



The Effect of Exchange Rate and Inflation on Foreign Direct Investment and Its Relationship with Economic Growth in Nigeria

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ABSTRACT

This study is on the effect of exchange rate and inflation on foreign direct investment and its relationship with economic growth. Its main objective is to find the effect of inflation and exchange rate and the bidirectional influences between FDI and economic growth in Nigeria. A thirty year period was studied. A linear regression analysis was used on the thirty year data to determine the relationship between inflation, exchange rate, FDI inflows and economic growth. The study reveals that FDI follow economic growth occasioned by trade openness which saw the entry of some major companies especially the telecommunication companies, while Inflation has no effect on FDI. However exchange rate has effect on FDI.

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1. Introduction

In most developing countries there is the dearth of capital for investment which has affected the economic situation of these nations. In other to ameliorate the situation various governments of these nations has now focused much attention on investment especially foreign direct investment which will not only guarantee employment but will also impact positively on economic growth and development. FDI is needed to reduce the difference between the desired gross domestic investment and domestic savings.

Jenkin and Thomas (2002) assert that FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated.

According to Adegbite and Ayadi (2010) FDI helps fill the domestic revenue-generation gap in a developing economy, given that most developing countries' governments do not seem to be able to generate sufficient revenue to meet their expenditure needs. Other benefits are in the form of externalities and the adoption of foreign technology. Externalities here can be in the form of licencing, imitation, employee training and the introduction of new processes by the foreign firms (Alfaro, Chanda, Kalemli- Ozean and Sayek 2006).

Foreign direct investment consists of external resources including technology, managerial and marketing expertise and capital. All these generate a considerable impact on host nation's productive capabilities. The success of government policies of stimulating the productive base of the economy depend largely on her ability to control adequate amount of FDI comprising of managerial, capital and technological resources to boast the existing production capacity. Although the Nigerian government has being trying to provide conducive investment climate for foreign investment, the inflow of foreign investments into the country have not been encouraging.

Given the Nigerian economy resource base, the country's foreign investment policy should move towards attracting and encouraging more inflow of foreign capital. The need for foreign direct investment (FDI) is born out of the under developed nature of the country's economy that essentially hindered the pace of her economic development. Generally, policy strategies of the Nigerian government towards foreign investments are shaped by two principal objectives of the desire for economic independence and the demand for economic development.

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2. Statement of the problem

An analysis of foreign flow into the country so far have revealed that only a limited number of multinationals or their subsidiaries have made Foreign Direct Investment in the country. Added to this problem of insufficient inflow of FDI is the inability to retain the Foreign Direct Investment which has already come into the country. Also what effect have foreign direct investment have on such variables as- Gross Domestic Product (GDP) and Balance of Payment(BOP).Moreover, what effect does inflation and exchange rate have on Foreign Direct Investment. However the focus of this paper is on the effect of inflation and exchange rate and the bidirectional influences between FDI and economic growth in Nigeria.

According to Ayanwale (2007). The relationship between FDI and economic growth in Nigeria is yet unclear, and that recent evidence shows that the relationship may be country and period specific. Therefore there is the need to carry out more study on their relationship.

Developing countries economic difficulties do not originate in their isolation from advance countries. The most powerful obstacle to their development comes from the way they are joined to the international system. Also an economic policy that can provide a conducive economic environment that will help to attract FDI inflows into the country is desired. However the characteristics of monetary policy according to Kiat (2008) presents the impossible trinity, that is a trilemma problem where trade-offs must be done in order to maintain economic stability. Two of these anchors are inflation autonomy and exchange rate variability. These trade-offs can impact on the on FDI inflow (Lahrèche-Révil and Bénassy-Quéré, 2002; Gelb, 2005; Umezaki, 2006) as cited by Kiat (2008).

Foreign direct investment (FDI) is a major component of capital flow for developing countries, its contribution towards economic growth is widely argued, but most researchers concur that the benefits outweigh its cost on the economy. (Musila and Sigure, 2006).

Mc Aleese (2004) states that "FDI embodies a package of potential growth enhancing attributes such as technology and access to international market" but the host country must satisfy certain preconditions in order to absorb and retain these benefits and not all emerging markets possess such qualities. (Boransztain De Gregorio and Lee 1998, and Collier and Dollar, 2001).

