Impact of Foreign Direct Investment on Poverty Reduction in Nigeria, (1980-2009).

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Abstract

The impetus for this study stems from the paradoxical observation that, although Nigeria is blessed with a huge influx of foreign direct investment (FDI), the country suffers from acute and chronic poverty. While this casual observation appears to cast doubts about the effect of FDI, it could be camouflaged by omission of potentially relevant variables. It is the objective of this study, then to investigate the relationship between FDI and poverty in a systematic manner (i.e. By controlling for the effects of other potentially relevant variables).Towards this end, an empirical analysis of the relationship between poverty (measured by the head count ratio) and FDI as well as a host of control variables (such as government expenditure, national debt, inflation, human capital, and infrastructural) was conducted during the period (1980-2009).

Since this study employed time series data, the issue of nonstationarity needs to be addressed beforehand. Using a standard unit root test (i.e. the Augmented Dickey-Fuller test).this study found that each variable is nonstationary in first differences, suggesting a possibility for co-integration. Using standard co-integration tests (i.e. Engle-Granger and Johansen-juselius tests, respectively), this study found that the variables are co-integrated, suggesting that there exists a short relationship among them. The result from Error Correction Model (ECM), uncovered the short-run relationship among the variables under study. The ECM-based estimation results showed that, while poverty reduction is positively related to FDI, government expenditure, and infrastructure, it is negatively related to inflation, national debts, and human capital. Of these findings, a special interest is the result of FDI and poverty reduction, which suggest that FDI does have a positive relationship on poverty reduction. Accordingly, more FDI should be encouraged to Nigeria, especially those that will prompt employment opportunities to the populace.

Key words   Foreign Direct Investment, Poverty reduction, Nigeria

1.   Introduction

FDI is defined as an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise operating in a country other than that of the investor (Mwillima, 2003; World Bank, 1993, 2007). Moosa (2002) defined FDI as the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country). FDI may take the form of either "Greenfield" investment (also called "mortar and brick" investment) or merger and acquisition (M&A), which means the acquisition of existing interest rather than new investment. The rule has it that for the corporate outfit, ownership of at least 10% of the ordinary shares or voting stock is the condition for the existence of a direct investment relationship.

Despite Nigeria's enormous resources and potential, poverty is widespread throughout the nation. Basic economic indicators place it among the 20 poorest countries of the world (CIA World Fact book, 2008). Nigeria has been in stagnation and relative decline since 1981, from a per capita GDP of US$1,200 in 1981 to about US$300 in 2000. In 1992, 34.1 percent of the population was below the poverty line, about 70 percent fell below the poverty line in 2000 and still on the increase, the larger percentage is in the rural areas, according to the (World Bank, 2008).

For many Nigerians the quality of life has declined rather than improved. In contrast, the standard of living for a few privileged Nigerians has improved substantially. The average worker salary cannot earn enough to support a family because of inflation and rises in food prices and transportation costs. The national minimum wage of N18, 000 (about US$118. 00) Per month, adopted by the federal government, falls far short of what is needed to cover housing, food, education, health care and transportation. Housing and living facilities for the wealthy are very similar to those available to their counterparts in countries of the western world. Middle and lower-level

income groups in the urban and rural areas live in individual houses or crowded flats (apartments). Rural dwellers live in cement or mud block houses with tin or thatched roofs, and have no running water for the most part. Water and electricity services in the major cities are erratic. Water supplies in many rural areas are infested with disease-carrying worms, while electricity services, under government patronage, are seldom available.

There is, therefore, much poverty in the country, a situation that has led to a "brain drain" from the country to other nations of the world. Much of the despair can be linked to the awful quality of life of the average Nigerian, and also to the huge income disparity between the poverty-stricken masses and the few well-to-do Nigerians. Mismanagement and corruption on the part of the government squandered the nation's wealth, which encourage an atmosphere of violence that has become the order of the day. The report further confirmed that life expectancy which was 54 years in 1990 had dropped to less than 50 years in 2005. Access to adequate shelter, water and sanitation facilities as well as communication had been very low while income inequality had also worsened during the same period. The worsening situation had affected vulnerable groups and women in rural areas the most in particular are the individuals with limited or no formal education, large families' farm communities and groups engaged in informal sector activities. However there are some measures that the federal government of Nigeria had taken in the past to present time in order to tackle poverty, such as: National Directorate of Employment (NDE), National Agricultural Land Development Authority (NALDA), Family Economic Advancement Programs (FEAP), Directorate of Food, Roads and Rural Infrastructure (DFRRI), Better Life Program for Rural women (BLP), Nigerian Agricultural and Cooperative Bank (NACB), Peoples Bank of Nigeria(PBN), National Board for Community Banks (NBCB), and lately National Poverty eradication Program (NAPEP). Despite these heartwarming programs, percentage of the poor seems not to reduce as expected.

