RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT INFLOW, SUB-SAHARA AFRICA AND NIGERIA ECONOMIC DEVELOPMENT

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Abstract
The paper aimed at evaluating the relationship between FDI inflow from sub-Sahara Africa (Ghana and Liberia) to the growth of the Nigerian economy. Foreign direct investment provides capital for investment, it enhances job opportunities, technical and management skills, transforming the structure of the economy and the provision of imported technology. Data were derived from the Central Bank of Nigeria, International Monetary Fund, African Development Bank, and World Development Indicators of the World Bank. The period of analysis was 1980 to 2009. Econometrics model was used for estimation. The OLS results reviewed the independent variables have a positive relationship with Nigeria economic growth as a result of the normality significance of Jarque-Bera test. Vector Auto-regression model was used to statistically test for a long-run relationship between foreign direct investment and growth of the Nigeria economy. Also construct vector autoregressive model which tested the causality between FDI and economic growth the Granger Causality tests results revealed that NGDP causes LFDI and both LFDI and GFDI granger cause.

Keywords: Johansen test, VAR, Central Bank of Nigeria (CBN), International Monetary Fund (IMF), World Bank Indicator, African Development Bank (ADB), Foreign Direct Investment (FDI), Gross Domestic Product (GDP).

Introduction
Over the years, Nigeria has achieved some appreciable economic development for promotion of economic growth. One of the sources is through Foreign Direct Investment inflow. FDI is 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 defined according to residency. Such investments may take the form of merger and acquisition which entails of existing interest rather than new investment (World Bank, 1996).

FDI inflow has been viewed as the major activities that contribute to economic growth of any nation from the developing world. According to Obida and Abu (2010), foreign direct investment not only provides needed capital for investment, it also enhances job creation, managerial skills as well as transfer of technology. However, event had changed over times where foreign direct investment inflow is considered from countries within the region of Africa.

Governments have been trying to lift the country out of the economic doldrums without achieving success as desired. Each of these governments has not focused much attention on investment especially foreign direct investment which will not only guarantee employment but will also impact positively on economic growth and development. FDI is needed to reduce the difference between the desired gross domestic investment and domestic savings. Jenkin and Thomas (2002) assert that FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated. According to Adegbite and Ayadi (2010), FDI helps fill the domestic revenue-generation gap in a developing

economy, given that most developing countries' governments do not seem to be able to generate sufficient revenue to meet their expenditure needs. Other benefits are in the form of externalities and the adoption of foreign technology.

Given the Nigerian economy resource base, the country's foreign investment policy should move towards attracting and encouraging more inflow of foreign capital. The need for foreign direct investment (FDI) is born out of the under developed nature of the country's economy that essentially hindered the pace of her economic development. Generally, policy strategies of the Nigeria government towards foreign investments are shaped by two principal objectives of the desire for economic independence and the demand for economic development.

An analysis of foreign flow into the country so far have revealed that only a limited number of multinationals or their subsidiaries have made Foreign Direct Investment in the country. Added to this problem of insufficient inflow of FDI is the inability to retain the Foreign Direct Investment which has already come into the country. Also what effect has foreign direct investment have on such variables as – Gross Domestic Product (GDP) and Balance of Payment (BOP). Moreover, what effect does inflation and exchange rate have on Foreign Direct Investment? Carkovie and Levine (2002) in their study concluded that exogenous component of FDI does not exert a robust positive influence on economic growth.

According to Ayanwale (2007), the relationship between FDI and economic growth in Nigeria is yet unclear, and that recent evidence shows that the relationship may be country and period specific. Therefore there is the need to carry out more study on their relationship. Developing countries economic difficulties do not originate in their isolation from advance countries. The most powerful obstacle to their development comes from the way they are joined to the international system. Added to this problem is the poor external image Nigeria have and the concept of European Economic Community that include Eastern Europe. This translates to the fact that investment flows that would normally come from western countries now go to poor European Economic Communities which include Eastern Europe. Foreign direct investment (FDI) is a major component of capital flow for developing countries, its contribution towards economic growth is widely argued, but most researchers concur that the benefits outweigh its cost on the economy (Musila and Sigue, 2006).

