**DOES STOCK MARKET DEVELOPMENT PLAY ANY ROLE IN THE EFFECT OF FDI ON ECONOMIC GROWTH IN NIGERIA? AN EMPIRICAL INVESTIGATION**

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**Abstract**
*The objective of the paper is to investigate whether stock market development plays any role in the effect of foreign direct investment (FDI) on economic growth in Nigeria. Using annual time series data that span the period from 1981 to 2014, and employing the fully modified ordinary least squares (FMOLS) estimation technique, the empirical evidence indicates that FDI, domestic investment and stock market development positively and significantly affect economic growth, but the effect of the interaction between stock market development and FDI on economic growth is negative and significant, indicating that the Nigerian bourse is not yet fully developed to engender positive growth effect of FDI. The study further finds that government consumption expenditure and trade openness adversely affect the growth of the country's real GDP per capita. Recommendations of the paper include efforts by the government to design and implement programmes and policies aimed at enhancing the attractiveness of the country to foreign and local investors, efforts by capital market regulators to enhance stock market efficiency, reduction of government consumption expenditures and import control.*

**1. Introduction**
Gross investment in an economy according to Agosin and Mayer (2000) comprises domestic investment and foreign investment of which foreign direct investment constitutes a significant part. The inflow of foreign direct investment to an economy is envisaged to complement domestic investment therein *all things being equal* especially where there is dearth of savings (or savings gap) according to the two-gap model. Increase in investment arising from domestic capital formation and inflow of foreign direct and portfolio investments to the economy according to various growth models (neoclassical and endogenous growth models) will engender increase in economic growth rate.

Feldstein (2000) identified three benefits of FDI to host countries. The first benefit is that FDI provides a mechanism for transference of technology that cannot be achieved through financial investment or through trade in goods and services. The second is human capital development as countries that receive FDI often gain employee training as an automatic by-product of operating the new business. Such human capital development is important for all categories of workers ranging from production workers to managers and executives. The third is the revenue accruing to the government of the host-country in the form of corporate tax revenue imposed on the profits of the multinationals through which FDI flows into the country.

Listing of foreign firms or multinational corporations through which FDI is channeled into a host country on the stock market could be beneficial to the individuals, that is local investors who would take up part ownership of the foreign firms by buying or investing in their stocks to

either partake in the profit of the corporations through dividends when it is declared, or reap capital gains where the stocks appreciate in value through trade in stocks in the bourse, thus enhancing their incomes; it could be beneficial to the government by enhancing government revenue derived from withholding tax on dividend to shareholders, etc; it also enhances the income of market players especially the stockbrokers and issuing houses whose income also get enhanced as they render stockbrokerage and allied services to the corporations and their shareholders. All these translate into enhanced national income. However, dominance of the stock market by foreign firms could have adverse effect on the growth of a nation's economy if the stock market is not well developed.

This study is motivated by the observation that though numerous multinational corporations operate in Nigeria's economy, only a small fraction of these are listed on the country's stock market. Several studies have shown that stock market development positively affects growth (Olweny and Kimani, 2011; Ovat, 2012; Ogboi and Oladipo, 2012; Ahmad, Khan and Tariq, 2012). A major determinant of the extent of the development of the stock market is the number of firms listed thereon. This enhances market capitalization and market liquidity which are key indicators of stock market development. Listing of multinationals on the stock exchange will no doubt enhance the market size and liquidity (Aigheyisi and Edore, 2013), just as foreign portfolio investment enhances the growth of the capital market (Eniekezimene, 2013). Thus the inflow of FDI to the economy (through the multinational companies), if interacted with stock market development indicators is hypothesized in this study to enhance the impact of FDI on economic growth. The objective of this paper therefore is to investigate whether the extent of development of the stock market is a significant determinant of the effect of FDI on the growth of Nigeria's economy. In other words, the study intends to investigate whether the effect of FDI on economic growth of Nigeria depends on the extent of development of the country's bourse. Though numerous studies have been conducted to investigate the effect of FDI on Nigeria's economic growth, none to our knowledge have yet investigated the role the stock market plays in this effect. A gap therefore exists in the literature and this study intends to fill this gap.

