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An Investigation into the Impact of International Trade in the Growth of Nigeria's Economy

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ABSTRACT. International trade has become an inevitable activity in today's world. A country such as Nigeria generates a substantial portion of its revenue through the exportation of oil and agricultural produce. Likewise, through importation the country is able to satisfy the domestic needs for mechanised and technological products which it lacks the capacity and technical know-how to produce. It is based on this premise that this study conducts an investigation into the impact that international trade (through import and export channels) has on Nigeria's economy. Through the Johansen Cointegration test on data from 1971 to 2012, this study finds a long run relationship existing between international trade and economic growth in Nigeria. The Ordinary Least Square results suggest that export is positively associated with economic growth while imports connotes otherwise. The Granger causality test finds a unidirectional causation running from GDP to Import. However, the test failed to find a mutual correlation between Export and economic growth. This study therefore suggests that export promotion strategies should be put in place in order to encourage local farmers and producers to increase production which in turn will stimulate exports and enhance economic prosperity in Nigeria.

1. INTRODUCTION

International trade through the medium of import and export of goods and services has become an increasingly important and prominent economic activity amongst countries particularly in this volatile economy. The exchange of goods and services across borders is an avenue through which countries are able to achieve and promote economic self-sustainability as well as a platform for transforming a country's natural resources such as crude oil, gold, diamond and etcetera into economic wealth. The wealth acquired in this regard is used by the government to provide basic infrastructural facilities, which offcourse, enhances the living standards of the populace and consequently leading to economic growth and development.

Another positive spillover effect that international trade has on the economy of developing countries especially in Africa is that it presents opportunities for local industries to internationally broaden their market reach. This results to the potential increase of market size and increased profit turnover which in turn results to the encouragement and growth of the local industries and creation of employment opportunities for the teaming populace. Furthermore, international trade to some extent creates competition in the world market thereby providing consumers with a variety of products and an avenue for the importing and exporting countries to discriminate in terms of prices and choices. Likewise, the exchange of knowledge, techniques and modern technology is made possible through international trade and by so doing, industries, businesses and the country as a whole are able to increase business efficiencies and productivity (Chen and Gupta, 2006).

Despite the aforementioned benefits that international trade has on economic growth, foreign trade has also been seen as a constraint to economic growth particularly in developing countries. This is because countries tend to over depend on the international market hence resulting to increased vulnerability to international market volatility (Matteis, 2004). Furthermore, international trade may also result to macroeconomic instability such as inflation, balance of payment crises which may negatively affect domestic investment leading to poor economic growth (Rodrik, 1992).

In Nigeria, international trade has been found to be paramount to the growth of the economy because it generates a significant amount of revenue particularly from the agricultural and oil sectors. Prior to the discovery of crude oil, a significant portion of Nigeria's revenue emanated from the exportation of agricultural products such as palm oil, groundnut, rubber and cocoa. However, the discovery of crude oil resulted to the neglect of the agricultural sector as Nigeria's major export sector. From the import perspective, due to Nigeria's status quo of being underdeveloped, it highly depends on technologically advanced countries such as Germany, the United States and the United Kingdom for the importation of products which it lacks the capacity and technical know-how to produce for instance, automobiles, equipment and machinery. The importation of these commodities help to stimulate technical efficiencies and meet the productive needs of the local industries as well as that of the teeming population.

Based on the aforementioned analyses, there are several mixed findings on the contribution of international trade to economic growth. Secondly, there is still a growing inconclusive debate as to which channel of international trade is actually favourable to a developing country such as Nigeria. It is based on this premise that this study aims to investigate the individual contribution that import and export has on Nigeria's economy.

2. LITERATURE REVIEW:

Adak (2010) through the use of Ordinary Least Squares econometric technique on data between the years 1981 to 2007 opines that international trade positively stimulates economic growth in Turkey. Furthermore, the study also suggests that a causality exists between international trade and economic growth. Similarly, Kotil and Konur (2010), also investigates the relationship between GDP and foreign trade in Turkey between 1989 and 2007 through the use of Granger Causality test. The results did not only find a direct relationship that subsists between economic growth and international trade, it also suggests that economic growth in Turkey is export-led. However, Mustafa (2011) through the use of Vector Error Correction Model (VECM) to investigate the relationship between foreign trade and economic growth in Turkey between 1987 and 2007 finds that economic growth does not significantly depend on export in the short run.

Sarbapriya Ray (2011) examines the foreign trade and economic growth nexus in India on data spanning between 1972 to 2011. By adopting the cointegration and Granger Causality tests, the results suggests the presence of a long-run cointegrated relationship between foreign trade and economic growth. Furthermore, the outcome of the study also portrays a bi-directional causality between both variables.

Using data from Iran spanning between 1975 to 2008 Safdari, Mehrizi and Dehqan-Niri (2012) examines the relationship existing between foreign trade and economic growth. With the use of Vector Autoregressive Model (VAR), their findings suggests that trade volume and capital formation positively influence economic growth in Iran during the period under review. Likewise, Wong Hock (2005) investigates the contribution of trade openness on economic growth in Malaysia through the use of error correction model and finds sufficient evidence of a unidirectional causation running from openness to international trade to economic growth.

