

Foreign Direct Investment and Economic Growth: The Role of Institutional Quality in Nigeria.

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Abstract: With the use of time series data between 1995 and 2016, this study examines the effects of foreign direct investment (FDI) along with institutional quality on economic growth in Nigeria. We use LSE-Hendry's General to Specific Approach Technique. The results show significant positive effect of FDI on economic growth. Institutional quality tested with an interaction term reduces the growth effects of FDI. The findings from this interaction show statistically significant and robust results to different specifications. Based on this, we conclude that while FDI spur economic growth, decision makers in Nigeria need to also focus on ensuring quality institutions in order to fully benefit from FDI.

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I. INTRODUCTION

One of the reasons given for the continuous stagnation of developing countries' economies is their lack of capital compared to the developed countries. Among the suggested panaceas to come out of this problem according to some studies, is the attraction of foreign direct investment (Chenery and Strout, 1966; Blanchard, Ostry, Ghosh, and Chamon, 2016). Thus, the notion that foreign direct investment can serve as a source of increasing capital base of developing nations and thereby propel their economic growth is no more a news (World Bank, 1996). This notion has generated many debates and researches. Separately, many studies have been done on the relationship between foreign direct investment (FDI) and economic growth, institutional quality and foreign direct investment, as well institutional quality (IQ) and economic growth in almost all the countries of the world. These studies have provided mixed findings. Some of them have noted positive relationship, some found negative relationship, while others found no relationship between the variables studied, depending on the country being studied. However, one of the major problems with these studies is their failure to consider the role of institutional quality as well as sound economic policy on the relationship between FDI and economic growth, especially in Nigeria. Probably, these could be among the reasons for their inconclusive results on the relationship between FDI and economic growth. Among the countries that are striving to attract FDI by all means is Nigeria. Although, Nigeria is one of the countries ranked highly deficient when it comes to institutional quality, yet she has been tagged the largest and growing economy in Africa. The question is, if institutional quality matters, does this relevant to Nigeria economy?

Recently, it has been noted that, the capability of FDI in spurring economic growth can be limited by poor institutions. Common sense also shows that, it is impossible for foreign investors to bring along their businesses with quality institutions from their countries. More so, there are so many factors outside the control of foreign investors especially on what concerns property rights (see Ali et al. (2010). In other words, foreign investors are bound to rely on domestic institutions, the quality of which can determine the extent of their success or failure in host countries. Inability to consider this important role of institutional quality on the relationship between FDI and economic growth can lead to wrong policy decision making. On this note, this study attempts to focus on the role of institutional quality on the relationship between FDI and economic growth in Nigeria.

II. LITERATURE REVIEW

Many studies have shown that countries that engage in trade with foreign investors will experience some benefits such as consumption smoothing, removing the gap between saving and foreign exchange rate, improved managerial skills, provision of employee training and access to international markets, as well as benefit of economic growth (Chenery and Strout, 1966; Aizenman et al., 2013; Nwaoguet et al., 2015; Blanchard et

al., 2016). While these studies maintained positive relationship between FDI and economic growth, others such as Boyd and Smith (1992); Sadik and Bolbol (2001); Durham (2004); Meschi (2006); Lensink and Morrissey (2006); and Adams (2009) in their studies found negative relationship. For example, Adams (2009) in his study on the influence of FDI and domestic investment on growth in Sub-Saharan Africa for the period 1990–2003 discovered negative impact on domestic investment in the short run but positive effect in long run in the Sub-Saharan African economies and a net crowding-out effect. He showed that a lot of regions in Africa have been able to increase FDI inflows, but this increase did not show positive effect on economic growth. He suggested four implications in terms of diversification, enhancing absorptive capacity of local firms, providing opportunities for linkages between domestic and foreign investors and a targeted approach to FDI. From this study, it can be deduced that what African countries should target is attracting FDI in more dynamic products and sectors with high income elasticity of demand.

