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The Comparative Role of FDI and SME in Economic Growth in Nigeria

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Abstract:

This study uses a co-integration with vector error correction and Granger causality techniques to ascertain the role of foreign direct investment and small and medium scale enterprises in comparative terms. Variance decomposition and impulse response function are adopted to identify the authenticity of the aforementioned tests results. Correlation matrix and diagnostic tests are conducted to ascertain whether our results are biased. The empirical evidence reveals that the normalised long run equilibrium indicates that both FDI and SME are positively related to economic growth. Precisely, the long run equation result shows that FDI and SME contributed 1.35% and 0.19% to economic growth respectively. The short run dynamics support the co-integration results by being appropriately signed and statistically significant. The Granger causality result indicates that both FDI and SME Granger cause economic growth. Results on variance decomposition show that besides economic growth, the predominant source of variation in output growth is FDI followed by SME. On impulse response function, result indicates that to a large extent the response of economic growth to foreign direct investment is favourable from the fourth period to the tenth period. On the other hand, the response of economic growth to small and medium scale enterprises is favourable only from the first period to the fifth period and negative in all other period. However, a positive influence of SME on economic growth can be boosted in Nigeria by taken care of operational challenges that affect SME in the country through provision of monitored loan and credit. Results from the diagnostic tests suggest that the long run, Granger causality, variance decomposition and impulse response results are not spurious.

Keywords: Foreign direct investment, small and medium scale enterprises, economic growth

1. Introduction

Agriculture happened to be the mainstay of Nigeria economy, seconded by the manufacturing sector. From Table 1 below, we grasp that agriculture and manufacturing sectors were the first runners of Nigeria economic growth. For example, agricultural sector contribution to economic growth in 1960, 1970 and 1975 were 62.9%, 48.8% and 30.1% respectively. On the other hand, the contributions of the manufacturing/industrial sector to economic growth were 4.8%, 7.2% and 5.6%, while oil, mining/quarrying contributed 1.6%, 10.8% and 32% to economic growth. Lastly, transport and communication contributions to economic growth were 4.9%, 2.8% and 3.2% respectively. Table 1 shows that agriculture sector ceased to be the major contributors of Nigeria economic growth by the middle of 1970s, when oil, mining/quarrying share to economic growth rose higher than the agricultural sector. From Table 1 oil, mining/quarrying sector contribution to gross domestic product in 1975 was 32%, greater than agriculture and other sectors.

Sectors	1960	1970	1975	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	62.9	48.8	30.1	7.06	7.40	7.19	6.54	2.5	2.4	2.3	1.46
Manufacturing/ industry	4.8	7.2	5.6	9.61	9.39	9.57	9.28	0.4	1.2	0.3	0.11
(oil)Mining/ quarrying	1.6	10.8	32	0.50	-4.51	-4.54	-4.76	0.1	0.8	0.2	0.004
Transport and communication	4.9	2.8	3.2	28.38	32.45	32.85	29.65	1.0	1.3	1.6	1.91

*Table 1: The Growth Rate of GDP 1960-2012 in Nigeria
Source: Central Bank of Nigeria various issues*

Oil was discovered in large quantity in Nigeria in the 1970s. The oil price was slashed at the international market in 1980s. Nigeria realised about two hundred and thirty one billion US dollars for the period of 1970-1999 and in 2000 it showed that earnings from oil export was about 99.6% of total foreign exchange earnings (Ross 2003, p. 2). Many years after the discovery of oil in Nigeria, the

contribution of agriculture continues to decrease. Specifically, from 1975-2012 the contribution of agriculture to gross domestic product (GDP) in Nigeria continues to fall. In the case of manufacturing/industrial sector, its contribution to gross domestic product improves from 1960-2005, fluctuates in 2006-2008 and continues to fall in 2009-2012. From 2006-2008 the contributions of oil, mining/quarrying sector to gross domestic product were negative, improved in 2009-2010, negative in 2011 which however improved in 2012 but not significantly greater than zero. The contribution of transport/communication to economic growth started to fall in 1960-1975, increased in 2005-2007, with slight and drastic falls in 2008 and 2009 respectively. However, it started to improve a little in 2011-2012. Above all, the oil, mining/quarrying sector contribution to economic growth started to decrease and contributed less than any other sector. The reason is as a result fall in oil prices, the activities of the militant groups in the Niger Delta (oil states), oil theft and corruption, (Ekpo and Umeh 2013).

Despite the fall in economic growth in Nigeria, research works in Nigeria have not deemed it fit to compare the role of FDI and SME in economic growth in the country to ascertain the rate of which the aforementioned variables can have expansionary effect on output. This paper is divided into six sections. Besides the introduction, section 2 covers the concepts and comparative FDI and SME, section 3 deals with research methodology, section 4 handles results presentation and discussions, while section 5 treats the conclusion and recommendation.

