Foreign Trade, Foreign Direct Investment and Economic Growth: Cointegration Evidence for Nigeria

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Abstract

This study assesses the twin impact of foreign trade and foreign direct investment (FDI) on economic growth process in Nigeria. Although the process of economic growth is complex and multifaceted, there exists sufficient theoretical and empirical evidence underpinning the role of foreign trade and financial inflow in economic growth. For instance it is argued that through FDI positive externalities inside the economy enhances economic growth and equally important is the fact that trade liberalization stimulates both export and import. Four variables: GDP, FDI, export and import were isolated for analysis and a two-step procedure was used to analyze the data for the period 1962 – 2011. First, we perform a descriptive statistics analysis and second, we look at the relationship amongst the variables using vector error correction model (VECM) analysis. Our findings revealed that FDI and export exert a positive long-run influence on economic growth contrary to import which has a negative long-run relationship with economic growth.

Keywords: Foreign trade; foreign direct investment; economic growth

1.   Introduction

The question "what determines the wealth of nations?" is by no means a new question begging for an answer. While the question still remain relevant, a scientific response to the issue was first rendered in the ground breaking work of Adams Smith titled *An Inquiry into the Nature and Causes of the Wealth of Nations* published in 1776. Ever since Smith's work, the best economic minds have tried to address the question of what determines the wealth of nations. Some of the determinants include economic specialization, investment in physical capital and infrastructure, education and training, technological progress, innovation, macroeconomic stability, good governance and the rule of law, lack of corruption, market orientation, and many others. Each of these conjectures would seem to rest on solid theoretical foundations and makes economic sense; some even have empirical support. But they could all be contributing factors simultaneously because they are flexible; because they are not mutually exclusive, several of them could be true at the same time. Hence various determinants of economic growth are very likely to be interdependent, related to each other and tending to reinforce each other.

Countries across the world are at different stages of economic development and prosperity levels. Some countries have been able to grow rapidly, providing rising living standards for their citizens over time, others have achieved economic success more slowly, and yet others have seen their economies stagnate for decades. The determinants of economic growth and development likely affect different countries differently: one would expect that the best way for Nigeria to improve its economic prospects is not the same as for China or Brazil. As countries move along the development path, how will the specific priorities for reform and improvement change? While all these general ideas may be true, providing a basis for understanding the problem is needed. We need to understand the specific actions that can make a difference for economic growth and development. In the words of De Soysa and Jutting (2006) we know that education is important, but how do we improve education? We might know that institutions matter, but how do we develop institutions? We know that openness and markets are useful, but what kind of openness and what kinds of markets? These are the necessary condition for any country to attain economic growth because they provide conducive atmosphere for production and exchange of goods and services within the country or at international market.

However, for a country to produce goods and services, it must have the required inputs, and the ability to

produce output that would satisfy the national consumption depends on the quantity and qualities of the inputs as well as the technological relationship involved. Moreover, for any country to export part of its products, it must produce the quantity beyond national requirement, and the objective for export is to earn more income from abroad in order to increase the national wealth.

On the other hand, there are countries with abundant natural resources but are faced with the problem of capital shortages, poor technology and unproductive manpower. In order to utilize their resources, the principal alternative for such countries is to allow foreigners who have adequate capital, technology and productive personnel to invest in their economy. This will enable such countries to utilize their resources and to also learn their skills and expertise to domesticate foreign technology, to have more employment opportunities, income, wealth creation as well as economic growth and development.

Foreign direct investment as a component of import became dominant in the world after the economic liberalization of many countries, its benefits was found to be another means of promoting efficient allocation of resources among countries of the world as well as income, wealth creation and accelerating economic growth and development in both the developed and developing countries of the world. This therefore has attracted considerable attention about its features and factors that influence its inflows and outflows as well as its impact on the host economy. Results of studies on this issue are diverse, but most of the findings are of the view that FDI is a means for achieving growth and development.

