probability is greater than any significance level (e.g. 5%).

VAR Residual Serial Correlation LM
Tests
Null Hypothesis: no serial correlation
at lag order h
Date: 10/28/16 Time: 11:25
Sample: 1970 2014
Included observations: 43

Lags	LM-Stat	Prob
1	49.90142	0.4373
2	46.42924	0.5780
3	45.74965	0.6057

Probs from chi-square with 49 df.

By letting EViews to come up with the lag length structure, a lag of 1 is found to be suitable if a maximum restriction of 3 lag is imposed. This is if we follow the Akaike information Criteria, the final prediction error, the modified LR test statistic and the hannan-quinn information criteria.

VAR Lag Order Selection Criteria

Endogenous variables: BOT D1EXCH D1INFLATION D1TRADEOP FDI GDP EXPORTS

Exogenous variables: C

Date: 10/28/16 Time: 11:29

Sample: 1970 2014

Included observations: 41

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1055.797	NA	7.73e+13	51.84375	52.13631*	51.95028
1	-974.5135	130.8464*	1.66e+13*	50.26895*	52.60944	51.12123*
2	-933.6628	51.81066	3.05e+13	50.66648	55.05489	52.26450
3	-881.1947	48.62898	4.84e+13	50.49730	56.93365	52.84106

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

b) Check for stability of the system.

After the lag length has been determined, the stability of the system is checked to ensure that the Vector Autoregressive model captures all the dynamics of the model. To do this the AR roots table is used. Observing the modulus, we observe that no roots lie outside the unit circle. This therefore means that the VAR satisfies the stability condition when a lag of 1 is used.

Roots of Characteristic Polynomial

Endogenous variables: BOT D1EXCH D1INFLATION D1TRADEOP FDI GDP EXPORTS

Exogenous variables: C

Lag specification: 1 1

Date: 10/28/16 Time: 11:33

Root	Modulus
0.997547	0.997547
0.502063	0.502063
-0.473650	0.473650
0.294666	0.294666
0.074487 - 0.248105i	0.259045
0.074487 + 0.248105i	0.259045
0.066614	0.066614

No root lies outside the unit circle.

VAR satisfies the stability condition.

In line with the findings above (Taiwo, Measuring Forecasting Performance of Vector Autoregressive and Time Series Regression Models, 2013) also determined a lag length of order 1 for annual data from 2009 to 2013 to be significant, as evidenced by the Akaike Information Criteria and the SBIC. On the other hand, in a study by (Obioma, 2015) a lag length of 6 was