2. Concepts and Comparative FDI and SME in Nigeria

The need for economic growth cannot be overemphasized. The importance of both foreign direct investment and small and medium scale enterprises in economic growth has made countries such as Nigeria to attract and encourage them respectively.

Foreign direct investment encompasses those entities in a foreign country that are subsidiaries, which could be up to fifty percent of shareholders voting power (to exert absolute control) and may have branches entirely owned by the parent company or jointly with other companies (OECD 1999). When a firm reaches the stage of multinational or transnational enterprise, it could source foreign direct investment. Foreign direct investment can take the form of international mergers and acquisitions (M&A) (i.e. acquiring of existing companies). This is sometimes known as Brownfield Investment or by establishment of an entirely new company, known as Greenfield Investment. Foreign direct investment components according to IMF definition quoted in Maintena and Banco (2003, p. 5) indicates that foreign direct investment is made up of the following three basic components: (1) Equity capital – comprises shares in subsidiaries (with the exception of preferred shares that are treated as debt securities) and other form of capital contribution like machinery. (2) Reinvested earnings – comprises the foreign direct investor's share (earnings) (in relation to direct equity participation) not distributed or remitted to the direct investor. (3) Other direct investment capital – borrowing and lending of funds, debt securities between the direct investors and the enterprises.

Small and medium scale enterprises are the major source of private investment in Nigeria. Large enterprises are usually excluded in some texts because the majority of the entrepreneurship in Nigeria exists in form of small and medium scale enterprises as Table 19 below suggests. Though there has not been an agreement on the point at which private firms are deemed to be small or medium. However, Central Bank of Nigeria (2003, pp. 7-8) and (Ekwem 2011, pp. 8-9) attempt to classify small and medium scale enterprises in terms of the number of employee as shown in Table 2 below.

Country	Micro enterprise	Small enterprise	Medium enterprise
	Number of Employees		
United States of America	1-19	20-99	100-499
United Kingdom	1-9	10-49	50-249
Nigeria	1-10	11-100	101-300

Table 2: Comparative definitions of SME components

Source: Central Bank of Nigeria (2003, p. 8)

In addition to the number of employees classification of the components of small and medium scale enterprises, Central Bank of Nigeria (2003) in its second classification which is based on total cost shows that 1.50 million, 50 million and over 50 million but not more than 200 million naira are the maximum total costs for micro, small and medium enterprises respectively, including working capital but excluding cost of land. Despite disparity in the comparative definitions of SME, Central Bank of Nigeria (2003) argues that there still exist some common features. One of the commonest attributes is that they are either owned or managed by one person or in the form of partnership. Generally, they do not require large capital base like the large scale enterprises but they often face difficulties in getting funds for the expansion of their enterprises, and consequently depend heavily on their private sources (Ijeoma 2011). Another important feature is that sole proprietorship type often does not differentiate private funds from business funds. This contributes to inefficiency and high mortality rate of domestic investment (Central Bank of Nigeria 2003). Lastly, most of the components of domestic investment in Nigeria are labour intensive with limited accessibility of long term capital (Nweze 2009). Over the years foreign direct investment and small and medium scale enterprises in Nigeria continued to be low when compared to economic growth variable used in this study as evidenced in Table 3 and Figure 1 below.

Year	GDP	SME	FDI
1980	49,632.3	6,344.00	62.2
1981	47,619.7	8,604.80	60.8
1982	49,069.3	10,227.00	68.9
1983	53,107.4	11,100.00	77.3
1984	59,622.5	11,550.00	80.6
1985	67,908.6	12,170.30	85.9
1986	69,147.0	15,701.00	80.4
1987	105,222.8	17,531.00	75.6
1988	139,085.3	24,602.30	160.6
1989	216,797.5	28,108.80	158.2
1990	267,550.0	28,640.80	240.5
1991	312,139.7	32,912.40	373.2
1992	532,613.8	20,400.00	391.5
1993	683,869.8	15,462.90	426.4
1994	899,863.2	20,552.50	429.6
1995	1,933,211.6	32,374.50	374.8
1996	2,702,719.1	42,302.10	485.6
1997	2,801,972.6	40,844.30	672.6
1998	2,708,430.9	42,260.70	689.2
1999	3,194,015.0	46,824.00	820.3
2000	4,582,127.3	44,542.30	820.3
2001	4,725,086.0	52,428.40	955.3
2002	6,912,381.3	82,368.80	1,736.3
2003	8,487,031.6	90,176.50	2,890.5
2004	11,411,066.9	54,981.20	4,281.1
2005	14,572,239.1	50,672.60	5,565.4
2006	18,564,594.7	21,201.70	8,291.0
2007	20,657,317.7	41,100.40	10,758.2
2008	24,296,329.3	13,512.20	7,996.8
2009	24,712,669.9	16,366.50	13,238.1
2010	24,504,499.6	12,550.30	10,617.5
2011	24,685,847.1	14,458.40	11,927.8

Table 3: Foreign direct Investment, Small and Medium Scale Enterprises and Economic Growth in Nigeria (1980-2011)
Sources: Central Bank of Nigeria (Statistical Bulletin) Various Issues

