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FDI and Economic Growth in Nigeria: A Co-integration Analysis

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Abstract

This paper establishes an empirical relationship between foreign direct investment (FDI) and economic growth in Nigeria under the framework of cointegration analysis over the period 1970-2010. The econometric evidence from the Engle Granger cointegration tests suggests that there is no long-run relationship between FDI and economic growth in Nigeria. However, there is a short-run dynamic relationship between FDI and economic growth. And finally the study concluded that, for the achievement of a long-run relationship between FDI and economic growth in Nigeria, there is a need to improve the business environment, with the provision of necessary infrastructure and political stability in the country.

Keywords: FDI, Growth, Cointegration, Human capital, Nigeria.

1. Introduction

The literature on the FDI-growth nexus is vast for both developed and developing countries. The basis of the empirical work on this link focuses on neoclassical and endogenous growth models. It is argue that FDI is an important source of capital, which complements domestic investment, creates new job opportunities and is the main conduit through which technology transfers take place. The transfer of technology and technological spillovers leads to an increase in factor productivity and efficiency in the utilization of resources, which promote growth. Empirical analysis of the positive relationship is often said to depend on the absorptive capacity of the host country (Blomstrom *et. al.*, 1994; de Mello, 1997; Borenztein *et al.*, 1998; Easterly and Levine, 2002) which includes the level of human capital development, the institutional quality, technological and infrastructure development. While many studies observe positive impacts of FDI on economic growth, others also reported a negative relationship and among the main reasons for this controversy remain data insufficiency and methodological flaws.

On the other hand, endogenous growth models (Romer, 1999; Lucas, 1998 and Barro and Sala-i-Martin, 1997) highlight the importance of improvement in technology, efficiency and

productivity and suggest that FDI can positively influence the growth rate in so far as it generates increasing returns in production via externalities.

Sub-Saharan Africa as the region now has to depend very much on FDI because it is viewed as a major stimulus to economic growth in developing countries and its perceived ability to deal with major obstacles such as shortages of financial resources, technology and skill. The preference for FDI stems from its acknowledged advantages (Asiedu, 2004; Ayanwale, 2007). The effort by several African countries to improve their business climate stems from the desire to attract FDI. In fact, one of the objective on which the New Partnership for Africa's Development (NEPAD) was launched was to increase available capital to US$64billion through a combination of reforms, resource mobilization and a conducive environment for FDI (Funke and Nsouli, 2003; Adams, 2009). Unfortunately, the efforts of most countries in Africa to attract FDI have been futile. The development is disturbing, sending very little hope of economic development and growth for these countries. Further, the pattern of the FDI that does exist is often skewed towards extractive industries, meaning that the differential rate of FDI inflow into sub-Saharan African countries has been adduced to natural resources, although the size of the local market may also be a consideration (Asiedu, 2001).

Nigeria as a country, given her natural resource base and large market size, qualifies to be a major recipient of FDI in Africa and indeed is one of the top three leading African countries that consistently received FDI in the past decade. However the level of FDI attracted by Nigeria is mediocre (Asieudu, 2003), compared with the resource base and potential need, further the empirical linkage between FDI and economic growth in Nigeria is yet unclear, despite numerous studies that have examined the influence of FDI with varying outcomes. (Adelegan, 2000; Akinlo, 2004: Ayanwale, 2007). Most of the previous studies on FDI and growth in sub-Saharan Africa are multi-country studies. However, recent evidence affirms that the relationship between FDI and growth may be country and period specific. Asiedu (2001) submits that the determinants of FDI in one region may not be the same for other regions. Again, the determinants of FDI in countries within a region may be different from one another and from one period to other.

Nigeria is a monoculture economy, over depending on the oil sector. This has been seen to be responsible for the deficiency in investment capital in the country. Amadi (2002) opined, "With oil as the main source of foreign exchange, a one-product monoculture economy must be continuously deficient in investment capital, oil is subject to the vagaries of international capitalism therefore revenue from it must be subject to serious fluctuations". The above situation in the country has created savings and a foreign exchange gap. This culminates to a wide gap between the actual domestic investment fund and the required investment for accelerating economic growth. Consequently, for any country, like Nigeria, with this investment gap to achieve a desired rate of economic growth, FDI has to be given due consideration. This is because FDI provides funds from other parts of the world to bridge the investment gap.

This study will depart from the previous studies by examining the relationship between FDI inflows and Nigeria's economic growth not only in extracting (oil) industry but into non-oil

FDI on Nigeria's economic growth. This study, therefore will critically evaluate the co-integrating the relationship between FDI inflows and Nigeria economic growth in the main sectors, namely primary, manufacturing and services. And it will be divided into six sections. The first section will start with a brief introduction; section two provides a brief overview of the literature on FDI and Economic growth, Section three will introduce the methodology. Section four presents the data that will be used for this empirical exercise, with some descriptive analysis of the data. Section five will present the findings and the interpretation of the empirical results, while section six concludes the paper.