This paper is divided into five parts. Part one above is the introduction. Part two reviews the relevant literature, part three discusses the methodology employed in this study, and part four is data presentation and analysis while part five discusses the findings and recommendation

3. Literature review

The growing interest in foreign direct investment (FDI), stand from the perceived opportunities derivable from utilizing this form of foreign capital injection into the economy, to augment domestic savings and further promote economic development in most developing economies (Aremu 2005).

FDI is believed to be stable and easier to service than bank credit. FDI are usually on long term economic activities in which repatriation of profit only occur when the project earn profit. As stated by Dunning and Rugman (1985) Foreign Direct Investment (FDI) contributes to the host country's gross capital formation, higher growth, industrial productivity and competitiveness and other spin-off benefits such as transfer of technology, managerial expertise, improvement in the quality of human resources and increased investment.

According to Riedel (1987) as cited by Tsai (1994) while the potential importance of FDI in less developed countries (LDCs) development process is getting appreciated, two fundamental issues concerning FDI remains unresolved. In the first place what are the determinants of FDI? Specifically from LDCs point of view are there factors in the control of the host country that can be manipulated to attract FDI?

Or as some researchers claim that by and large LDCs play a relatively passive role in determining the direction and volume of FDI.

A body of theoretical and empirical literature has investigated the importance of FDI on economic growth and development in less developed countries. For example see (Dauda 2007) (Akinlo 2004) (Deepak, Mody and Murshid 2001) (Aremu 2005) e.t.c.

Modern growth theory rest on the view that economic growth is the result of capital accumulation which leads to investment. Given the overriding importance of an enabling environment for investment to thrive, it is important to examine necessary conditions that facilitate FDI inflow. These are classified into economic, political, social and legal factors. The economic factors include infrastructural facilities, favourable fiscal, monetary, trade and exchange rate policies. The degree of openness of the domestic economy, tariff policy, credit provision by a country's banking system, indigenization policy, the economy's growth potentials, market size and macroeconomic stability.

Other factors like higher profit from investment, low labour and production cost, political stability, enduring investment climate, functional infrastructure facilities and favourable regulatory environment also help to attract and retain FDI in the host country. (Ekpo 1995).

Mwillima (2008) describe foreign direct investment as investment made so as to acquire a lasting management interest (for instance 10% of voting stocks) and at least 10% of equity shares in an enterprise operating in another country other than that of the investor's country.

Foreign Direct investment can also be describe as an investment made by an investor or enterprises in another enterprises or equivalent in voting power or other means of control in another country with the aim to manage the investment and maximize profit. This investment involves not only the transfer of fund but also the transfer of physical capital, technique of production, managerial and marketing expertise, product advertising and business practice with the aim to make profit.

In recent years due to the rapid growth and changes in global investment patterns, the definition of Foreign Direct investment have been broadened to include the acquisition of a lasting management interest in a company or enterprise outside the investor's home country.

4. The impact of FDI on Gross Domestic Investment

Generally, it is known that LDCs have insufficient domestic capital resources available to meet their investment needs. Low domestic savings is often attributed to, among other factors, low per capita income, and high and fluctuating inflation rates, low exports-to-GDP ratios and poor financial intermediation. FDI is needed to reduced the between desired gross domestic investment and domestic savings. Jenkins and Thomas (2002) assert that FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated.

Olaniyi (1988) investigates the impact of direct foreign capital on domestic investment to ascertain its overall contribution to the enhancement of domestic savings capacity in Nigeria. His model of domestic savings and investment financing in Nigeria empirically tested in impact of FDI on the level of domestic savings and investment. His results confirm that domestic savings is by far more relevant in determining investment growth than foreign capital inflows in Nigeria. At best, foreign capital complements domestic savings.

FDI may "crowd out" equal amounts of investment by domestic firms through aggressive competition in local product of financial markets, especially in cases where domestic firms are already financially constrained.

Some researchers have suggested that the link between FDI and productivity might arise because foreign investors pursue higher productivity and capital formation. This raises the fundamental question of whether FDI takes place before higher labour productivity and capital formation. The common problem associated with most previous attempts to measure spillover effects from FDI is lack of investigation of the correlation between FDI and growth in detail. Though various empirical works have recognized this inadequacy, only a few studies directly address the problem without accepting the convention that the direction of causality is from other determinants, including FDI, to growth. Most previous estimations attempting to establish the relationship between FDI and economic growth has always been to regress labour productivity on foreign direct investment, which implicitly assumes that FDI is causally prior to, or at least independent of, economic growth. But causation can run both ways. The inflow of foreign investment could potentially react to the vitality of the domestic economy. Bell and Pavitt (1993) observe that foreign direct investment has generally been a consequence, rather than a cause of growth in domestic investment and rapid industrialization in developing countries.