For much of Nigeria's history since independence, it has allowed foreigner to invest in the local economy. It has also engaged in international trade with different countries of the world with the aim of achieving economic growth and development. It is against this background that this study seeks to examine the role of foreign trade and FDI in the economic growth process of Nigeria.

The structure of the paper is as follows. The next section presents the review of literature. Then, an overview of the employed research method is provided in section three. The fourth section discusses the results of the answers to the research questions set above, and the final section concludes the paper summarising the key findings.

2.   Literature Review

This section is divided into two, in the first the theoretical framework underpinning the impact of foreign trade and FDI on economic growth is presented followed by a review of empirical literature on the interplay of foreign trade, FDI and economic growth.

2.1   Theoretical Framework

The classists' postulates of foreign trade consist of the absolute cost advantage theory championed by Adam Smith and comparative cost advantage theory put forward by David Richard. The two theories explain the basis of international trade. The similarities of the theories lies in their assumptions of skewed endowment of natural resources, differences in labour productivity, climatic condition as well as differences in technology among countries. Their dissimilarities are that David Ricardo argued that trade between countries will also be possible even if one country has absolute advantages in the production of the two products being exchanged, the proponents of absolute cost advantage theory however, disagree.

Hecksher (1919) formulated a new theory of international trade which was embellished by Ohlin (1933), the main thrust of their theory was that factor endowment is the major determinant of international exchange of goods and services. They argued that trade is only possible between countries due to differences in the types, quantity, and quality of resources endowment. In his theoretical contribution on the subject of international trade, Vernon (1966) in a seminal study argued that foreign trade has the features of product life cycles i.e. introductory, growth, maturity and decline stages.

Academics have invested time and energy debating the importance or otherwise of FDI. To date however, there is no consensus on this issue. Trakman (2009) argued that FDI ordinarily occurs when an entity usually a corporation from one state, the home state, makes a physical investment in another state, the host state. Typically, such investment involves building a factory and investing in machineries, equipment and related corporate assets. He was of the view that the pros and cons of FDI on the host economy depends on many factors which include political, economic and social.

The benefit of foreign direct investment is distributive. Both the host country and the foreigners benefit in terms of wealth creation. The direct gains of FDI to the host country include capital inflows, production expansion, employment generation, and increase in income, wealth creation, and economic growth. The indirect benefits

include domestication of foreign technology, managerial skills and exposure. However, despite the importance of FDI some countries are yet to benefit from it due to flexibility of economic liberalization, poor infrastructure, insecurity and political instability.

2.2   *Review of Empirical Literature*

Azyun and Ozbay (2010) examined the role of foreign trade in economic growth of Turkey. They hypothesized that export is the major determinant of economic growth than import. To investigate their hypothesis annual data for turkey covering the period of 1980-2008 was employed. Export variables consist of produces of exportable goods from the industrial sector, mining and agricultural sector, while import variables include capital goods, consumer goods and raw material inputs. Engle Granger causality test and vector error correction model (VECM) were employed as techniques of analysis. Their findings revealed a positive relationship between export and growth. The possible interpretations is export induce increase in growth while economic growth attract foreign capital inflows.

Dritsaki et al. (2004) investigated the causal relationship between FDI, foreign trade and economic growth for Greece over the period of 1960 to 2002. Their variables of choice include export which was measured by its real revenue, FDI by its flows and economic growth by real gross domestic product GDP). To examine their causal relationships, the authors employed Grange causality test, unit root test and vector error correction model. Their findings can be categorized into three in line with their technique of analysis. For Granger causality test, an inelastic relationship between export and FDI and with elastic relationship between export and economic growth was reported. For VECM, both short run and long run relationship revealed that, an increase in export led to an increase in real GDP in the long run. While an increase in FDI led to an increase in export. They conclude that, there is a causal relationship between the variables, FDI, trade and economic growth appear to mutually reinforce one another.