Mc Aleese (2004) states that "FDI embodies a package of potential growth enhancing attributes such as technology and access to international market" , but the host country must satisfy certain preconditions in order to absorb and retain these benefits and not all emerging markets possess such qualities. (Boransztan De Gregorio and Lee 1998, and Coller and Doller, 2001). On his part Ezirim (2005) stated that FDIs in Nigeria have transmitted positive effects to the Nigerian economy. According to him these contributions include: *the expansion of the country's industrial base; the growth of industrial opportunities and the improvement of the balance of payment; it aids the country's industrial development programme by bringing in technical and managerial skills; the biggest single source of employment opportunities for the country's teeming population; they are engine of growth in terms of their assistance in transforming the structure of the economy from a single vector to a composite sector; from a primary agrarian enclave to an industrial one. They have assisted in and also induced the government in providing needed infrastructure. More importantly, they have facilitated in bringing imported technology that has led to greater utilization of resources.*
Over the years, FDI has being viewed as majorly the activities that contributes to economic growth of any nation from the developed world. However, event has changed over time where foreign direct invest inflow is considered from countries within the region: such as FDI inflow into Nigeria economy from Ghana and Liberia. This paper critically evaluates the co-integrating relationship between FDI inflow and Nigeria economic performance. To test any existence of significant contribution to the performance; we employed Economic Analysis procedure to investigate the significance empirically. Therefore to achieve the objective, the paper is divided into five interconnected sections. The next section reviews

relevant literatures on foreign direct investment and the third section examines the materials and methods of the study. The fourth section examines the results and the concluding remarks in the final section.

Literature Review

At the firm level, several studies provided evidence of technological spillover and improved plant productivity. At the macro level, FDI inflows in developing countries tend to crowd in other investment and are associated with an overall increase in total investment. Most studies found that FDI inflows led to higher per capita GDP, increase economic growth rate and higher productivity growth. As noted by De Mello (1997), two channels have been advanced to explain the positive impact of FDI on growth. First, through capital accumulation in the recipient country, FDI is expected to be growth-enhancing by encouraging the incorporation of new inputs and foreign technologies in the production function of the recipient economy. Second, through technology transfer, FDI is expected to increase the existing stock of knowledge in the recipient economy through labour training and skill acquisition (Borensztein et al., 1998; Mastromarco and Ghosh, 2009), on the one hand and through the introduction of alternative management practices and organization arrangements, on the other. Essentially, the extent to which FDI is growth-enhancing depends on the economic and technological conditions of the host country. For example, Borensztein et al. (1998) suggest that there is a strong complementary effect between FDI and human capital, that is, the contribution of FDI to economic growth is enhanced by its interaction with the level of human capital in the host country. Moreover, the magnitude of the FDI-growth link depends on the degree of complementarities and substitution between FDI and domestic investment (De Mello, 1999), and depends on institutional matters, such as the recipient economy's trade regime, legislation, political stability, urbanization rate (Hsiao and Shen, 2003), etc.

However, studies in the line of Carcovic and Levine (2003) do not lend support to the view that FDI promotes growth. Moreover, Hanson (2001) has found weak evidence that FDI generates positive spillovers for host countries. Recently, comprehensive discussions at the firm level have been provided by Gorg and Greenaway (2004). Another strand of the literature has focused more directly on the causal relationships between FDI and growth.

For example, Chowdhury and Mavrotas (2006) examines the causal relationship between FDI and economic growth by using time-series data covering the period 1969-2000 for three developing countries, namely Chile, Malaysia and Thailand. They follow the Toda and Yamamoto causality test approach. Their empirical findings clearly suggest that GDP causes FDI in the case of Chile and not vice versa, while for both Malaysia and Thailand, there is strong evidence of a bi-directional causality between the two variables. Furthermore, in Hansen and Rand (2006), the causal relationship between FDI and GDP is analysed in a sample of 31 developing countries covering the period 1970-2000. Their conclusions regarding the direction of causation between the two variables seem to vary significantly depending on the econometric approach adopted and the sample used. In addition, looking at time series on 11 countries, Zhang (2001) evidences strong Granger-causal relationship between FDI and GDP growth.

In summary, despite the truly enormous amount of research that has been undertaken on FDI there remain serious methodological issues. Moreover, probably due to relatively small level of foreign direct investment to

Africa, when compared with other regions, e.g. Latin America and Asia, not many studies has been reported on the effects of FDI on economic growth.