Empirical evidence indicates that firms increase investment in response to the expansion of sales associated with the rise in GDP. Bandera and Whyte (1968) found a statistically significant correlation between US FDI to the European Union (EU) and European incomes (GNP), and conclude that a motive to invest abroad can be summarized as a desire to penetrate a growing market defined in terms of the level and growth of GNP in host countries.

Benefits such as increased productivity may also be highly dependent on the sectors invested and host country environments. Kokko and Blomstrom (1995) show that the affiliate technology imports increase with the host countries domestic investment and education levels. Therefore, the benefits of productivity may be highly dependent on sectors of investment, the technology gap in a particular investment, and host country environments.

In FDI flows greatly to a relatively high technology and knowledge-base sector, the positive effect on net wet jobs may be marginal since these sectors are bereft of skilled and technical manpower because of inadequate domestic investment. Improved foreign exchange savings may not be feasible in the short run of the inflows of FDI. If FDI flows only to concentrated sectors such as oil, as it is, with huge capital requirement, the net foreign exchange position will suffer some deterioration. This arises because the cost of importation of the capital equipment is much higher than the price of processed or semi-processed goods exported by developing economies.

Although empirical literature suggests significant role of FDI on economic growth, the opponents of neo-liberal policies and globalization attack the exploitative nature of foreign investors. Bornschieer and Chase-Dunn (1985) argue that FDI flows might produce short-run benefits. However, they report that long-run benefits of accumulation of stock of FDI, as a percentage of GDP, were statistically insignificant on economic growth over time. Gardiner (2000) argues that though FDI is potentially effective in enhancing growth, the monopolistic characteristics of foreign investors have the tendencies to crowd out domestic investment. Domestic firms with inadequate marketing and advertising resources are grossly incapable to successfully compete with the superior foreign firms. According to Gardiner (2000), the MNCs may engage in predatory pricing aimed at restricting domestic firms' access to the market, thereby posing greater negative externalities. In attempting to establish a statistical relationship between FDI inflows and a measure of output growth and/or domestic investment, negative effects may emanate from various distortions in an economy. Foreign investors may offer profit opportunities without improving efficiency of the host economies. This may occur if government policies attract foreign investors to strategic industries by offering investment incentives that offset any benefit foreign investment may generate, particularly in gross fixed capital formation.

5. Economic growth, real exchange rate and inflation

From traditionally standpoint, the real exchange rate had not constituted an important dimension in the analysis of economic growth. The first generation of neo-classical economists did not consider exchange rate in the growth models or in their practical policy incarnations that focused on savings and investment as determinants of growth. The above indicates that these were closed-economy models that dictated that exchange rate, defined as the ratio of relative prices of non-traded goods (all goods being non-traded in closed economies) had no role in the growth process.

The literature on the impact of inflation on economic growth present extremely diverse opinions. In the 1960s, many economists believed in permanent output-inflation trade-off due to Phillip curve. Contrarily, theoretical arguments from various researchers undermined the above opinion and relief. However, subsequent econometric investigations did not find any significant relationship between inflation and unemployment (Lucas 1990).

However, recent empirical researches detected long-run non-linear relationships between inflation and economic growth. The result of these empirical studies demonstrates that inflation has a negative impact on growth only if it exceeds a certain threshold. Otherwise, inflation has no adverse impact on growth nor accelerates growth. The level of threshold varies from various results obtained from various investigations, however, depending on a sample of countries, time periods and estimation methods.

Besides, inflation distorts the tax system, and investors are uncomfortable with it because of money illusion. The level of inflation is positively correlated with its volatility. Greater inflation volatility is consistent with higher inflation rates and hence increase uncertainty and discourages long-term investment (Romer, 1990).

However, inflation possesses economic benefits as well. These benefits rest on three main arguments that favour positive inflation. First, there is a trade off between inflation, tax and other indirect taxes so that government tax optimization translates to positive inflation. Second, a commitment by the policy makers to maintain low inflation restricts the Central Bank ability to respond to adverse supply shocks. This restriction may have been a major factor leading to stagnation of the Japanese economy during deflation of 1990 (Krugman, 1998). Third, and probably, the most important, inflation serves as a lubricant making nominal prices wages more flexible (Lucas, 1990). A number of research studies reveal that prices and wages are more rigid in the downward direction than in the upward movement (Cover, 1992).