Igbal et al. (2010) empirically investigated the causal relationship between foreign direct investment (FDI), foreign trade, and economic growth in Pakistan for the period of 1998 to 2009, using quarterly data. Their econometric models for data analysis include Granger causality test, vector error correct model, and cointegration test. The causal relationship between FDI and GDP, export and GDP, FDI and export, import ant GDP were analysed using Granger causality test while cointegration model on the other hand examined their combined effect on economic growth. Their findings revealed that export and FDI were the leading determinants of economic growth and all the variables appeared to be interdependent with a bidirectional relationship.

Some studies have reported a significant relationship between foreign direct investment and economic growth, while economic growth on the other hand has a non-significant relationship with foreign trade. For instance, Cristina and loana (2008) investigated the proposition that foreign direct investment (FDI) and foreign trade are two principal determinants of economic growth in Romania after its economic liberalization policy. To investigate this proposition, the authors used annual data of (FDI), foreign trade and economic growth from 1991 to 2002. The data was sourced form (IMF), World Bank, Directory of Trade statistics and Balance of payment statistics. Their variables of choice include foreign direct investment (FDI), trade balance, export, import and the GDP. The authors employed OLS and tested the interdependency between the dependent and independents variables in three steps. The first regression model captured the interdependency between FDI and the GDP partially; while the second model examined the relationship between trade and the GDP. The third regression model employed FDI, export and import together in order to find the combine effects of the three variables on the GDP. The first model reported a positive and statistically significant relationship between (FDI) and GDP. The second model between export and the GDP revealed a non-significant negative relationship. The third model reported a positive coefficient, although it was not significant. Taken together, their result vindicates the proposition that FDI induce economic growth.

The role of foreign direct investment in economic growth alone was also investigated by Edward and Chen (1987) for Hong Kong for the period of 1961 to 1982, using time series analysis. In order to analyse their relationship, economic growth was measured with GDP and GDP per capital. The authors suggested that Hong Kong should maintain harmonious relationship with its trading partners by improving the qualities of their products, charge affordable price and other incentives that could promote their economic performance.

Yauri (2006) investigated the proposition that foreign direct investment (FDI) is a threat to the performance of local firms in less developed countries (LDCs). He argued that various research findings over the years have revealed mixed evidence on whether the aggregate effect of FDI on firms' performance in the host economy are positive or negative. He argued that economic literature has dwelled extensively on the merits of FDI to the host

economy these benefits include employment opportunities, technology spill over, capital inflows, economic growth among others. To analyse this proposition, he used Nigeria as a case study and traced its experience from foreign companies' performances. He finally reported that FDI in Nigeria is not a threat to the performance of local firms instead, it promote their efficiency by providing adequate infrastructure for the smooth operation of domestic firms.

Trufin (2010) investigated the role of foreign direct investment (FDI) in economic growth for Romania's north-eastern region after their economic liberalization policy. According to him this region has suffered from high rate of unemployment, poverty, low productivity of labour among others prior to its liberalization policies. He found that FDI has played a vital role in reducing unemployment, poverty, and it promotes increase in income, capital formation, labour productivity, growth and development of the region; it also helped the region to domesticate foreign technology, managerial skills, and marketing strategies. He further argued that, the region has the potentials of attracting more foreign investors. He suggested that, in order to sustained these benefits, infrastructure, labour productivity should be improved and to also encourage local initiatives, creating an efficient administrative frame work and by stimulating activities in research and development among others. He finally concluded that FDI is a determinant of economic growth in the Romanian eastern region.

Malami and Bawa (2007) examined the policies and strategies that were adopted in Malaysia to attract foreign direct investment inflows. These polices include economic liberalization, specification of industries for foreigners, non-discriminatory principles, and regulation policy. These strategies were organized into three categories i.e. incentives base approach, rule approach and others. They argued that while economic liberalization removed all the barriers and welcome foreign investors, the specification of industries is a means of improving the performance of such sectors that the host country was unable to perform either due to shortages of capital or technology. The non-discriminatory policy on the other hand, served as incentives to foreign investors through uniform tax rate and regulation applied to both domestic firms and foreign. Moreover, among the three strategies, the incentives based approach to foreign investors includes tax holidays, improvement of infrastructure and macroeconomic stability which provide confidence for their risk. The rule based approach incorporated friendly manner of regulation for their activities while the third approach provides room for foreign investors to also suggest other polices and strategies that will promote their performance in the economy. The authors argued that the experience in Malaysia after adopting such polices and strategies was tremendous, this is because FDI has promotes its economic growth and made it to be the third largest recipient of foreign capital, next only to Singapore and Indonesia.

