Foreign Direct Investment (FDI)
and standard of living in Nigeria

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Abstract

The subject of interrelationship that exists between foreign direct investment (FDI) and standard of living has been an issue of both theoretical and empirical investigations. This study, thus examined the relationship between foreign direct investment and standard of living measured by per capita income (PCI) in Nigeria over 1986 – 2009 period using time series data. The study employed Vector Auto regression (VAR) model because of the fact that the variables are integrated of different orders in their Unit Root Tests.

Test involving Impulse Response Analysis and Variance Decomposition reveal that the relationship between FDI and standard of living is insignificant. Thus, the past values of FDI could be used to predict the future behavior of standard of living in Nigeria only to a lesser extent.

Thus, the policy implications underscore the need for institutional and macroeconomic policy framework that would redirect steps in making FDI to

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contribute positively to the standard of living in Nigeria by channeling the available FDI into industrial, productive sector of the economy.

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1 Introduction

Foreign direct investment (FDI) can be defined as "investment made to acquire lasting interest in enterprises operating outside of the economy of the investor" (Mosima, 2003). Thus, it is not only a transfer of ownership from domestic to foreign residents but also a mechanism that makes it possible for foreign investors to exercise management and control over host country's firms (Hill, 2004; Sandey, 2003).

Accordingly,

"when a corporation or an individual decides to move from its country-domain; crossing international border(s) to establish a new production capacity in such a nation, and/or join a domestic enterprise or a host national to form a corporation, whether or not the corporation has formerly being in existence, in the course of a national establishing a new corporation/enterprise not existing in its country-domain; such that the control and management lies in the hands of the foreign national, such an investment is called foreign direct investment (FDI) and hitherto manifests as such" (Akinmulegun, 2011)

Among others, Feldstein (2000) opined that profits generated by FDI contribute to corporate tax revenue in the host country. In addition, if the foreign affiliate decides to reinvest the proceeds into the domestic system, it will be an

additional advantage to economic growth in the host nation with the attendant impact any structural change exerts on standard of living of individual citizenry. Although, the theoretical literature on this is clear and straightforward (Findlay, 1978; Romer, 1994), however, the evidence in empirical studies is still divided. This gap needs to be filled.

This study therefore aims at examining the impact of FDI on the life standards of Nigerian citizens. Thus, the major hypothesis to be tested is; Ho: foreign direct investment in Nigeria has no significant relationship with the people's standard of living.

2 Literature Review

2.1 Conceptual Literature

One of the major dramatic changes in the world economy over the past three decades as evidence in the super flows of institutions is the surge in the FDI across national borders (Mimiko, 2010). This is so to the extent that scholars all over the ages have argued in favour of FDI as a catalyst for economic growth and living standards in the host nation. That, the wide externalities in respect of technology transfer, the development of human capital and enhancement of domestic productive capacities attested to the beneficial effects of FDI cannot be overemphasized (Bende-Nabende, 2002; Feldstein, 2000; Chantal and Patrick, 2005; Alfaro and Charlton, 2007; Mottaleb, 2007; Ayanwale, 2007; Maertens and Swinnen, 2008). The growth effects of FDI and subsequent multiplier impact on living standards in the host country in terms of productivity gains, managerial skills and know-how in the domestic market, employee training, international networks and markets account for its preference as evident in the literature (Findlay, 1978; Caves, 1996; UNCTAD, 1999; Carkovic and Levine, 2002).

However, it is sometimes feared whether FDI contributes to the broader aspect of growth and the distribution of income in the host economy. For growth potentials of FDI to manifest, the distribution and redistribution of income as a central factor in determining the impact of growth on living standards cannot be overemphasized. This presupposes a linkage between growth and poverty level of an economy. Thus empirical evidence on the relationship between growth and poverty has shown that higher growth is usually associated with reduction in poverty (Ravallion and Chen, 1997; Dollar and Kraay, 2002; Ravallion and Datt, 2002; Besley and Burgess, 2003; Kraay, 2006; Ashley, 2008). This further presupposes equitable living standard.