The lubricant inflation hypothesis is particularly important for fast modernization periods, during quick structural changes, require adequate changes in price proportions. In this case, strong disinflation efforts hamper economic growth. The need to carry out industrial and social policies can also create trade-offs between inflation and growth. Both kinds of policies may be necessary to promote sustainable growth, and both of them bring a risk of inflation.

Real exchange rate dynamics, being result of inflation and nominal exchange rate change, attracts additional dimensions into the picture. The traditional theory treats real exchange rate as endogenous: The equilibrium level of real exchange rate is the one that ensures the equilibrium of the balance of payments (Calvo, Reinhart and Vegh, 1995).

In the long run, real exchange rate is believed to be the function of the level of the development of a country. There are several explanations why equilibrium exchange rate in poorer countries is well below Purchasing Power Parity (PPP) rate (Froot and Stein, 1991). References are usually made to Balassa-Samuelson effect (smaller productivity gap between developed and developing countries in non-tradable goods sector than in tradable, but equal wages in both sectors) and to Bhagwati-Kravis-Lipsey effect (non-tradable goods, which are mostly services, are among labour intensive, so if labour is cheap in developing countries, prices for service should be lower) (Polterovich and Popov, 2006).

The Baassa-Samuelson effect states that, if productivity grows faster in sector producing tradable output (mainly goods) than in sectors producing non-tradable output (mainly services), and if wages are equalized across sectors – with the result that economy-wide real wage increased lag behind productivity growth – then the real exchange rate (EXR) can appreciate without undermining business profits. For transition economies, the processes of real exchange rate (EXR) appreciation were studied in Grafe and Wyplosz (1997).

However, there is a lot of evidence that many countries maintain “a disequilibrium real exchange rate that is overpriced or under-priced as compared to the equilibrium level. Resource rich countries often maintain overpriced exchange rate that is imposing constraints on their economic growth.

On the contrary, many developing countries (including those rich in resources) pursue the conscious policy of low exchange rate as part of their general export orientation strategy.

The argument against a policy of low exchange rate is that it leads to monetary expansion and hence to inflation. Calvo, Reinhart and Vegh (1995) argue that the under-valuation of the exchange rate is inflationary in theory and were inflationary in practice for Latin American countries in the 1980s. It appears, however, that the effect depends on the instrument used to support low exchange rate. According to Polterovich and Popov (2006), if a country uses foreign exchange accumulation to reach this purpose, then it has a good chance to escape high inflationary pressure.

Rodrik (1986), and Polterovich and Popov (2006) developed models demonstrating how disequilibrium exchange rate in the presence of foreign trade externalities could lead to the acceleration of growth. However, these studies did not consider the problem of inflation in detail. A related problem considered the impact of inflation and real exchange rate on the volatility of growth rates of output. In a survey of literature, Aghion, Angeletos, Barnerjee and Manova (2004) as cited by (Polterovich and Popov, 2006) report a negative relationship between volatility and growth. Thus, policies aimed at promoting growth, if successful, are likely to reduce volatility as well, even though the mechanism of such spin-off is not well understood. There are empirical evidences that fluctuations in real exchange rate are crucial for explaining the volatility in open economies. Calvo and Reinhart (2000) argue that this volatility is much more harmful for developing countries than for developed economies so that fixed exchange rate regime is preferable for developing economies.

In fact, evidence of the link from exchange rate volatility to economic growth is less than definitive. While Ghosh and Wolf (1997) find no relationship between observed exchange rate variability and economic growth for a sample of 136 countries over the period 1960-89. Bailliu, Lafrance and Perrault (2001) report a positive association between a degree of exchange rates flexibility and economic growth. That the association is positive rather than negative leads to the suspicion that the result reflects the growth.

6. Foreign direct investment and economic growth nexus

Ekpo (1995) using time series data reports that political regime, real income per capita, rate of inflation, global interest rates, credit rating and debt service are the key factors responsible for the variability of FDI into Nigeria.

Adelegan (2000) explored the seemingly unrelated regression model to examine the impact of FDI on economic growth in Nigeria and observed that FDI is pro-consumption and pro-import and negatively related to gross domestic investment. Akinlo (2004) found that foreign capital has a negligible and not statistically significant effect on economic growth in Nigeria.

However, according to Ayanwale (2007), these studies did not control for the fact that most of the FDI is concentrated on the extractive industry (oil, gas and natural resources). Assessing the influence of FDI on firm level productivity in Nigeria, Ayanwale and Bamire (2001) report a positive spillover of foreign firms on domestic firms' productivity.

