Effect of Foreign Direct Investment on Economic Growth in Nigeria

Alphonsus Sunday Anichebe  Ph.D, ACA
Department of Accountancy, Chukwuemeka Odumegwu Ojukwu University, Nigeria
as.anichebe@coou.edu.ng

Abstract

This study investigated the effect of foreign direct investment on economic growth in Nigeria. The study covered the period of 37 years from 1981 to 2017. The annual time series data for the study were analysed using the Ordinary least square (OLS) technique. The results of the estimated model show that foreign direct investment had strong positive impact on economic growth. Foreign exchange rate and gross fixed capital formation both have positive relationships with economic growth while trade openness and expenditure on education have strong negative effect on economic growth. The study therefore concludes that foreign direct investment has long run impact on economic growth in Nigeria.

Keywords: Foreign Direct Investment, Economic Growth, Nigeria, Foreign Exchange Rate, Gross Fixed Capital Formation, Trade Openness, Education Expenditure.

1.0 Introduction

Since 1986, the government of Nigeria has vigorously pursued economic policies aimed at liberalising and promoting competition and investment in the Nigerian economy. Appropriate incentives are also continuously being put in place to encourage and promote private investment. Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in the host country economy. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Foreign direct investment (FDI) not only provides developing countries (including Nigeria) with the much needed capital for investment, it also enhances job creation, managerial skills as well as transfer of technology. All of these contribute to economic growth and development. To this end, Nigerian authorities have been trying to attract FDI via various reforms (Obida & Abu, 2010).

The level of net inflow of FDI as a percentage of GDP in Nigeria remained at an average of 1.02% between 1981 and 1986. It rose to 10.83 percent in 1994 and has since then continued to fall. It was 5.05 percent in 2009, and has fallen to 0.9 percent as at 2017 (CBN, 2017). The fluctuations in the level of net FDI inflow in Nigeria reflect changes in the political, social and economic environment of the country over the period of study.

Recent Studies have turned to investigate the effect of foreign direct investment on economic growth. Simionescu (2016) carried out in Europe found a positive relationship between foreign
direct investment and economic growth, while Lyrouri, Papanastasiou & Vamvakidis (2004) carried out in the United States and Europe showed no significant relationship. Studies like Mehdi (2012) and Ogbokor (2016) conducted in Southern Asia and Namibia respectively showed that foreign direct investment has a significant impact on economic growth. Among the Studies conducted in Nigeria; Uwubanmwen & Ogiemudia (2016) and Okafor, Ugwuegbe & Ezeaku (2016) found a positive relationship between foreign direct investment and economic growth, while Onyeagu & Okeiyika (2013) and Awe (2013) showed a negative relationship. The review of literature showed that there are significant variations in results from studies conducted both in the developed European countries and developing countries like Nigeria. Some of these Studies failed to adopt robust methodologies in carrying out the analysis of research data.

This study therefore seeks to evaluate the impact of Foreign Direct investment on Economic growth in Nigeria. The remaining part of this study is organised as follows, Section two discusses the literature on foreign direct investment and economic growth while section three lays out the analytical framework and econometric methodology. Section four reports the results while section five concludes.

2.0 Review of Related Literature

2.1 Theoretical Framework

2.1.1 The Harrod-Domar Growth Model

The Harrod-Domar growth model stresses the importance of savings and investment as key determinants of growth. The model was developed independently by Roy F. Harrod in 1939 and Evsey Domar in 1946. Basically, the model suggests that the economy’s rate of growth can be increased in one of two ways:

- Increased level of savings in the economy (national savings)

- Reducing the capital output ratio (i.e. increasing the quality of capital inputs)

2.1.2 The Solow Model

The model was developed independently by Robert Solow and Trevor Swan in 1956, and superseded the Harrod–Domar model. Growth comes from adding more capital and labour inputs and also from ideas and new technology. The Solow model believes that a sustained rise in capital investment increases the growth rate only temporarily: because the ratio of capital to labour goes up. However, the marginal product of additional units of capital may decline (there are diminishing returns) and thus an economy moves back to a long-term growth path, with real GDP growing at the same rate as the growth of the workforce plus a factor to reflect improving productivity. A ‘steady-state growth path’ is reached when output, capital and labour are all growing at the same rate, so output per worker and capital per worker are constant.
This model shows that to raise the trend rate of growth requires an increase in the labour supply and also a higher level of productivity of labour and capital. Differences in the rate of technological change between countries are said to explain much of the variation in growth rates that we see.