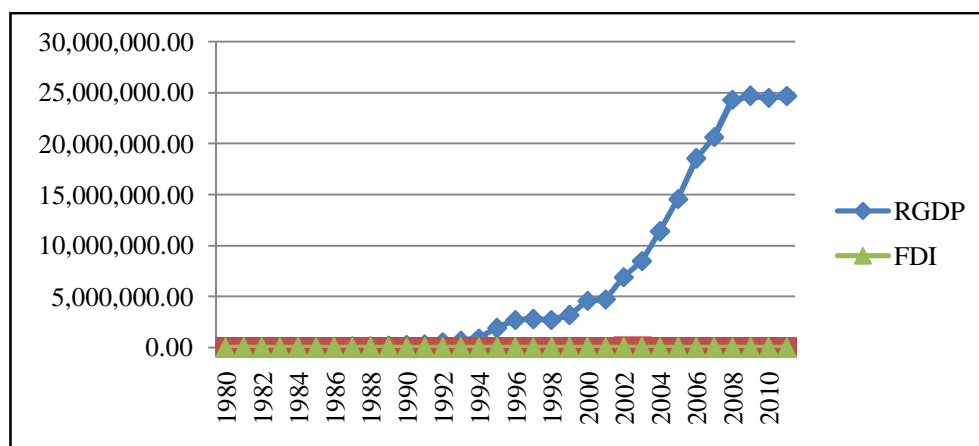


Figure 1: Summary graph for Table 3
Source: Computed from Table 3

Figure 1 shows that the explanatory variables are low than the explained variable which suggests the need to create conducive environment and policies to attract and encourage the independent variables for economic growth in Nigeria. The low level of FDI is as a result of poor infrastructural facilities and harsh policies in the country, while the low level of SME is caused by factors such as poor infrastructural facilities, poor bank loan and deficient entrepreneurial capacity. The global financial crisis of 2008 exerted contraction effect on the explanatory variables and in 2009/2010 its impact on the gross domestic product started to be conspicuous.

Since this research is aimed at comparing the role of FDI and SME in economic growth it becomes imperative to discuss their disparity in relation to percentage of GDP. Figure 2 below compares small and medium scale enterprises and foreign direct investment via percentage of gross domestic product.

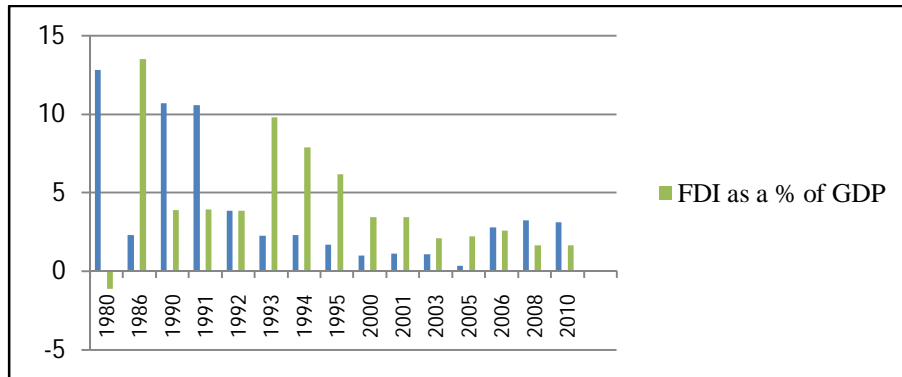


Figure 2: SME and FDI as % of GDP 1980-2010
 Source: Computed from Central Bank of Nigeria (2011)

In 1980 SME as a percentage of gross domestic product was 12.8 percent whereas FDI was -1.15. The negative percentage share of gross domestic product was as a result of the indigenisation decrees of 1972 and 1977 that nationalised foreign companies in Nigeria. However, in 1986, foreign direct investment as a percentage share of gross domestic product increased to 13.5 percent, whereas small and medium scale enterprises as a percentage of gross domestic product fell to 2.3 percent. The increase in the FDI share of gross domestic investment is not unconnected with the Structural Adjustment Programme of 1986 which privatised some inefficient enterprises and permitted foreign investors to invest in Nigeria. SME as a percentage share of gross domestic product increased to 10.7 percent because the commercial banks were mandated by the government to grant credit to small and medium scale enterprises in the late 1980s which led to an improvement in the SME percentage share of gross domestic product. Furthermore, government subsidy granted to small and medium scale enterprises also play vital role in the improvement of the SME percentage share of gross domestic product. Another factor that improved the SME percentage share of gross domestic product in the early 1990s was the high credit granted to small and medium scale enterprises during the period (see Central Bank of Nigeria 2011). Foreign direct investment as a percentage share of gross domestic product fell to 3.9 percent in 1990 and did not improve until 1993. The reason for the decline could be attributed to the imminent high cost of importing raw materials and machinery during the period caused by the depreciation of the currency. Nigerian government relaxed some of the restrictions on foreign direct investment which led to the improvement in foreign direct investment percentage share of gross domestic product from 1993 to 1995. Both the foreign direct investment and small and medium scale enterprises percentage share of gross domestic product fell in 1990s. The reason for the decline could be as a result of political instability caused by coup and counter coup by the Nigerian military. From 2000-2005 foreign direct investment and SME as percentage of gross domestic product have not been improving. For instance in 2000, foreign direct investment and SME as percentage of gross domestic product were 3.44 percent and 0.97 percent respectively, whereas in 2005 they were 2.23 percent and 0.35 percent. In 2008 foreign direct investment and SME as percentage share of gross domestic product were 1.65 percent and 3.12 percent respectively. In 2010 the former was still 1.65 percent, whereas the later declined to 3.11 percent. The fall in the 2008 could be due to the global economic crisis and it affected foreign direct investment percentage share of gross domestic product than the SME share because the former is more integrated to global world the latter.