2. Literature Review

Most studies found that FDI inflows led to higher per capital GDP, increase economic growth rate and higher productivity growth. As noted by (De Mello 1997), two channels have been advanced to explain the positive impact of FDI on growth. First through capital accumulation in the recipient country, FDI is expected to be growth enhancing by encouraging the incorporation of new inputs and foreign technologies in the production function of the recipient economy. Second, through technology transfer, FDI is expected to increase the existing stock of knowledge in the recipient economy through labour training and skills acquisition (Borensztein et al., 1998). Carkovic and Levine (2003) examine the impact of FDI on economic growth, and their study did not support the view that FDI promotes growth. Chowdhury and Mavrotas (2006), examines the casual relationship between FDI and economic growth by using time series data covering the period 1969-2000 in three developing countries, namely Chile, Malaysia and Thailand. Their empirical findings clearly suggest that GDP causes FDI in the case of Chile and not vice-versa, while for both Malaysia and Thailand; there is strong evidence of bi-directional causality between the two variables.

In order to explain the role of FDI in the long term growth of host countries, Lucas (1988, 1990), Romer (1986, 1987) and Mankiw (1992) amended the neoclassical growth model, especially the Solow growth model, by including the growth-driving factors of human capital as well as physical capital to explain the presence of FDI in developing host countries. Barro and Sala-i-Martin (2004) examine the linkage between FDI and economic growth by using a Cobb-Douglas production function model that shows constant returns to physical and human capital.

The results for developing countries are not so clear, with some finding positive spillovers (Blomstrom, 1986; Blomstrom and Sjoholm, 1999) and others such as Aitken et al., 1997) reporting limited evidence, Some of the reasons adduced for these mixed results are that the envisaged forward and backward linkages may not necessarily be there (Aitken et al., 1997) and that the arguments of TNC's encouraging increased productivity due to competition may not be true in practice Airtken et al. (1997). Other reasons include the fact that TNC's tend to locate in high productivity industries and, therefore, could force less productive firms to exit (Smarzynska, 2002). Further, the role of FDI in export promotion remains controversial and depends crucially on the motive for such investment (World Bank, 1998). The consensus in the literature appears to be that FDI spillovers depend on the host country's capacity to absorb the foreign technology and the type of investment climate (Obwona, 2004).

The review shows that the discussion on the impact of FDI on economic growth is far from being conclusive. The role of FDI seems to be country specific, and can be positive, negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries. Most of the previous studies on FDI and growth in sub-Saharan Africa are multi-country studies. However, recent evidence affirms that the relationship between FDI and growth may be country and period specific. Asiedu (2001) submits that the determinants of FDI in one region may not be the same for other regions. In the same vein, the determinants of FDI in countries within a region may be different from one another and from one period to another.

The results of studies carried out on the linkage between FDI and economic growth in Nigeria are not unanimous in their submissions. A closer examination of these previous studies reveals that a conscious effort was not make to take care of the fact that more than 60% of the FDI inflows into Nigeria is made in the extractive (oil) industry. Hence, these studies actually modelled the influence of natural resources on Nigeria‘s economic growth. In addition, the impact of FDI on economic growth is more contentious in empirical than theoretical studies, hence the need to examine the relationship between FDI and growth in different economic dispensations. There is the further problem of endogeneity, which has not been consciously tackled in the previous studies in Nigeria. FDI may have a positive impact on economic growth leading to an enlarged market size, which in turn attracts FDI.

This study will contributes to the literature by examining the relationship between FDI inflows and Nigeria’s economic growth, hence addressing the country’s specific dimension to the FDI growth relationship. And it will examine the role FDI inflows play in promoting growth in the main sectors, namely primary, manufacturing and services.

3. Theoretical Framework

Several studies have articulated theoretically and empirically the effect of FDI on economic growth using the standard growth accounting framework Agosin and Mayer, 2000; Akinlo, 2004; Ayanwale, 2007). This framework is therefore chosen based on the plausibility and relevance of its assumptions to the nature and structure of Nigeria economy. To begin with capital stock is assumed to consist of two components; domestic and foreign owned capital stock.