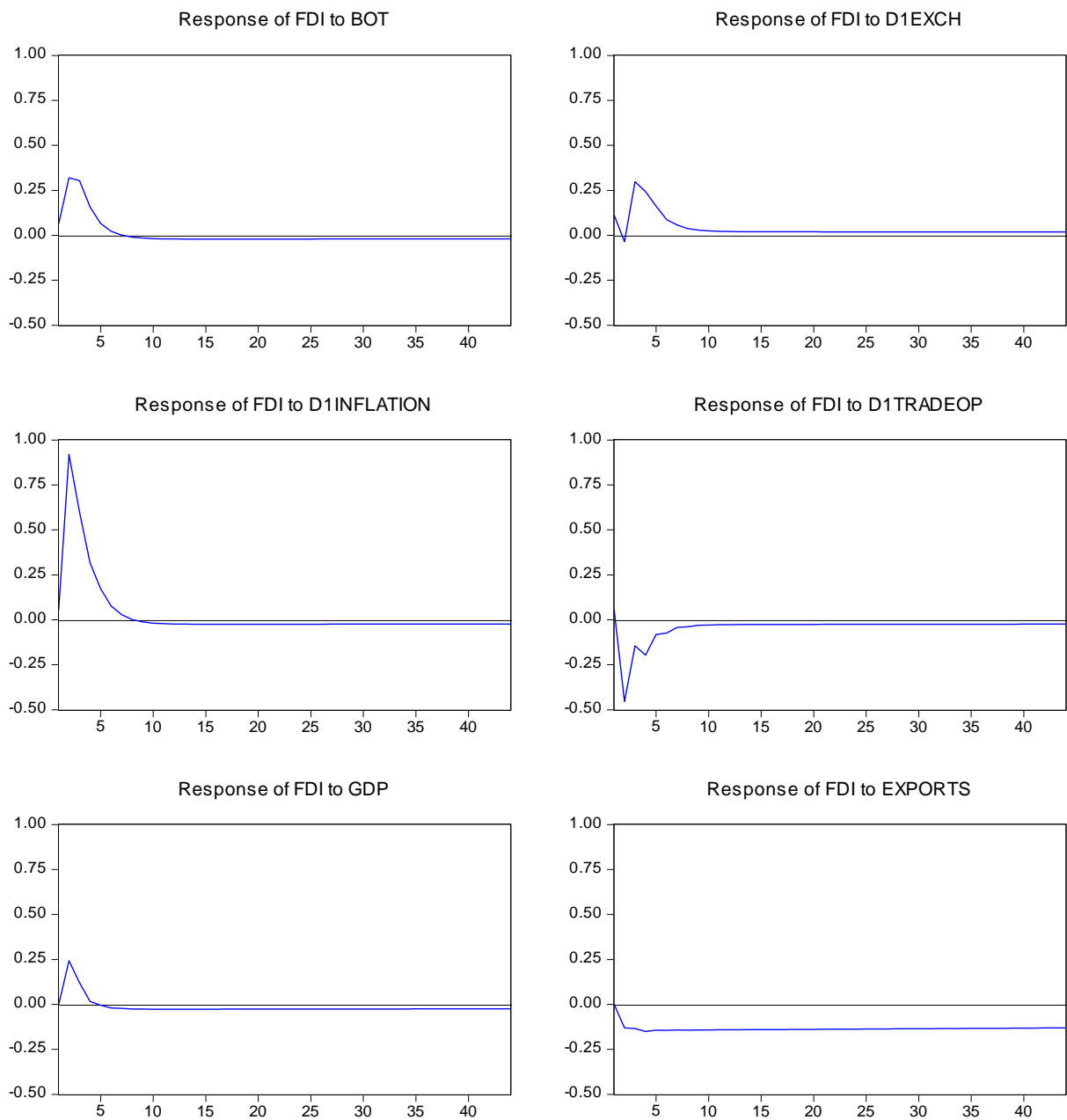
found to be suitable for monthly data from the period 2007 to 2015. This study found a lag length of 1 to be suitable as supported by diagnostic tests and the VAR stability test.

Impulse Response Functions

In this part, impulse response functions will be used once more to study the relationship between variables in the Vector Autoregressive model

The graphs below show the reaction of foreign direct investment to shocks in all the other variables in a bid to understand which variables affect FDI and how.

Response to Cholesky One S.D. Innovations



Interpretation

Balance of trade

A shock to balance of trade is transmitted to foreign direct investment from the onset by a positive 0.125 units to its peak at 0.25 units within the 2nd year. Later the effect decreases until it becomes close to zero on the negative side from the 10th year.

Exchange rate

A shock to exchange rate is transmitted to foreign direct investment from the onset at a positive 0.125 units till its peak in the 3rd year at .25 units and finally decreasing to close to zero from the 10th year onwards. The impulse does not decompose but remains close to zero.

Inflation

A shock to inflation is transmitted to foreign direct investment in the beginning at 0.125 where it then moves to its peak at a positive 0.9 units in the 2nd year. From then, the impulse decreases sharply till the 10th year where the effect becomes close to zero in the negative side. The impulse persists and does not decompose.

Trade openness

A shock to trade openness is transmitted to foreign direct investment in a unique way as compared to all the graphs. In the beginning it has no effect on foreign direct investment; however, it decreases to its lowest point at negative 0.45 units in the 2nd year. The impulse then rises close to zero, though still negative in the 10th year. From here the impulse remains constant and does not decompose.

Gross Domestic Product

The effect of gross domestic product has no effect on foreign direct investment in the beginning. The impulse however peaks to 0.25 within the 2nd year and finally plunges into the negative close to zero. The impulse also does not dissipate.