Clearly, the empirical evidence on FDI and economic growth nexus in Nigeria is not unanimous. For instance, Odozi (1995) working on the determinants of FDI in Nigeria in periods pre and post Structural Adjustment Programme (SAP) discovers that the macro policies in place pre-SAP era inhibited the inflow of FDI. This policy environment resulted in the proliferation and growth of parallel exchange markets and sustained capital flight.

Ogiogio (1995) identifies distortions as reasons for negative contributions of public investment to GDP growth in Nigeria. Contrarily, other researchers, such as Aluko (1961) and Obinna (1983) identify positive significant nexus between FDI and economic growth in Nigeria. However, Edozien (1968) submits that though there are linkage effects of FDI and the Nigerian economy, he maintains that the relationship is positively negligible. According to Oseghale and Amenkhenan (1987), FDI is positively associated with GDP growth. In their conclusion, they submit that increased inflows of FDI results in better economic performance.

Ariyo (1998) examined the trend of investment and its consequences on long-term economic growth in Nigeria. He observes that private domestic investment only consistently contributes to higher GDP growth rates between 1970 and 1995. However, reliable evidence that all the investment variables included in the analysis have any perceptible influence on economic growth was lacking. He therefore, suggests the need for

an institutional re-arrangement that recognizes and protects the interests of major partners, (such as foreign investors) in the development of the economy.

Jerome and Ogunkola (2004) examined the magnitude, direction and prospects of FDI in Nigeria. They note general improvement in FDI regime in Nigeria. They also observe some serious deficiencies. These deficiencies were found in the area of corporate environment (such as corporate laws, bankruptcy and labour laws, among others), and institutional uncertainty as well as the rule of law.

Oyaide (1977), using indices of dependence and development as mirror of economic performance in Nigeria, concludes that FDI catalyses both economic dependence and economic development. According to him, FDI continuously promotes a level of development that would have been impossible without such inward flows of investment albeit, at the cost of dependence.

Furthermore, Oseghae and Amenkheinan (1987), explored the nexus between oil exports, international debt and foreign direct investment in Nigeria on one hand, and the impact of this relationship on the sectoral performance, on the other hand. They surmise that foreign borrowing and FDI negatively influence overall GDP. However, they conclude that the variables generate significantly positive impact on three main sectors of the Nigerian economy, viz: manufacturing, transport, communication, insurance, and finance.

Oyinlola (1995) examined the contributions of foreign direct investment to the prosperity or poverty of least developed countries (LDCs), and concluded that FDI generates a negative effect on economic growth and development in Nigeria.

7. Research methodology

Time series data will be used for this study. An econometric model will be developed to examine the relationship FDI has with Nigeria's Economy. The variables to be used include the country's gross domestic product (GDP), exchange rate, gross capital formation, government expenditure, inflation, exchange rate and foreign direct investment (FDI). Models will be developed to analyze the exact relationship among these variables.

Model specification

This study is based on the assumption that the inflow of FDI affects economic growth in Nigeria (GDP). And again, that inflation and exchange rate in turn affect the inflow of Foreign Direct Investment (FDI). Hence the model:

$$GDP = f(FDI) \dots\dots\dots (1)$$

$$FDI = f(INFL., EXR.) \dots\dots (2)$$

Where:

GDP = Gross Domestic Product

FDI = inflow of Foreign Direct Investment

INFL. = Inflation rate

EXR. = Exchange rate

Considering the fact that the GDP of an economy are not determined by FDI alone, the inclusion of two more growth determining variables is made so as to get a more realistic model: Hence, equations (1) and (2) is extended thus:

$$GDP = f(FDI, GOV, GCF) \dots\dots\dots (3)$$

$$FDI = f(INFL, EXR.) \dots\dots\dots (4)$$

Where:

GOV = Government expenditure

GCF = Gross fixed capital formation.

Equations (3) and (4) show that GDP is dependent on FDI, GOV and GCF.

The statistical forms of the models are thus:

$$GDP = \alpha_0 + \alpha_1 FDI + \alpha_2 GOV + \alpha_3 GCF + e \dots\dots (5)$$

$$FDI = \beta_0 - \beta_1 INFL. - \beta_2 EXR. + e \dots\dots\dots(6)$$

Where:

α_0 = the intercept for equations (1)

β_0 = the intercept for equation (2)

α_1 = the parameter estimate of FDI.