2.2 Empirical Literature

That economic theory univocally predicts a positive and directional impact of FDI on standard of living is a subject of intensive examination as empirical evidence is mixed. There seems to be no doubt that there is a strong correlation between FDI and standard of living. This has been argued from the economic growth potentials of FDI (Hayami, 2001; Mottaleb, 2007; Crespo and Fontura, 2007).

Measured in terms of domestic productivity, Adams (2004) found from his regression analysis that FDI is not harmful to sub-Saharan African (SSA) countries. Thus, contributing to the living standard of its citizenry. All these predict a greater positive impact of FDI on living standards of the host country.

However, empirical evidence casts doubts on the relationship that exist between FDI and standard of living. This spurred the idea behind this research work at investigating the relationship using a dynamic approach as specified below.

3 Methodology

The methodological approach used in this study follows the works of Selvanathan and Selvanathan (2008) as captured in the growth model, which depicts a realistic relationship between two variables of output and capital stock as in Solow (1956) given as;

$$Y_{it} = a_0 + a_i + \mu_i + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

In line with the above theoretical framework therefore, this relationship between FDI and standard of living measured by PCI is presented in a simple model as follows:

$$PCI = f(FDI) \qquad (2)$$

where

PCI = per capita income (a measure of standard of living)

FDI = foreign direct investment

The *apriori* expectation is that;

$$\frac{\partial PCI}{\partial FDI} > 0$$

To avoid spurious regression as suggested by Gujarati and Porter (2009), a stationary test (unit root test) will be conducted to determine the time series properties of the variables and to know whether a condition for long-run equilibrium relationship among them is met.

Thus, it is required that variables in a model should be integrated of the same order to meet the condition for long-run equilibrium relationship known as cointegration.

If this condition is not met, a better option for estimation as suggested by Gujarati and Porter (2009) and Greene (2003) is the Vector Autoregression (VAR). Hence, this study prefers the VAR model which is specified mathematically as

$$Y_t = A_t Y_{t-1} + \cdots + A_p Y_{t-p} + \beta X_t + \varepsilon_t \qquad (3)$$

where Y_t is a k vector of endogenous variables (PCI and FDI), X_t is a vector of exogenous variables. $A_t, \ldots A_p$ and β are matrices of coefficient to be estimated and ε_t is a vector of innovation.

The VAR is commonly used for forecasting system of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. It sidesteps the need for structural modeling by modeling every endogenous variable in the system as a function of the lagged values of all the endogenous variables in the system.

The VAR form of the model above is given as

$$\text{PCI}_t = a_i + \sum_{j=1}^{k} \beta_{1j} \text{FDI}_{t-j} + \sum_{j=1}^{k} \beta_{1j} \text{PCI}_{t-j} + \varepsilon_{1t} \tag{4}$$

$$\text{FDI}_t = a_j + \sum_{j=1}^{k} \beta_{2j} \text{PCI}_{t-j} + \sum_{j=1}^{k} \beta_{2j} \text{FDI}_{t-j} + \varepsilon_{2t} \tag{5}$$

where β_{1j} and β_{2j} are matrices of coefficient to be estimated and ε_{1t} is a vector of innovation, $j = 1, 2, \ldots, k$. This is the lag length of each variable. The choice of lag length for this study is made using Akaike Information Criterion (AIC).

Once the VAR is estimated, a further analysis in terms of Variance Decomposition and Impulse Response will be conducted. Impulse Response Analysis traces the effects of a shock to an endogenous variable on the variables in the VAR. By contrast, variance decomposition decomposes variation in an endogenous variable into the component shocks to the endogenous variable in the VAR. This gives information about the relative importance of each random innovation to the variables in the VAR.