It is obvious to common sense that there are numerous advantages in the reduction of poverty through FDI; the question is that of what effect is FDI on poverty reduction? Unfortunately, work on the FDI and poverty reduction links is very scanty. Most of the poverty related subjects typically relate to economic growth, without exploring further, the probable contribution of FDI.

The principal notion, correct or not, seems to have been that while the expansion of the private sector contributes to the development process through economic growth, the poorest members of society often do not benefit from this process.

The paradox of huge inflow of FDI to Nigeria and high rate of poverty inform the conduct of this study. In addition, very scanty studies were on direct linkage between FDI and poverty reduction in Nigeria, and these studies captured poverty reduction via economic growth. This study contributes to the literature by examining the impact of FDI inflows and poverty reduction. The study is different from previous studies in scope (number of years considered is longer, 1980–2009). A conscious effort was made to examine the direct impact of FDI upon poverty reduction within the period of study, especially when there is a policy that favors FDI inflow in Nigeria. It is with this background that the following research questions are raised.

1. What is the contribution of FDI to poverty reduction in Nigeria?

2. What are the policy implications of the contribution of FDI to poverty reduction?

The broad objective of the study is to investigate the impacts of FDI on poverty reduction in Nigerian over the period 1980–2009.

The study specifically seeks to:

1. Investigate the contribution of FDI to poverty reduction in Nigeria.

2. Examine the policy implications of FDI on poverty reduction

2.0. Literature review

The relationship between FDI and poverty reduction could be classically, grouped into two different categories; the relationship between FDI and growth and the relationship between FDI and poverty reduction. In most of the studies related to economic growth and FDI, the empirical findings revealed that FDI is an important vehicle for growth even more than the domestic investment (Borenzstein, 1998). There are two main categories of investment in a foreign country: "market-seeking" and "non market-seeking"(Martin and Keith, 1999). Market-

seeking investments aim at serving domestic markets. In other words, goods produced in host markets are sold in those markets. Hence, FDI can influence growth via the nature of the domestic demand such as large markets and high income levels of the host country. In contrast, non-market-seeking investments aim to sell goods produced in host economies to markets abroad. Therefore, this type of investment will be more beneficial to the host country in term of revenue, especially when the products are competitive in the global market. (Woidemeskel, 2008). Essentially, FDI will boost economic growth in the host country through an increase in the productivity of capital.

Alfaro (2006) argued that when FDI firms move goods or services across international borders, they affect society on both sides of the transaction. In some cases, the prime intention of the firms may be different from the above; nevertheless, resources as well as commercial activities will have to be transferred from the home country to the host country.

According to Fagan and Webber (1999), historically, capital has been internationalized in three ways:

i.   Commodity trade by firms supplying goods to overseas markets and obtaining raw materials from those markets for domestic production.

ii.   Flows of financial capital to overseas governments and firms.

iii.   The internationalization of production when companies set up branch plants overseas to control resources and markets, or to control production sites offering particular advantages. Global FDI inflows grew by an average of 13 per cent per year during 1990-1997, compared with the average rates of 7 per cent both for world exports of goods and nonfactor services (Carson, 2003). In developing countries, FDI has increased from US$24 billion (24 per cent of total foreign investment) in 1990 to US$178 billion (61 per cent of total foreign investment) in 2000 (World Bank, 2004).It was discovered that an increase in the rate of GDP growth produces an equivalent increase in the income growth rate of the poorest 40 per cent of the population – that is an income elasticity of one. The implication of this is that poverty reduction effect of FDI can only be felt through economic growth, which is an indirect path of poverty reduction through FDI.