α_2 = the parameter estimate of GOV.

α_3 = the parameter estimate of GCF.

β_1 = the parameter estimate of INFL.

β_2 = the parameter estimate of EXR.

e = the random variable or error term.

Foreign Exchange Rate (EXR)

Exchange rate is important to inflow of foreign direct investment. An over-valued exchange rate or highly distorted foreign exchange rate will discourage exports and negatively affect foreign direct investment. The

theoretical literature is ambiguous about the direction of the effect of exchange rate on the rate of investment. On the one hand, a real depreciation raises the cost of imported capital goods, and since a large chunk of investment goods in developing countries is imported, domestic investment would be expected to fall on account of significant depreciation. On the other hand, a significant depreciation, by raising the profitability of activity in the tradable goods sector, would be expected to stimulate private investment in this sector but it depresses investment in the non-tradable goods sector.

Estimation procedure

The ordinary least squares equation technique is the estimation procedure chosen for this study. It will be used for estimating the equation specified. As a justification for this method, Maddala (1977) identified that ordinary least squares is more robust against specification errors than many of the simultaneous equation methods and also that predictions from equations estimated by ordinary least squares often compare favourably with those obtained from equations estimated by the simultaneous equation method. Among other reasons is the simplicity of its computational procedure in conjunction with optimal properties of the estimates obtained and these properties are linearity, unbiasedness and minimum variance among a class of unbiased estimators.

Techniques to adopt in the analysis of data

The econometric method is the approach employed for the research. There is no doubt that the method will facilitate the model specification, parameter estimation and appropriate econometric tests.

Sources of data for the study

Annual time-series data on the variables under study covering thirty year period 1980-2009 are used in this study for estimation of functions. Foreign Direct Investment inflow (FDI), Government Expenditure (GE) and Gross fixed Capital Formation (GCF) are the relevant explanatory variables. Equally, the Gross Domestic Product. The Gross Domestic Product is the quantitative variable that measures economic performance of a country.

Data were collected from various editions of the various issues of Central Bank of Nigeria Economic and financial Review; and Central bank of Nigeria Statistical bulletin.

I. Data analysis and result presentation

This chapter focuses on the analysis of, and interpretation of the results generated from the regression analyses. This chapter helped in providing the set of data used a practical meaning, the result, serving as a yard-stick/benchmark for the measurements of the various impacts which the different variables have on both economic growth (GDP) and FDI. The regression analysis and tests of hypotheses are conducted at 5% significance level. After running the relevant regressions, the following results were obtained and are presented below:

Estimated results

Model 1

GDP	=	α_0	+	α_1 FDI	+	α_2 GOV	+	α_3 GCF	+	e
=	1.6709		+	4.0912FDI	+	6.2835GOV.	+	1.5457GFC		
=	(1.9847)			(2.6086)		(0.61381)		(0.50454)		
	0.842			1.568		10.237		3.063		
=	0.989607			F-Statisti	=	825.24		D.W. = 2.74		

Model 2

FDI	=	β_0	-	β_1 INFL.	-	β_2 EXR.	+	e
=	-14108.		+	-310.46 INFL.	+	3731.5 EXR.		
=	(58549)			(1678.9)		(538.18)		
	-0.241			-0.185		6.934		
=	0.666903			F-Statistic	=	27.029		D.W.= 0.453

N.B: The regression result is presented in Appendix I. Note: Numbers in parenthesis are t-values.

“SE” is the Standard Error of the Estimates. “FS” is the ratio used in the statistical test of significance. “DW” is the Durbin-Watson statistic used in the test of auto correlation.

Model 1

From the regressions result, the R-squared (R^2) value of 0.989607 shows that at 98.96% the explanatory variables explain changes in the dependent variable. This means that at 98.96% the independent variables explain changes on the Gross Domestic Product (GDP). This simply means that the explanatory variables

explain the behaviour of the dependent variable at 98.96%. The calculated F-statistics of 825.24 which is greater than the value in the F-table (2.9751) implies that all the variables' coefficients in the regression result are all statistically significant to GDP.

The Durbin-Watson (DW) as shown in the regression analysis is 2.74 which shows that there is the presence of autocorrelation.

The above model tested the effect of three different variables namely – Foreign Direct Investment (FDI), Government Expenditure (GOV) and Gross fixed Capital Formation (GCF) on Gross Domestic Product (GDP). In order to obtain the regression result, the OLS technique with the help of the PC Give software was used.