The study thus uses time series data on per capita income (PCI) and foreign direct investment (FDI) collected for 1986 – 2009 period. Data were gathered notably through secondary sources. Results of both Impulse Response functions and Variance Decomposition are presented in the next section.

4 Data Analysis

4.1 Stationary Test of Variables

Table 1: Results of the Unit Root Tests

Variables	PP Test Statistic				
	Level	1st Difference	Level	1st Difference	
PCI	-0.20028	-2.9559	-2.9969	-3.0038	I(1)
FDI	0.4460	-4.6116	-2.9969	-3.0038	I(1)

Source: Data Analysis

Table 1 above presents the results of the Philip Peron Unit root test. The table enables us to determine the time series properties of each variable, and know whether a condition for long-run equilibrium relationship among the variables is met.

Note: The Null hypothesis is that the series is non-stationary or contains a unit root. Test statistics for PP are compared with stimulated critical values from Mckinnon, testing the hypothesis at both 5% and 10% significance levels.

The lag length in PP test known as test bandwidth selection is based on Newey-West. All results are obtained from E-view 7.1 econometric package.

The variables are made stationary at their first difference thereby integrated of order one, denoted as I(1). Hence, the result is a clear indication that the model does not meet the condition for cointegration since all variables are integrated of different orders.

As suggested by Gujarati and Porter (2009) and Greene (2003); a better alternative when variables in a model are not integrated of the same order is to resort to the VAR technique and all its attached system dynamics. Hence, the use of VAR by this study is justified.

4.2 Vector Autoregression Results

To know how much endogenous the variables are, the summary regression statistics are presented in Table 2 below.

Table 2: VAR Regression Statistics

Statistics	PCI	FDI
R – squared	0.9305	0.9890
F – Statistics	10.04	67.50
Adj. R – Squared	0.83	0.97

Source: Data Analysis

Table 2 above shows the summary of regression statistics. The table presents the level of endogeneity of the variables in the model.

The degree of endogeneity of each variable is found to be very high with the high R^2 and adjusted R^2 of the variables. This implies that the variables are affected by each other to a larger extent.

As stated earlier, the main uses of the VAR are the impulse response analysis and the variance decomposition, which show the nature and direction of the relationship among the variables.

The impulse response function and the variance decomposition tables are presented in Tables 3 and 4 below.

Table 3 below represents the impulse response function. The impulse response function table traces the effect of a one standard deviation shock to one of the innovations on current and future values of the endogenous variables in the VAR model.

Table 3: Impulse Response of One S.D Innovations

Response of PCI			Response of FDI		
Period	PCI	FDI	Period	FDI	PCI
1	30796	0.000	1	4058.3	1496.04
2	-1461.3	2462.8	2	3430.2	-3958.3
3	11066	8533.1	3	2402.8	-638.5
4	-225.2	2304	4	599.9	3057.7
5	1056.3	90.0	5	-614.9	1386.01
6	10802	-2248.1	6	-164.2	6058
7	1348.3	-2937.4	7	-39.507	5179.9
8	6885.1	143.1	8	365.75	851,66
9	5876.1	1455.5	9	1193.4	3724.7
10	-3160	2149.7	10	1447.5	4287.0

Source: Data Analysis

Table 4 below presents the results of the variance decomposition. The result as presented decomposes variations in an endogenous variable into the component shocks to the endogenous variables in the VAR model.

The result in Tables 3 and 4 represents the impulse response function results and the variance decomposition results. The interpretation of the results is straight forward. The question is that, what happened to PCI (a proxy for standard of living) if there is one standard deviation shock to FDI. The impulse response results in Table 3 show that a one standard deviation shock to FDI impacts significantly on living standard, measured by PCI. However, the impact is positively unstable. On the other hand, a better analysis of the magnitude and direction of impact between FDI and living standard is revealed by the results of the variance decomposition in Table 4 below. The table shows that initially 73.25 percent of variations in PCI were feedback effect, but reduces drastically to 8.44 percent and 9.41 percent in the 5th and 10th periods respectively.