Exports

The shock to exports is transmitted to foreign direct investment from the beginning. The effect is negative throughout the 45 years. The lowest point is achieved within the 2nd year at negative 0.125 units after which the effect remains constant at this point throughout the 44 years

Granger Causality

Pairwise Granger Causality Tests

Date: 11/22/16 Time: 20:41

Sample: 1970 2014

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
BOT does not Granger Cause FDI	44	1.26323	0.2676
FDI does not Granger Cause BOT		0.91972	0.3432
D1EXCH does not Granger Cause FDI	43	0.07222	0.7895
FDI does not Granger Cause D1EXCH		0.08946	0.7664
D1INFLATION does not Granger Cause FDI	43	8.25425	0.0065
FDI does not Granger Cause D1INFLATION		0.95580	0.3341
D1TRADEOP does not Granger Cause FDI	43	0.95586	0.3341
FDI does not Granger Cause D1TRADEOP		0.00527	0.9425
EXPORTS does not Granger Cause FDI	44	0.21855	0.6426
FDI does not Granger Cause EXPORTS		0.56932	0.4548
GDP does not Granger Cause FDI	44	0.87713	0.3545
FDI does not Granger Cause GDP		1.94152	0.1710

Interpretation

As previously stated, where the probability exceeds 5% we fail to reject the null hypothesis, therefore we accept.

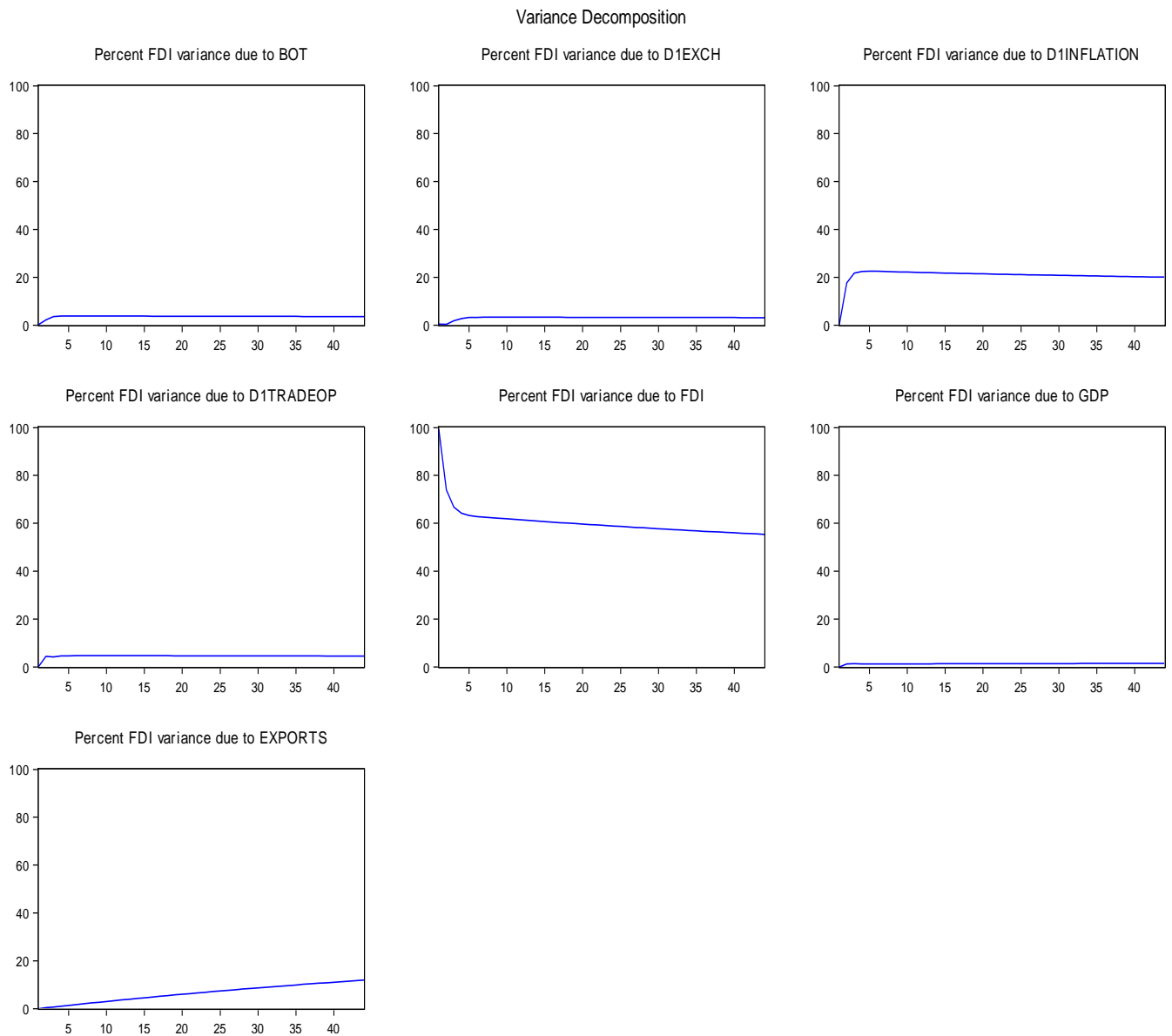
In the table above we accept the following:

- Balance of trade does not granger cause FDI and FDI does not granger cause balance of trade.
- Exchange rate does not granger cause FDI and FDI does not granger cause exchange rate.
- FDI does not granger cause exports and exports does not granger cause FDI
- Trade openness does not granger cause FDI and FDI does not cause trade openness
- GDP does not granger cause FDI and FDI does not granger cause GDP.
- Inflation granger causes FDI and FDI does not granger cause inflation.

In summary, inflation is the only variable seen to granger cause FDI. This means that past values of inflation give information that help predict FDI.

Variance Decomposition

Variance decomposition complements impulse response functions. They measure the contribution of each type of shock to the forecast error variance. They help in the explanation of how much of the error variance of each variable of is attributable to exogenous shocks in other variables.



Interpretation

VARIABLE	TREND	CONTRIBUTION TO FORECAST ERROR VARIANCE
Balance of trade	Slight increase to 5% followed by stagnation.	the variable only contributes 5%
Exchange rate	Slight increase to 3% followed by stagnation.	The variable only contributes 3%
Inflation	An increase to 20% followed by gradual decline onwards.	The variable contributes less than 20% with time
Trade openness	Slight increase to 3% followed by stagnation.	The variable seems to contribute less than 3% with time
GDP	Slight increase to 3% followed by stagnation.	Slight increase to 3% followed by stagnation.
Exports	Gradual increase from 0 to 16%	The variable explains more of the forecast error with time.

Ordinary Least Squares Regression

The use of ordinary least squares will be used to understand the short run relationship between variables better. Its use is necessitated by the inability to use cointegration analysis due to foreign direct investment being stationary at level. The variables that will be used for the ordinary least squares will be in differenced form.

As before, diagnostic tests will be carried out first before interpretation.

Initial estimation

In estimating the ordinary least squares (OLS) equation, the following output appears.

Dependent Variable: FDI

Method: Least Squares

Date: 11/23/16 Time: 09:40

Sample (adjusted): 1971 2014

Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.596551	0.356217	7.289242	0.0000
D1EXCH	0.019846	0.029686	0.668518	0.5076
D1INFLATION	-0.002979	0.023017	-0.129425	0.8977
D1TRADEOP	0.021295	0.031204	0.682444	0.4989
R-squared	0.019971	Mean dependent var		2.673636
Adjusted R-squared	-0.053531	S.D. dependent var		2.193705
S.E. of regression	2.251655	Akaike info criterion		4.547716
Sum squared resid	202.7980	Schwarz criterion		4.709915
Log likelihood	-96.04975	Hannan-Quinn criter.		4.607867
F-statistic	0.271709	Durbin-Watson stat		0.923195
Prob(F-statistic)	0.845421			

Once again the above model is seen to be unsuitable since all the dependent variables are insignificant because they are greater than 5%. Moreover, the R-squared is quite low meaning the model only explains 1.99% of variation in the model. In addition, the probability of the F-statistic is insignificant since it is greater than 5% meaning the independent variables have no joint influence on the dependent variable foreign direct investment (FDI).

To correct the above model, the tests below will be used to investigate which OLS assumptions have been violated.

Diagnostic tests

a) Multicollinearity

To test for multicollinearity, a correlation matrix will be formed to check which variables have high correlations. This is an indication of the presence of multicollinearity.