Therefore,

$$k_t = k_{dt} + k_{ft}$$

k_t = capital stock

k_{dt} = domestic capital stock

k_{ft} = foreign capital stock

We adopt an augmented Solow production function (Solow, 1956) that makes the output a

function of capital stock, labour and human capital.. In our framework, we specify domestic and foreign owned capital separately assuming that the production function is of a Cobb-Douglas form as follows: (Cobb and Douglas, 1928).

$$Y_i = A_{it} K_{dit}^{\alpha} K_{fit}^{\lambda} L_{it}^{\beta} H_{it}^{\gamma} \quad (1)$$

Where Y is the flow of output, $K_{dt} K_{ft}$ represent the domestic and foreign owned capital stocks, respectively, L is the labour input (the total number of person-hours worked in a year), H is the human skills capital stock, (studies such as Barro (1991) and Mankiw et al. (1992) use enrolment rates for primary and secondary education, the defect of this measure is that years of enrolment cannot be equated with quality of labour in developing countries as such the total labour force which comprises 15 and older who meets the International labour organization definition of economically active population will be used). And A is total factor productivity, which explains the output growth that is not accounted for by the growth in factors of production. Taking the logs and differentiating equation 1 with respect to time, we obtain the following growth equation:

$$y_{it} = a_{it} + \alpha k_{dit} + \lambda k_{fit} + \beta l_{it} + \gamma h_{it} \quad (2)$$

Where lower cases represent the growth rates of output, domestic capital stock, and foreign capital stock, labour and human capital and α, λ, β and γ represent elasticity of output, with respect to domestic capital stock, foreign capital stock, labour and human capital.

In a setting of perfect competition and constant returns to scale, these elasticities can be interpreted as factor shares to total output. Equation 2 decomposes output growth into total factor productivity growth plus the sum of weighted factors growth. Theoretically, α, β and γ are expected to be positive while the sign of λ would depend on the relative strength of competition and linkage effects and other externalities that FDI generates in the development process as discussed in the previous section.

The following established practice in the literature, (Barro, 1999; Ayanwale, 2007), k_d and k_f are proxied by domestic investment to GDP ratio (I_∂) and FDI to GDP ratio (I_f) respectively in view of the problems associated with measurement of capital stock. This study will employ the gross domestic investment as a proxy for k the final form of Equation 2 therefore is;

$$y_{it} = a_i + \alpha l_{dit} + l_{fit} + \gamma h_{it} + \varepsilon_{it} \quad (3)$$

Equation 3 therefore is the basis for the empirical model estimation in the next section.

4. Methodology and Data

The first step of the estimation process is to examine the time series properties of the data series by looking at patterns and trends in the data and test for stationary and the order of integration, since most economic variables are non-stationary in their form. These non-stationary time series may result to spurious regressions. For this purpose I will employ the following forms of Dickey-fuller and the augmented Dickey-fuller (ADF) test where each form differs in the assumed deterministic component(s) in the series:

Y_t is random walk: $\Delta Y_t = \alpha Y_{t-1} + \mu_t$ (1)

Y_t is random walk with drift: $\Delta Y_t = \beta_1 + \alpha Y_{t-1} + \mu_t$ (2)

Y_t is random walk with drift around a deterministic trend: $\Delta Y_t = \beta_1 + \beta_{2t} + \alpha Y_{t-1} + \mu_t$ (3)

In each case the null hypothesis is that α=0, that is, there is a Unit Root. As the error term μt is autocorrelated, I will use the following equation with the lagged difference term instead of equation 3.

$$\Delta Y_t = \beta_1 + \beta_{2t} + \alpha Y_{t-1} + \delta_i \sum \Delta Y_{t-1} + \mu \quad (4)$$

After selecting the order of integrating, next step involve is to test the cointegration rank.

4.1 Description of Variables

The dependent variable used is the GDP per capita, which is obtained as a ratio of real GDPto the population. This is following after Borensztein et al. (1998).

The Independent variables included in the model are:

Domestic investment: To investigate the contribution of FDI to economic growth, domestic investment will be one of the key variables because of its relationship with total investment. FDI could add to economic growth simply by augmenting capital accumulation in the host country. This would require that FDI does not 'crowd out' equal amounts of investment from domestic sources by competing in product markets or financial markets. In addition, FDI could increase economic growth if it is more productive, or efficient, than domestic investment.

Openness of the host economy to trade: The ratio of trade (imports and exports) to GDP is used to capture this variable as in standard literature. In the growth accounting literature exports have been considered as an explanatory variable. FDI inflows are expected to result

in improved competitiveness of host countries exports. As exports and investment increase, they will have a multiplier effect on GDP. Increased exports and investments will also generate foreign exchange that can be used to import capital goods, Further if the additional investment embodies neutral/labour intensive techniques, employment will rise. I expect a direct relationship between this variable and economic growth.

