Globalization And Economic Growth in Nigeria: A Cointegration Approach

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Abstract

The broad objective of the study is to assess empirically, the relationship between major globalization indicators and economic growth in Nigeria. The paper covered the period between 1980 and 2015. The cointegration and Error correction mechanism were adopted. The result showed that current FDI and one period lagged FDI, one period lagged exchange rate, current Balance of Payment and two period lagged openness of the economy to the outside world have a positive and significant impact on the level of economic growth in Nigeria. The ECM shows a satisfactory speed of adjustment. The Johansson cointegration test indicates a long run equilibrium relationship among the variables. The result recommends policy to expand FDI and an increase in the level of trade liberalization

Keywords: Globalization, openness, cointegration, FDI

1. Introduction

Globalization connotes the tendency of moving towards the integration of a nation into the world economy (Okpokpo, Helenian and Osuyali 2014). Globalization entails the links among enterprises, institution as well as citizens across national borders. Thus, as a historical process, globalization it is the result of innovation and technological progress by humans (Nwakama and Ibe, 2014). Globalization involves the movement of goods and services across national borders. Nsavcama and Ibe (2014) also noted that globalization has cultural, political and technological perspectives. Thus, all things being equal globalization ought to have brought efficiency, technological break through as well as competitiveness to the economy. This has however not been the case due to the mono production base of the Nigerian economy which rely mostly on the exports of crude oil for her foreign exchange. This has led to the neglect of all other sectors like the manufacturing and agricultural sectors. This has deprived the country of the supposed benefits from globalization.

The impact of globalization has not been felt in the Nigerian economy. This is because, currently, Nigeria exports crude oil and imports refined products due to the inability of local refineries to meet the domestic demand despite the huge money spent on the Turn Around maintenance (TAM) of the four local refineries. The exports from Nigeria thus have very high import content. This has made the Nigeria economy to be industrially underdeveloped. For example in 1960, Nigeria's oil exports was just 2.6 percent of the total exports. In 1965 it rose to 25.4 percent and 57.5 percent in 1970. By the 2000 it has increased to 98.7 percent and reduced to 96.4 percent in 2010 (Sede and Izilein, 2013). Since 2010. The percentage of oil exports in total exports has not fallen below 90 percent since then. This paints a grim picture of the impact of globalization on the Nigerian economy which in currently in recession with the exchange rate of the naira to the dollar being higher than ever before in the history of the country. Some developing countries including Nigeria has blamed the failure to achieve the supposed benefit of globalization on the harsh trade policies of the Western world.

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The poor economic policy and corruption by both private and public sector have worsen the situation. The broad objective of the study is to assess empirically, the relationship between major globalization indicators and economic growth in Nigeria. The second part of the paper is on the theoretical underpinnings while the third part reviews previous literature. The forth section is the econometric procedure while the fifth section borders on the findings of the research. The sixth section concludes the research.

2.Theoretical underpinnings

The paper draws from the neoclassical growth theory developed by Robert Solow. The theory postulates that output is a function of labour and capital. The production function is expressed as: $Y=AR(L,K)$ where Y represent output, k is stock of capital and L is labour. A is technology which is exogenously determined. This model is relevant in analyzing globalization and economic growth because the movement of capital and labour forms the basis for globalization and international trade. The relevance of globalization is determined by the changes in total factor productivity in terms of labour, capital and technological progress (Ogunyomi, Jenrola and Daisi, 2013) in economic growth between the developed and developing nations through technology which is exogenously determined. This divergence in the benefit from globalization also has been linked to the neglect of the manufacturing sector in developing countries including Nigeria which has become retrogressive due to obsolete technology.