Bashir (1999) examined the impact of foreign direct investment in economic growth for six Middle East and North African countries (MENA) over the period of 1975 to 1990 using panel data. Their objectives were to identify the channels through which foreign direct investment promotes economic growth as well as variable that influence its inflows in these countries. These variables include infrastructure, skill manpower, market, economic liberalization and government control. In order to analyse their relationship, they employed ordinary least square (OLS) and General least square (GLS) models. They found that FDI played a key role in promoting economic growth especially in countries with adequate skills manpower and infrastructure. As for their method of data analysis, the OLS model was employed to examine the influence of labour productivity, infrastructure and government control on FDI inflows while the GLS model was used to investigate the relationship between FDI and economic growths. After the empirical analysis, the GLS model revealed a positive relationship between FDI and economic growth, but their relationship is weak in countries with poor infrastructure and shortages of manpower. On the other hand, the OLS model also revealed that countries with adequate skill manpower, infrastructure, and market had the highest foreign capital inflows. To further interpret these findings, the authors, argued that infrastructure, labour productivity and market are the principal determinants of FDI inflows which in turn served as a vehicle for improving, promoting and accelerating economic growth. They finally suggested that countries with shortages of manpower should invest in education, labour training as well as infrastructure; this is because they served as prerequisite and primary requirement for economic growth.

Zhang (2006) empirically investigated the role of foreign direct investment (FDI) in economic growth for China over the period of 1992 to 2004 using panel data. His objectives were to identify the direct and indirect channels through which FDI promotes economic growth and to also compare rate of growth during the pre-economic liberalization and liberalization regime. In order to analyse these relationships, the author employed Cob-Douglas production function and cross-section model. He found that the level of output during the open door policy outweighed the pre-liberalization regime. Moreover, he also found that FDI accelerate economic growth directly through raising labour productivity, increase in output, employment, and income and promoting export

while indirectly, it brought about diffusion of technology. As for his method of data analysis, the Cobb-Douglas production function model aimed at comparing labour productivity and capital in relation to output for the two regimes while the cross-section model compared the level of income, volume of export and economic growth for the two periods. The cob-Douglas model revealed that, there was an increased in labour productivity and output during the liberalization regime. He further argued that the indirect benefit from foreign investors (diffusion of technology) has made China to compete globally in producing items that are technology intensive.

Borensztein et al. (1998) investigated some determinants of foreign direct investment and its relations to economic growth in 69 developing countries using panel data. Their variables of choice that influence the inflows of FDI include economic liberalization, domestic market, infrastructure, human capital and government control. The relationship between FDI and economic growth were analysed from its contribution to the volume of the GDP. In order to examine their relationship, the authors employed cross-country regression model and found that countries with adequate infrastructure, skill manpower and market, had the highest foreign capital inflows as well as economic growth.

Cevis and Camurdan (2007) empirically investigated some economic factors that determined the inflows of FDI in 17 developing countries for the period of 1989 to 2006, using panel data. Their variables of choice include inflation, economic growth, labour cost, domestic investment, and tax policy. To examine their relationship, they applied time series analysis and chi-square. They found that inflation and high tax rate have negative relationship with FDI. On the basis of their result they concluded that FDI is inversely related with inflation and high rate of tax while economic growths attract foreign investors.