Labour cost and quality: Part of the FDI in developing countries is motivated by cheap labour costs and a reduction of production costs. For example, firms which produce differentiated goods are in search of new markets and local staff that will be able to operate the production technology used in the source country. Existing literature shows that most studies used the average schooling years in the population over age 15 or the ratio of secondary and tertiary enrolment in the population (Baro and lee, 1994: Jamoutte, 2004: Akinlo, 2004). The defect of this measure is that years of enrolment cannot be equated with quality of labour in developing countries. For the purpose of this study, the total labour force which comprises 15 and older who meets the international labour organization definition of economically active population will be use.

Inflation, measured as the percentage of change in the GDP deflator and used as a proxy for macroeconomic stability was taken from WDI (2001). This variable is included as a measure of overall economic stability of the country. I expect an indirect relationship between inflation and economic growth.

Exchange rate: Experience has shows that high levels of exchange rate volatility can be disruptive to exports and investments. But it can help jump-start growth by encouraging the redeployment of resources into manufacturing and reaping immediate productivity gains. Given the availability of data, this study will use the official exchange rate. This variable refers to the exchange rate determined by national authorities.

Government size: This is measured as the ratio of government consumption to GDP. It is expected to bear a direct relationship to economic growth. This is because a high level of government consumption should translate into provision of more social capital that should encourage production and growth.

External debt: This plays a dual role in shaping the economy, especially in developing countries. It acts as a positive catalyst when used for capital expenditures, but it can be a disaster if the same is wasted on non-development and personal expenditures. The low level of external debt affects economic growth positively, which becomes negative with high external debt.

4.2 The Model

From the foregoing analysis the general empirical model of FDI on Nigeria's economic growth can be put as:

$$GDP = f(FDI, DINV, TP, REXCH, GOVCON, EXCHRATE, INF, EXTDEBT, LF)$$

Where, GDP =real GDP per capita (in log form)

FDI	= foreign direct investment (FDI/GDP*100)
DIN	=domestic investment
TP	=openness of the economy
REXCH	=real exchange rate
GOVCON	= government consumption
INFL	=rate of inflation
EXTDEBT	=external debt
LF	=labour force (economically active population)

Given the time series nature of the data available, the postulated long-run model is

$$LNGDPPERCAP = \alpha + GDPPERCAP_{t-1} + \beta_1 FDI + \beta_2 DIN + \beta_3 TP + \beta_4 REXCH + \beta_5 GOVCON + \beta_6 INF + \beta_7 EXTDB + \beta_8 LF$$

4.3 Data and Estimation

To achieve the stated objectives of the study, annual time series data of the variables were used. The data were sourced from the *Annual Abstract of statistics (1970-2010) editions*, provided by the Federal Office of Statistics, Abuja, Nigeria. Estimated by the Central Bank of Nigeria; the International Monetary Fund's *International Financial Statistics (2010-2012*) and the World Bank's *World Development Indicators 2010.*

The period covered by the study is 1970-2010. The choice of the period is informed by the developments in the Nigerian economy. The official change in policy direction towards FDI was in 1988 with the establishment of the IDCC.

In order for the impact of FDI on economic growth to be sustainable, the time series data were tested for unit root (non-stationarity) by using the Augmented Dickey-fuller (ADF) and Phillip- Peron test.