D1EXCH	1.000000	0.017347	-0.138442	0.090391
D1INFLATI ON	0.017347	1.000000	0.002356	-0.018175
D1TRADEO P	-0.138442	0.002356	1.000000	0.093183
FDI	0.090391	-0.018175	0.093183	1.000000

From the table above, there seems to be no high correlation between variables, thus indicating absence of multicollinearity.

b) Heteroscedasticity

To check for heteroscedasticity, the white test will be used. The null is

H₀: homoscedasticity

H_A: heteroscedasticity

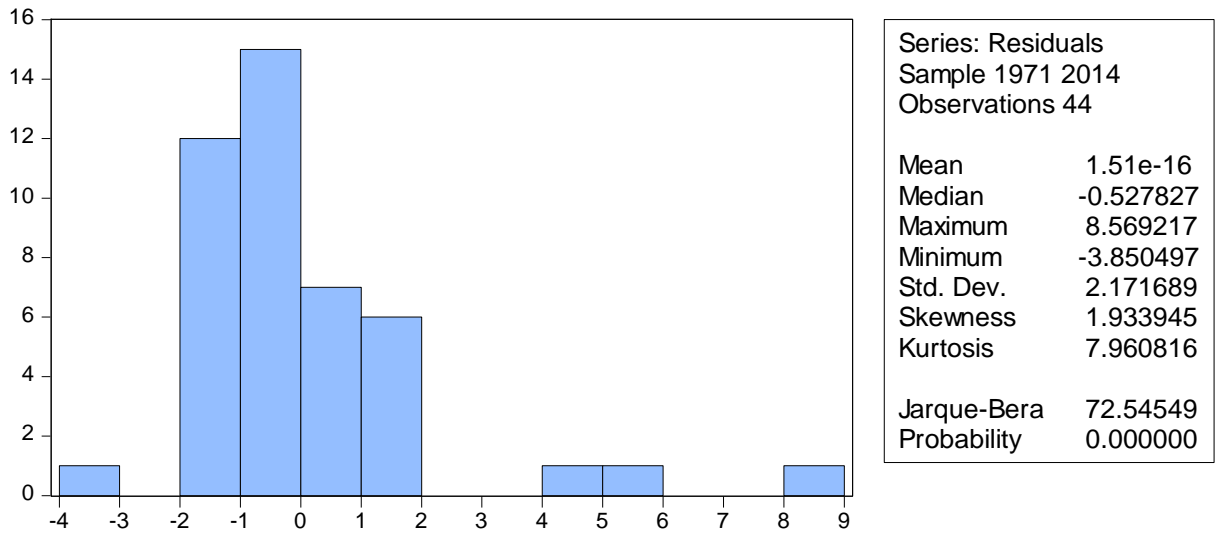
Heteroskedasticity Test: White

F-statistic	0.325479	Prob. F(3,40)	0.8069
Obs*R-squared	1.048487	Prob. Chi-Square(3)	0.7895
Scaled explained SS	3.015836	Prob. Chi-Square(3)	0.3892

From the table above, the probability values are greater than 5% therefore, we fail to reject the null meaning; there is no heteroscedasticity.

c) Normality

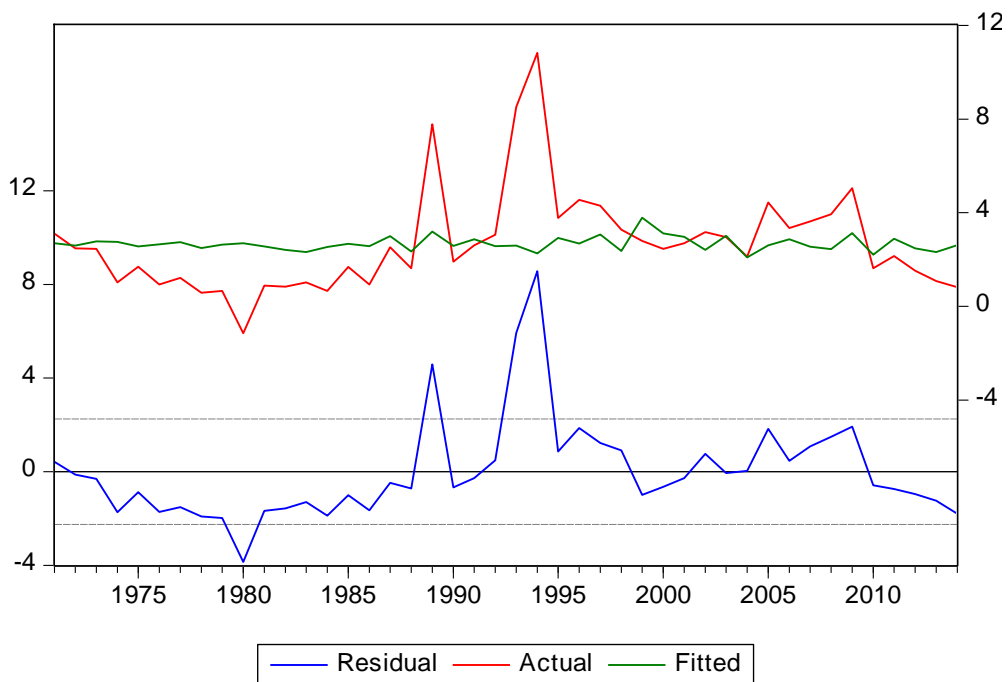
Next, we test for normality by plotting a histogram.