3.Empirical Review

Globalization has differential impact in countries across the world. The benefits of globalization is however dependent on whether the country is developed or emerging and on whether the naturally endowed resources are being optimally utilized for the purpose of diversification. The study by Ogunyomi, Jenrolea and Daisi (2013) investigated globalization and economic security in Nigeria's manufacturing sector. The study covered the period between 1981 and 2010 and used the cointegration and Error correction mechanism (ECM) TO estimate the formulated model. The findings revealed that globalization has negative effect on the Nigerian manufacturing sector in the long run, but the effect of globalization on the manufacturing sector is positive in the short run. The impact of globalization on economic growth in Nigeria was the focus of the study by Shuaib, Ekeria and Ogedengbe (2015). The study spanned 1960 to 2010 period. The ordinary least squares (OLS) was used. The result showed that globalization had a significant impact on economic growth in Nigeria. Adeleke, Akinola and Chris (2013) investigated globalization and economic development in Nigeria. Adopting the cointegration technique and granger causality tests the result showed that FDI is a component of globalization and had an important influence on the level of economic growth in Nigeria. The result also indicated unidirectional causality from FDI to economic growth. Sede and Izilein (2013) examined economic growth and globalization in Nigeria. The study adopted the granger causality. The result adopted the null hypothesis that globalization does not granger cause economic growth was accepted. Globalization and the industrial development of Nigeria formed the basic of the study by Ebong, Udoh and Obafemi (2014).

The study covered the period between 1960 and 2010. The study adopted the Johansen cointegration methodology. The result revealed that globalization had a significant impact on industrial development in Nigerian. Trade openness had a positive impact on industrial development. Nwakama and Ibe (2014) studied globalization and economic growth in Nigeria. The study spanned the 1981 – 2012 period. The cointegration test was adopted. The results showed a positive and insignificant relationship between financial integration, human resource development and trade openness, while Gross fixed Capital Formation had a negative and insignificant impact on trade openness. Okpokpo. Ifelunini and Osuyali (2014) investigated the potency of globalization as a driver of economic growth in Nigeria. The 1970 – 2011 period was the target of the study. The OLS technique was used. The results revealed that globalization had no significant impact on non-oil export in Nigeria. Oni (2015) evaluated globalization and national development in Nigeria. The study adopted the description statistics. The result revealed that infrastructural decay, poverty, ethno-religious crises and bad governance are hindering the integration of the Nigerian economy into the global system. Globalization, business cycle and economic growth in Nigeria formed the focus of the study by Alimi and Atanda (2011). The study covered 1970 to 2010 period. Using the autoregressive model, the study showed that globalization had positive and significant impact on economic growth in Nigeria. Rasaki, Hakeem and Emmanuel (2013) analyzed the nexus between globalization and economic growth in Nigeria. The study adopted the descriptive statistics and the OLS. The result revealed that insulation had a significant and positive impact on FDI while exchange rate had a significant and negative impact on FDI. Jerungwa (2014) analyzed globalization and economic development in Nigeria. The study adopted the descriptive statistics and discovered that the Nigerian economy had not benefited from the globalization process.

4. Econometric Procedures

The study which covered the period between 1980 and 2015 adopted the ex-post facto research design because the study utilized historical data which are time series in nature. The regression analysis, specifically, the cointegration and ECM will be used for the study. The first stage in the estimation is to describe the variables using the descriptive statistics. This is followed by the unit root test. The Augmented Dickey Fuller (ADF) unit root test will be used for this purpose. The Johansen multivariate cointegration technique will form the basis for analyzing the long run relationship among the variables. The signs and elasticity's will be analyzed using the overparameterized and parsimonious ECM. The extent of shocks of the variables on themselves and on other variables will be analyzed using the impulse response and variance decomposition. This will however be after the preferred model has been subjected to some diagnostic shocks which include the Breusch Godfrey serial correlation Langrage. Multiplier (LM) test, Jarque-bera normality test and white heteroskedasticity test. The model to be analyzed draws from the Solow's growth theory as stated earlier. The model is briefly restated as: Y= AF(L,K) However, in our model output is represented by economic growth which is captured by the Gross Domestic Product. (GDP). Other variables includes foreign direct investment (FDI) which incorporates the international movement of capital and labour, degree of openness which represents trade liberalization and the exchange rate. The model is stated lineally as:

$$GDP = \alpha_0 + \alpha_1 FDI + \alpha_2 OPEN + \alpha_3 EXR + \alpha_4 BOP + Ut$$

$$\alpha_1, \alpha_2, \alpha_3, \alpha_4 > 0$$

Where:
CDP: = Gross Domestic Product
FDI: = Foreign Direct Investment
OPEN: = degree of openness proceed, by the ratio of exports + imports to GDP
E XR = exchange rate
BOP = Balance of Payments
Ut = ErrorTorun