Ayadi (2009) examined the factors that determine the inflows of foreign direct investment and their relation to economic growth in Nigeria for the period of 1980 to 2007 using annual data. These variables include economic liberalization, infrastructure, labour productivity, security and macroeconomic stability. In order to investigate their relationship, he employed Granger causality test and spearman' rho model and found that despite the poor infrastructure and labour productivity, the country annually experienced an increase of FDI inflows, but its relationship to economic growth was very weak. Granger causality tests revealed an insignificant relationship between labour productivity and domestic output, domestic output and export, export and economic growth, while there was a positive relationship between economic liberalization and FDI inflows. On the other hand, the Spearman rho model revealed a positive relationship between FDI and domestic output but statistically insignificant. The author therefore argued that all these effect may arise due to shortages of human capital and poor infrastructure in the country and therefore suggested that government should invest much in education, labour training, improve infrastructure, and ensure adequate security in other to achieve the growth potentials of the country.

3. Data and Methodology

This study uses annual data for GDP, export, import and FDI for Nigeria to assess the impact of foreign trade and FDI on economic growth. The study period range from 1962 to 2011, hence the data set comprises 50 observations for each variable. The data was sourced from the Statistical Bulletin of the Central Bank of Nigeria.

The model for this study is:

$$\Delta RGDP_t = \beta_0 + \beta_1 \Delta Export_{t-1} + \beta_2 \Delta Import_{t-1} + \beta_3 \Delta FDI_{t-1} + \varepsilon_t$$

(1)

Our analysis however, begin with unit root test, for which the Dickey-Fuller generalized least squares (DF-GLS) was used. Elliott et al. (1996) find that DF-GLS test has substantially improved power when an unknown mean or trend is present. The test is as follows: let $z_t = (1, t)$. For the time series y_t regress $[y_1, (1-\alpha L)y_2, ..., (1-\alpha L)y_T]$ on $[z_1, (1-\alpha L)z_2, ..., (1-\alpha L)z_T]$ yielding $\tilde{\beta}_{GLS}$ where $\alpha = 1 + \bar{c}/T$, $u_0 = 0$ and $\bar{c} = -13.5$ for detrended statistic. Detrended $\bar{y}_t = y_t - z_t' \tilde{\beta}_{GLS}$ is then employed in the (augmented) Dickey-Fuller regression. With no intercept nor time trend. The $t-$statistic on $\bar{y}_{t-1}$ is the DF-GLS statistic. For the demeaned case, the t is omitted from z_t and $\bar{c}$ = -7.0.

If all the series are stationary usually at first difference for most time series data, cointegration test is conducted to investigate the long-run relationship among the variables. This study employed the Johansen cointegration test which begins with a VAR of order P estimated as:

$$y_t = \mu + A_1 y_{t-1} + A_p y_{t-p} + \varepsilon_t$$

(2)

where y_t is an $n \times 1$ vector of variables that are integrated of order one denoted by I(1) and ε_t is an $n \times 1$ vector

of innovations. Thus, VAR can be rewritten as:

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{i-1}^{p-1} \Gamma i \Delta_{t-i} + \varepsilon_t \qquad (3)$$

where $\Pi = \sum_{i-1}^{p-1} A_i - 1$ and $\Gamma = \sum^{p} A_j$

Suppose the coefficient matrix Π has reduced rank $r > n$ then there exist $r \times n$ matrices α and β each with rank r such that $\Pi = \alpha\beta' y_t$ and $\beta' y_t$ is stationary, r is the number of cointegrating relationships, the elements of α are known as the adjustment parameters in the vector error correction model and each column of β is a cointegrating vector. It can be shown that for a given r, the maximum likelihood estimator of β defines the combination of y_{t-1} that yields the r largest canonical correlations of Δy_t with y_t after correcting for lagged differences and deterministic variables. Two different techniques suggested by Johansen to establish the deterministic variable when present are the use of eigenvalue and trace statistics.