Furthermore, in the study of Borensztein et al (1998) where they studied the effect of FDI on economic growth, using a cross-country regression framework. They noted that FDI is highly essential for economic growth, based on the fact that it contributed more to economic growth than domestic investment. However, it was pointed out that for FDI to be effective in promoting economic growth, the host country needed a minimum stock of human capital. The implication of this is that FDI only improves economic growth when the country can absorb the advanced technologies. Thus, the role of technology diffusion in economic development was emphasized in the study. More so, examining the work of Vu et al. (2007) where they examined the effect of FDI on economic growth, using sectoral analysis of China and Vietnam. It was noted that FDI has a positive effect on economic growth. This effect works directly through labour productivity in both countries. The findings showed that the benefits from FDI varied among the sectors examined, with the manufacturing sector benefitting the most. It was recommended that governments should focus on investing in the manufacturing and energy extraction sectors, as FDI in other sectors has no significant benefit.

Following the study of Agrawal and Khan (2011) on the links between FDI and economic growth in Brazil, Russia, India, China and South Africa between 1989 and 2012, FDI and economic growth were found to be cointegrated. The implication of this result was that, a long-run relationship exists between FDI and growth. It was also discovered that foreign direct investment and economic growth had a positive bidirectional relationship. Thus, it was recommended that policy makers in these economies should remove obstacles to FDI inflows and enhance absorptive capacity, so as to make the positive effects of FDI on growth feasible. In the study of Balasubramanyam, Salisu, & Sapsford, (1996) where they used annual cross-sectional data for 46 developing countries in a fixed effects model, they found that economic growth effect of FDI is positive in the export promoting countries; and negative in the import substituting countries. Zhang (2001) used cointegration and error correction techniques and found FDI promoting economic growth in Hong Kong, Indonesia, Singapore, Taiwan, and Mexico from 11 selected countries in the study; and for the other six countries without cointegration links, unidirectional causal effects were noted in five countries.

In addition, it has been noted that the extent of contribution of FDI to economic growth can depend on the economic and social condition as well as the quality of environment of the recipient country (Buckley, Clegg, Wang, & Cross, 2002). Qualities identified could be the rate of savings in the host country, the degree of openness and the level of technological development. The argument was that, host countries with high rate of savings, open trade regime and high technological product would benefit from FDI since their countries would mean a fertile ground for the sustainability of foreign investment. Notwithstanding the above, it has also been argued that FDI may have negative effect on economic growth of the host country if it gives rise to a substantial reverse flows in the form of remittances of profits, and dividends and/or if the transnational corporations (TNCs) obtain substantial or other concessions from the host country (see Ramirez, 2000).

Even though some studies appear to support the growth benefit of FDI on the recipient countries, results on foreign direct investment-growth relation lacks empirical generalization. Most of the explanations provided for the conflicting results have focused on methodological issues and absorptive capacity of host countries. Careful examination of these studies showed that FDI-growth relationship is conditional on several factors or circumstances such as level of development, trade openness, human capital, financial development or operation of business environment within the host country.

Given the fact that these factors are many, this study focused on the role of institutional quality on the relationship between FDI and economic growth in Nigeria. The notion is that good institutions which are often characterized by political stability, absence of violence; control of corruption and the rule of law in the recipient country can serve as catalyst to foreign investors as well as fostering their businesses and then impact the host economy positively. According to Wei (2000), lack of good institutions as reflected in corruption of civil servants, bureaucracy and high levels of extortions may provoke mistrust which may hamper the zeal for doing business by both domestic and foreign investors. Thus, poor institutional quality may lead to unnecessarily high costs, low profits as well as discouraging investment.

Empirical modeling

In the process of examining the effect of FDI on economic growth in Nigeria, we use the widely applied Solow (1956) model which was developed by Rao and Singh (2010). Following this, we start with, the Cobb–Douglas production function using Hicks neutral technology with constant returns and state that:

$$y_t = A_0 e^{gt} k_t^\alpha \quad 0 < \alpha < 1 \tag{1}$$

where y = level of output, A_0 = technology, g = autonomous rate of growth of total factor productivity, t = time, k = stock of capital, α = share of capital input. Given Solow (1956) model of steady state, we can derive the steady state level of output and growth rate as:

$$y^* = \left(\frac{s}{d + n + g} \right)^{\frac{\alpha}{1-\alpha}} A \tag{2}$$

$$\Delta \ln y^* = \text{steady state growth} = \Delta \ln y^* = g \tag{3}$$

Where s represents savings rate, d represents depreciation rate, n represents growth rate of labour force and A represents steady state stock of knowledge. In this model, the resultant assumption of total factor productivity (TFP) can be given as:

$$A_t = A_0 e^{gt} \tag{4}$$

Given the assumption that, initial level of knowledge (human capital) develops at an exogenous rate of growth of g , that is $g = g(T)$, then the effect of FDI on TFP can be restricted to an alternative specification such as a simple linear specification of extended production function of equation (1). This then implies that we can have:

$$y_t = A_0 e^{(g_1 + g_2 FDI_t)T} k_t^\alpha \tag{5}$$

From equation (5), we use FDI as one of the growth enhancing variable. This then follows that we can factor in other growth enhancing variables using the same process. For good institutional quality (IQ), it is tested as an interactive term. Thus, our modified production function equation with this conditional variable (IQ) can be specified as:

$$y_t = A_0 e^{(g_1 + g_2 FDI_t + g_3 FDI * IQ)T} k_t^\alpha \tag{6}$$

If we take the log-linear relationship of equation (6) with variable foreign direct investment (FDI) and interactive term of FDI and institutional quality (FDI*IQ), then equation 6 can be stated as:

$$\ln y_t = \ln A_0 + (g_1 + g_2 FDI + g_3 FDI * IQ)T + \alpha * \ln k_t + \varepsilon_t \tag{7}$$

Using LSE-Hendry’s general-to-specific modeling method of analysis and taking the first difference of time in equation (7), we have:

$$\begin{aligned} \Delta \ln y_t = & -\xi [\ln y_{t-1} - (\ln A_0 + (g_1 + g_2 FDI_{t-1} + g_3 FDI * IQ_{t-1})t \\ & + \alpha_1 \ln k_{t-1})] + \beta_1 \sum_{t=1}^n \Delta \ln y_{t-1} + \beta_2 \sum_{t=0}^n \Delta \ln k_{t-1} \\ & + \beta_3 \sum_{t=1}^n \Delta \ln FDI_{t-1} + \beta_4 \sum_{t=0}^n \Delta \ln Z_{t-1} + \varepsilon_t \end{aligned} \tag{8}$$

where FDI is foreign direct investment. Δ is difference operator. Z is vector of other growth enhancing variables (interactive term of FDI and government spending, (GS)). α and β are coefficients to be estimated and are expected to be positive. ξ measures the speed of adjustment to equilibrium when there is deviation from equilibrium and it is also interpreted as the indication of cointegration.

III. METHODOLOGY, DATA MEASUREMENT AND SOURCES.

Various methods such as LSE-Hendry’s GETS, Fully Modified Ordinary Least Square (FMOLS), Engle-Granger (EG) and Johansen Maximum Likelihood can be used to determine cointegration in time series analysis. However, LSE-Hendry’s GETS has been known to be popular single equation estimation method. The process involves the formulation of unrestricted ‘General’ model which is congruent to data and application of testing down process. Testing down process involves removal of variable whose coefficients are statistically not significant. This process leads to a ‘specific’ simpler congruent model, and the assurance of encompassing and congruency. Encompassing is about preventing any loss of information during the reduction process, while

congruency allows harmonizing model with data in-line with the criteria like normality, weak exogeneity of right hand side variables, homoskedasticity, coefficient constancy and innovation errors (Charemza&Deadman, 1997; Sargan, 1964). Although, Johansen cointegration and Vector Error Correction Model have been widely used, but sometimes finding significant results with small number of observation may be difficult. While it is easier to use EG and FMOLS, FMOLS is non parametric correction of OLS and EG, and it accounts for the problem of serial correlation as well as potential endogeneity of variables. Even though, LSE-Hendry's GETS has been criticized for estimating long-run coefficients and autoregressive distribute lag coefficients in single step, and then presents an impression that regression is combination of $I(1)$ and $I(0)$ variables, it has been recognized and accredited for its similarity to FMOLS. It has also been confirmed to possess the same reliability and consistency with traditional Engle and Granger Method, although, it has also been argued that this may not be true because if variables in levels, $I(1)$, are cointegrated, the linear combination of them will be $I(0)$ (Hendry &Doornik, 1994; Hendry &Krolzig, 2000). Aside from this, LSE-Hendry's GETS approach has been criticized based on the notion that no formal cointegrating tests are conducted on the variables in the ECM part of GETS. However, Banarjee, Dolado, Galbraith and Hendry (1993) and Patterson (2000) have shown that GETS is an improvement on EG and similar or better than FMOLS. Furthermore, Ericsson and MacKinnon (2002) have developed various tests, similar to the well known MacKinnon (1991) tests for cointegration in the EG two-step procedure, to test for cointegration between the levels of the variables in the ECM part of GETS. Based on this, this study employs LSE-Hendry's GETS approach to examine growth effects of FDI and interaction of FDI and human capital development.