The paper contributes to the empirical literature on the relationship between foreign direct investment and economic growth, for three Sub-Saharan African countries, namely Ghana, Liberia, and Nigeria. To this end, we employ two newly introduced methods in applied economics: the Pesaran et al. (2001) approach to cointegration and the Toda and Yamamoto (1995) causality procedure. The Pesaran et al. (2001) approach has at least two major advantages over the traditional approaches (Engle and Granger, Johansen) used by a wide range of studies. The first advantage is that it is applicable irrespective of

whether the underlying regressors are purely stationary, purely integrated or mutually cointegrated. The second advantage is that it has superior statistical properties in small samples. The bounds test is relatively more efficient in small sample data sizes as is the case in most empirical studies on African countries. Furthermore, Toda and Yamamoto (1995) propose an interesting yet simple procedure requiring the estimation of an augmented vector autoregressive (VAR) which guarantees the asymptotic distribution of the Wald statistic, since the testing procedure is robust to the integration and cointegration properties of the process. Data are derived from UNCTAD (2008), the African Development Bank (2008) and the 2008 World Development Indicators of the World Bank (2008), and span from 1980 to 2007.

Materials and Methods

The co-integration approach

Econometric literature proposes different methodological alternatives to empirically analyse the long-run relationships and dynamic interactions between two or more time-series variables. The most widely used methods include the two-step procedure of Engle and Granger (1987) and the full information maximum likelihood-based approach due to Johansen (1988) and Johansen and Juselius (1990). All these methods require that the variables under investigation are integrated of order one. This inevitably involves a step of stationarity pre-testing, thus introducing a certain degree of uncertainty into the analysis. In addition, these tests suffer from low power and do not have good small sample properties (Cheung and Lai, 1993; Harris, 1995). Due to these problems, this study makes use of a newly developed approach to cointegration that has become popular in recent years.

The bounds testing approach to cointegration was originally introduced by Pesaran and Shin (1999) and further extended by Pesaran et al. (2001). The bounds testing approach to cointegration has at least two major advantages over the Johansen and Juselius (1990) approach used by a wide range of studies (Masih and Masih2000; Narayan and Peng, 2007). The first advantage is that it is applicable irrespective of whether the underlying regressors are purely I(0), purely I(1) or mutually cointegrated. The second advantage is that it has superior statistical properties in small samples. The bounds test is relatively more efficient in small sample data sizes as is the case in most empirical studies on African countries. Estimates derived from Johansen-Juselius method of cointegration are not robust when subjected to small sample sizes such as that in the present study.

To search for possible long run relationships amongst the variables, namely gross domestic product per capita (GDPC) and the ratio of foreign direct investment to GDP, we employ the bounds testing approach to cointegration suggested by Pesaran et al. (2001).

Variable Specification

To investigate the flow of Foreign Direct Investment from Ghana and Liberia into Nigeria in contributing to the economic growth, the model for the study is specified as:

$NGDP$ = Nigerian Gross Domestic Product, $GFDI$ = Ghana Foreign Direct Investment

$LFDI$ = Liberia Foreign Direct Investment and Others= F(externalities and the adoption of foreign technology)

Data and variables

This paper uses annual time series data on three Sub-Saharan African countries, namely, Ghana, Liberia, and Nigeria. These African countries benefit large foreign direct investment inflows and are characterized by high levels of the per capita gross domestic product during the last two decades. In addition, these countries are viewed as having strong prospects over the near term in attracting large volumes of global FDI flows because of a successful implementation of reforms. That is why this study focuses on three African countries. The series comprise yearly observations between 1980 and 2009, namely real gross domestic product per capita (GDPC) as a measure for economic growth and the ratio of foreign direct investment (FDI) inflows to GDP (RFDI). Data on real GDP per capita and GDP are from the World Development Indicators of the World Bank and from the Selected International Journal of Economics and Finance.

Statistics on African Countries of the African Development Bank, and time series on FDI inflows come from World Investment Report Dataset of the United Nations Conference on Trade and Development.

Methodology

In estimating the model, the dependent and independent variables are separately subjected to normality, ARCH, stability and stationary tests using histogram, white heteroskedasticity test, Ramsey reset and unit root tests since the appriori assumptions for the regression model require that the variables are normal, heteroscedasticity, in functional form and stationary and that errors have a zero mean and unequal variance. The unit root test is evaluated using the Augmented Dickey-Fuller (ADF) test which can be determined as:

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \gamma \sum_{i=1}^{m1} \Delta Y_{t-i} + \varepsilon_t \quad \text{.....1}$$

Where α represents the drift, t represents deterministic trend and m is a lag length large enough to ensure that ε_t is a white noise process. If the variables are stationary and integrated of order one I(2), we test for the possibility of a co-integrating relationship using Eagle and Granger (1987) two stage Var Auto-Regression (VAR). The study employs the Var Auto-Regression (VAR) because it is an appropriate estimation technique that captures the relationship among the inflows variables.