Basically, most of the studies on FDI and poverty in Nigeria measured economic growth, and not poverty directly, but the fact remains that most of these proceeds from economic growth, does not reach the common man (i.e. The indigent in the society). Despite numerous studies that examined the impacts of FDI on economic growth, with the impressive results of the positive impact of FDI on economic growth, there still a need to understand if FDI really has any meaningful contribution to poverty reduction in Nigeria. The available statistic from Human Poverty Index revealed a high level of poverty in the country, which has cumulated to low savings. Most of the FDI in Nigeria goes into the oil and extractive sectors and its economic structure highly depend on the crude oil, which account for 95 percent of exports (USAID 2004). Also World Bank (2004, 2007) reports stated that Nigeria is one of the largest recipients of FDI in Africa, and most of the FDI are mainly concentrated in the oil and mining sectors, which accounted for about 36 percent of gross fixed capital formation. According to the World Bank 2006 index of economic freedom report, "the oil sector accounts for about one third of annual GDP, but provides over 70 percent of federal government revenues and more than 90 percent of exports." However, Nigerian government has acted to stimulate non-oil businesses through the promotion of Small and Medium Enterprise (SME). Nigeria as a country, given her natural resource base and a large market size, qualifies to be a major recipient of FDI in Africa and indeed is one of the top three leading African countries that consistently received FDI in the past three decades (Ariyo 2004). The World Bank reports that Nigeria is one of the largest recipients of FDI in Africa, and most of the FDI are mainly concentrated in the oil and mining sectors, which accounted for about 36 percent of gross fixed capital formation (World Bank index, 2004, 2007).

In recent years, communication sector is one of the leading industries that attract FDI. Following the deregulation of the telecommunication sector, Nigeria's telecommunication sector is now in a rapid growth form (Ariyo, 2005). According to the Nigerian Communications Commission, there is an enormous growth potential in the market, as demand for telecommunication service has been high because of market liberalization and massive telecommunication investments. Over recent years, all branches of the telecommunication industry have generated considerable growth. It is only the oil sector that has seen more investment in the past, but with the turn of events telecommunication is now seen as the most lucrative branch for non-oil- investment in Nigeria's economy. Consequently, Nigeria presently boasts Africa's largest and most promising telecommunication market.

2.1. The   Analytical Model

The model specified below is adopted from Kashin (2010) to test the effects of FDI on poverty reduction in Nigeria (1980 (2009).

$$POVT_t = \alpha + \beta_1 (FDI_t / GDP_t) + \beta_2 (HUMCAP_t) + \beta_3 (INFLAT_t) + \beta_4 (GOVS_t / GDP_t)$$

$$+ \beta_5 (INFRAST_t) + \beta_6 (DEBT_t / GDP_t) + v_t \qquad (1)$$

Where,

$POVT_t$ = Poverty incidence of people living under the poverty line at time t.

FDI_t / GDP_t = Proportion of FDI to GDP at time t.

$HUMCAP_t$ = Human capital development at time t.

$INFLAT_t$ = Inflation rate in the country at time t.

$GOVS_t / GDP_t$ = Proportion of government spending to GDP at time t.

$INFRAST_t$ = Infrastructure (i.e. electric power consumption) at time t, and

$DEBT_t / GDP_t$ = Proportion of outstanding DEBT to GDP at time t.

In this equation, POVT is the logarithm of the poverty rate and FDI/GDP is the logarithm of the ratio of FDI inflows to GDP (Kashin, 2010). Other variables are measured in levels.

2.2 **Description of Variables**

i. Dependent and Independent Variables:

1. Poverty

The dependent variable in this study is poverty. For the purpose of this study, poverty is defined as the condition in which an individual's income is insufficient to meet a given standard of living (Kashin, 2010). In the above model, poverty is the percentage of the overall population whose income falls below the poverty line. In summary, this study uses a headcount poverty index that measures absolute, not relative, poverty (Santarelli and Figini, 2003).Data for this variable were from the Federal Office of Statistics, Nigeria (FOS).

2. Foreign Direct Investment (FDI)

The explanatory variable of interest in this study is foreign direct investment (FDI)

The OECD (1996) defines FDI as the act of an entity resident in one economy (direct investor) obtaining a lasting interest in an entity that is resident in another economy (direct investment enterprise). Nigeria government, in line with OECD guidelines, considers a direct investment relationship established when a foreign investor owns at least 10% of the ordinary shares or voting power of an enterprise (FOS, 2007).

At a macroeconomic level, FDI can be measured either as a stock of total FDI at a given point in time or as the sum of inflows of FDI over a given time period (Kashin, 2010). Also from previous studies such as Ayanwale (2007), Mirza et al (2003), and Gohun (2009), FDI was measured as a proportion or percentage of GDP (i.e. FDI/GDP). It is in this backdrop that this study measures FDI as the percentage of GDP. Data for FDI were from the Central Bank of Nigeria (CBN).

ii. Control variables**:**

To assess the specific link between FDI and poverty, this study controls for various other determinants of poverty.

1. Human Capital (HUMCAP): The share of people enrolled in higher education per 10,000 of a nation's populations (Higher Education Rate) is used as a proxy for human capital. This measure is used over other measures of human capital because it characterizes the "depth" of human capital. The inclusion of human capital is justified as some previous studies such as Barrio and Lee (1994), Ayanwale (2007), and Kashin (2010) included this variable in their growth and poverty, models and found a direct relationship. This study expects a positive impact on poverty reduction. Data for higher education were from The United Nations Educational, Scientific and Cultural Organization (UNESCO).