3. Research Methodology

3.1. Variables, Data Collection and Measurement

In this study, the comparative role of FDI and SME in economic growth in Nigeria is examined spanning from 1980-2011. This study covers the period because data for all the variables before and after 1980-2011 do not exist. The variables to be employed in the study are gross domestic product (GDP), foreign direct investment (FDI), small and medium scale enterprises (SME) and human capital (HC).

This study uses secondary data (time series). The time series data are collected from Central Bank of Nigeria (statistical Bulletin) various issues.

Variables	Definition of Variables (Model 1)	How the variables are measured
GDP	Gross domestic product at current prices divided by implicit price deflator.	GDP/IPD
FDI	Total foreign direct investment divided by implicit price deflator	FDI/IPD
SME	Small and medium scale enterprises divided by implicit price deflator	SME/IPD
HC	Skilled workers	HC

Table 4: Measurement of variables

The reason behind implicit deflator is that it captures change in prices of goods and services and reflects up to date expenditure pattern. Thus by dividing the nominal values of the variables in Table 4 by the implicit deflator the values of the variables are deflated into a real measure. The variables are divided by implicit price deflator to take care of inflation. Some studies such as Somoye (2011) adopted it to take care of inflation by dividing values of variables with implicit price deflator.

3.2. Data Analysis

3.2.1. Unit Root Test

The reason for conducting unit root test is to ascertain whether the variables are stationary to ensure that spurious results are not realised.

The justification for adopting Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests is based on the shortcomings of Engle-Granger regression which test for $\gamma = 0$ below.

$$\Delta z_t = \alpha_1 + \gamma z_{t-1} + \varepsilon_t \quad (1)$$

With reference to Equation 1 above, the most basic non-stationary time series is the random walk and is a version of Engle-Granger test which has a distribution that depends on the value of α_1 . All tabulated critical values assume that $\alpha_1 = 0$ and this can mislead scholars especially when it is not so (Mackinnon 2010, p. 3).

Thus, to find out whether there is a stochastic trend, unit roots are tested in time series. Equation 2 below explains Augmented Dickey Fuller test.

$$y_t = \alpha_0 + \alpha_1 t + y_{t-1} + \sum_{i=1}^k \alpha_i \Delta y_{t-k} + \varepsilon_t \quad (2)$$

The left hand side of Equation 2 is the Dickey-Fuller unit root test on autoregressive process of order 1 with linear time trend (deterministic terms). The second part of the equation shows that the standard Dickey-Fuller test has been augmented by $\sum \Delta y_{t-k}$. Thus, the t-test and the regression of the equation is Augmented Dickey Fullers test (ADF).

In Equation 2 above, Δy is differenced variable, α_0 stands for the intercept, t for the linear trend, while y_{t-1} is used in simple autoregressive process, i is the ADF lags selected and ε_t is the error term that adjusts errors of auto correlation. The k lagged difference terms, Δy_{t-k} are employed in complex autoregressive process and the value of k is set so that the error term do not correlate which is assumed to be homoskedastic. In a nut shell, the presence of serial correlation in the Dickey-Fullers test affects results and led to the introduction of Augmented Dickey-Fullers test which suggests adding lags to get rid of the residuals of serial correlation.

3.2.2. Co-integration Test

Co-integration was introduced by Engle and Granger (1987) and when the variables deviate from equilibrium error has occurred. Co-integrating ranks is the name given to the number of vector in the co-integration relationship. Important point to note on co-integration test is that the variables used in the study must be integrated at the same order. If the variables are unable to integrate at the same order after all the levels or lags has been exhausted, it shows that the variables do not co-integrate. Trace and eigen values statistics are used to test the null hypothesis of co-integrating vectors. If the t-statistics derived from them exceed the critical value the null hypothesis would be rejected and the reverse will be the case if they are below the critical value. When the variables co-integrate, there exists a long run relationship among them.

$$\Delta X_t = \mu + \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-i} + \Pi X_{t-1} + \varepsilon_t \quad (3)$$

In Equation 3 above, X_t is vector of time series and μ for constant term. Γ and Π Stands for coefficient matrices, Δ represents a difference operator and ε_t is error term. In a nutshell, coefficient matrix Π shows the impact as well as the long run relationship and has ranks based on the significance of eigen values. When there exists no co-integration all the rows in the Π -matrix will be zero and when it is non-zero it means stationary or co-integration.