## 2. Brief Review of the Literature: Theory and Empirical Evidence

The inflow of FDI into an economy, especially the LDCs where there is a dearth of investment as a result of low savings rate, raises the level of investment therein thereby accelerating the growth of such economies. This is actually a major tenet of the two-gap model which has been described as an extension of the Harrod-Domar model (which shows that the rate of growth of an economy is jointly determined by the national savings rate, that is the national savings-income ratio, and the national capital-output ratio, suggesting that the more a country can save and invest, the faster it can grow). The model identifies two gaps which necessitate foreign finance and foreign exchange inflows, namely the savings-gap arising from low level of savings, and the foreign exchange gap arising from low level of export (and high level of imports). The savings-gap can be closed with foreign direct investment, while the foreign exchange gap can be bridged with foreign aid (Akande and Oluyomi, 2010). The two-gap model therefore provides an explanation of how capital inflows affect economic growth by increasing the level of investment in the economy. However, the empirical evidence on the effect of FDI on economic growth has been mixed, and yet remains inconclusive.

Numerous studies have investigated the effect of FDI on economic growth in various countries and regions. The empirical evidence has been inconclusive. Umoh, Jacob and Chuku (2012) employ various methodologies such as error correction methodology, Granger causality test and the three stage least squares technique for simultaneous equations modeling to investigate the relationship between FDI and growth in Nigeria. The evidence shows that a feedback relationship exists between the variables that is, FDI

positively and significantly affects growth, just as growth positively and significantly affects FDI inflows. Hassen and Anis (2012) also find significant positive effect of FDI on long-run growth in Tunisia using data that span the period from 1975 to 2009 and employing the time series technique of cointegration and error correction analysis. Turkcan, Duman and Yetkiner (2008) test the endogenous relationship between FDI and economic growth using a panel data set for 23 OECD countries for the period from 1975 to 2004. FDI and growth are treated as endogenous variables and a two-equation system of simultaneous equation estimated using the generalized moment of means. The study finds a two-way positive and significant relationship between FDI and economic growth. Liu (2005) employs single equation and simultaneous equations techniques to investigate the effect of FDI on economic growth using panel data set for 84 countries over the period from 1970 to 1999. The analysis finds that FDI positively and significantly affects growth, directly, and indirectly through its interactions terms as the interaction of FDI with human capital is observed to exert strong positive effect on economic growth, while the interaction of FDI with technology gap is observed to exert significant negative impact on growth.

However, applying the OLS estimation technique to analyse data that span the period from 1970 to 2007, Olokoyo (2012) finds no significant effect of FDI on economic growth in Nigeria. Similarly, using same methodology, Danja (2012) finds no evidence of significant effect of FDI on economic growth in Nigeria. The study by Louzi and Abadi (2011) on the effect of FDI on economic growth of Jordan using cointegration and error correction analysis finds no evidence of significant effect of FDI on gross domestic product in the 1990-2009 period. Alfaro (2003) employs OLS with White's correction for heteroskedasticity and instrumental variables techniques to investigate the effect of FDI in various sectors on economic using cross country data on 47 countries for the period 1981-1999. The analysis indicates that FDI exerts ambiguous effect on growth: FDI in the primary sector negatively affects growth; FDI in the manufacturing sector positively affects growth; while the growth effect of FDI in the service sector is ambiguous. Another study by Alfaro et al (2006) finds that well developed local financial markets are important for the effect of FDI on economic growth, as financial markets act as channel for the realization of the linkage effect as well as create positive spillovers of FDI to economic growth.

The role of host countries' financial markets in the effect of FDI on economic growth has also been investigated empirically. A common strand in majority of the studies is that well developed financial markets are essential for FDI to positively affect economic growth. We present below some empirical evidence on the FDI-financial market-economic growth relationship.