Table 4: Variance Decomposition Results

Decomposition of PCI			Decomposition of FDI		
Period	PCI	FDI	Period	FDI	PCI
1	73.25	0.000	1	33.12	4.50
2	14.73	0.09	2	22.68	14.38
3	10.13	0.74	3	11.02	5.93
4	8.93	0.70	4	7.82	6.29
5	8.44	0.66	5	5.62	4.78
6	9.12	0.68	6	4.17	7.95
7	8.95	0.73	7	3.78	10.14
8	9.22	0.72	8	3.62	9.74
9	9.37	0.73	9	3.47	10.29
10	9.41	0.77	10	3.39	11.14

Source: Data Analysis

The impact of FDI on PCI was insignificant. Less than 1 percent in the first instance. However, in the variance decomposition of FDI, the results revealed that the contribution of FDI to variations in PCI (a measure of standard of living) was about 33.12 in the first period and diminishingly reduces to a low figure of 3.39 percent in the 10th period. This highly contradicts the *apriori* expectation of this study

Thus, the major inference that can be drawn from the findings is that FDI impacts insignificantly on living standard in Nigeria.

While the feedback effect on PCI (a measure of standard of living) reduces, the impact from other exogenous variables takes over except for the FDI. These other exogenous variables according to Akinmulegun (2011) include, Current Account Balance (CAB) and Index of openness (both proxies of globalization).

5 Discussions, Conclusions and Policy Recommendations

This study adopts a country specific-data in the analysis to allow for an in-depth and elaborate investigation into the impact of FDI on standard of living as it relates to an individual nation-state. The variables are affected by each other from the results of the regression statistics tests, thus; they stand to explain changes in each other.

Deduced from the findings is that FDI has insignificant impact on living standard in Nigeria with FDI accounting for less than 2 percent in the variations in PCI in the first instance, and less than 10 percent in the subsequent impact decomposition of FDI. This might not be unconnected with the small proportionate share by Nigeria from the slow proportion of FDI flows to sub-Saharan Africa and the appropriation of the little flows that accrued to Nigeria. When the investment of FDI into the domestic economy is majorly on white elephant projects that have no direct impact on what goes to the pockets of individual citizenry, one would not expect anything other than the results above. Chantal and Patrick (2005) argued that the sector in which a country receives FDI affects the extent to which the country could realize its potential benefits. Furthermore, the results juxtapose the findings of Adams (2009); as the political environment in Nigeria over the years and the dilapidated infrastructural facilities serve as a bane to FDI growth-potential in the nation. Where over 80 percent of the FDI flows to Nigeria goes to oil sector alone, one will not expect the effect to be on the per capita income as the majority of the benefits are channel towards unproductive service sector, thus neglecting the industrial productive sectors.

The findings of this study therefore leads us to accepting our Null hypothesis that FDI in Nigeria has no significant relationship with living standard. Thus, with the bi-directional relationship between FDI and PCI, the finding is consistent with theory and empirical literature. FDI is expected to have causal influence on standard of living, such that the past values of FDI should be able to help predict future values of PCI. This is in line with the previous findings (Adams, 2004; Fosu

and Magnus, 2006) and therefore satisfies the objective of examining relationship between FDI and PCI of this study, however, the relationship is insignificant. This insignificant impact of FDI on PCI corroborates Ayadi (2009).

The policy implication of this is that the past values of FDI can only predict the future values of PCI to a lesser extent.

It is thus recommended that;

i. Government should embark on policies that would attract more FDI to the dynamic products and sectors with high-income elasticities of demand.

ii. FDI should be channeled to the production of secondary products, such that FDI be made to contribute positively to the living standard of Nigeria.

iii. Government should redirect steps at making FDI (more importantly, Oil FDI) to contribute positively to the PCI through a well articulated policies that will develop non-oil sectors of the economy.

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