5. Estimation Techniques and Presentation of Estimation

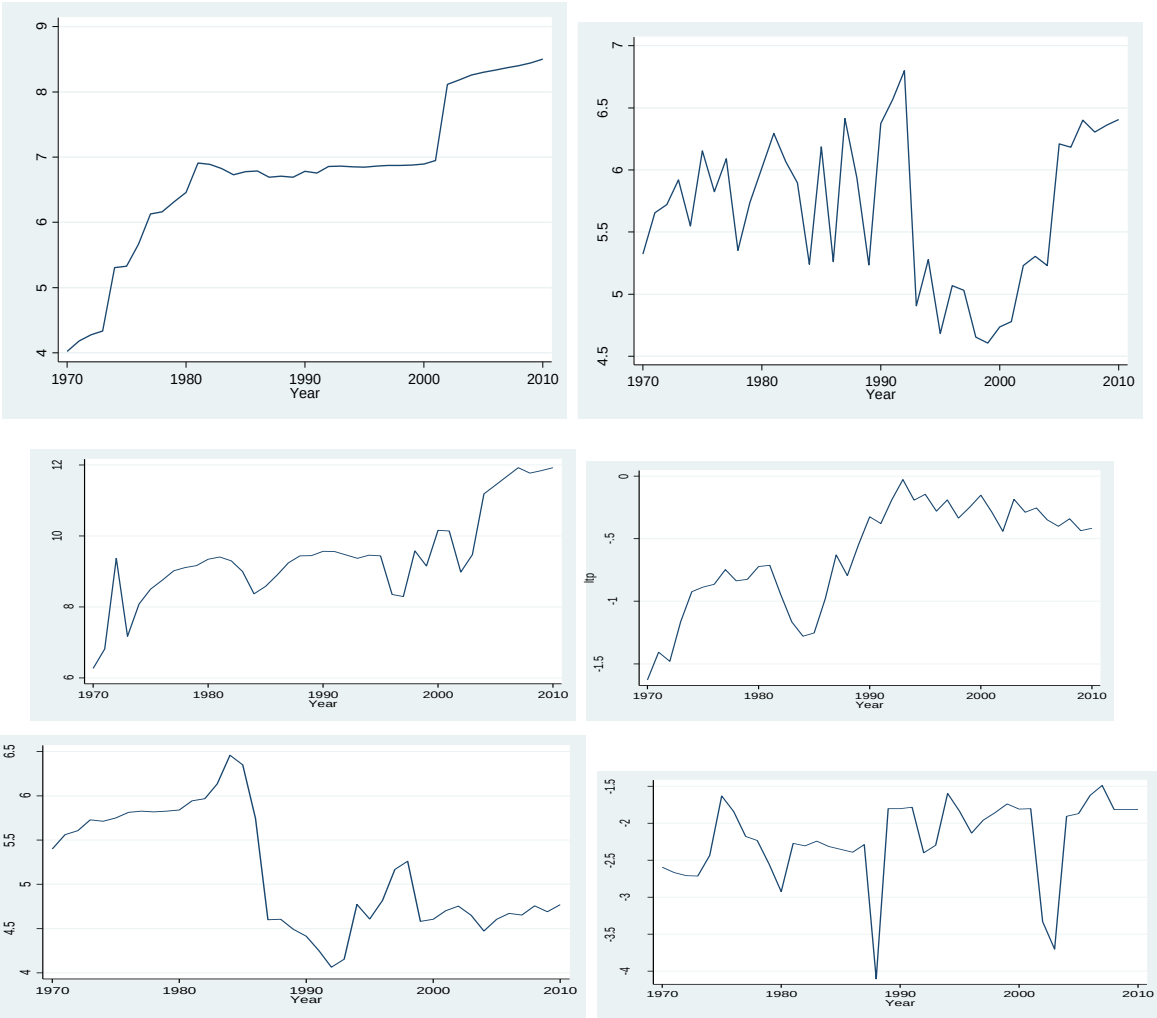
Table 2 represents the descriptive statistics of the model. In the table below RGDP is the dependent variable while FDI, DIN, TP REXCH, GC, INF, EXTDEBT and LF are independent variables.

Table 2. Descriptive Statistics

Variable(s)	Mean	Maximum	Minimum	Std. Dev.
RGDP	6.741	8.504	4.023	1.171
FDI	5.675	6.799	4.605	0.614
DIN	9.415	11.924	6.268	1.316
TP	-0.625	-0.027	-1.629	0.422
REXCH	5.137	6.459	4.063	0.663
GC	-2.217	-1.490	-4.104	0.559
INF	2.700	4.288	1.253	0.734
EXTDEBT	22.812	24.210	20.156	1.361
LF	5.636	6.240	4.934	0.413

Source: Authors' calculation

A visual inspection of the data indicated that all the variables are non-stationary (see Appendix Figure 1), shows the trend of real GDP, FDI, DIN, TP, REXCH, GC, INF and EXTDEBT respectively over the last 41years period in Nigeria.



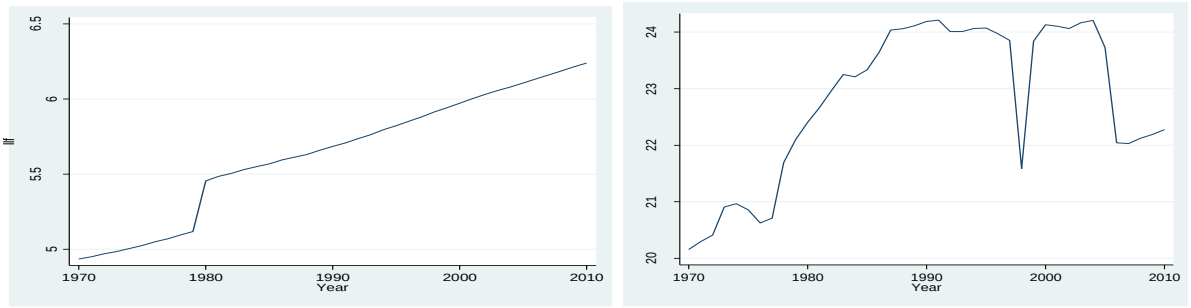


Figure1. Trend of Variables

The plots showed an upward trend, suggesting that the mean, variance and covariance of the series has been changing. This suggests that the series is non-stationary and there exist unit root problems in the time series. In order to do any meaningful policy analysis with the results, it is important to distinguish between correlation that arises from a share trend and one associated with underlying causal relationship.