2. Inflation (INFLAT): Inflation is introduced to capture macroeconomic instability; this is measured as the rate of inflation (i.e. The annualized percentage change in a general price index). This control variable is expected to have a negative impact on poverty reduction (Ayanwale, 2007), because a high level of inflation can characterize a more unstable macroeconomic environment. Data for inflation were from the Central Bank of Nigeria (CBN).

3. Government spending **(**GOVS/GDP): This is measured as the ratio of government expenditure to GDP. It is expected to have a positive impact on poverty reduction (Tanbanum, 2009, Kushin, 2010). Indeed; this can be

justified by the fact that investment by the government will ensure the basic needs of the population, especially in developing countries where the majority of investments in education and health care facilities are from the government. Data for this variable were from the Central Bank of Nigeria (CBN).

4. Infrastructure development (INFRACT): Good infrastructure facilitates production, reduces operating costs and thereby promotes FDI (Wheeler and Mody, 1992). Infrastructure increases the productivity of investment and thereby enhances economic growth (Ayanwale, 2003). In most of the literature, the number of telephones per 1,000 populations is often used to measure infrastructure development (Santarelli and Figini, 2003; Kashin, 2010). The defects of this measure are that it does not take into consideration the rise in the number of mobile phones and that it measures only the availability of the facility and not reliability. Other measures used in the literature include electric power consumption (Ayanwale, 2007). Given the availability of data the study employed electric power consumption as a proxy for this variable. The variable is measured as per capita electricity consumption. This measure takes care of availability and it is expected to have a positive impact on poverty reduction. Data for this variable were sourced from the Federal Office of Statistics, Nigeria (FOS).

5. Total Debt Ratio (DEBT/GDP): Since a large part of Government financing comes from debt, at least for developing countries, introducing the debt ratio variable, as a control variable will help to capture the government financial constraint. The total debt ratio is measured by total debt outstanding over GDP (Gohun, 2009). Thus, it is expected to have a negative impact on poverty reduction, since the higher the indebtedness of a country, the more constrained the government becomes in its capacity to respond to the basic needs of populations. Data for this control variable were from the National Bureau of Statistic (NBS).

3.0 Methodology

This study entirely depends on secondary data in the form of aggregate annual time series at current prices for gross domestic product (GDP) and total net inflows of FDI, covering the period (1980 – 2009). The units of measurement for both variables are US$.

One difficulty of using data with a time series component is non-stationarity. In order for the impact of FDI on poverty to be ascertained, the study checked the time series statistics of the included variables. If both poverty and other explanatory variables exhibit stochastic trends, the previous estimation could be beset by a spurious correlation that captures a common trend over time in both variables. It thus becomes imperative to test for the presence of non-stationarity or unit roots in the dependent and explanatory variables. When testing time-series properties and co-integration evidence, the preliminary step in that analysis is concerned with establishing the degree of integration of each variable. The distinction between whether the levels of differences of a series are stationary leads to substantially different conclusions and hence, tests of non-stationarity (that is unit roots) are the usual practices today. Engle and Granger (1987) define a non-stationary time series to integrated of order 'd' if it becomes stationary after being differentiated 'd' time. This notion is normally denoted by I (d).

The test for co-integration proceeds in two steps: first, the individual series test for stationarity. [In general, a variable is said to be stationary if its mean and variance are constant over time and the value of the covariance between two time periods depend only on the distance or lag between the two time periods, and not on the actual time at which the covariance is computed (Gujarati,2003). The second step is to determine the order of integration of series for the analysis of long-run relationships. If the series are integrated and are of the same order, it would imply co-integration.

3.1 Stationary Test (Unit Root Test)

Using the Augmented Dickey Fuller (ADF) test, the stationarity of the series is tested. The ADF test is a standard unit root test; it analyzes the order of integration of the data series. These statistics are calculated with a constant and a constant plus time trend and these tests have a null hypothesis of non-stationarity against an alternative of stationarity. The ADF test to check the stationarity series is based on the equation of the form given below:

$$\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_i \sum_{t=1}^{m} \Delta y_{t-1} + \varepsilon_t \qquad (2)$$

Where ε_t is a pure white noise error term and

$$\Delta y_{t-1} = (y_{t-1} - y_{t-2}), \Delta y_{t-2} = (y_{t-2} - y_{t-3}), \text{ etc.}$$

These tests determine whether the estimates of δ are equal to zero. Fuller (1976) provided a cumulative distribution of the ADF statistics; if the calculated-ratio (value) of the coefficient δ is less than τ the critical value from the Fuller table, then Y is said to be stationary.