Nunnenkamp and Spatz (2004) examine the relevance of host-economy characteristics (such as real GDP per capita, level of schooling, institutional development and openness/closeness of the economy) and industry characteristics (such as technology intensity, factor requirements, linkages to local and foreign markets, and the degree of foreign vertical integration of foreign affiliates) in the effect of FDI on economic growth in developing economies. Evidence from the cross-country analysis indicates that higher FDI stock in a particular period tend to be associated with lower growth in subsequent period in economies with unfavourable characteristics, suggesting that FDI crowds out domestic investment in those economies. The picture is however brighter for economies with favourable characteristics. Specifically, it is found that availability of complimentary human capital in host countries is important for FDI to stimulate economic growth. It is also found that sound institutions are a prerequisite for attracting and benefiting from the market-seeking and efficiency-seeking FDI. Openness to trade is also found to be a *sine quanon* to successfully participate in the widely perceived trend towards efficiency seeking FDI.

Alfaro *et al* (2003) examine the role financial markets play in the relationship between FDI and economic development using cross0country analysis of data on seventy countries. The

empirical analysis provides ample evidence that the level of development of the financial markets is crucial for FDI to positively affect economic development. Specifically, the evidence shows that well developed financial markets allow significant gains from trade, while the effect of FDI alone on economic development is ambiguous.

Esfandyari (2015) investigates the role of financial market development in the foreign direct investment effect on economic growth in the Developing 8 (D8) countries namely Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey, with emphasis on Iran, using data for the period from 2004 to 2013. The empirical evidence shows that FDI alone has no significant effect on economic growth in the countries, but when interacted with a threshold level of financial development, FDI positively and significantly affects growth, suggesting that the D8 countries should channel efforts towards developing their domestic financial markets before absorbing FDI.

Raheem and Oyinlola (2013) examine the relationship between FDI and economic growth in 15 African countries, putting the role of the level of financial sector development into consideration. The two-stage least squares instrumental variable technique is used to estimate the model specified for the investigation. The results suggest that financial sector development is a precursor for positive effect of FDI on economic growth, suggesting that policies directed towards attracting FDI should go along with policies aimed at financial sector development, and not precede it.

Hsu and Wu (2006) investigate the role of financial intermediary in the effect of FDI on economic growth using cross country data for the period from 1975 to 2005. The least squares, limited information maximum likelihood (LIML) and the Fuller methods are used to estimate the model specified, while the heteroskedasticity robust limited information maximum likelihood (HLIM) and the heteroskedasticity robust Fuller (HFUL) estimators are used to control for heteroskedasticity. Contrary to previous works, the empirical evidence shows that economies with well developed financial markets do not necessarily benefit more from FDI to accelerate their economic growth as the interaction term for FDI and financial market variable is observed to be negative and significant.

Sghaier and Abida (2013) conduct a study to investigate whether the depth of the financial system of a recipient country affects the impact of FDI on growth. The system GMM is employed to analyse panel data spanning the period from 1980 to 2011 on four countries of North Africa namely Tunisia, Algeria, Morocco and Egypt. The study finds strong evidence in support of positive effect of FDI on growth. It also finds that the development of the financial is an important prerequisite for FDI to positively affect economic growth.

## 3. Theoretical Model and Methodology

Following the work of Sghaier and Abida (2013) which investigates whether the depth of the financial system of a recipient country affects the impact of FDI on growth, we specify our model to investigate whether the extent of development of Nigeria's stock market affects the impact of FDI on the country's economic growth. The model is specified functionally as:

$$RGDPPC = f(FDI, MCAP, FDI*MCAP, X) \qquad (1)$$

Where:

RGDPPC represents (logarithm of) real GDP per capita (proxy for economic growth;

FDI is logarithm of net inflow of foreign investment as a percentage of GDP;

MCAP represents logarithm of market capitalization as percentage of GDP, a measure of stock market development;

FDI*MCAP is an interaction term capturing interaction between FDI and stock market development. This variable is incorporated in the model to investigate whether the extent of development of the stock market influences the effect of FDI on economic growth;