Foreign investment inflow, particularly foreign direct investment (FDI) is perceived to have a positive impact on economic growth of a host country through various direct and indirect channels. It augments domestic investment, which is crucial to the attainment of sustained growth and development (Olokoyo, 2012). Foreign direct investment relates to investment which allows the investor to enjoy a perpetual interest in an enterprise in a country other than his own country which takes the form of building a factory, purchase of equipments or establishment of plants etc. It is also seen to include all forms of capital contributions and the reinvestment of earnings by a company incorporated abroad (Odo, Anoke, Nwachukwu & Promise, 2016).

2.2 Review of Empirical Studies
Maji & Achegbulu (2011), examine the effect of foreign direct investment on economic growth in Nigeria. The data used were sourced from central bank of Nigeria statistical bulletin. The Ordinary least square (OLS) technique was used in estimating the relationship between foreign direct investment and Economic growth over the period. The study shows that foreign direct investment has a positive impact on gross domestic product in Nigeria.

Ugwuegbe, Okore & Onoh (2013), examine the relationship between Foreign Direct Investment and economic growth in Nigeria. The study covered the period of 1981-2009 using annual time series data from Central Bank of Nigeria statistical bulletin. The Ordinary Least Square technique was used to test the relationship between foreign direct investment and Economic growth. Result indicates that FDI has a positive and insignificant impact on growth of the Nigerian economy for the period under study. Gross fixed capital formation is positively and significantly related to economic growth. Interest rate has a positive and insignificant effect while exchange rate positively and significantly affects the growth of Nigeria economy.

Olokoyo (2012) examined the effects of Foreign Direct Investment (FDI) on the development of Nigerian economy. The study employed the Ordinary Least Square (OLS) technique to test the time series data from 1970–2007. The results evidently do not provide much support for the view of a robust link between FDI and economic growth in Nigeria as suggested by extant previous literatures. Though the result does not imply that FDI is unimportant, the model analysis reduces the confidence in the belief that FDI has exerted an independent growth effect in Nigeria.

Okafor, Ugwuegbe & Ezeaku (2016), studied the relationship between foreign capital inflows and economic growth in Nigeria for the period of 1981-2014. Foreign capital inflows, was proxied by Foreign Direct Investment, Foreign Portfolio Investment and Foreign Aid while economic growth was proxied by Gross Domestic Product (GDP). The study employed annual time series data generated from CBN statistical bulletin, and Toda Yamamoto test of causality was used to determine the relationship between foreign capital inflow and economic growth in Nigeria. The result indicates that increase in foreign capital inflow causes GDP to increase positively. And so,
government should design policies and programs to enhance the inflows of foreign capital as this will accelerate the speed of growth in the economy.

Odo, Anoke, Nwachukwu & Promise (2016), examine the impact of foreign direct investment on the growth of the Nigeria stock market from 1984 to 2015 using the Ordinary least square technique in the estimation of the variables specified in the regression model. The results of the test revealed a long run equilibrium relationship between the dependent and explanatory variables. The findings from the VECM indicated that FDI and Export have negative relationship with stock market growth both in the long and short run while Import and Gross Capital Formation was found to have a positive relationship with stock market growth both in the short and long run periods. Based on the results, the study concludes that foreign direct investment has no significant impact on stock market growth in Nigeria.

Saibu & Keke (2014), examined the impact of Foreign Private Investment on economic growth using annual time series data from Nigerian economy. Co-integration and Error Correction Mechanism (ECM) techniques were employed to analyze the relationship between foreign private investment and economic growth. The result revealed that there was a substantial feedback of 116% and 78% from previous disequilibria between long-run economic growth and foreign private investment respectively.

Onyeagu & Okeiyika (2013), examine the relationship between FDI, HCD and Economic growth in Nigeria. Result shows that FDI in Nigeria has a negatively insignificant impact on growth in the long run, meaning that the contribution of FDI to the Nigeria economy is small in the long run. The negative insignificant effect of human capital on overall growth in the long run, suggest that there is shortage of skilled labour in the country. The ECM coefficient is -0.13 and is not significant, meaning that the speed to adjust towards equilibrium is not in moderate condition.