3.2.3. Vector Error Correction Model

$$\Delta GDP_t = \delta_0 + \sum_{i=1}^n \delta_{1i} \Delta LGDP_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta LFDI_{t-i} + \sum_{i=1}^n \delta_{3i} \Delta LSME_{t-i} + \sum_{i=1}^n \delta_{4i} \Delta LHC_{t-i} + \lambda_1 ECM_{t-i} + \varepsilon_{1t} \quad (4)$$

In Equation 4 above, δ^s are the coefficients, ε_{1t} is the residual for the time series, the ECM_{t-1} stands for error correction term. λ_1 Stands for 1st canonical correlation and the $t-i$ in all the co-integrating variables define the combination of foreign direct investment, small and medium scale enterprises and human capital variables in the co-integrating relationship that yield the largest correlations of the difference operators (Δ). The canonical correlation is tested via trace and maximum eigen value The statistical significance of coefficients of the error term in the error correction model above shows the rate at which the variables are brought into equilibrium. When a coefficient is statistically significant, it means that an equilibrium error in the past has a role to play in the present result. The model will be normalised on GDP which captures short run dynamics.

3.2.4. Granger Causality Test

This study carried out Granger causality test to ascertain the direction of causality between foreign direct investment (FDI) and economic growth (GDP) in one hand, and also to investigate the direction of the causality between small and medium scale enterprises (SME) and economic growth in Nigeria. In Granger causality test, cause is influenced by actions in the past. Granger causality tests the lag values of the independent variable to ascertain whether it plays a significant role in explaining the dependent variable with its lag values. In Granger causality test, movement could be unidirectional or bidirectional. The causality regression of the two variables (dependent = GDP and independent = FDI) are presented in equations 5 and 6 below.

$$GDP_t = \alpha_1 GDP_{t-1} + \alpha_2 GDP_{t-2} + \alpha_3 GDP_{t-3} + \dots + \beta_1 FDI_{t-1} + \beta_2 FDI_{t-2} + \beta_3 FDI_{t-3} \dots + \varepsilon_{1t} \dots \dots \dots (5)$$

$$FDI_t = \phi_1 GDP_{t-1} + \phi_2 GDP_{t-2} + \phi_3 GDP_{t-3} + \dots + \delta_1 FDI_{t-1} + \delta_2 FDI_{t-2} + \delta_3 FDI_{t-3} \dots + \varepsilon_{2t} \dots \dots \dots (6)$$

If the lag values of foreign direct investment as well as small and medium scale enterprises play a significant role in explaining economic growth, then FDI and SME are said to Granger cause GDP.

3.2.5. Variance Decomposition and Impulse Response Function

Variance decomposition and impulse response function technique can be adopted to examine the relationship between variables. The forecast error variance decomposition allows a researcher to make inferences about the proportion of movements in time series due to its own shocks versus shocks to other variables in the system (Tang et al. 2008, p. 1303). Precisely, variance decomposition analysis determines how much of the forecast error variance of a given variable is explained by innovations to each explanatory variable. In impulse response function error term represents shock in the system. If ε_{FDIt} and ε_{SMEt} shocks explain the forecast error variance of GDP_t at all forecast horizons, it implies that economic growth sequence is endogenous. On the other hand, if ε_{FDIt} and ε_{SMEt} shocks explain none of the forecast error variance of GDP_t at all level, it shows that economic growth sequence is exogenous. In such a circumstance, the GDP_t sequence would evolve independently of the $\varepsilon_{FDIt}/\varepsilon_{SMEt}$ shocks and the FDI_t/SME_t sequence. In a nut shell, impulse response analysis shows the responsiveness of a dependent variable in a VAR to shocks from each of the variables.

4. Results Presentation and Discussions

4.1. Unit Root Test Results

From Table 5, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests indicated that not all the variables are stationary at level. It shows that only economic growth (LGDP) and foreign direct investment (LFDI) are stationary at level. It further shows that small and medium scale enterprises (LSME) and human capital (LHC) are non-stationary in their levels with the likelihood of not reverting to their mean value. However, at first difference, all the variables are stationary when both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used. The ADF lag length at first difference and PP bandwidth at first difference where they are stationary are 0, 0, 0, 0 and 2, 29, 5, 0 respectively.