The result obtained from the regression shows that there is positive impact of Foreign Direct Investment (FDI) on Gross Domestic Product (GDP) with a coefficient of 4.0912. However, this coefficient is not statistically significant as revealed by its corresponding standard error and t-values. Hence, FDI is inelastic to GDP. This positivity in the coefficient of Foreign Direct Investment is in conformity to the economic a priori expectation of a positive impact of Foreign Direct Investment on the economic growth of the economy (GDP).

Also, the regression result shows that the Government Expenditure has a positive impact on GDP with a coefficient of 6.2835. The standard error and t-values showed that this parameter is statistically significant. Thus, the Government Expenditure is elastic to Gross Domestic product. This positivity of the coefficient of GOV conforms to the economic a priori expectation of a positive impact of Government Expenditure on GDP.

Furthermore, the result obtained from the regression shows that Gross Fixed Capital Formation has a positive impact on GDP. This is indicated in its positive coefficient of 1.5457. This coefficient is revealed to be statistically significant by the standard error and t-values. Thus, from this it implies that Gross fixed Capital Formation is elastic to GDP. The coefficient of Gross fixed Capital Formation being positive conforms to the economic a priori expectation of a positive impact of GCF on the growth of the economy vis-à-vis GDP.

Model 2

From the regressions result of model 3, the R-squared (R^2) value of 0.666903 shows that at 66.69% the explanatory variables explain changes in the dependent variable. This means that at 66.69% the independent variables explain changes on Foreign Direct Investment (FDI). This simply means that the explanatory variables explain the behaviour of the dependent variable at 66.69%. The calculated F-statistics of 27.029 which is greater than the value in the F-table (3.3541) implies that all the variables' coefficients in the regression result are all statistically significant to FDI.

The Durbin-Watson (DW) as shown in the regression analysis is 0.453 which shows that there is the presence of autocorrelation.

The above model tested the effect of two different variables namely –inflation rate (INFL.) and Foreign Exchange Rate (EXR.) on Foreign Direct Investment (FDI). In order to obtain the regression result, the OLS technique with the help of the PC Give software was used.

The result obtained from the regression shows that there is negative and non-significant impact of inflation on Foreign Direct Investment (FDI) with a coefficient of -310.46. Hence, inflation is inelastic to FDI. This negativity in the coefficient of inflation is in conformity to the economic a priori expectation of a negative impact of inflation on FDI.

Again, the regression result shows that foreign exchange has a positive effect on FDI with a coefficient of 3731.5. The standard error and t-values showed that this parameter is statistically significant. Thus, the foreign exchange rate is elastic to FDI

Test of hypotheses

This section of study implies testing the significance of the numerical values of the parameter estimates of the OLS regression. Here, the t-statistics and values are required.

Testing of Significance of Foreign Direct Investment (FDI)

Hypothesis 1

Recall: $H_0: \alpha_1 = 0$: There is no significant relationship between GDP and FDI

$H_1: \alpha_1 \neq 0$: There is significant relationship between GDP and FDI

Decision: Accept H_0 if $t_{0.05} > t_{\text{Statistics}}$ and

Reject H_0 and accept H_1 if $t_{0.05} < t_{\text{Statistics}}$

Where $t_{0.05} = 1.703$, and

$t_{\text{Statistics}} = 1.568$

$1.703 > 1.568$

Therefore, we accept H_0 implying that the inflow of Foreign Direct Investment into the Nigerian economy within the period of 1980 - 2009 does have significant relationship to economic growth (GDP).

Testing of Significance of Inflation (INFL.)

Model 2

Recall: $H_0: \beta_1 = 0$: There is no significant effect of inflation on FDI.

$H_1: \beta_1 \neq 0$: There is significant effect of inflation on FDI.

Decision: Accept H_0 if $t_{0.05} > t_{Statistics}$

Reject H_0 and accept H_1 if $t_{0.05} < t_{Statistics}$

$t_{0.05} = 1.701$

$t_{Statistics} = -0.185$ and $|t| = 0.185$

$1.701 > 0.185$

From this, we accept H_0 implying that inflation did not have major effect on the inflow of FDI into the Nigerian economy during the period of analysis (1980-2009).

Testing of Significance of Exchange rate (EXR.)

Model 2

Recall: $H_0: \beta_2 = 0$: There is no significant effect of foreign exchange rate on FDI.

$H_1: \beta_2 \neq 0$: There is significant effect of foreign exchange rate on FDI.