5. Discussion of Results.

The results of the descriptive statistic is shown in the table below

Table: Descriptive Statistics

	LGDP	LFDI	LEXR	LBOP	OPEN	ECM
Mean	14.55214	21.00479	3.325945	5.087990	0.496000	8.00E-14
Median	14.84583	20.85442	3.093362	5.070161	0.560000	0.015167
Maximum	17.87657	22.90277	5.132263	13.93254	0.880000	0.681869
Minimum	10.77100	19.05813	-0.494296	1.000000	0.160000	-0.673963
Std. Dev.	2.434524	1.139137	1.828668	4.206602	0.177370	0.337806
Skewness	-0.237039	0.229221	-0.784653	0.450597	0.320250	0.180596
Kurtosis	1.642410	2.009433	2.394598	1.897644	2.456646	2.671186
Jarque-Bera	3.015542	1.737449	4.125968	2.956536	1.028815	0.347927
Probability	0.221403	0.419486	0.127074	0.228032	0.597855	0.840327
Sum	509.3250	735.1678	116.4081	178.0796	17.36000	2.80E-12
Sum Sq. Dev.	201.5148	44.11954	113.6969	601.6469	1.069640	3.879844
Observations	35	35	35	35	35	35

The skeweness indicates that the values of the variables are greater than O in most of the cases which indicates that the series is skewed to the right. The series exhibits a long right tail. The result of the kurtosis with an expected value of 3 indicates that openness satisfies this conduction. The Jarque-bera test indicates that the errors are normally distributed in most of the cases. The result of the Augmented Dickey Filled unit root test is shown in the table below:

Table2: ADF unit root test result

Variables	Level data	First difference	Order of integration
OPEN	1.27	- 3.25	I (1)
GDP	-0.92	- 3.63	I (1)
FDI	-0.73	- 5.14	I (1)
EXR	-2.32	- 3.59	I (1)
BOP	-1.19	- 6.35	I (1)

NB: 1% & 10% critical values are – 3.64 and – 2.95 * and ** indicates stationary at the 1% and 5% level.

The result indicates that all the variables were non stationary at the levels but only became stationary after the first difference was taken. The result indicates further that apart than the (FDI) and BOP which were stationary at the 1 percent level the other variables were stationary at the 5 percent level. The Johansen metrology of cointegration test was used to analyze the long run relationship among the variables. The result is shown in table 3 below:

Table 3: Summary of Johansen cointegration test result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.726241	104.7114	68.52	76.07
At most 1 **	0.595464	63.25517	47.21	54.46
At most 2 *	0.475419	34.29472	29.68	35.65
At most 3	0.345693	13.64973	15.41	20.04
At most 4	0.002372	0.075992	3.76	6.65
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.726241	41.45621	33.46	38.77
At most 1 *	0.595464	28.96045	27.07	32.24
At most 2	0.475419	20.64499	20.97	25.52
At most 3	0.345693	13.57374	14.07	18.63
At most 4	0.002372	0.075992	3.76	6.65

The result showed three cointegrating equation in the trace statistic while the Max-Eigen statistic indicates two cointegrating equation. The result indicates the existence of a long run equilibrium relationship among openness, exchange rate, Balance Payments, FDI and Gross Domestic Product.The Vector Error Correction (VEC) was used in this case to identify the true cointegrating equation. The result of the VEC is shown below:

Table 4: Summary of VEC result

Cointegrating Eq:	CointEq1				
LGDP(-1)	1.000000				
LFDI(-1)	-0.420344 (0.09074) [-4.63253]				
LEXR(-1)	-0.925114 (0.04526) [-20.4385]				
LBOP(-1)	-0.062780 (0.02164) [-2.90060]				
OPEN(-1)	-0.481186 (0.38026) [-1.26540]				
C	-2.055428				
Error Correction:	D(LGDP)	D(LFDI)	D(LEXR)	D(LBOP)	D(OPEN)
CointEq1	-0.294520 (0.08814) [-3.34145]	-0.204437 (0.26364) [-0.77545]	-0.139756 (0.17630) [-0.79273]	-9.167062 (2.92856) [-3.13023]	-0.094410 (0.09588) [-0.98465]