Simionescu (2016), investigates the relationship between economic growth and foreign direct investment inflows in the European Union (EU-28) in the period of the recent economic crisis. Panel data approach and Bayesian techniques are employed to solve the problem of a short set of data (2008–2014). The panel data approach (panel vector-autoregressive model and Bayesian random effect models) identified a reciprocal and positive relationship between FDI and economic growth in EU-28 starting with 2008. The individual approach based on Bayesian linear regressions identified this tendency as being specific for most of the EU-28 countries.

Awe (2013), examines the impact of foreign direct investment on economic growth in Nigeria during the period 1976 – 2006, using the two-stage least squares (2SLS) method of simultaneous equation model. The findings of the study revealed a negative relationship between economic growth proxied by Gross Domestic Product (GDP) and Foreign Direct Investment (FDI), as a result of insufficient FDI flow into the Nigerian economy.

Uwubanmwen & Ogiemudia (2016), examine the effect of Foreign Direct Investment (FDI) on economic growth in Nigeria. Annual time series data covering the period of 1979 to 2013 were analysed using the Error Correction Model (ECM) technique. Result reveals that Foreign Direct Investment (FDI) has both immediate and time lag effect on Nigeria economy in the short run. And FDI has a non significant negative effect on the Nigerian economy in the long run during the period under review. Thus FDI has a significant positive effect on the growth as well as the development of the Nigerian economy only in the short run during the period under review.
Borensztein, De Gregorio & Lee (1998), test the effect of foreign direct investment (FDI) on economic growth in a cross-country regression framework, utilizing data on FDI flows from industrial countries to 69 developing countries over the last two decades. Results suggest that FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment. However, the higher productivity of FDI holds only when the host country has a minimum threshold stock of human capital.

Mehdi, (2012) investigate the influence of foreign direct investment (FDI) on economic growth in Southern Asia for the period 1977-2009. Result shows that foreign direct investment (FDI) has positive and significant effect on economic growth and variables such as human capital, economic infrastructure and capital formation have positive effect on gross domestic product (GDP). But, population, technology gap and inflation have negative effect on economic growth.

Moudatsou (2003), assesses the growth effects of foreign direct investment (FDI) in European Union (EU) countries, when controlling for other growth determinants. Using data over the period 1980-1996, the study obtained estimates of the growth effects of FDI for each country in isolation and by pooling the data for the whole Union. Country-specific estimates suggest that growth determinants vary across EU members and that only past FDI inflows have a significant effect on growth. Interestingly, when data are pooled, the empirical results show that FDI has a positive effect on the growth rate of EU economies both directly and indirectly (through trade reinforcement). Also, unlike previous empirical findings concerning developing economies, the study obtained evidence that the growth effect of FDI is not conditional upon the level of human capital in developed host countries.

Lyroudi, Papanastasiou & Vamvakidis (2004), investigate the existence and the nature of the effect of FDI on the rate of growth of a panel of transition economies focusing on the US and the western European countries. The study applies the Bayesian analysis. Results indicate that FDI does not exhibit any significant relationship with economic growth for the transition countries.

Ogbokor (2016), examines the influence of foreign direct investment on economic growth in Namibia with annual dataset from 1990 to 2014. The study found long-run relationships among all the variables. The estimated long-run equation also indicates a positive association between the explanatory variables and real gross domestic product. In particular, net foreign direct capital was found to have a stronger influence on economic growth compared to openness and real foreign exchange rate.

3.0 Methodology

3.1 Data and Variable Description
This Study was based on secondary data. A sample of annual observations on time series covering the period from 1981 to 2017 was employed. Series are in current domestic currency. All data variables were sourced from the Central Bank of Nigeria Statistical Bulletin (various editions).

3.2 Model specification
The model expresses the Gross Domestic Product as the dependent variable while the independent variables include; Foreign direct investment, Exchange rate, Gross fixed capital formation, Trade openness and expenditure on education;
GDP = \sum (FDI, EXR, TROP, GFCF, EDEXP)
The equation from the model becomes;
\[ \ln RGDP = a + a_1 \ln FDI_t + a_2 \ln REXR_t + a_3 \ln GFCF_t + a_4 \ln TROP_t + a_5 \ln EDEXP_t + \epsilon_t \]
Where:
RGDP = Real Gross domestic product
The explanatory variables include:
FDI = Foreign direct investment (Net inflow of Foreign direct investment as share of GDP)
REXR = Exchange rate (Real effective exchange rate)
GFCF = Gross fixed capital formation as share of GDP
TROP = Trade openness (ie sum of import and export expressed as share of GDP. Measures the Openness of the economy)
EDEXP = Total expenditure on education as share of GDP
\( \epsilon_t \) = Random error term
a = Constant
\( a_1, a_2, a_3, a_4, a_5 \), are the coefficients of the regression equation.
The study based its selection of variables on theoretical proposition and evidence in the literature.