Consider, for example, two series X_t and Y_t both integrated of order (d). Engle and Granger have described that their linear combination will in general also be I(d). It is an empirical reality that many macro-economic variables appear to be integrated of order (d) [or I (d) in the terminology of Engle and Granger (1987) so that their changes are stationary. Hence, if POVT, FDIGDP, HUMCAP, GOVSPND, INFLAT, INFRACT, and DEBTGDP are each I (d), then it may be true that any linear combination of these variables will also be I(d).

3.2 . Test for Long run Relationship

Having established that all of these variables are I (d), this study, then proceed to determine the long-run relationships between POVT, FDI/GDP, HUMCAP, GOVS/GDP, INFLAT, INFRAST, and DEBT/GDP. For the purpose of examining the long-run relationship among the variables, they must be co-integrated. The co-integration test provides the basis for tracing the long-run relationship. Two tests for co-integration have been identified in the literature [Engle and Granger (1987) and Johansen and Juselius (1990)]. In the multivariate case, if the I (1) variables are linked by more than one co-integrating vector, the Engle–Granger procedure is not applicable. The test for co-integration used here is the likelihood ratio put forward by Johansen and Juselius (1990), indicating that the maximum likelihood method is more appropriate in a multivariate system. Therefore, this study has employed this method to identify the number of co-integrated vectors in the model. The Johansen and Juselius method has been developed in part based on the literature available in the field and reduced rank regression, the co-integrating vector 'r' is defined by Johansen as the maximum eigenvalue and trace test or statistics. Johansen (1988) and Johansen and Juselius (1990) proposed that the multivariate co-integration methodology could be defined as:

S_t = (POVT, FDI/GDP, HUMCAP, GOVS/GDP, INFLAT, INFRAST, and DEBT/GDP) (3)

The above equation is a vector of $P = 7$ elements. Considering the following autoregressive representation:

$$S_t = \pi_\circ + \sum_{T=1}^{K} \pi_i S_{t-1} + \mu_t$$

Johansen's method involves the estimation of the above equation by the maximum likelihood technique, and testing the hypothesis H_o; $(\pi = \Psi \xi)$ of "r" co-integrating relationships, where r is the rank or the matrix $\pi(0 \angle r \angle P), \Psi$ is the matrix of weights with which the variable enter co-integrating relationships and ξ is the matrix of co-integrating vectors. The null hypothesis of non-cointegration among variables is rejected when the estimated likelihood test statistic $\phi_i \{= -n \sum_{t=r+1}^{p} \ln(1 - \hat{\lambda}_i\}$ exceeds its critical value. Given estimates of the eigenvalue $(\hat{\lambda}_i)$ the eigenvector (ξ_i) and the weights (Ψ_i), we can find out whether or not the variables in the vector (S_t) are co-integrated in one or more long-run relationships among POVT, FDI/GDP, HUMCAP, GOVS/GDP, INFLAT, INFRAST, and DEBT/GDP.

A further step in integrating two co-integrated time series is to analyze their short-run relationships. Even if a long term equilibrium relationship between y_t and x_t exists there is still the possibility of disequilibrium in the short-run. One way to investigate the short term dynamic of two co-integrated time series is by the Error Correction Model (ECM) which is known as Granger Representation Theorem. A simple example of ECM equation is:

$$\Delta y_t = \alpha_0 + \alpha_1 \Delta x_t + \alpha_2 \mu_{t-1} + \varepsilon_t \qquad (4)$$

Where Δ as usual denotes the first difference and μ_{t-1} is the one-period-lagged value of the residual from the co-integration regression equation, i.e. the empirical estimate of the long-term equilibrium error term, and ε_t is the error term with the usual properties (White-noise).

The ECM regression relates Δy_t to the change in x_t and the 'equilibrating' error in the previous period. In this regression Δx_t describes the short-term disturbances in x_t, whereas the error correction term μ_{t-1} captures the adjustments towards the long-run equilibrium. If the coefficient of the error correction term, α_2, is statistically significant, then it shows which proportion of the disequilibrium in y_t in one period is corrected in the next period (Gujarati, 2003).