The VEC result revealed that the Gross Domestic Product equation and the BOP equation constitute the true cointegrating equations. The result of the overparameterize ECM is shown in the appendix. The parsimonious ECM was gotten by eliminating the insignificant exogenous variables from the overparameterize ECM. The result of the parsimonious ECM is shown in the table below:

Table 5: Parsimonious ECM Result: Dependent Variable : LGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDI	0.209353	0.061612	3.397924	0.0022
LFDI(-1)	0.678216	0.058099	11.67349	0.0000
LEXR(-1)	0.820513	0.022515	36.44305	0.0000
LBOP	0.483866	0.105696	4.577960	0.0001
OPEN(-2)	0.642603	0.149431	4.300324	0.0001
ECM(-1)	0.703667	0.082051	8.575923	0.0000
C	-6.702609	0.653125	-10.26236	0.0000

R^2 = 0.80, AIC = -1.19, SC = 0.88

The result of the coefficient of determination (R^2) shows that 80 percent of the total changes in economic growth has been explained by FDI, exchange rate , Balance of Payments and the openness of the Nigerian economy taken together . The result shows that the level and one period lagged value of FDI have significant and positive impact on the level of economic growth in Nigeria. Since FDI represents capital inflow from outside countries which is also an indicator of globalization, the result indicates that Nigeria has benefited from the globalization process. The two period lagged value of the openness of the Nigerian economy to the outside world through globalization also have a significant and positive impact on the level of economic growth in Nigeria. An indication that getting integrated into the global world could be a potential source of economic progress for the Nigeria economy. The result revealed further that an increase in the openness of the Nigerian economy to the outside world through globalization by 1 unit will increase the level of economic growth by 0.64 units. The Balance of Payments has a significant and positive impact on the level of economic growth. A favourable Balance of Payment to the tone of I percent could increase the level of economic growth by 0.48 percent. The results of the diagnostic checks are shown below:

Table 6: Diagnostic Checks Result

Jargue-bera

F statistic	0.35	probability	0.84

Breusch Godfrey serial Correlation LM test

F statistic	1.60	probability	0.22

White Heteroskedasticity

F statistic	0.89	probability	0.94

The result of the normality test revealed that the residuals in the model are normally distributed. The result of the Breusch – Godfrey serial correction LM test with value of 1.60 and probability of 0.22 indicates that there is no serial correlation in the residuals. The result of the white heteroskedasticity suggests that the residuals are homooskedastic. The result of the Cumulative Sum of Recursive Residual (CUSUM) and the Cumulative Sum of Squares of Recursive residuals (CUSMQ) are shown in the figures below:
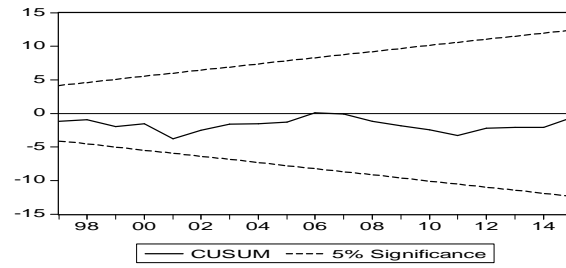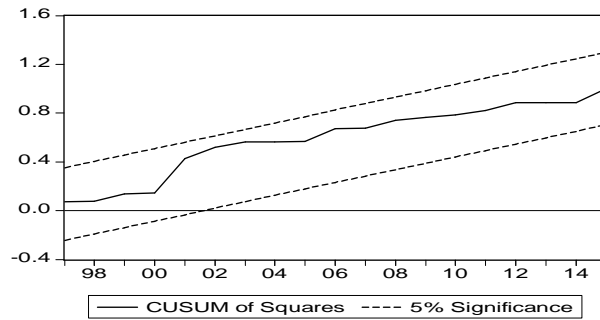
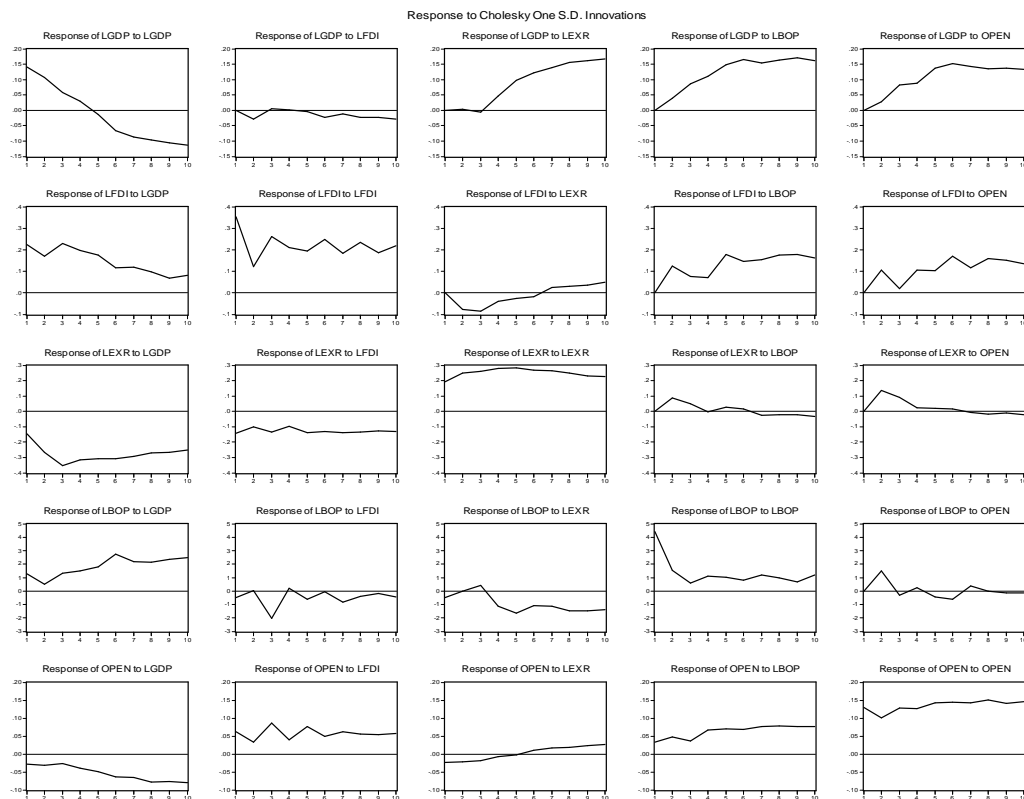**Figure 1: CUSUM Stability test**

Figure 2: CUSUMQ stability test

The result of the CUSUM and CUSUMQ stability tests indicate residual stability. This is because the lines of the CUSUM and CUSUMQ fell in the middle of the two 5 percent lines. The results of the impulse response is shown in figure 3 below:

Figure 3: Impulse Response: cholesky ordering

The result of the cholesky impulse response indicates that an unanticipated increase in FDI, exchange rate, Balance of Payments and the openness of the economy through globalization has a positive impact on actual FDI, exchange rate, Balance of payment and openness of the economy through globalization. The result shows further that an unanticipated increase in expected economic growth has a negative impact on actual economic growth. Also, an unanticipated increase in exchange rate, Balance of Payments and the openness of the economy through globalization have a positive impact on actual level of economic growth. The result of the variance decomposition is shown in the table below:

Table 7: Variance Decomposition Result

Variance Decomposition of LGDP:

Period	S.E.	LGDP	LFDI	LEXR	LBOP	OPEN
1	0.139844	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.184813	91.13612	2.307953	0.020428	4.418956	2.116543
3	0.227893	66.58834	1.585256	0.077425	17.00143	14.74755
4	0.273742	47.39697	1.099513	3.055202	28.06877	20.37955
5	0.354027	28.47722	0.675650	9.312774	34.43891	27.09545
6	0.442317	20.47173	0.713502	13.53377	36.12512	29.15588
7	0.516562	17.87243	0.569560	17.18668	35.42488	28.94645
8	0.587959	16.49145	0.585390	20.22576	35.09772	27.59968
9	0.657324	15.80949	0.586642	22.24574	34.88542	26.47271
10	0.719407	15.64668	0.657947	23.97216	34.16542	25.55779