3.3 Estimation Procedures

- The characteristics of the time series data used in the analysis are first evaluated. The statistical properties of the variables provide information about the means, medians, standard deviations, skewness, kurtosis and jarque-Bera statistics of each variable. The correlation analysis that shows the extent of linear relationship that exist among the variables is employed to estimate the nature of linear association among the dependent and independent variables.
- Thereafter, the stationarity properties of the employed data are examined using the Augmented Dickey-Fuller test.
- The existence of a stationary linear combination from the non-stationary time series is referred to as co integration and it can be interpreted as a long-run equilibrium relationship among the variables.
- The long run analysis is estimated using Ordinary Least Square (OLS) estimation technique.

4.0 Results

4.1 Descriptive statistics

The characteristics of the time series data used in the analysis are presented in Table 4.1.

Table 4.1 Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>EDEXP</th>
<th>FDI</th>
<th>GFCF</th>
<th>REXR</th>
<th>RGDP</th>
<th>TROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.525946</td>
<td>368.1511</td>
<td>12.84108</td>
<td>151.9638</td>
<td>32749.95</td>
<td>30.27054</td>
</tr>
<tr>
<td>Median</td>
<td>0.850000</td>
<td>111.3000</td>
<td>12.09000</td>
<td>100.0000</td>
<td>22449.41</td>
<td>31.81000</td>
</tr>
</tbody>
</table>
The correlation matrix of the variables employed in this Study is presented in Table 4.2. The table presents all possible bivariate combinations of all the employed variables. The result as presented in Table 4.2 showed that most of the variables employed are highly correlated. The directions of the correlation for some are positive, while negative for some variables.

Table 4.2: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>EDEXP</th>
<th>FDI</th>
<th>GFCF</th>
<th>REXR</th>
<th>RGDP</th>
<th>TROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDEXP</td>
<td>1.000000</td>
<td>-0.435008</td>
<td>0.742640</td>
<td>0.778435</td>
<td>-0.498502</td>
<td>-0.716546</td>
</tr>
<tr>
<td>FDI</td>
<td>-0.435008</td>
<td>1.000000</td>
<td>-0.058364</td>
<td>-0.319900</td>
<td>0.908736</td>
<td>0.188959</td>
</tr>
<tr>
<td>GFCF</td>
<td>0.742640</td>
<td>-0.058364</td>
<td>1.000000</td>
<td>0.431023</td>
<td>-0.053714</td>
<td>-0.598182</td>
</tr>
<tr>
<td>REXR</td>
<td>0.778435</td>
<td>-0.319900</td>
<td>0.431023</td>
<td>1.000000</td>
<td>-0.360059</td>
<td>-0.513879</td>
</tr>
<tr>
<td>RGDP</td>
<td>-0.498502</td>
<td>0.908736</td>
<td>-0.053714</td>
<td>-0.360059</td>
<td>1.000000</td>
<td>0.133149</td>
</tr>
<tr>
<td>TROP</td>
<td>-0.716546</td>
<td>0.188959</td>
<td>-0.598182</td>
<td>-0.513879</td>
<td>0.133149</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: Author’s Computation

4.3 Unit Root/Stationarity test

The variables employed in the analysis are tested for stationarity using the Augmented Dickey-Fuller test. The results of the unit root tests as presented in Table 4.3 indicated that EDEXP and LGFCF are stationary at level while LFDI, LREXR and LTROP are stationary at after first difference. LRGDP is stationary at after second difference.

Table 4.3: The Unit Root Test Results for the Selected Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Augmented Dickey-Fuller test</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEDEXP</td>
<td>Level</td>
<td>6.421011</td>
</tr>
<tr>
<td>LFDI</td>
<td>Level</td>
<td>-0.283250</td>
</tr>
<tr>
<td>1st Difference</td>
<td></td>
<td>-4.014514</td>
</tr>
</tbody>
</table>
Table 4.4 illustrates the outcome of the co-integration test. There are three co-integrating relations among the variables in the model as indicated by the Max-Eigen Statistic. This implies that there are long run relations among the variables employed in the model.