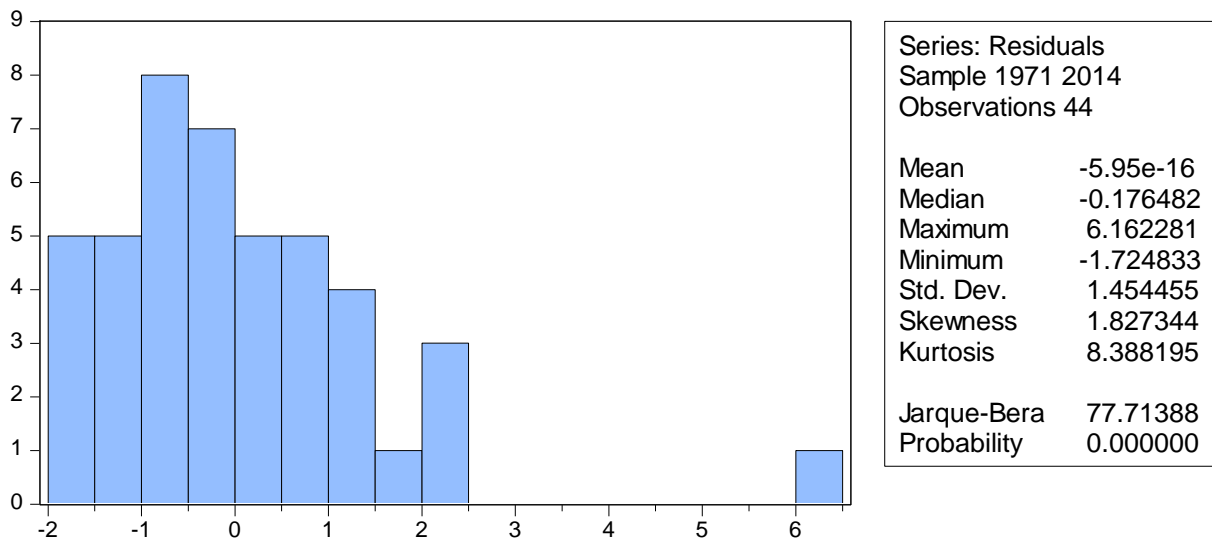


From the Jacque Bera and the probability value we see that it is less than 5% thus we reject the null, meaning the data is not normally distributed.

H_0 : data is normally distributed.

We correct this by using a dummy variable for the outliers in 1980, 1989 and 1994 as seen from the residual line in blue below.





Despite the inclusion of the dummy variables, the data still does not follow a normal distribution. Inclusion of more dummy variables would be excessive and this would be undesirable.

d) Serial correlation

To check for the presence of autocorrelation, we use the Breusch-Godfrey LM test. The null is H_0 : no serial correlation

H_A : serial correlation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	20.97681	Prob. F(1,36)	0.0001
Obs*R-squared	16.19921	Prob. Chi-Square(1)	0.0001

From the table above, the probability value of the chi square is less than 5%, therefore we reject the null meaning; there is serial autocorrelation.

To correct for this we will lag the dependent variable.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.331947	Prob. F(1,36)	0.2561
Obs*R-squared	1.569853	Prob. Chi-Square(1)	0.2102

After correcting for serial correlation, the probability value of the chi square is greater than 5%, therefore we fail to reject the null meaning; serial autocorrelation has been eliminated.