Decision: Accept H_0 if $t_{0.05} > t_{Statistics}$

Reject H_0 and accept H_1 if $t_{0.05} < t_{Statistics}$

$t_{0.05} = 1.701$

$t_{Statistics} = 6.934$

$1.701 < 6.934$

From this, we reject H_0 implying that foreign exchange rate had great effect on the inflow of FDI into the Nigerian economy during the period of analysis (1980-2009).

Discussion of findings

The OLS regression analysis is carried out to determine the impact of FDI, Government expenditure and Gross fixed Capital Formation on GDP (proxy for economic performance). Hence, GDP was regressed on FDI, GOV and GCF. Though the impact of FDI is of primary concern here, the other two economic variables were included to serve as "control variables" to check the overstating of the estimated coefficient of FDI.

In model 2, the effects of two macroeconomic indicators, inflation and exchange rates were also examined. Hence, FDI was regressed on inflation and foreign exchange rates.

The result of the findings show that FDI has positive effect, though not statistically significant on GDP. In other words, the inflow of FDI into the Nigerian economy for the stipulated period this research was carried out (1980-2009), showed that FDI was not a major contributor to economic growth of the nation.

The effect of inflation and foreign exchange rates on FDI, brought under scrutiny, also showed that whereas inflation rate did not have major effect on the inflow of FDI into the Nigerian economy, foreign exchange rate had great effect on the inflow of FDI into the Nigerian economy within the same period (1980-2009).

From the foregoing discussion, it should be pointed out that although the government have made reasonable efforts in attracting FDI, certain economic and political circumstances prevalent in the country have hindered its inflow and its overall performance.

In addition it is seen that:

- 1) There is no empirical strong evidence to support the notion that Foreign Direct Investment has been pivotal to economic growth in Nigeria; which could have justify the effort of successive governments in the country at using FDI as a tool for economic growth.
- 2) Governments direct involvement in the provision of goods and services by establishing and controlling corporations, for example, has contributed little to economic growth in Nigeria. This justifies the privatization policy of the various administrations in our government to allow for the possible takeover by investors (both foreign and domestic) of the government corporations.

8. Recommendations

The outcome of this study shows that though FDI was not found to have significantly contributed to the nation's economic growth, if well harnessed can contribute to economic growth in Nigeria. To increase the inflow of FDI and its performance, the following recommendations from this study were enunciated:

- The nation's monetary authorities should develop and implement measures that will ensure that both inflation and foreign exchange rates are sustained at levels that will ensure increasing level of inflow of FDI
- Trade barriers should be reduced especially the one constituted by the customs and port authorities.

- The country's education should be in favour of science and technology which would provide the economy with the required skills that FDI require.
- Competitiveness should be encouraged, and as a result, the existing and 'yet-to-exist' export processing and free trade zones should be equipped with state-of-the-art infrastructures and technologies.
- The infrastructures in the country need to be enhanced to meet the needs/requirements of foreign investors. For example, electricity should be provided at an uninterrupted level to reduce the extra cost that investors incur in the procurement of power generating sets coupled with their maintenance. Also, good network roads and adequate water supply should be provided so as to cut the cost of investors doing business.
- Appropriate measures should be implemented to check economic and financial crimes.

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Regression result

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EQ (1) Modeling GDP by OLS

The present sample is: 1 to 30

Variable	Coefficient	Std. Error	t-value	t-prob	PartR ²
Constant	1.6709e	+005 1.9847e	+005 0.842	0.4075	0.0265
FDI	4.0912	2.6086	1.568	0.1289	0.0864
GOV.EXP	6.2835	0.61381	10.237	0.0000	0.8012
GFC	1.5457	0.50454	3.063	0.0050	0.2652

R² = 0.989607 F(3, 26) = 825.24 [0.0000] s = 820013 DW = 2.74

RSS = 1.748293983e+013 for 4 variables and 30 observations

EQ (2) Modeling FDI by OLS

The present sample is: 1 to 30

Variable	Coefficient	Std. Error	t-value	t-prob	PartR ²
Constant	-14108.	58549.	-0.241	0.8114	0.0021
INFL	-310.46	1678.9	-0.185	0.8547	0.0013
EXR	3731.5	538.18	6.934	0.0000	0.6404

R² = 0.666903 F(2, 27) = 27.029 [0.0000] s = 155120 DW = 0.453

RSS = 6.496770871e+011 for 3 variables and 30 observations