To achieve this, our data were tested for a unit root (non-stationarity) by using the Dickey-Fuller (DF) and the Augmented Dickey-Fuller test (ADF) with a constant and a deterministic trend. The hypothesis of the unit root test is described as follows.

$H_0 : \delta = 0$ A Unit Root (Non-Stationary) = $I(1)$

$H_A : \delta \neq 0$ No Unit Root (Stationary) = $I(0)$

Where, H_0 defines null hypothesis and H_A defines the alternative hypothesis. If the DF and ADF test-statistic is less in absolute value than the critical value, then the null hypothesis cannot be rejected. I.e. the series is non-stationary

The results of the eight (9) series are presented in Table 3.

Table 3. Summaries of Unit Root Test Results (1970-2010)

Variable	DF		ADF		Augmented
	Constant	constant & trend	constant	constant & trend	lag
RGDP	-1.959	-2.229	-1.990	-2.351	1
FDI	-3.237**	-3.174	-1.898	-1.777	1
DINV	-2.227	-3.478	-1.712	-2.789	1
TP	-2.483	-2.130	-2.095	-1.192	1
REXCH	-1.301	-1.920	-1.772	-2.451	1
GOVCON	-4.483**	-4.760	-3.275	-3.617**	3
INF	-3.667**	-3.540**	-3.055**	-4.104**	3
EXTDEBT	-2.167	-1.571	-2.086	-1.251	1
LF	-0.892	-1.853	-1.013	-1.908	1

Notes: All the variables are in Logarithmic form. ** denotes rejection of null hypothesis at 5% significance level

The results reveal that seven of the variables are integrated of order one, I (1), while two are at stationary level. Having established that most of the variables are integrated of order one, I (1), the next step is to check for possible long run relationships among the variables.

5.1 Testing for long-run Relationship

Econometric literature proposes different methodological alternatives to empirically analyze the long-run relationships and dynamic interaction between two or more time series variable.

The most widely used methods include the two-step procedure of (Engle & Granger 1987) and the full information maximum likelihood approach due to (Johansen 1988) and (Johansen & Juselius 1990). All these methods require that the variables under investigation are integrated of order one, I (1). The study uses the (Engle & Granger, 1987); two- step procedures due to its ease and extensive use in econometric literature and because of its major advantages. The first advantage is that it provides a framework for testing long-run models from actual-time series data. The second advantage is that the cointegration technique allows non-stationary data to be used so that spurious regression results are avoided (stock, 1987). The hypothesis for the cointegration teat is described below.

H_0: the series are not cointegrated

H_1: the series are cointegrated

The rejection of the null means that the series are cointegrated and if we fail to reject the null the series are not cointegrated. The result of the cointegration relationship is presented in

table 4

Table 4. Engle and Granger cointegration test (first step).

Variable	Coefficient estimate	Std Error	t-statistic	P-values
FDI	0.312	0.105	2.97	0.006
DINV	0.275	0.076	3.62	0.001
TP	0.807	0.254	3.17	0.003
REXCH	0.69	20.124	5.60	0.000
GOVCON	-0.289	0.101	-2.86	0.008
INF	0.117	0.074	1.58	0.124
EXTDEBT	0.075	0.056	1.33	0.192
LF	1.991	0.285	6.99	0.000
R-squared	0.952			
DW	1.613			
Obs	39			

Dependent variable: RGDP

Having established that seven (7) of the variables are integrated of the order one, I (1), I have conducted the Engle-Granger's (EG) residual-based ADF test. As the first step of the EG cointegration test, I have estimated equation (4) using the OLS method. From the regression

output the series appears to be related because they are trended. However, we noted the consequence of spurious regression, the result shows that the R^2 of 0.95 is too high and the Durbin Watson statistic of 1.6128 is very low. The t- statistics of FD1, DINV, TP, REXCH, GOVCON, and LF are high and significant at 5% level, this might be misleading. The second step of the Engle & Granger procedure is used to check the stationarity of residuals by performing the ADF test. Table 5 presents the results from Engle-Granger (EG) cointegration test.