Variance Decomposition of LFDI:

Period	S.E.	LGDP	LFDI	LEXR	LBOP	OPEN
1	0.418282	28.91509	71.08491	0.000000	0.000000	0.000000
2	0.500824	31.79741	55.42227	2.313516	6.123683	4.343126
3	0.620279	34.37723	53.81021	3.348684	5.537324	2.926549
4	0.697175	35.20541	51.71335	2.975916	5.438208	4.667116
5	0.772748	33.82798	48.37651	2.525545	9.684422	5.585546
6	0.849735	29.82354	48.52459	2.139380	10.90864	8.603847
7	0.898521	28.41123	47.56490	1.996703	12.69052	9.336654
8	0.963980	25.69756	47.25136	1.837947	14.37038	10.84275
9	1.012527	23.75664	46.23167	1.799723	16.16750	12.04447
10	1.061666	22.18293	46.32031	1.857693	17.06963	12.56944

Variance Decomposition of LEXR:

Period	S.E.	LGDP	LFDI	LEXR	LBOP	OPEN
1	0.279711	26.70063	25.76272	47.53666	0.000000	0.000000
2	0.498864	37.19137	12.27652	39.93381	2.962680	7.635614
3	0.685106	46.00712	10.46378	35.61087	2.085372	5.832859
4	0.810426	47.97590	8.897151	37.38460	1.490859	4.251489
5	0.923454	48.17264	9.110255	38.14949	1.242911	3.324701
6	1.018130	48.84142	9.111227	38.23620	1.048304	2.762850
7	1.100524	48.89681	9.361394	38.42376	0.951260	2.366772
8	1.168409	48.74260	9.631164	38.62379	0.878537	2.123910
9	1.226544	48.90305	9.811570	38.52147	0.827042	1.936866
10	1.279264	48.78232	10.04952	38.53064	0.823337	1.814183

Variance Decomposition of LBOP:

Period	S.E.	LGDP	LFDI	LEXR	LBOP	OPEN
1	4.646427	7.791949	1.112890	1.072831	90.02233	0.000000
2	5.150640	7.378335	0.906778	0.873358	82.32491	8.516620
3	5.753408	11.36440	13.19995	1.273794	67.02359	7.138271
4	6.156686	15.67783	11.63166	4.593637	61.71859	6.378273
5	6.740302	20.14609	10.52374	9.858201	53.71279	5.759184
6	7.430377	30.33352	8.663126	10.20941	45.38875	5.405191
7	7.974807	33.88885	8.615751	10.83249	41.72433	4.938577
8	8.452273	36.49817	7.897434	12.74454	38.46325	4.396607
9	8.924074	39.63515	7.117687	14.23382	35.04636	3.966987
10	9.452545	42.22547	6.552048	14.82462	32.84220	3.555658

Variance Decomposition of OPEN:

Period	S.E.	LGDP	LFDI	LEXR	LBOP	OPEN
1	0.152125	3.293247	16.45007	2.476921	4.657868	73.12189
2	0.195672	4.495409	12.91377	2.720069	8.723983	71.14677
3	0.254268	3.709105	19.29282	2.103243	7.196690	67.69814
4	0.297446	4.424049	15.90782	1.593348	10.25619	67.81859
5	0.349057	5.159511	16.27177	1.164348	11.44277	65.96160
6	0.392469	6.696882	14.43987	0.993547	12.13431	65.73539
7	0.434181	7.712702	13.81810	0.971793	13.05599	64.44141
8	0.476474	9.095249	12.84138	0.965916	13.49004	63.60742
9	0.511902	10.09599	12.26425	1.059231	13.95004	62.63050
10	0.547209	10.93543	11.81897	1.151285	14.12989	61.96443

Cholesky Ordering: LGDP LFDI LEXR LBOP OPEN

The result of the variance decomposition shows the dominance of own shocks. It ranges from 100 percent in the first period to 16 percent in the last period for economic growth, from 71 percent in the first period to 39 percent for FDI, from 90 percent in the first period to 33 percent in the last period for Balance of payments and from 73 percent in the first period to 62 percent in the last period for openness. Shocks to FDI explained 2 percent of changes in economic growth in the second period which reduced to 1 percent in the last period. Shocks to exchange rate explained 3 percent of changes in economic growth in the third period and this increased to 24 percent in the last period. Shocks to Balance of Payments explained 4 percent of changes in economic growth in the second period and this increased to 34 percent in the last period. Shocks to openness explained 2 percent of changes in economic growth in the first period and this increased to 26 percent in the last period.