Overall OLS equation

Dependent Variable: FDI

Method: Least Squares

Date: 11/23/16 Time: 11:35

Sample (adjusted): 1971 2014

Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.350931	0.257117	9.143436	0.0000
D1EXCH	0.024973	0.020779	1.201803	0.2371
D1INFLATION	-0.001744	0.016046	-0.108703	0.9140
D1TRADEOP	0.030629	0.023905	1.281271	0.2081
DUM1980	-3.646295	1.592381	-2.289839	0.0278
DUM1989	4.582893	1.697850	2.699234	0.0104
DUM1994	8.962255	1.635367	5.480273	0.0000
R-squared	0.560413	Mean dependent var		2.673636
Adjusted R-squared	0.489129	S.D. dependent var		2.193705
S.E. of regression	1.567955	Akaike info criterion		3.882332
Sum squared resid	90.96391	Schwarz criterion		4.166180
Log likelihood	-78.41131	Hannan-Quinn criter.		3.987597
F-statistic	7.861668	Durbin-Watson stat		1.133218
Prob(F-statistic)	0.000017			

The new estimated regression indicates an improvement in the results. Despite the probability of the independent variables being insignificant; the model is significant overall since the probability of the F-statistic is less than 5%. The R squared also explains more about the model from the previous 1.99% to 56%.

Interpretation

The model may be written as:

$$FDI = 2.35 + 0.025D1EXCH - 0.002 D1INFLATION + 0.03D1TRADEOP$$

For a unit change in FDI, there must an increase of 0.03 change in trade openness, a decrease of 0.002 change in inflation and an increase by 0.025 change in exchange rate. From the system we can see that trade openness and exchange rate are directly related to an increase in FDI; thus, to increase FDI there should be improved trade openness and strengthening of the exchange rate. Inflation should be accounted for and kept within acceptable levels in order to attract foreign direct investment.

Overview of findings

KENYA

In line with the results of the impulse response function all the dependent variables were seen to have an impact on foreign direct investment. The variable with the largest impact were exports and trade openness while inflation and GDP had the least impact. The impulses on exchange rate, exports, trade openness and inflation last the longest, for about 25 years before decaying while the impact of balance of trade and GDP last the shortest.

With respect to variance decomposition, exports and the exchange rate explained most of the forecast error variance attributable to exogenous shocks in other variables.

From granger causality, exports was the only independent variable seen to granger cause FDI. This means that the past values of this variable give more information about the future trend of FDI than the other variables.

After conducting an ordinary least squares regression on the differenced variables, the study found out that for a unit change in FDI, trade openness had to change the least while exchange rate required the most change.

In summary, in Kenya the most important variable to determination of FDI is exports.

NIGERIA

The impulse response functions indicated that all the independent variables had an impact on foreign direct investment. In particular, inflation and trade openness had the largest impact while exports and GDP had the least effects. Different from Kenya, all the variable's impulses to FDI seemed remain within the model while the effect decomposed in Kenya

From the granger causality test, inflation was the only variable that granger caused FDI. This means that only the past values of inflation give information on the future trend of FDI.

In line with variance decomposition, inflation and exports explained most of the forecast error variance of exogenous shock in the other variables.

Lastly, on fitting the OLS using the differenced variables; it was noted that for a unit change in FDI, trade openness had to change by the most while inflation had to change by the least.

In conclusion, the most important variable in determination of FDI is inflation.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

The main objective of this study was to find out the determinants of foreign direct investment on developing economies using the cases of Kenya and Nigeria. Specifically, the study aimed to find out what the determinants of foreign direct investment were in Nigeria in order to understand why there has been a decline in foreign direct investment yet it remains a top host country. Moreover, the determinants of foreign direct investment were also investigated in Kenya to understand the reasons why foreign direct investment has been increasing. Finally, the study was directed at understanding the differences in foreign direct investment determinants in both Kenya and Nigeria.

Chapter one gave an overview of the recent statistics of foreign direct investment from the World Investment Report of 2016 and prior periods. The investment trends in foreign direct investment were studied globally and it was noted that for the first time in 5 years, developed economies received a bigger share of FDI than the developing economies. The study scaled down to the 5 African Regions, whose trends were graphed and the volatility of FDI in each region compared. Lastly, a side-by-side study was done to compare and contrast the different characteristics of Kenya and Nigeria; the features of each country's foreign direct investment flows and factors that have a possibility of influencing the FDI flows.