Table 5. Engle and Granger cointegration test (second step)

	Constant	**Constant&Trend**
DF	-5.169	-5.120
ADF(1)	-3.526	-3.466
ADF(2)	-2.420	-2.099
ADF(3)	-2.414	-1.840
ADF(4)	-2.182	-1.759

Critical value at the 10% significance level -4.13, Critical value at the 5% significance level -4.42

Critical value at the 1% significance level -4.96

From the above result the ADF test statistic is less than the critical values at 10%, 5% and 1%, and then we fail to reject the null hypothesis and concluded that the series is not cointegrated. In other words there is no long-run relationship between the real GDP growths and the independent variables. Since there is no evidence of long-run relationship between the real GDP and the other variables, an attempt will be made to investigate any presence of a short-term relationship between the variables. In this instance first difference of the series will be undertaken to make it stationary. Once they are stationary, OLS methods can be use to estimate the relationship between them. Table 6, present the unit root test result after taken the first difference

Table 6. Stationary Test Results (First difference)

Variables	*DF*	*Critical value (5%)*	*ADF(1)*	*Critical value (5%)*
RGDP	-6.018	-2.961	-3.828	-2.964
FDI	-9.597	-2.969	-4.698	-2.975
DINV	-7.920	-2.969	-7.422	-2.975
TP	-6.151	-2.961	-4.064	-2.964
REXCH	-4.772	-2.961	-4.287	-2.964
GOVCON	-4.483	-2.958	-4.081	-2.961
INF	-5.977	-2.961	-6.402	-2.964
EXTDEBT	-7.099	-2.961	-4.821	-2.964
LF	-6.154	-2.961	-4.378	-2.964

Source: Authors calculation

The results in Table 6, indicates that all the variables are stationary after taking the first

difference. All the variables are checked at the lag length of one. Since the series are stationary after the first difference, the OLS method can be use to for forecasting or analysis.

5.2 Results and Discussions

The Engle Granger cointegration test carried suggests that there is no long-run relationship between FDI and economic growth in Nigeria. However there is short-run dynamic relationship between FDI and economic growth. From the regression results in Table 3, RGDP is the dependent variable while FDI, DIN, TP, REXCH, GOVCON, INF, EXTDEBT and LF are independent variables. The R-square which is called the coefficient of determination gives the adequacy of the model. The value of R-square is 0.9519 that means the independent variable in the model can predict 95% of the variance in dependent variable. The p-values with the exception of inflation and external debt values are less than 0.005, which shows the significance of our model. The value of Durbin-Watson statistics of 1.612 is very near 2.00, this indicates that there is no autocorrelation exists in our study and the regression models assume that the error deviations are uncorrelated.

The Beta value shows the relationship between the variables in the model, if the value of coefficient is positive it means that independent variables have positive relation with dependent variable i.e. increase in dependent variable is caused by increase in independent variable and if the value of coefficient is negative then independent variables are having negative relation with the dependent variable i.e. decrease in dependent variable is caused by increase in dependent variable. The values of coefficients beta are used to construct the regression model, the model is shown below.

$$GDP= -14.5294+ 0.3122\ (FDI) +0.2748\ (DIN) +0.8067(TP) +0.6917(REXCH) -0.2890(GOVCON) +0.1173(INF) +0.0748(EXT\ DEBT) +1.9912(LF)$$

The results obtained from the regression show the overall performance of the model is satisfactory, with the coefficients correctly signed and six of the explanatory variables statistically significant. The results show that *FDI* inflows exert positive influence on economic growth in Nigeria economy in the short-run. According to the results, a 1% percent increase FDI results in a 0.311 percentage increase in GDP. This finding is consistent with theoretical literature because Nigeria is a developing country, so increases in foreign capital inflows positively affect the level of investment; the consumption level is also increase because of foreign capital inflows. The increase in investment and consumption will increase the gross domestic production in the short run. This result is consistent with the findings of many previous studies. Lan (2006) claimed that foreign direct investment contributed positively to economic growth of Vietnam. Chakrabort & Basu, (2002), examined cointegration relationship for both short and long run for India. They found positive relationship for both short and long run for India. The reason for the significant effect of FDI inflows in the Nigeria economy might be due to the policy shift in favour of FDI in 1988 with the establishment of the Industrial Development Coordinating Committee (IDCC), with the sole responsibility of attracting foreign investors into Nigeria. The FDI variable also has positive and significant relationship because of the deregulation of the downstream sector of the oil industry, which facilitates its integration into the mainstream of the economy. This

corroborates the submission by Akinlo (2004) that the oil industry is not integrated into the economy.

The Domestic investment had a positive influence on economic growth. According to the result 1% increase in the level of domestic investment, will increase GDP by 0.275 percent. The result shows that FDI is found to be complementary with domestic investment. Thus, FDI has not only assisted in overcoming shortage of capital, it has also stimulated economic growth through complementing domestic investment in Nigeria.