X represents a battery of control variables identified in the literature as growth determinants. In this study we incorporate government consumption expenditure as

percentage of GDP (GOVCON), domestic investment rate measured as gross fixed capital formation as percentage of GDP (DINV), trade openness (TOPEN) and inflation (INF) as relevant control variables. Incorporating these into equation 1, and specifying the model in the form in which it could be estimated, we have:

$$RGDPPC_t = \beta_0 + \beta_1 FDI_t + \beta_2 MCAP_t + \beta_3 FDI*MCAP_t + \beta_4 DINV_t + \beta_5 GOVCON_t + \beta_6 TOPEN_t + \beta_7 INF_t + \varepsilon_t \tag{2}$$

The variables are as defined above. $\varepsilon_t$ is the error term assumed to be normally distributed with zero mean and constant variance. The *a priori* expectations are: $(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6) > 0$, $\beta_7 < 0$. These imply that FDI, stock market development, interaction between FDI and stock market development, domestic investment, government consumption expenditure and openness of the economy to trade positively affect real GDP per capita in the long run, while inflation negatively affects real GDP per capita. The neoclassical growth models such as the Solow's growth model, the augmented Solow growth model, etc. identify investment as a key determinant of economic growth. According to these models, increase in investment rate engenders increase in the rate of growth of the economy.

The inclusion of government expenditure as a growth determinant is justified by the Keynesian expenditure- economic growth theory within IS-LM framework and the Ram's (1986) growth accounting model which identify government expenditure as a growth stimulant acting through the multiplier and positive externality effects respectively, where it is productive. However, Barro (1990) has argued that government expenditure on consumption could be growth-retarding, while government capital and investment expenditures could enhance economic growth.

The New Growth theory recognizes the role of trade in the growth process (Roe and Mohtadi, 1999).The theory posits that the long-run growth path of an economy can possibly be influenced by international trade as it guarantees access to acquisition of leading technologies of developed countries (Barro and Lee,1994). Thus, openness to trade enhances economic growth ceteris paribus. The effect of inflation on economic growth has been copiously investigated by various researchers. The evidence suggests that high rate of inflation (beyond some threshold) adversely affects growth as it reduces the level of investment and the efficiency of productive factors (Andres and Hernando, 1999; Gregorio, 1999).

The model (equation 2) shall be estimated using the Fully Modified Ordinary Least Squares (FMOLS) Estimation technique (FMOLS) developed by Phillips and Hansen (1990). The methodology modifies the least square estimator to account for serial correlation effects and for endogeneity in the regressors that results from the existence of a cointegrating relationship to yield optimal estimates of long-run (cointegrating) regressions (Phillips, 1993). The analysis begins with unit root test for the variables for ascertain the time series properties of the variables. This shall be performed using the Phillips-Perron test. The unit root test shall be followed by the cointegration test to determine the existence or otherwise of long-run (cointegration) relationship among the variables, and thereafter, if the variables are found to be cointegrated, the model shall be estimated using the FMOLS technique.

Data used for the analysis are annual time series data spanning the period from 1981 to 2014. They were sourced from the Central Bank of Nigeria's Statistical Bulletin (2014) and World Bank's World Development Indicators (2014). Specifically, data on real GDP per capita, foreign direct investment, trade openness, government final consumption expenditure, domestic investment and inflation were obtained from the World Development Indicators database while data on stock market capitalization were sourced from the Central Bank of Nigeria Statistical Bulletin. The model shall be estimated using the logarithm of all variables except inflation which is measured as the annual percentage change in the consumers' price index. All estimations shall be performed with the aid of EVIEWS 8 software.

## 4. Results and Discussion

### 4.1. Unit Root and Cointegration Test

The results of the test for unit root in each of the data series using the Phillips-Perron method is presented in Table 1.