6.Conclusion and Recommendations

The study investigated the impact of globalization on the level of economic growth in Nigeria between 1980 to 2015 period. Based on the research findings the study concludes that the openness of the Nigeria economic to the outside world through trade liberalization has brought the benefits of globalization to the growth process in Nigeria. The study also concludes that FDI is an important factor to be considered if the country is to benefit from the globalization process. The findings also conclude, that a depreciation of the exchange rate which is an indicator of global price could be a patent instrument for driving the growth process in Nigeria. The study recommends the creation of conducive environment to encourage FDI. This could be through the creation of enabling environment like constant power supply, good road and rail networks e.t.c. To reap the dividend of a depreciated or even a devalued exchange rate, the government and relevant stake holders should put in place policies to diversify the production base of the Nigeria economy. Nigeria trade with the rest of the world should be further be liberalized.

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Appendix
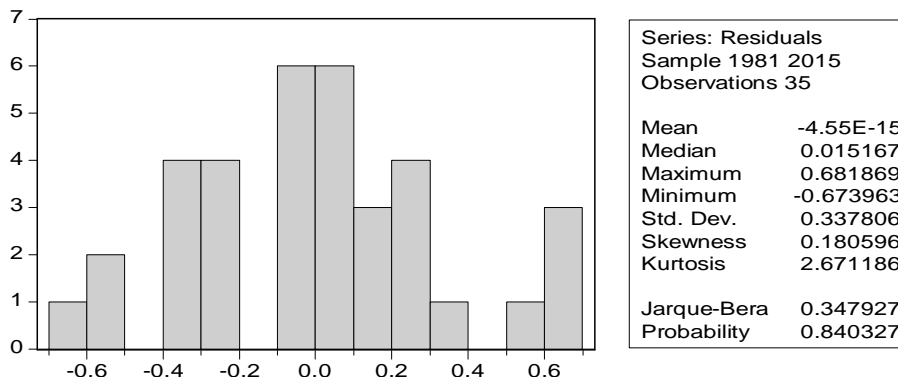
Dependent Variable: LGDP
Method: Least Squares
Date: 02/28/17   Time: 20:40
Sample(adjusted): 1983 2015
Included observations: 33 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDI	0.357931	0.095795	3.736427	0.0014
LFDI(-1)	0.581050	0.098404	5.904746	0.0000
LFDI(-2)	-0.057582	0.072032	-0.799392	0.4339
LEXR	0.177684	0.134361	1.322443	0.2017
LEXR(-1)	0.498887	0.225215	2.215154	0.0392
LEXR(-2)	0.139423	0.126822	1.099362	0.2853
LBOP	0.437115	0.183657	2.380068	0.0241
LBOP(-1)	-0.007042	0.006286	-1.120301	0.2765
LBOP(-2)	-0.005925	0.006147	-0.963901	0.3472
OPEN	-0.241081	0.183352	-1.314858	0.2042
OPEN(-1)	-0.111631	0.310061	-0.360028	0.7228
OPEN(-2)	0.454316	0.167069	2.989855	0.0053
ECM(-1)	-0.559423	0.134651	-4.154614	0.0005
C	-6.609282	0.808293	-8.176834	0.0000

R-squared	0.888372	Mean dependent var	14.78040
Adjusted R-squared	0.827258	S.D. dependent var	2.314542
S.E. of regression	0.121204	Akaike info criterion	1.086263
Sum squared resid	0.279119	Schwarz criterion	0.451381
Log likelihood	31.92334	F-statistic	96.18762
Durbin-Watson stat	2.183072	Prob(F-statistic)	0.000000