Trade openness is positively related to GDP, 1% increase in the level of trade openness of the economy will increase GDP by 0.807%. The proposition is that openness affects growth positively; this view is supported by Romer (1986) and Lucas (1988) in the new theories of growth. Romer (1992), Grossman and Helpman (1991), among others, have argued that countries that are more opened to the rest of the world have greater ability to absorb technological advances generated in leading nations. So the process of trade liberalization not only increases trade but also foreign direct investment (FDI). Openness has a positive and significant relationship with economic growth in Nigeria. This is expected and is consistent with previous results such as those of Asiedu (2001). This result stresses the importance of variations in export and import prices on per capita GDP growth. These variations are a major source of economic instability in less developed countries, especially in Africa, where the bulk of export earnings is from primary commodities. However this result is contrary to the results of Odozi (1995) and Anyanwu (1998), who blamed the observed capital flight in Nigeria on the unfavorable trade policy that was in place before the structural adjustment programme in the country.

Real exchange rate has positive impact on economic growth in Nigeria in the short run. From the result, 1% increase in real exchange rate will increase the real GDP growth by 0.692%. Exchange rate policy plays a vital role in the economic growth of developing countries. Countries that pursue major and appropriate exchange rate reform to eliminate real exchange rate misalignment are very likely to record gains in real per capita GDP. As Agarwala (1983) has shown, although there are many forms of distortion that can affect macroeconomic performance, real exchange rate misalignment is by far the single most important of these.

The negative relationship of the *government size* is not surprising but suggestive of the fact government spending in most African countries, Nigeria inclusive it's not FDI inducing and could not promote economic growth. There is need to consciously improve the business environment to enable manufacturing to contribute positively to growth. One way to improve the business environment is for government to provide infrastructure, which will lower the costs of doing business in Nigeria

The positive relationship of the *inflation* coefficient though not statistically significant, suggests that the development within the macro economy is such that it encourages FDI inflows. This indicates that the various policy initiates aimed at encouraging investors is yielding the expected results in Nigeria. Among these are the abrogations of the indigenization policy in 1989, which lead to the relaxation of restrictions to foreign investors in the economy and in 1995, the Nigerian Investment Promotion Commission Act opened all

sectors to foreign participation except for short negative list.

The *external debt* service coefficient has a positive impact on economic growth, though not statistically significant. In Nigeria, using the social and economic indicators, debt overhang is the major factor that has contributed largely to the poor performance of the Nigeria economy. The debt service burden has militated against the country rapid economic development and worsens the social problems. By cutting down expenditure on social and economic infrastructure, the government appears to have also constrained private sector investment and growth through lost externalities. This has reduced total investment, since public investment is significant proportion of the total investment in the country. These results are consistent with findings from similar studies (e.g. Cohen, 1993 and Warner, 1992), which find positive outcome between past debt accumulation with economic growth.

The Labour force has a positive and statistically significant with economic growth. It had been posited that efficiency seeking FDI will tend to locate in those destinations that are able to supply skilled and disciplined labour force. Fung et al. (2000) report that labour quality is an important determinant of FDI, but raw labour costs were insignificant determinants of FDI. This result is consistent with the study by Akinlo, (2004), which show that labour and human capital has significant positive effects on economic growth. The results seem to demonstrate the importance of labour and education on the growth prospect of the Nigerian economy. This might as a result of the efficiency with which the stock of technical knowledge is translated into technologies in the market, via the higher education system reform in Nigeria.

6. Summary and Conclusion

The objectives of this study were threefold: to explore empirically the relationship between FDI and GDP growth in Nigeria; to examine the effects of oil and non-oil FDI on economic growth in Nigeria; and to ascertain the long-run sustainability of the FDI-induced growth process. Data were collected from secondary sources analyzed with the aim of achieving the stated objectives. From the findings of the study the following can be inferred: The econometric results show that FDI exert positive influence on economic growth in Nigeria. This might be due to stable macroeconomic policies and a level of human capital that is tolerable by investors. The FDI in non-oil sector has contributed positively to economic growth in Nigeria. It should be emphasized that the country could benefit from increased FDI inflows into the oil sector, if the oil sector is integrated into the economy. A major policy in this direction is the liberalization of the oil sector. This will lead to increased private participation, higher employment with possible multiplier effects on the economy as a whole. And finally for the achievement of a long-run relationship between FDI and economic growth in Nigeria, there is a need to improve the business environment, with the provision of necessary infrastructure. The privatization of the National Electric Power Authority (NEPA), now known as Power Holding Company, may be a step in the right direction.

A related issue on the business environment is the importance of consciously curbing corruption. Agencies established to fight corruption such as the Economic and Financial Crimes Commission (EFCC) and Independent Corrupt Practices Commission (ICPC), should be seen to do their job to convince both foreigners and nationals that Nigeria is a safe place to

invest in.

There is a need for guided training and integration of the human resources of the country to enable them to contribute positively to economic growth wherever they find themselves employed either with foreign or with indigenous firms and whichever sector they are in. The need for training of high quality personnel in the country cannot be overemphasized.

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