**Table 1. Phillips-Perron Unit Root Test Results**

| Variables | Levels | | | First Difference | | | Order of Integration |
|---|---|---|---|---|---|---|---|
| | PP test stat | Test Critical Value (5%) | Infe-rence | PP test stat | Test Critical Value (5%) | Inference | |
| RGDPPC | -1.9114 | -3.5530 | NS | -4.9103 | -3.5578 | S | I(1) |
| FDI | -2.3846 | -3.5530 | NS | -28.4277 | -3.5578 | S | I(1) |
| DINV | -2.0873 | -3.5530 | NS | -5.7704 | -3.5578 | S | I(1) |
| MCAP | -1.9363 | -3.5530 | NS | -4.3813 | -3.5578 | S | I(1) |
| FDI*MCAP | -2.5064 | -3.5530 | NS | -6.8884 | -3.5578 | S | I(1) |
| GOVCON | 2.6255 | -3.5530 | NS | -6.3167 | -3.5578 | S | I(1) |
| TOPEN | -1.8390 | -3.5530 | NS | -7.6451 | -3.5578 | S | I(1) |
| INF | -2.6352 | -3.5530 | NS | -9.7482 | -3.5578 | S | I(1) |

**NS = Not stationary; S = Stationary**

The unit root test results indicate that the variables are non-stationary at levels, but stationary at first differences. Thus, they are integrated of order 1, that is they are all I(1). Considering that the variables are 1(1), an appropriate procedure to test for cointegration among them is the Johansen cointegration test procedure. The results of the test comprising the Trace test and the Maximum Eigenvalue test are presented in Tables 2A and 2B.

**Table 2A. Johansen Cointegration Test Result (Trace Test)**

Sample (adjusted): 1983 2014
Included observations: 32 after adjustments
Trend assumption: Linear deterministic trend
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.919332 | 251.8076 | 159.5297 | 0.0000 |
| At most 1 * | 0.851071 | 171.2502 | 125.6154 | 0.0000 |
| At most 2 * | 0.625241 | 110.3131 | 95.75366 | 0.0034 |
| At most 3 * | 0.581518 | 78.90604 | 69.81889 | 0.0079 |
| At most 4 * | 0.559253 | 51.03014 | 47.85613 | 0.0244 |
| At most 5 | 0.324319 | 24.81301 | 29.79707 | 0.1682 |
| At most 6 | 0.271240 | 12.26792 | 15.49471 | 0.1445 |
| At most 7 | 0.064769 | 2.142790 | 3.841466 | 0.1432 |

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

**Table 2B. Johansen Cointegration Test Result (Maximum Eigenvalue)**

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.919332 | 80.55734 | 52.36261 | 0.0000 |
| At most 1 * | 0.851071 | 60.93706 | 46.23142 | 0.0007 |
| At most 2 | 0.625241 | 31.40711 | 40.07757 | 0.3365 |
| At most 3 | 0.581518 | 27.87591 | 33.87687 | 0.2193 |
| At most 4 | 0.559253 | 26.21713 | 27.58434 | 0.0740 |
| At most 5 | 0.324319 | 12.54509 | 21.13162 | 0.4949 |
| At most 6 | 0.271240 | 10.12513 | 14.26460 | 0.2038 |
| At most 7 | 0.064769 | 2.142790 | 3.841466 | 0.1432 |

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The Trace test indicates 5 cointegrating equations while the Maximum Eigenvalue test indicates 2 cointegration equations. These suggest that long-run relationship exists among the variables. The relationship is estimated using the FMOLS estimator.

## 4.2. Fully Modified OLS Estimation Results

The result of estimation of the specified model using the FMOLS estimator is presented in Table 3.

**Table 3. FMOLS Estimation Results**

Dependent Variable: LOG(RGDPPC)

Method: Fully Modified Least Squares (FMOLS)

Included observations: 33 after adjustments

Cointegrating equation deterministics: C

Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| FDI | 0.077353 | 0.036239 | 2.134513 | 0.0428 |
| DINV | 0.285797 | 0.040165 | 7.115508 | 0.0000 |
| MCAP | 0.399001 | 0.028640 | 13.93146 | 0.0000 |
| FDI*MCAP | -0.001801 | 0.000489 | -3.685332 | 0.0011 |
| GOVCON | -0.080500 | 0.036344 | -2.214928 | 0.0361 |
| TOPEN | -0.150529 | 0.055373 | -2.718459 | 0.0117 |
| INF | 0.000442 | 0.000873 | 0.506210 | 0.6171 |
| C | 5.704261 | 0.290255 | 19.65260 | 0.0000 |

| R-squared | 0.915321 | Adjusted R-squared | | 0.891611 |
|---|---|---|---|---|
| Long-run variance | 0.004336 | | | |