AUGMENTED DICKEY FULLER TEST (ADF)			Lag	PHILIP PERRON TEST (PP)			
Variables	t-statistics (Probability) at level	t-statistics (Probability) at 1 st diff.		t-statistics (Probability) at level	t-statistics (Probability) at 1 st diff.	Band width	
LGDP	-4.641988 (0.0008)	-6.305943 (0.0000)	0	-4.140238 (0.0030)	-28.14634 (0.0000)	2	
LFDI	-6.773194 (0.0000)	-8.640761 (0.0000)	0	-6.964898 (0.0000)	-21.19074 (0.0000)	29	
LSME	-0.916665 (0.7693)	-7.779322 (0.0000)	0	-1.011743 (0.7366)	-9.086669 (0.0000)	5	
LHC	-1.441374 (0.5493)	-5.269221 (0.0000)	0	-1.538055 (0.5014)	-5.269221 (0.0000)	0	

Table 5: Unit Root Test Results
Source: Author's calculation using E-View 8.0

4.1.1. Optimal Lag Length

With reference to Table 6 below, lag order length selected is 4 because it gives positive and statistically significant relationship between the explained and the explanatory variables; meaning that the VAR model used to investigate the long run relationship between foreign direct investment, domestic investment, human capital and economic growth will be stable at lag length 4.

Lag	LogL	LR	FPE	AIC	SC
0	5.715078	NA	1.04e-05	-0.122506	0.067809
1	112.9181	176.1192*	1.56e-08*	-6.637007	-5.685432*
2	128.3208	20.90365	1.77e-08	-6.594342	-4.881508
3	148.4494	21.56640	1.63e-08	-6.889245	-4.415151
4	169.5970	16.61593	1.80e-08	-7.256926*	-4.021572
* indicates lag order selected by the criterion					

Table 6: Optimal VAR Lag Length
Generated from E-View 8.0

4.2. Johansen co-integration Results

Table 7 shows that the null hypothesis which states that there exists no co-integration among the variables (LGDP, LFDI, LSME and LHC) is rejected as observed in the trace test and the maximum-eigen value test. Trace test comprises trace statistics and critical value which indicates that the values of trace statistics are greater than that of the critical values with P values less than 0.05. Further, the column for hypothesised number of co-integrating equations indicates two co-integrating equations because both the trace statistics and eigen statistics are significant.

Hypothesised No. of Co-integrating Equation (CE)	Trace Test		Maximum-Eigen Value Test	
	Trace statistics	Critical Value P < 0.05	Maxi-Eigen Statistics	Critical Value P < 0.05
None *	121.7054	47.85613	78.73854	27.58434
At most 1 *	42.96688	29.79707	33.62283	21.13162

Table 7: Johansen co-integration results (The trace and Eigen value tests)

Note * implies 2 co-integrating equations with statistics significant at $p < 0.05$

Author's calculation using E-View 8.0

4.3. Long run Equation Results

Equation 7 below is the estimated co-integration test and it explains that the explanatory variables which comprise foreign direct investment (LFDI), small and medium scale enterprises (LSME) and human capital (LHC) at a time (t) are positively related to economic growth (LGDP).

$$LGDP_t = 1.349900 LFDI_t + 0.191261 LSME_t + 0.184525 LHC_t(7)$$

$$(SE) \quad (0.11001) \quad (0.01176) \quad (0.00664)$$

$$(T-ratios) \quad [12.270703] \quad [16.26369] \quad [27.78991]$$

The equation shows that foreign direct investment (LFDI); small and medium scale enterprises (LSME) and human capital (LHC) exerted positive and significant influence on economic growth (LGDP). Foreign direct investment contributed 1.35% to economic growth, while small and medium scale enterprises contributed 0.19%. The higher coefficient of foreign direct investment in relation to small and medium scale enterprises in Nigeria could be due to operational challenges that face SME in Nigeria which ranges from limited funds, deficient entrepreneurial capacity, insufficient demand for products, poor sales promotion and advertising among others. Unlike small and medium scale enterprises in Nigeria, foreign direct investment in the country is able to handle these challenges due to their financial, technical and managerial supremacy.

4.4. Vector Error Correction Model (VECM) Results

With reference to Table 8 in page 10, the results from the vector error correction model explain that the error correction coefficient is properly signed at -0.299630 and significant at t-statistics -4.84443. This means that a deviation of economic growth (LGDP) from the equilibrium in the long run caused by short run shock is corrected by 30% in each year. Thus, the short run dynamics (error correction model) supports the co-integration relationship that exists between the variables. The coefficient of determination (R^2) shows that 78% of the variation in economic growth is explained by the variation in foreign direct investment, small and medium scale enterprises and human capital.