Annual data for the period between 1995 and 2016 were used for the study. FDI represents direct investment equity flows in an economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. For government economic policy, we include share of government spending (GS) in total output. The level of output (y) is measured by real gross domestic product (GDP). These data are in constant 2005 international dollars. Real gross fixed capital formation is used as proxy for stock of capital (k).Gross fixed capital formation (% of GDP) measure includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Human capital is measured as Human Development which is constructed using Health and Welfare. These data were in current U.S. dollars and they were obtained from Africa Development Indicators (2016). Institutional quality is measured as government effectiveness. Data were obtained from Worldwide Governance Indicators (2016). We conducted the unit root test of all the series to check the stationary properties of all the variables used before the estimation. All the variables used are in the logarithmic form. This implies that the interpretation of estimated coefficient is on the basis of log-log regression.

IV. ESTIMATION OF RESULTS

Before we proceed to estimating our variables, we check for the stationarity of our data by testing for the unit root in our data. In the literature, unit root test can be carried out using Dickey-Fuller unit root test, Augmented Dickey Fuller (ADF), Phillip Peron (PPP) unit root test developed by Phillips and Perron (1988). These tests modified the test statistics to account for the potential serial correlation and heteroskedasticity in the residuals. For the purpose of this study, we use GLS-ADF test proposed by Elliott et al. (1996). This is similar to the ADF test. However, prior to fitting the model, the test first transform the actual series via a generalized least-squares (GLS) regression. Elliott et al. (1996) show that this test has better power than the ADF test. The null hypothesis is a random walk with a possible drift with two specific alternative hypotheses: the series is stationary around a linear time trend, or the series is stationary around a possible nonzero mean with no time trend. The results of unit root test are presented in Table 1 below.

Table 1: Results of Unit Root Test: General Least Square-Augmented Dickey Fuller Test

VARIABLES	LEVEL	FIRST DIFFERENCE
Y	-1.37	-4.50
FDI	-0.43	-4.15
FDI*IQ	-1.55	-3.92
FDI*GS	-1.64	-3.85
H	-1.41	-3.55

K	-1.79	-4.69
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Source: Author’s calculation.

Notes: The ADF test includes the intercept and trend when testing for unit root test. The lag length 2 is selected based on Schwarz Bayesian criteria. The critical value for intercept with trend for ADF test is -4.26 at 1 per cent and -3.55 at 5 per cent significance level.

Based on the results in Table 1 above, we found that all our variables in levels are non-stationary, but stationary when tested in first difference, indicating that series are integrated of order $I(1)$. After this, we proceed to model the effect of foreign direct investment on growth in Nigeria. Estimates of equation 8 with linear effects of FDI and other conditioning variable are presented as equations I, II, III and IV in Table 2.

Since it is possible for the right hand side of the variables in the model to be correlated, we examined the multicollinearity among our regressors using baseline model that includes FDI and interactive term of institutional quality and FDI, which are the key variables. We then add other variables to the model one at a time. The results show that calculated detection-tolerance and variance inflation factor fall within the conventional range. Thus, we did not encounter problem of multicollinearity among the variables used. The results of Equation I in Table 2 is the estimates of the baseline model and appears satisfactory. All the estimated parameters are significant at 5 or 10 per cent levels. FDI showed small, but positive effect on level of output - a one per cent rise in FDI leads to 0.12 per cent increase in level of output. The significance of time trend indicates that FDI is robustly trended variable and inclusion of time trend could capture the impact of other time trended and omitted variables which could reduce its effect on growth. Also, in this equation FDI exhibits strong residual because of the low estimated R^2 , around 0.40. The chi-square test summary for serial-correlation, heteroscedasticity and normality of residual are not significant (0.14).