To determine the number of cointegrating vectors, Johansen (1988, 1989) and Johansen and Juselius (1990) suggested two statistical tests, the first one is the trace (trace) which tests the null hypothesis that the number of distinct cointegrating vector is less than or equal to n against a general unrestricted alternative estimated as:

$$\lambda_{trace}(r) = -T \sum_{r+1}^{n} \ln(1 - \hat{\lambda}_i)$$

where T is the number of usable observation and $\hat{\lambda}_i$ are the estimates. When there are cointegrating vectors, this validates the application of Vector Error Correction Model (VECM) which solves for normalized cointegration coefficient. The regression equation for VECM are as follows:

$$\Delta Y_t = \alpha_1 + p_1 e_1 + \sum_{i=0}^{n} \beta_i \Delta Y_{t-i} + \sum_{i=0}^{n} \delta_i \Delta X_{t-i} + \sum_{i=0}^{n} \gamma_i \Delta Z_{t-i} \qquad (4)$$

$$\Delta X_t = \alpha_2 + p_2 e_{i-1} + \sum_{i=0}^{n} \beta_i \Delta Y_{t-i} + \sum_{i=0}^{n} \delta_i \Delta X_{t-i} + \sum_{i=0}^{n} \gamma_i \Delta Z_{t-i} \qquad (5)$$

In VECM the cointegration rank shows the number of cointegrating vectors. For example a rank of two indicates that two linearly independent combinations of the non-stationary variables will be stationary. A negative and significant coefficient of the Error Correction Model (ECM) indicates that any short-term fluctuations between the independent variables and the dependent variable will give rise to a stable long run relationship between the variables. Finally, the (ECM) is estimated as:

$$\Delta RGDP = \beta_0 + \beta_1 \Delta FDI + \beta_2 \Delta Export + \beta_3 \Delta \text{Im} port + \alpha^* \varepsilon_{t-1} + \varepsilon_t \qquad (6)$$

Where $\alpha^* = -(1 - \alpha_1)$ i.e. the speed of adjustment to equilibrium and ε_{t-1} is the error correction mechanism.

4.   Results

Table1 presents a summary of the descriptive statistics for the four variables in their natural logarithm form i.e. real GDP, foreign direct investment, import and export with emphasis on measure of central tendency (mean), measure of deviation (standard deviation), kurtosis and skewness.

Table 1: Summary statistics, **full sample (1962 – 2011)**

Variables	Mean	Std. Dev.	Skewness	Kurtosis
lnRGDP	11.2667	2.0178	-0.6604	1.8349
lnFDI	9.5968	2.3779	0.2657	1.6754
lnImport	10.1464	3.2704	0.2793	1.7019
lnExport	10.4406	3.4455	0.2545	1.7306

First sub-sample (1962 – 1986)

Variables	Mean	Std. Dev.	Skewness	Kurtosis
lnRGDP	9.6845	1.7066	0.3992	1.6343
lnFDI	7.5586	0.8664	0.1065	1.9523
lnImport	7.4286	1.3284	0.2886	1.3573
lnExport	7.5441	1.3927	0.0545	1.2987

Second sub-sample (1987 – 2011)

Variables	Mean	Std. Dev.	Skewness	Kurtosis
lnRGDP	12.8253	0.4384	0.4584	1.8479
lnFDI	11.539	1.5145	-0.3656	2.0094
lnImport	12.7109	2.2599	-0.4155	1.9611
lnExport	13.1747	2.3049	-0.3649	1.9572

It can be observed from Table 1 that the means and standard deviations of the four series are not constant for the full sample and two sub-samples, a preliminary indication that the four series are nonstationary at level values.

To conduct a robust test for unit root, DF-GLS method was employed at both level and first difference values.

Table 2: Result of Stationarity Test

Variables	Level Values		First Difference	
	Trend	No Trend	Trend	No Trend
	DF-GLS	DF-GLS	DF-GLS	DF-GLS
	Test Stat.	Test Stat.	Test Stat.	Test Stat.
ΔlnRGDP	-2.026 (7)	-0.605 (7)	-4.800 (1)***	-4.641 (1)***
ΔlnFDI	-2.009 (2)	0.822 (9)	-3.967 (2)***	-3.963 (2)***
ΔlnImport	-1.998 (6)	0.187 (6)	-3.998 (1)***	-3.516 (1)***
ΔlnExport	-2.129 (5)	-0.103 (8)	-5.242 (1)***	-4.680 (1)***

Significant at 1% (***)

Results at level values in Table 2 shows that none of the variables is stationary at even 10% level of significance. The results provide strong evidence of nonstationarity among the variables, we therefore conclude that there is presence of unit-root in the variables at their level values.