Variable	Coefficient	Std. Error	t-statistics
Constant	0.017805	0.00721	2.47052
$\Delta LFDI$	2.180904	4.15677	0.52466
$\Delta LSME$	-15.72205	35.1062	-0.44784
ΔLHC	5.845772	19.1428	0.30538
$\Delta LGDP(-1)$	-0.266095	0.17017	-1.56367
$\Delta LFDI(-1)$	0.057643	0.01280	4.50228
$\Delta LSME(-1)$	-0.0011535	0.00045	-3.40781
$\Delta LHC(-1)$	-0.003010	0.00100	-3.02423
ECM(1)	-0.299630	0.06185	-4.84443
R-squared	0.784612	Mean dependent	0.023478
Adj. R-squared	0.635497	S.D. dependent	0.022484
S.E equation	0.013575	Akaike AIC	-5.462220
Sum sq. resid.	0.002395	Schwarz SC	-4.968527
Log likelihood	72.81553		

Table 8: Vector Error Correction Results

Author calculation using E-View 8.0

4.5. Variance Decomposition Result

Table 9 is the variance decomposition result and it shows that the variance of economic growth (LGDP) rates is caused by 100 percent by itself in the first year. In the second year the economic growth rates variance is decomposed into its own variance (97.25%). The own shocks of economic growth constitute a significant source of variation in growth forecast error in the time horizon, ranging from 100 percent to 90.09 percent. Ten years after, variation in economic growth are accounted by foreign direct investment (LFDI, 8.2%), small and medium scale enterprises (LSME, 0.94%) and human capital (LHC, 0.81%). In a nutshell, the changes in economic growth are mainly caused by its own variation. The salient feature of Table 7 is that besides economic growth, the predominant source of variation in economic growth is foreign direct investment.

Period	S.E.	LGDP	LFDI	LSME	LHC
1	0.024268	100.0000	0.000000	0.000000	0.000000
2	0.037649	97.24748	0.106682	0.520436	2.125399
3	0.046883	96.50376	0.096700	1.591654	1.807889
4	0.054307	96.46216	0.200993	1.678762	1.658087
5	0.060638	96.26724	0.844990	1.491632	1.396141
6	0.066282	95.76012	1.802792	1.260458	1.176630
7	0.071614	94.74634	3.157759	1.085120	1.010781
8	0.076753	93.38196	4.734914	0.981470	0.901653
9	0.081779	91.78398	6.439623	0.937024	0.839376
10	0.086708	90.09059	8.160761	0.937093	0.811556

Table 9: Variance Decomposition Result
Source: Author's computation using E-View 8.0

4.6. Impulse Response Results

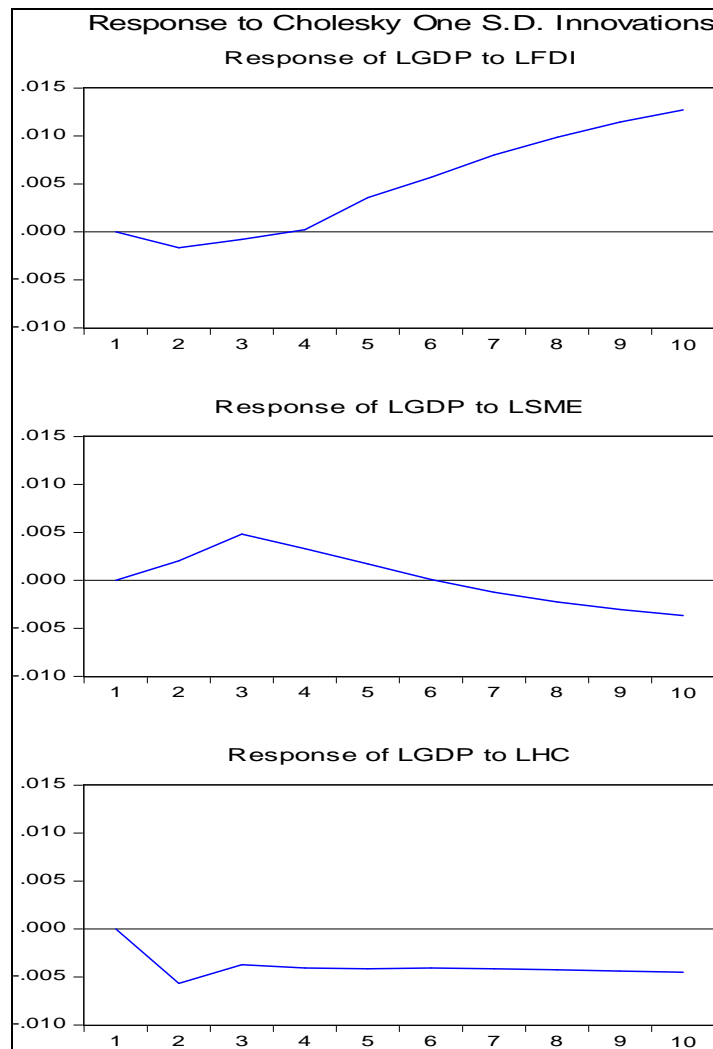


Figure 3

Figure 2 is the impulse response of economic growth (LGDP) to foreign direct investment (LFDI), small and medium scale enterprises (LSME) and human capital (LHC) in Nigeria. It shows the response of economic growth to shocks in foreign direct investment, small and medium scale enterprises and human capital. The upper one shows that the response of economic growth to foreign direct investment is favourable from the fourth period to the tenth period. The impulse response has expected pattern and confirms the long run result, Granger causality result and variance decomposition result.