Considering the absorptive capacity of human capital, infrastructure as well as institutional quality of FDI on growth of host countries, researchers such as Borensztein, Gregorio and Lee (1995, 1998) used human capital as absorption capacity in an endogenous growth model where technology progress occur through a process of capital deepening. Also, following the work of Romer (1990), Grossman and Helpman (1991) and Barro and Sala-I-Martin (1995) and then concluded that the impact of FDI on growth is only possible through the interaction with the level of human capital in the host country. In addition, Xu (2000) showed that there is a need for a minimum of human capital threshold level for a country to benefit from technology transfer of US multinational enterprises. The above therefore showed that growth equations are noted to be extremely sensitive to proxies of human capital, and human capital is closely related to long run economic growth (see Borensztein, De Gregorio, & Lee, 1998). Based on this, equation 8 is re-estimated by adding human capital along with institutional quality and is illustrated as Equation II in Table 2. Also, we re-estimated equation 8 by adding the interaction term of government spending and FDI. This is illustrated as Equation IV in Table 2.

Table 2: Equations for Long-run Growth Effects of Foreign Direct Investment and institutional Quality with LSE-Hendry’s GETS

Dependent Variable:				
$\Delta \ln y_t$	I	II	III	IV
Variables				
Constant	5.70 (5.00)*	6.92 (5.34)*	5.24 (1.68)	5.08 (1.62)
λ	-0.14 (3.00)*	-0.17 (2.35)*	-0.09 (4.17)*	-0.10 (5.00)*
Time trend	0.02 (4.50)*	0.02 (5.06)*	0.02 (3.97)*	0.04 (4.76)*
FDI_{t-1}	0.12 (1.85)**	0.15 (2.20)*	0.17 (1.55)	0.20 (1.80)**
HK_{t-1}		0.02 (2.09)*	0.03 (1.72)**	0.04 (2.06)*
FDI*IQ			-0.21 (2.53)*	0.25 (3.04)*
FDI*GS				0.37 (2.46)*
$\ln K_{t-1}$	0.33 (2.21)*	0.42 (2.42)*		

$\Delta \ln K_t$	0.18 (6.72)*	0.22 (7.99)*	0.33 (7.48)*	0.40 (8.9)*
$\Delta \ln K_{t-1}$	-0.05 (2.34)*	-0.06 (1.72)**	-0.08 (2.11)*	-0.09 (2.53)*
$\Delta \ln y_{t-1}$	0.12 (1.50)			
DUMFC				-0.01 (2.59)*
R^2	0.40	0.56	0.67	0.83
$\chi^2(SC)$	0.86	0.93	0.05	0.06
$\chi^2(NM)$	0.87	0.96	0.53	0.64
$\chi^2(HT)$	0.14	0.14	0.88	0.92
DW	1.79	1.93	2.57	3.08

Notes: Absolute t -ratios below coefficients are reported in parenthesis. The χ^2 tests in the table are for Breusch-Godfrey LM test for serial correlation (SC), Jarque-Bera test for non-normality(NM) and White test for heteroscedasticity (HT), with their p-values reported respectively.

DW is Durbin Watson statistics. * and **, represent 5 per cent and 10 per cent significance level respectively.

We included time trend in our regression. We found that human capital positively influenced economic growth and the results were statistically significant at 10 per cent level. Although there is no substantial change in the size of coefficient of FDI, its significance level has improved with inclusion of human capital compared to equation I. This result corroborates the view that human capital can serve as absorptive capacity of the economy. For example, Borensztein et al. (1998) in their study on the effect of FDI on economic growth, where they used a cross-country regression framework, discovered that FDI is very important for economic growth, as it contributed more than domestic investment to growth. They pointed out that, for FDI to be effective in promoting economic growth, the host country needed a minimum stock of human capital. This implies that FDI only improves economic growth when the country can absorb the advanced technologies likely to come with FDI.