**Table 4. Test for Multicolinearity**

| Variable | Centered VIF |
|----------|--------------|
| FDI | 4.477903 |
| DINV | 1.753749 |
| MCAP | 3.946053 |
| FDI*MCAP | 4.394684 |
| GOVCON | 1.287033 |
| TOPEN | 2.841337 |
| INF | 1.900972 |
| C | NA |

The result shows that foreign direct investment, domestic investment and stock market development positively and significantly affect economic growth in the long-run. These conform to *a priori* (theoretical) expectations. A 10% increase in net foreign direct investment is associated with 0.8% increase in real GDP per capita; a 10% increase in domestic investment is associated with 2.9% rise in the real GDP per capita. The coefficients and the associated t-ratios of FDI and DINV indicate that though both variables significantly affect growth, domestic investment contributes more to economic growth than foreign direct investment. A 10% rise in market capitalization as a percentage of GDP (stock market development) is associated with 4% rise in the real GDP per capita. However, the effect of interaction between FDI and stock market development variable on real GDP per capita is negative and highly statistically significant even at the 1% level. This is contrary to *a priori* expectations and it suggests that the Nigerian bourse is not yet fully developed and consequently, does not have the capacity to absorb FDI and to translate it into positive effect on growth.

Trade openness is observed to have had negative and significant effect on Nigeria's real GDP per capita. The effect is highly significant even at the 2% level. This could be attributed to the (precarious) import dependence nature of the economy which tends to put much pressure on, and depletes the nation's reserves of foreign exchange as well as engenders unfavourable balance of trade especially in non-oil commodities. These serve to adversely affect the real GDP per capita.

The effect of government consumption expenditure on real GDP per capita is negative and significant at the 5% level. This is an indication that government expenditure on consumption has been unproductive and hence, growth-reducing and it confirms Barro's (1990) prediction. A 10% increase in government final consumption expenditure has been associated with 0.8% reduction in real GDP per capita. The effect of inflation on economic growth has not been significant.

An examination of the diagnostic statistics reveals that the model has very high goodness of fit as indicated by the coefficient of determination (R-squared) which shows that over 92% of the systematic variation in the dependent variable is explained by the regressors. The variance inflation factor (VIF) test for multicolinearity indicates absence of the problem of multicolinearity in the model as the VIFs are all less than 5. Thus, the model can be relied upon for policy.

## 5. Conclusion and Recommendations

In this paper we empirically investigated whether the extent of development of the stock market affect the effect of FDI on economic growth using Nigeria data spanning the period from 1981 to 2014. The Phillips-Hansen fully modified ordinary least squares (FMOLS) estimation technique was used to estimate a multiple linear regression model specified for the investigation. The empirical evidence indicates that net inflow of FDI, domestic

investment and stock market development positively affected economic growth, but the interaction between FDI and stock market development negatively affected the growth of the nation's economy indicating that Nigeria's stock market is not yet fully developed to enhance the effect of FDI on economic growth. Further evidence from the analysis is that government consumption expenditure had been unproductive and growth-reducing and that trade openness had adversely affected the growth of the nation's real GDP per capita.

In view of the empirical evidence, we proffer, as recommendations for policy considerations, efforts by the government design and implement policies and programmes aimed increasing the attractiveness of the economy to foreign and local investors (such as favourable tax regimes and infrastructural development to reduce the cost of doing business, affordable interest rates to reduce cost of capital especially to domestic investors, etc.); efforts to develop the country's stock market (such as introduction of trade in equity derivatives, proper regulation of the stock market by the capital market regulators to enhance its efficiency, etc); reduction in government consumption expenditures, reduction in the degree of trade openness through import control. These will no doubt boost the country's real GDP per capita.

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