The specification is expressed as function:

NGDP= f (GFDI, LFDI and Others)

The proposed long-run equation in this study is specified below

$$NGDP_t = \alpha_0 + \alpha_1 GFDI + \alpha_2 LFDI_t + \alpha_3 Others_t + \varepsilon_t \quad \text{.....2}$$

Hence VAR model used in this study is specified as:

$$\Delta NGDP_t = \beta_1 + \beta_2 \sum_{i=1}^{n} \Delta GFDI_{t-i} + \beta_3 \sum_{i=1}^{n} \Delta LFDI_{t-i} + \beta_2 \sum_{i=1}^{n} \Delta Others_{t-i} + \delta_1 VAR(-2) + \varepsilon_t \quad \text{...3}$$

Where NGDP is Nigerian Gross Domestic Product, FDI is Foreign Direct Investment inflow from Ghana, Liberia and Others and $VAR(-2)$ is VAR term and U_t is Error term.

The short run effects are captured through the individual coefficients of the differenced terms. That is β_i captures the impact while the coefficient of the VAR variable contains information about whether the past values of variables affect the current values of the variables under study. The size and statistical significance of the coefficient of the residual correction term measures the tendency of each variable to return to the equilibrium. A significant coefficient implies that past equilibrium errors play a role in determining the current outcomes ∂_1 captures the long-run impact.

Empirical Analysis Result

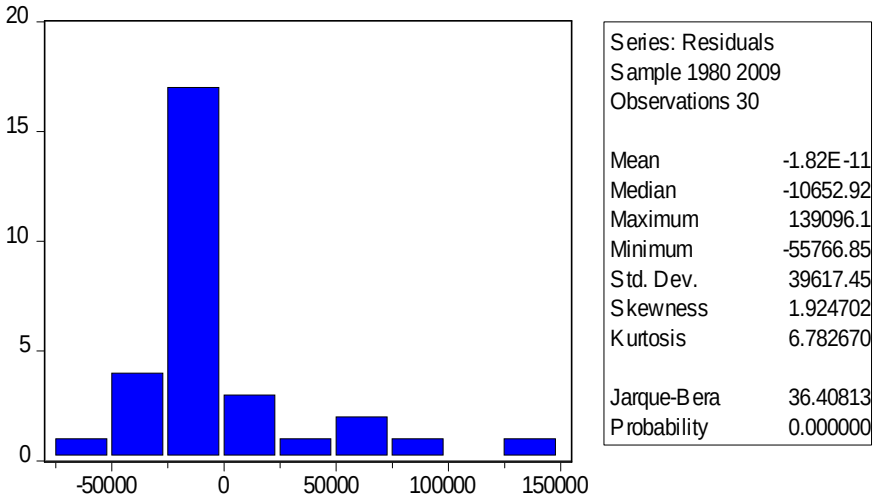
Dependent Variable: NGDP
Method: Least Squares
Table 1
Sample(adjusted): 1980 2009
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GFDI	37.32926	15.45081	2.416007	0.0230
LFDI	27.79444	12.89845	2.154867	0.0406
OTHERS	38.95335	40.22011	0.968504	0.3417
C	-11009.12	11588.40	-0.950012	0.3509

R-squared	0.848101	Mean dependent var	87062.37
Adjusted R-squared	0.830574	S.D. dependent var	101650.4
S.E. of regression	41840.69	Akaike info criterion	24.24469
Sum squared resid	4.55E+10	Schwarz criterion	24.43152
Log likelihood	-359.6704	F-statistic	48.38884
Durbin-Watson stat	0.961045	Prob(F-statistic)	0.000000

Source: E-Views version 3.1

Table2 Diagnostic Test



Source: E-Views version 3.1

Table3 Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	4.783712	Probability	0.017845
Obs*R-squared	8.550633	Probability	0.013908