Having established the long- run relationship among the variables, the study, then advances to determine the short run relationship among the variables. To find the effect of short-run changes of (POVT, FDIGDP, HUMCAP, GOVS/GDP, INFLAT, INFRAST, and DEBT/GDP) on poverty, the study then used the following specification:

$$
\Delta POVT = \gamma + \alpha\eta_{t-1} + \sum_{t=1}^{p} \beta_P \Delta POVT_{t-2} + \sum_{t=1}^{p} \beta_{FDIGDP} \Delta FDIGDP_{t-3} + \sum_{t=1}^{p} \beta_{HUMCAP} \Delta HUMCAP_{t-4}
$$

$$
+ \sum_{t=1}^{p} \beta_{GOVTSPND} \Delta GOVTSPND_{t-5} + \sum_{t=1}^{p} \beta_{INFLAT} \Delta INFLAT_{t-6} + \sum_{t=1}^{p} f_{(4)RAACT} \Delta INFRACT_{t-7}
$$

$$
+ \sum_{t=1}^{p} \beta_{DEBTGDP} \Delta DEBTGDP_{t-8} + \nu_t \qquad (5)
$$

Where ν_t = error term and α = short run speed of adjustment, Johansen and Juselius (1990) provide critical values for the two statistics. The statistical distribution depends on the number of non-stationary components in the model.

4.0 Result of the preliminary tests

4.1. Stationarity Test (Unit Root Test)

Since the prime objective of this study is to establish the contribution of FDI to poverty reduction, the study empirically estimated whether a statistically significant relationship exists between poverty and FDI in the long-run as well as in the short-run. The preliminary step in this analysis is concerned with establishing the degree of integration of each variable since the study employed time series data. For this purpose, to get reliable results of equation 1, the implied assumption is that variables in equation 1 are I (1) and co-integrated. On this note the study applied the test for the existence of a unit root in the level and first difference of each of the variables in the data using the Augmented Dickey Fuller (ADF) test. This is a well-accepted test statistic to check the stationarity of the series. The results presented in Table 4.1 revealed that all other variables are non-stationary in their level data. However, stationarity is found in the first differencing of the variables.

Table 4.1:   Unit Root Estimation

	Level	1st Difference		
Variables	Constant	Constant&Trend	Constant	Constant& Trends
POVT	-0.09	-0.79	-1.66***	-1.66***
FDI/GDP	-0.56	-0.65	-1.69***	-1.74***
HUMANCAP	-0.10	-0.34	-1.18***	-1.17***
INFLAT	-0.74	-0.75	-1.90***	-1.93***
GOVS/GDP	-0.44	-0.43	38***	-1.43***
INFRACT	-0.06	-0.30	-1.16***	-1.17***
DEPT/GDP	-0.45	-0.44	-1.17***	-1.21***

Note: *** Significant at 1%. The variables are stationary at 1st difference with Lag (1)

Having satisfied that all the individual series of consideration are stationary, the study further estimated the long run relationship among the variables. The conventional co-integration test (Johansen's maximum likelihood approach) is employed for this purpose. The results from the Johansen Co-integration analysis are summarized in Table 4.2 below, where both the maximum eigenvalue and trace test value examined the null hypothesis of no co-integration against the alternative hypothesis of co-integration. Starting with the null hypothesis of no co-integration (R= 0) among the variables, the trace-test statistics is 131. 5519, which is above the 5% critical value 125.6154, therefore the null hypothesis of no co-integration is rejected for the alternative hypothesis of co-integration. Accordingly, the study concluded that there is only one co-integrating the relationship between poverty, FDI, human development, inflation, government spending, infrastructure and total debt. Turning to the maximum eigenvalue test the null hypothesis of no co-integration (R= 0) is rejected at the 5% level of significance in favor of the alternative hypothesis, that is one co-integrating vector, $R = 1$. From these results it can be concluded that there is only one co-integrating relationship amongst the seven I (1) variables. Once co-integration is established, then an Error Correction Method (ECM) can be estimated to determine the short-run behavior of FDI on poverty.

Table 4.2 Johansen-Juselius Maximum Likelihood Test for Co-integration

Null-Hypothesis	Trace-Test Values	5 Percent Critical Value	Null-Hypothesis	Maximum Eigen Values	5 Percent Critical Value
$R = 0$	131.5519**	125.6154	$R = 0$	47.9976**	46.23142
$R \leq 1$	83.55423	95.75366	$R = 1$	30.00066	40.07757
$R \leq 2$	53.55357	69.81889	$R = 2$	22.56625	33.87687
$R \leq 3$	30.98732	47.85613	$R = 3$	15.27295	27.58434
$R \leq 4$	15.71437	29.79707	$R = 4$	8.587192	21.13162
$R \leq 5$	7.127180	15.49471	$R= 5$	5.940327	14.26460
$R \leq 6$	1.186854	3.841466	$R= 6$	1.186854	3.841466

Note: (**) represents significant at (5%), Johansen Co-integration test provides one Co-integrating equations at 5% significance level.