Table 4.4 Test of Co-integration among LRGDP, LFDI, LREXR, LEDEXP, LGFCF and LTROP

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>5 Percent Critical</th>
<th>1 Percent Critical</th>
<th>Hypothesized No. of CE(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.801026</td>
<td>161.6298</td>
<td>94.15</td>
<td>103.18</td>
<td>None **</td>
</tr>
<tr>
<td>0.726989</td>
<td>105.1195</td>
<td>68.52</td>
<td>76.07</td>
<td>At most 1**</td>
</tr>
<tr>
<td>0.604253</td>
<td>59.68102</td>
<td>47.21</td>
<td>54.46</td>
<td>At most 2**</td>
</tr>
<tr>
<td>0.402391</td>
<td>27.23668</td>
<td>29.68</td>
<td>35.65</td>
<td>At most 3</td>
</tr>
<tr>
<td>0.230852</td>
<td>9.218035</td>
<td>15.41</td>
<td>20.04</td>
<td>At most 4</td>
</tr>
<tr>
<td>0.000900</td>
<td>0.031497</td>
<td>3.76</td>
<td>6.65</td>
<td>At most 5</td>
</tr>
</tbody>
</table>

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 3 co integrating equation(s) at 5% significance level

4.5 Results of the Estimated Model

The result of the model as presented in the table show that, LFDI, LREXR and LGFCF have positive impact on LRGDP while LEDEXP and LTROP have negative impact on LRGDP. All the explanatory variables included in the model are statistically significant except LREXR. Of interest is the fact that 88.3 per cent of the variations in the LRGDP are explained by LFDI, LREXR, LEDEXP, LGFCF and LTROP as implied by the Adjusted R², although the LRGDP
model is statistically significant as implied by the significance of the F-statistics coefficient in the model.

Table 4.5 Estimated Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>33340.73</td>
<td>6094.580</td>
<td>5.470555</td>
<td>0.0000</td>
</tr>
<tr>
<td>FDI</td>
<td>29.98876</td>
<td>3.091388</td>
<td>9.700741</td>
<td>0.0000</td>
</tr>
<tr>
<td>REXR</td>
<td>27.67114</td>
<td>15.24102</td>
<td>1.815571</td>
<td>0.0791</td>
</tr>
<tr>
<td>TROP</td>
<td>-378.5837</td>
<td>123.8497</td>
<td>-3.056800</td>
<td>0.0046</td>
</tr>
<tr>
<td>EDEXP</td>
<td>-10706.48</td>
<td>2467.343</td>
<td>-4.339274</td>
<td>0.0001</td>
</tr>
<tr>
<td>GFCF</td>
<td>931.4833</td>
<td>312.5594</td>
<td>2.980180</td>
<td>0.0056</td>
</tr>
</tbody>
</table>

R-squared 0.899589
Adjusted R-squared 0.883394
S.E. of regression 6450.207
Log likelihood -373.7866

Results of the analysis indicated a positive relationship between foreign direct investment and Gross domestic product. This means that increases in foreign direct investment inflow increases the gross domestic product. Increase in foreign direct investment leads to increase in Economic growth. Gross fixed capital formation also positively impacts on Economic growth of Nigeria. Increases in gross fixed capital formation leads to increase in economic growth. Moreover the above results are statistically significant.

Exchange rate also has a positive relationship with the Gross domestic product. This means that as the domestic currency depreciates, the gross domestic product increases. Depreciation of the Naira leads to higher economic growth. This result is however not significant.

Trade openness and expenditure on education have strong negative relationship with economic growth in Nigeria.

5.1 Conclusion

This study investigated the impact of foreign direct investment on economic growth in Nigeria, over the period 1981 to 2017. The study was carried out through a review of the relevant theoretical and empirical literature and employed secondary data sourced from the Central bank of Nigeria statistical bulletins for the relevant period. The model for the study was analysed using the Ordinary least square technique. Results of the analysis indicate a long run relationship between Gross domestic product and the explanatory variables. Foreign direct investment has a strong positive impact on economic growth. Gross fixed capital formation and exchange rate are also positively related to economic growth. However Trade openness and expenditure on education have negative relationship with Gross domestic product. The study therefore concludes that foreign direct investment has strong long run relationship with Economic growth in Nigeria.
References


334–361.