Test Equation:
Dependent Variable: RESID

Method: Least Squares

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GFDI	-8.334103	13.86250	-0.601198	0.5533
LFDI	0.608972	11.99002	0.050790	0.9599
OTHERS	-2.623614	37.40061	-0.070149	0.9447
C	4211.501	10335.64	0.407474	0.6873
RESID(-1)	0.561643	0.206830	2.715479	0.0121
RESID(-2)	-0.025561	0.218238	-0.117126	0.9077

R-squared	0.285021	Mean dependent var	-1.82E-11
Adjusted R-squared	0.136067	S.D. dependent var	39617.45
S.E. of regression	36823.62	Akaike info criterion	24.04252
Sum squared resid	3.25E+10	Schwarz criterion	24.32276
Log likelihood	-354.6378	F-statistic	1.913485
Durbin-Watson stat	1.931075	Prob(F-statistic)	0.129356

Source: E-Views version 3.1

Table 4 White Heteroskedasticity Test:

F-statistic	1.480964	Probability	0.228631
Obs*R-squared	8.360262	Probability	0.212880

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares

Sample: 1980 2009
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.19E+09	1.48E+09	-0.801020	0.4313
GFDI	-3550877.	8943728.	-0.397024	0.6950
GFDI^2	769.2288	2613.573	0.294321	0.7712
LFDI	1231553.	4064447.	0.303006	0.7646
LFDI^2	-471.1016	441.1803	-1.067821	0.2967
OTHERS	13781090	9271175.	1.486445	0.1507
OTHERS^2	-3063.976	3563.217	-0.859890	0.3987

R-squared	0.278675	Mean dependent var	1.52E+09
Adjusted R-squared	0.090504	S.D. dependent var	3.71E+09
S.E. of regression	3.54E+09	Akaike info criterion	47.01304
Sum squared resid	2.88E+20	Schwarz criterion	47.33999
Log likelihood	-698.1956	F-statistic	1.480964
Durbin-Watson stat	1.572533	Prob(F-statistic)	0.228631

Source: E-Views version 3.1

Table5 Ramsey RESET Test:

F-statistic	5.813862	Probability	0.002384
Log likelihood ratio	21.63842	Probability	0.000237

Test Equation:
Dependent Variable: NGDP
Method: Least Squares

Sample: 1980 2009
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GFDI	-117.5273	70.55008	-1.665871	0.1099
LFDI	-50.24847	57.93584	-0.867312	0.3951
OTHERS	-153.5938	108.3926	-1.417014	0.1705
C	38908.75	35969.07	1.081728	0.2911
FITTED^2	0.000111	5.47E-05	2.031712	0.0544
FITTED^3	-1.00E-09	5.73E-10	-1.752000	0.0937
FITTED^4	3.51E-15	2.38E-15	1.474069	0.1546
FITTED^5	-4.22E-21	3.42E-21	-1.233637	0.2304

R-squared	0.926158	Mean dependent var	87062.37
Adjusted R-squared	0.902662	S.D. dependent var	101650.4
S.E. of regression	31713.93	Akaike info criterion	23.79008
Sum squared resid	2.21E+10	Schwarz criterion	24.16373
Log likelihood	-348.8512	F-statistic	39.41878
Durbin-Watson stat	1.973339	Prob(F-statistic)	0.000000

Source: E-Views version 3.1

Table6

Unit Root at 2 NGDP

ADF Test Statistic	-5.911813	1% Critical Value*	-3.7076
		5% Critical Value	-2.9798
		10% Critical Value	-2.6290

Unit Root at 2 DFF GFDI

ADF Test Statistic	-5.620173	1% Critical Value*	-3.7076
		5% Critical Value	-2.9798
		10% Critical Value	-2.6290

Unit Root at 2 DFF

ADF Test Statistic	-0.128973	1% Critical Value*	-3.7076
		5% Critical Value	-2.9798
		10% Critical Value	-2.6290

Source: E-Views version 3.1

Table 7 Johnsen Co-integration test
Sample: 1979 2009
Included observations: 28
Test assumption: Linear deterministic trend in the data
Series: DNGDP DGFDI DLFDI
Lags interval: No lags

Eigenvalue
0.637847
0.613204
0.305853

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Unnormalized Cointegrating Coefficients:	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
-1.80E-06	65.25730	29.68	35.65	None **
-4.73E-06	36.81804	15.41	20.04	At most 1 **
2.97E-06	10.22199	3.76	6.65	At most 2 **

Normalized Cointegrating Coefficients: 1 Cointegrating Equation(s)