The middle one reveals that the response of economic growth to small and medium scale enterprises is favourable from the first period to the fifth period and negative in all other period. This shows that economic growth responded to small and medium scale enterprises shock by fifty percent which is not below average. This also confirms the long run and Granger causality results.

The last one indicates that the response of economic growth to human capital is negative in all the period. This confirms the Granger causality result and shows that skilled workers in Nigeria are low and inadequate to impact meaningfully on economic growth. The overall conclusion in this research shows that foreign direct investment contributed to economic growth more than small and medium scale enterprises in Nigeria. However, positive influence of SME on economic growth can be boosted in Nigeria by taken care of operational challenges that affect SME in the country through provision of monitored loan and credit which will act as a precursor to solving other challenges such as deficient entrepreneurial capacity, high rate of business failure, poor sales promotion and advertising and in the long run improve SME contribution to economic growth.

4.7. Granger Causality Results

Null Hypothesis:	Obs	F-Statistic	Prob.
LFDI does not Granger Cause LRGDP	31	14.1676	0.0008
LGDP does not Granger Cause LFDI		0.91431	0.3472
LSME does not Granger Cause LGDP	31	63.0600	1.E-08
LRGDP does not Granger Cause LSME		43.4497	4.E-07
LHC does not Granger Cause LGDP	31	1.04499	0.3154
LGDP does not Granger Cause LHC		0.73306	0.3992
LSME does not Granger Cause LFDI	31	1.19335	0.2840
LFDI does not Granger Cause LSME		10.8790	0.0027
LHC does not Granger Cause LFDI	31	1.12016	0.2989
LFDI does not Granger Cause LHC		0.03815	0.8465
LHC does not Granger Cause LSME	31	0.66050	0.4232
LSME does not Granger Cause LHC		0.31551	0.5788

Table 10: Granger causality test Result, Lags: 1
Sample: 1980 2011 Source: Author's computation using E-View 8.0

With reference to Table 10 the causality test for the short run relationship between foreign direct investment (LFDI) and economic growth (LGDP) indicates unidirectional causality from foreign direct investment to economic growth. This is because the F-statistics is significant and the p-value is less than 0.05. The causal relationship between small and medium scale enterprises (LSME) and economic growth (LGDP) is bidirectional. The F-statistics and the p-values in both ways are significant and less than 0.05 respectively. The p-values are $(1/10^8 = 0.00000001$ and $4/10^7 = 0.0000004$).

4.8. Correlation Matrix and Diagnostic Tests

The values in the correlation matrix results for correlation are low which indicate that the long run, Granger causality, variance decomposition and the impulse response results in this study are not spurious. Furthermore, all the variables pass through other necessary diagnostic tests regarding heteroscedasticity, normal distribution and serial correlation. In all the results the p-values are greater than 0.05 which shows that the null hypothesis of no heteroscedasticity is accepted while the alternative is rejected. In the same way, the null hypothesis of no serial correlation is accepted while the alternative is rejected. The null hypothesis of no normality of error term is rejected and the alternative accepted.

	LGDP	LFDI	LSME	LHC
LGDP	1	0.280850	0.597479	0.064772
LFDI	0.280850	1	0.230974	0.060597
LSME	0.597479	0.230974	1	0.069871
LHC	0.064772	0.060957	0.69871	1
Test	Null Hypothesis		T-Statistics	Probability
White (Chi-sq.)	No conditional heteroscedasticity		154.4404	0.6091
Jarque-Bera	There is no normal distribution		80.70495	0.0600
Lagrange Multiplier	There is no serial correlation		25.38280	0.0634

Table 11: Correlation Matrix and Diagnostic Tests
Source: Author's computation using E-View 8.0

5. Conclusion and Recommendations

This study is embarked upon because of the benefits that accrue from FDI and SME and with the view to fill the gap in literature; their roles in Nigeria economic growth are compared. The empirical findings reveal that the normalised long run equilibrium indicates that foreign direct investment and small and medium scale enterprises are positively related to economic growth. The results from the long run equilibrium relationship show that one percent increase in foreign direct investment (LFDI) and small and medium scale enterprises (SME) caused economic growth to increase by 1.35% and 0.19% respectively. The latter low contribution to economic growth is caused by operational challenges. The short run dynamics support the co-integration results by being appropriately signed and statistically significant. Furthermore, results show that there exists a Granger causality relationship between foreign direct investment as well as small and medium scale enterprises with economic growth. To a large extent variance decomposition results show that besides output growth the predominant source of variation in output growth is foreign direct investment in lieu of small and medium scale enterprises. The discussion indicates that impulse response results confirm the long run results, Granger causality results and variance decomposition results. Thus, there is need for policy makers to shift policy in this direction. Provision of monitored loan to active SME investors to take care of the operational challenges is needed. Government intervention should be the last resort and if necessary must cover provision of infrastructural facilities.

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