Chapter two looked at past studies that relate to foreign direct investment. It was divided into theoretical and empirical literature review. In the theoretical review different theories relating to capital flows were discussed; more specifically models such as Adam's Smith's Theory, Ricardian theories, the Harrod-Domar model, Marxist theory and the Lewis theory were incorporated. Lastly, growth theory approach to capital flows in Developing countries and capital flight was included.

For the empirical literature different past studies carried out on FDI were reviewed. It started from a broad perspective to a narrow perspective. Starting with studies on FDI in developing countries globally, followed by case studies on a sample of developing countries. Next, studies of FDI in Africa were considered and lastly country specific studies of FDI in Nigeria and Kenya.

Chapter three explained the study in terms of the nature of data, the sources of data collection and the model of the study. The main estimation and analysis techniques to be used were the Vector Autoregressive model, Impulse response functions, Granger Causality, Variance Decomposition and the simple Ordinary Least Squares Regression.

Chapter four gave the results and analysis of the methodology employed for the study. The Vector Autoregressive model for Kenya was found to have a lag length of 3 while the impulse response functions graphed the shocks of the independent variables to FDI. In Nigeria the Vector Autoregressive model was determined to be of 1 lag length and similarly the impulse responses were depicted. It was found that shocks of the independent variables in Kenya had a stronger effect on FDI as compared to Nigeria. On the other hand, the shocks in Nigeria seemed to persist longer than 44 years; while most effects on FDI in Kenya dissipated by the 25th year. The granger causality test and variance decomposition also complemented the impulse response function in explaining the VAR model. Finally, OLS equations for both countries were formed.

Conclusions

From chapter one, the following hypothesis were formed:

H_0 : The main determinants of foreign direct investment cannot be established to be any of the following variables: exchange rate, inflation rate, balance of payments, Gross Domestic Product (GDP) and exports.

H_1 : The main determinants of foreign direct investment may be one or more of the following variables: exchange rate, inflation rate, balance of payments, Gross Domestic Product (GDP) and exports.

In relation to the findings of chapter four, the null should be rejected. This is because in both countries, the determinants listed in the alternate hypothesis were all seen to be determinants of foreign direct investment.

In Kenya, exports were seen to be the most significant variable in explaining foreign direct investment while in Nigeria inflation was the most significant variable.

Recommendations

In Kenya, exports and trade openness seemed to have the largest impact on foreign direct investment. Consequentially, policies favouring the export market and trade should be carefully considered. The volume of exports should be increased and trade openness be improved to increase FDI inflows. This may be made possible through establishing favourable export terms to farmers; since Kenya is heavily agricultural and horticultural-based with the main exports being tea and coffee and flowers. Incentives should be given to the farmers for example higher return and prompt payment for their produce. On the other hand the importing terms should also be enhanced to make Kenya a country of choice. Trade openness may also be enhanced within East Africa and beyond through friendly treaties and favourable trading terms. With the plans of the East African Community, the future seems bright as the countries contemplate becoming a common market; after differences and differing policies are made smooth.

In Nigeria, inflation and trade openness were seen to have the most significant impact of the foreign direct investment flows. Policies controlling inflation should be keen on keeping the increase in prices within acceptable level. Nigeria being a large oil exporter is prone to suffer from cost push inflation when the cost of production increases with volatile oil prices. For this reason the monetary policy should be keen on this as a factor that could contribute to inflation. As for trade openness, as is with Kenya, favourable terms of trade should be put in place.

Areas for further study

There are still more avenues for advancing research on foreign direct investment in Kenya and Nigeria. For both countries, the sample size may be expanded beyond the 44 years done in this study due to data availability. Other methods such as Johansen Cointegration and Engle Granger may be employed on non-stationary data.

In Kenya, the incorporation of the stock market would form a good basis for a study since recently the Nairobi Securities Exchange has permitted 100% foreign ownership of companies listed. Due to this the trend of foreign direct investment in the country may increase.

In Nigeria, the incorporation of oil as an independent variable would make for another good study since oil has been on a decline in the country. Moreover, the country is moving away from being a dominantly oil producing countries and is diversifying into other foreign exchange earners. The direction of foreign direct investment is unclear and a study may help demystify if foreign investment flows will improve or continue to deteriorate.

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