DNGDP	DGFDI	DLFDI
1.000000	-0.000295	9.14E-05
Log likelihood	0.000189	0.000176

	0.000259	0.000481	
Normalized Cointegrating Coefficients: 2 Cointegrating Equation(s)			
DNGDP			
1.000000	DGFDI	DLFDI	C
	163.8013	-50.77000	1429.954
0.000000	(78.2784)	(50.2630)	
	-765.4580		
Log likelihood			
	DGFDI	DLFDI	C
	0.000000	-39.94833	-106.9733
		(18.4275)	
	1.000000	-0.066066	9.382873

Source: E-Views version 3.1

Table 8
Sample(adjusted): 1983 2009
Included observations: 27 after adjusting endpoints
Standard errors & t-statistics in parentheses

	DNGDP
DNGDP(-1)	-0.033437
	(0.22998)
	(-0.14539)
DNGDP(-2)	-0.144454
	(0.21316)
	(-0.67766)
C	13462.02
	(8386.27)
	(1.60525)
DGFDI	-8.467041

	(15.4113)
	(-0.54941)
DLFDI	-9.591634
	(20.3233)
	(-0.47195)
R-squared	0.043083
Adj. R-squared	-0.130901
Sum sq. resids	2.86E+10
S.E. equation	36064.12
F-statistic	0.247627
Log likelihood	-318.8591
Akaike AIC	23.98956
Schwarz SC	24.22953
Mean dependent	9719.389
S.D. dependent	33912.74

Source: E-Views version 3.1

Table 9 Estimation Proc:

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LS 1 2 DNGDP @ C DGFDI DLFDI

VAR Model:

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DNGDP = C(1,1)*DNGDP(-1) + C(1,2)*DNGDP(-2) + C(1,3) + C(1,4)*DGFDI + C(1,5)*DLFDI

VAR Model - Substituted Coefficients:

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DNGDP =- 0.03343657098*DNGDP(-1) - 0.144454019*DNGDP(-2) + 13462.01598 - 8.467040848*DGFDI - 9.59163364*DLFDI

Table 10 Pairwise Granger Causality Tests
Date: 07/17/11 Time: 09:36
Sample: 1979 2009
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
DGFDI does not Granger Cause DNGDP	27	0.30725	0.73857
DNGDP does not Granger Cause DGFDI		0.31069	0.73611
DLFDI does not Granger Cause DNGDP	27	0.45098	0.64276
DNGDP does not Granger Cause DLFDI		0.94809	0.40275
DLFDI does not Granger Cause DGFDI	27	1.86962	0.17787
DGFDI does not Granger Cause DLFDI		1.56559	0.23137

Source: E-Views version 3.1

Discussion of Results

The OLS result in table1 showed the independent variables have positive relationship with Nigeria economic growth and significant at 5%. The analysis is adjudged accurate at 84.8% and capable of explaining dependent variable (NGDP) while 15.2% may not be explained as accounted for error and

other economic reasons. The diagnostic test in table 2 showed that the series is normal and significant using Jargue-Bera test. There is presence of serial auto-correlation by the test result of breuch-Godfrey in table3 as the null hypothesis is rejected. The table 4 indicated cross terms and heteroscedasticity in series variance and stability test of Ramsey revealed the model is in functional form in table 5. The unit root test for stationarity of series at level and order 1 is non stationary at 5% but statistically significant at order 2 as ADF test value is greater than the 5% critical value but the test failed at level and various orders for OTHERS(see table 6) therefore, others was dropped during the co-integrating and granger test procedure. Johnsen test normalized at 2 with two co-integrating equations and do not established any evidence of long run relationshipin table 7. The table 8 and 9 showed the presentation and model result. Table10 test and investigate the Granger causality.

Conclusion

This study has contributed to the cointegrating and causal relationship between foreign direct investment and economic growth in the case of three Sub-Saharan African countries. To this end, we use two recent econometric procedures which are the Pesaran et al. (2001) approach to cointegration and the procedure for non-causality test popularized by Toda and Yamamoto (1995). We build vector Auto-regression models and compute bounds F-statistics to test for the absence of a long-run relationship between foreign direct investment and growth. We also construct vector autoregressive models and compute modified Wald statistics to test for the non-causality between FDI and economic growth. Granger test revealed that NGDP causes LFDI and both LFDI and GFDI granger cause.

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