4.3.. Short run Error Correction Test (Short run relationship)

Table 4.3 presents the results of the ECM (Error Correction Model) formulation of equation 5.According to Engle-Granger(1987),co-integrated variables must have an ECM representation. The ECM approach provides an answer to the problem of spurious correlation, in the short run dynamic relationship between FDI and the poverty reduction estimated from the ECM formulation. Theoretically speaking, ECM (Error Correction Term) measures the speed of adjustment back to co-integrated relationships (Muhammed, et al. 2007). According to Banerjee, *et al* (1994). ECM is posited to be a force returning the integrated variables to their long-run relation when they deviate from it and thus the longer the deviation, the greater would be the force tending to correct the deviation; The coefficients of lagged   values   of

$$\Delta POVT, \Delta FDIGDP, \Delta HUMCAP, \Delta GOVTSPND, \Delta INFLAT, \Delta INFRACT, and \Delta DEBTGDP \quad \text{are}$$

short run parameters measuring the immediate impact of the independent variables on $\Delta POVT$. In equation 5, the coefficient of lagged values of GOVS/GDP is statistically insignificant showing no impact on the poverty rate in the short run. The coefficients of lagged values of FDI/GDP, HUMCAP, INFLAT, INFRAST, DEBT/GDP are statistically significant, indicating the immediate impacts on the poverty rate in short-run dynamics. Whereas the value of CE_{t-1} (Error Correction Term of the equation) is statistically significant at 5%, suggesting a reasonably long run corrections in the model each year. The result also showed that R^2 of the estimated model is 53.9241%, which implies that about 54% of the variation in poverty incidence can be attributed (linearly) to the explanatory variables.

4.4. Impact of FDI on Poverty

Here the study addresses its first research question: *Does FDI contributes to poverty reduction in Nigeria?*
  Table-4.3 shows that FDI/GDP has a positive impact on poverty reduction; this result is in agreement with Hung (2009), Tambanum (2009), Muhammed et al. (2007), and Kashin (2010). Human capital (HUMCAP) has a negative impact on poverty reduction, intuitionally this sound odd to conventional wisdom. Nevertheless, it could be attributed to underemployments and non-employment that many of Nigeria citizens faces, though they have higher education qualifications, this therefore aggravate poverty, instead of reducing it. While government spending (GOVS/GDP) variable as expected has a positive impact but not significant (i.e. The effect of government spending is not felt at least in the short-run, on poverty reduction) this could be possible, especially in the developing countries where the level of corruption is high. Often than none the fund that is earmarked for certain purposes that could be a succor to the scorching effect of poverty may be diverted to the "influential" individual pockets therefore government expenditure effects will not be felt.
 The result of inflation shows a negative impact this is also confirmed by Gohun (2009) this is expected. The resultant effect of this is that, there will be a general rise in the price of commodities and services, thus it erodes the real wage of the people and in turn increases poverty rate**.** The outcome of the study revealed that infrastructure as proxy by electricity, has a positive impact on poverty and significant, this outcome is well accepted by many authors (Ayanwale, 2007;Gohun,2009; and Udoh et al. 2008) this result appeals to conventional intelligence since most of the economic activities need electricity as the source of energy (especially the small and medium enterprises, which constitute the bulk of domestic investments in Nigeria) the availability of it will   reduce the poverty rate in the country. On the part of the foreign investors, one of the attracting factors for FDI is availability of infrastructure such as electricity (Udoh et al. 2008) thus the presence of FDI will open up opportunity for employment, thereby reducing the rate of poverty. Finally total debt has a negative impact on poverty reduction, this is in line with the a priori expectation of this study, and is supported by (Ayanwale, 2007, Gohun, 2009).Intuitionally the more a country is indebted the higher the poverty this is the case of Nigeria, which borrowed money from the International Monetary Fund (IMF) with a stringent conditions and cut throat interest rate, this later caused the debt burden of which the country is still not out of wood till date.

Table 4.3-: Short-Run Error Correction Model: Dependent variable = Poverty Index
(Headcount Ratio)

Variables	Coefficients	P-Value
Constant	3.22914	0.0113**
DLPOV (-1)	-0.0474171	0.1015*
DLFDIGDP (-1)	126.359	0.0151**
DHUMCAP (-1)	-0.474171	0.0187**
DGOVSGDP (-1)	0.00014	0.1916
DINFLAT (-1)	-0.0230402	0.0993*
DINFRAST (-1)	0.0437892	0.02422*
DDEBTGDP (-1)	-0.105660	0.0164**
CE (-1)	-0.481170	0.0158**
R-squared = 0.778153 Adj. R-squared = 0.539241 F = 1.96		

Note: * (**) represents the coefficients are statistically significant at 10% (and 5%) levels.