To verify the role of institutional quality on the relationship between FDI and economic growth, we include the interactive term of FDI and institutional quality. We proxy institutional quality with government effectiveness. The results for this are presented in equation III in Table 2. The results show negative relationship between the interactive term and economic growth and statistically significant. This result is expected of a country like Nigeria which is ranked poorly in terms of institutional quality. With this result, even though, the relationship between FDI and economic growth still remain positive, but it is no more significant. This shows that poor institutional quality is an antagonist to the performance of FDI.

To further examine the role of FDI on economic growth, we analyze its relationship with sound economic policies. Following the work of Makun (2017), we proxy sound economic policies with share of government expenditure to output. Estimates for this specification with interactive term of FDI and sound economic policies are illustrated in Equation IV of Table 2. The proposition is that sound economic policies make FDI more successful. The result shows significant and positive relationship between the interactive term of sound economic policy and FDI on economic growth. This result is in-line with the view that FDI is capable of spurring economic growth only in the economies that are not heavily regulated or adopt sound economic policies in relation to international trade.

Recognizing the importance of financial institution in the determination of economic growth, we also tested for the effect of bank distress on economic growth using dummy variable. The bank crises year in Nigeria is highly pronounced between 1999 and 2004. According to the Central Bank of Nigeria in 2004, under the governorship of Charles Soludo, the minimum capital base of all the banks was increased from 2 billion naira to a minimum of 25 billion naira due to the inability of many banks to provide their functions adequately. This action led to reduction of the number of banks from 89 to 25 in 2005 and later to 24. We assign 0 and 1 to crisis and non crisis periods respectively. As expected, there was negative relationship between bank crisis and economic growth and the result was statistically significant. The estimated coefficient of capital 0.40 is parallel to stylized value. Lambda (λ) which indicates that cointegration between variables is negative and significant at 5 per cent level. It also indicates the speed of adjustment towards equilibrium in dynamic model and shows that long-term equilibrium is obtainable. The R^2 of 0.83 imply that 83 per cent of the variations in growth rate of output is explained by capital input, FDI, institutional quality, human capital and good government policy

while the remainder of the variation is expected to be within the trended variables that may be explored further. On the basis of coefficient-of-determination and diagnostic statistics, we may come to a close that Equation IV is the best equation in Table 2. The effect on economic growth derived from Equation IV, implies that institutional quality, human capital and sound economic policies made positive effect of foreign direct investment effective and significant than that of Equation I in Table 2.

V. CONCLUSION AND POLICY IMPLICATIONS

This study examined the effect of foreign direct investment along with institutional quality, human capital and sound economic policies on economic growth in Nigeria using time-series data between 1999 and 2016. We applied LSE-Hendry's GETS modeling method. The results showed positive effect of foreign direct investment on economic growth. Human capital had positive statistically significant effect on economic growth and it promotes the positive impact of foreign direct investment on economic growth. We also found that the interaction term of foreign direct investment and good economic policies have relatively large positive effect on economic growth. These interactions are statistically significant and robust to changes in specification. The results of this study corroborate that of Borensztein et al (1998) where they studied the effect of FDI on economic growth, using a cross-country regression framework. They discovered that FDI is very important for economic growth, as it contributed more than domestic investment to growth. However, it was pointed out that for FDI to be effective in promoting economic growth, the host country needed a minimum stock of human capital. The findings of this study are also in line with the findings of studies on FDI-growth relation in Nigeria by Akinlo (2004), Onu (2012) and Macaulay (2011). In the study of Akinlo (2004), it was concluded that FDI has a positive effect on growth after a considerable lag. He suggested that FDI in extractive oil sector might not be growth enhancing as much as the manufacturing sector. His work also supported the notion that export, labour and human capitals are positively related to growth.

The implication of these results is that, FDI only improves economic growth when the country can absorb the advanced technologies. Although our results indicate that around 83 per cent of variation in output growth is explained by FDI, institutional quality, human capital and good economic policies, the results can still be improved by testing other additional growth enhancing variables. In this study, we found that FDI contributes more to economic growth, while other variables act as enhancing variables to the performance of FDI. On this note, the study suggests that policy makers should encourage quality institutions, good economic policy and improved human capital so as to reap the full benefit of FDI. The study serves as pertinent issue on the effect of foreign direct investment in Nigeria and other less developed countries.

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