To correct for unit root in the series, first difference value of each variable was taken. The results shows that in their first difference all the series are stationary at 1% significance level.

This implies that the variables are integrated of order one, i.e. I(1), thus giving room for cointegration test using Johansen test.

To proceed, the maximum number of lags to be included in the analysis is determined; Table 3 shows that all four information criteria indicate that no lag should be used.

Table 3: Choice of optimal lag for cointegration test

Lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	-34.339				.000065*	-9.82533*	-9.82533*	-9.82533*
1	-29.6314	9.4151	16	.895	.000107	-9.32344	-9.08398	-8.68107
2	-21.1412	16.981	16	.387	.000152	-8.98968	-8.51074	-7.70494
3	-13.0449	16.193	16	.440	.000226	-8.6384	-7.91999	-6.71129
4	8.10912	42.308	16	.000	.000197	-8.86747	-7.90959	-6.29799

The result of cointegration test (Johansen test) is presented in Table 4. The result indicate evidence of cointegration relationship among the variables.

Table 4: Cointegration test result

Max. Rank	Eigenvalue	Trace Statistics	5% Critical Value
0	-	134.3415	47.21
1	0.58280	92.3799	29.68
2	0.56037	52.9325	15.41
3	0.48929	20.6790	3.76
4	0.35002		

This is obvious with trace statistics being greater than the critical value at 5% for ranks 0, 1, 2 and 3. On the basis of this result we conclude that there is evidence of long-run relationship between the variables, we therefore estimate a vector error correction model (VECM).

Table 5: Vector Error Correction Model (VECM) result

Dependent variable: $\Delta \ln RGDP$		
Independent variable	Coefficient	z - value
Constant	13.86611	
$\Delta \ln FDI$	-44.70201	-1.65*
$\Delta \ln \text{Im} port$	147.7766	6.05***
$\Delta \ln Export$	-167.5939	-7.71***

Significant at 1% (***) and 10% (*)

From the results in Table 5, the following cointegration equation can be estimated:

$$ECT = \Delta \ln RGDP - 44.70201 \Delta \ln FDI + 147.7766 \Delta \ln \text{Im} port - 167.5939 \Delta \ln Export$$

The long-run growth equation can thus be written as:

$$\Delta \ln RGDP = 13.86 + 44.70 \Delta \ln FDI - 147.77 \Delta \ln \text{Im} port + 167.59 \Delta \ln Export + ECM$$

$$(-1.65)* \qquad (6.05)*** \qquad (-7.71)***$$

From the result above, the null hypothesis of no long-run relationship between the dependent variable and independent variables is rejected. There is evidence of positive long-run relationship between economic growth, FDI and export, while a long-run negative relationship exist between economic growth and import.

5.   Conclusion and Recommendations

This study investigates the impact of foreign trade and FDI on economic growth in Nigeria by applying vector error correction model. To this end, our results are categorized into two: a) relationship between foreign trade (import and export) and economic growth, and b) relationship between FDI and economic growth. Our result of positive long-run relation between economic growth, FDI and export is in conformity with the findings of Azyum and Ozbay (2010), Dritsaki et al. (2004), Iqbal et al. (2010), Trufin (2010) and Malami and Bawa (2007). The second strand of result of negative long-run relationship between economic growth and import coroborate the findings of Cristina and Ioana (2008).

In view of our findings, the conventional view that FDI and export promote economic growth is confirmed. Consequently, policy measures that will stimulate and enhance the quality of human capital, infrastructure, institutions, governance, legal framework, ICT and tax system should be pursued vigorously.

This study did not report the direction of causality among the variables, which would have provided more robust conclusions and consequently specific policy guidelines. This remains an important challenge for future research.

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