4.5 Implications for Policy Making

The second research question is addressed in this section: *What is the policy implication of the contribution of FDI to poverty?*

This study implicitly revealed that FDI could be a direct source of poverty reduction; this outcome could be of assistance to policymakers in developing more effective FDI and poverty reduction strategies. However, FDI will not be able to reduce poverty without other favorable economic, political, institutional and environmental policy in place. In the discussion, findings of the study showed that both government spending and human capital development is not geared towards poverty reducing dynamics even though evidence showed that FDI inflow into the country within this period is substantial. Therefore, efforts to reduce poverty are unlikely to succeed in the long run unless there is greater investment in the human capital of the poor. Improvement in education; health and nutrition directly address the worst consequences of being poor. There is ample evidence that investing in human capital, especially in education, shelter and social services increases the poor's productivity and also attacks some of the most important causes of poverty. Improving the social services of the poor will be an essential part of any long-term strategy for reducing poverty in Nigeria as a whole.

With these two amazing sceneries, it is the job of policy makers to make sense of this information, and translate it into realistic and effective policy measures. To a large extent they are already attempting to do this, but their problem is one of balancing the desirable effects of a particular type of policy against the undesirable effects, in a more systematic approach. Apart from manpower development, government should find a solution to the current unemployment/under-employment problems in the country as well as making and implementing anti-inflationary policies that will reduce the burden created by the current inflation that makes most necessary consumer items unaffordable to the poor masses. This will help to increase the real wage of the salary earners and other income earning activities. All these will assist to reduce, if not completely eradicate poverty in our country.

In conclusion FDI policies can affect poverty reduction; the task of the policymaker is to coordinate policies affecting the gray areas mentioned above (government spending and human capital development, inflation) in such a way as to optimize the contribution of FDI to poverty reduction. In addition, any policy designed to ameliorate the plight of the urban poor must among other things recognize housing, provision of potable water, improved health care facilities, improved transportation in terms of good roads and provision of more mass transit buses and train, a sound education for all and sundry and employment opportunities. No societies can surely prosper and be happy, of which by far the greater part of the numbers are poor and miserable. Therefore, the need to alleviate poverty in Nigeria as a whole should be the highest priority of the government and the citizenry.

5.0. Summary and conclusion

The study empirically tested the impact of FDI on poverty reduction both in the long run and short run. We mainly employed secondary data from WorldBank (2008) and Ecostat/IMF (2010) for this study. To measure FDI (FDI/GDP) study used FDI as a proportion of GDP(Gohun, 2009),human capital (HUMCAP) was measured by the percentage of enrollment in tertiary higher education per 10,000 nation's population(Kashin,2003), while government spending (GOVS/GDP) was captured the ratio of government consumption to GDP (kashin ,2010). Inflation(INFLAT);Inflation is introduced to capture macroeconomic instability. Infrastructure (INFRACT) was measured as per capita electricity power consumption. Also total national debt (DEBT/GDP);was measured by total by total debt outstanding over GDP.Headcount ratio was used for poverty(POVT) measurement. Both stationarity test and co-integration test in he long run for the variables were verified, with Augmented Dickey Fuller (ADF) and Johansen and Juselius(1990) methods respectively. Error Correction Model (ECM) test was conducted for the short run relationship of the variables. Finally, though the study shows evidence of positive impact on poverty reduction, there are still more ground to cover as to make poverty the thing of the past.

5.1. Suggested Area for Further Study

Given the limitations of the available data on FDI in Nigeria, more study needs to be done in the as to both confirm and expand upon this work using a dataset with longer time range and FDI data segmented by industries.

In addition to the above, a few points are worth mentioning. First, the results can be regarded as a lower bound for the impact of FDI upon poverty. Second, while FDI was found to reduce poverty, the scope of this research does not cover the effect of FDI upon the depth of poverty. It is quite possible that while reducing the absolute poverty rate, FDI has no effect upon the most indigent in society. Therefore, government still needs to intensify efforts in combating poverty. Ultimately, the research lends tentative support to the great push for attracting FDI into Nigeria, especially FDI type that will bring about employment opportunities as to alleviate poverty. However, before concrete policy recommendations can be proposed, much more research needs to be done – both at the macro and micro levels as to understand the full range of impacts that FDI can have upon economic growth, poverty, income inequality, and less tangible factors that contribute to human welfare. Finally, while not explicitly tested in Nigeria context, this study, future work should address how the impact of FDI upon poverty varies by industrial structure.

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