Omoju and Adesanya, (2012), through the use of the Ordinary Least Square technique investigates the effect that trade has on Nigeria's economic growth between the years 1980 to 2010. The result from this study indicates that trade has a significant positive effect on economic growth

during the reviewed period. Other studies such as Adelowokan and Maku (2013) with the use of data between 1960 and 2011, Nduka (2013) on data spanning between 1970 to 2008 also finds similar results to that of Omoju and Adesanya, (2012).

Kim, Lim, and Park (2009) examined the nexus between imports, exports and factor productivity in Korea. The authors opine that imports contributes significantly to economic expansion while exports suggests otherwise. The outcome of the study suggests that there is no clear-cut relationship between trade and economic growth despite the evidence presenting a clear causality between both variables. Chimobi (2010) study on the trade openness and economic growth nexus in Nigeria on data spanning between 1970 to 2005 suggests both trade openness and financial development both have a bidirectional causation on economic growth.

Edoumiekumo and Opukri, (2013), through the use of the Johansen Cointegration test established the presence of a long-run relationship between international trade and economic growth in Nigeria. In addition to this, the authors also by using the Ordinary Least Square technique also finds that international trade which was proxied by import and export has a positive relationship with economic growth. The granger causality test conducted on this study depicts that economic growth causes export while import granger cause economic growth in the period under review.

In a more recent study, Ashamu and Abiola, (2014) investigates the impact that international trade has on the manufacturing sector in Nigeria. The researchers through the adoption of cointegration and error correction tests finds the presence of a long-run cointegrated relationship between both variables. However, both imports and exports was found not to have a significant impact on the manufacturing sector; despite the presence of a positive relationship. A result emanated from the study of Arodoye and Iyoha, (2014) who also finds a long- run relationship existing between foreign trade and economic growth in Nigeria based on quarterly time series data spanning between Q1 and Q4 of 1981 and 2010 respectively.

3. DATA

The data used in this study was obtained from the World Bank's Africa Development Indicators and the observed period is between 1971 to 2012. The observed period selected was based on data availability. The explanatory variables used in this research are Imports, Exports, Exchange Rates, Government Expenditure, Foreign Direct Investment (FDI) and Inflation, while the dependent variable is Gross Domestic Product (GDP). These variables are depicted in the multiple linear regression model in equation (1)

$$\ln GDP = \beta_0 + \beta_1 \ln IMP + \beta_2 \ln EPT + \beta_3 \ln EXR + \beta_4 \ln FDI + \beta_5 \ln EXPD + \beta_6 \ln INF + \varepsilon_t \quad (1)$$

where;

$\ln GDP$ = Gross Domestic Product (in current U.S dollars)

$\ln IMP$ = Total imports of goods and services (in current U.S dollars)

$\ln EPT$ = Total exports of goods and services (in current U.S dollars)

$\ln EXPD$ = Government Expenditure (in current U.S dollars)

$\ln EXR$ = Real Exchange Rates (value of Naira against U.S dollars)

$\ln FDI$ = Foreign Direct Investment (in current U.S dollars)

$\ln INF$ = Annual Inflation rate

β_0 = Intercept

β_1 to β_6 = the coefficient of each explanatory variables

ε_t = Stochastic error term

4. RESEARCH METHODOLOGY:

The econometric methodologies used in this study are the Unit-Root, Johansen Cointegration, Ordinary Least square and the Granger Causality tests.

Unit Root Test

It is important to estimate the stationarity of the data series by investigating whether the data series has a unit root or otherwise, it also serves as a precaution to circumvent the estimation of spurious regressions. A stationary data series connotes that its mean, covariance and variance linger constantly over-time. The Augmented Dickey Fuller (ADF) test and the Phillip– Perron (P–P) are used to examine the stationarity of the data series. The ADF and P-P tests takes the form of equation (2) and (3) respectively.

$$y_t = \beta' D_t + \phi y_{t-1} + \sum_{j=1}^p \psi_j \Delta y_{t-j} + \varepsilon_t \quad (2)$$

$$y_t = \beta' D_t + \pi y_{t-1} + u_t \quad (3)$$

If the data series is found to be nonstationary, then a further test for stationarity is conducted in the first difference for each of the variables. However, if the data series becomes stationary at the first difference, then it can be concluded that the variable has a unit root and also integrated in the order of one (I(1)).

The results from Table 2 and Table 3 (see appendix B1 and B2) indicates that both the ADF and P-P unit root test results show that all variables are integrated at the order of I(0). However, for this study, the conclusion on the stationarity test will be based on the P-P test. This is because the ADF has a higher sensitivity to small samples and the P-P test provides an avenue for the presence of heteroscedasticity in the error terms (Agbola and Damoense, 2005 and Hamilton, 1994).

Johansen Co-integration Test

According to Engle and Granger (1987), a spurious result could emanate from the Ordinary Least Square (OLS) estimation of time series that are nonstationary and not cointegrated. It is therefore based on this foundation that the cointegrating relationship between the variables in the linear equation depicted in equation (1) is examined. There are two widely used econometric techniques used in testing for cointegration which are the Engle and Granger two-step approach and the Johansen cointegration approach due to both Engle and Granger, (1987) and Johansen and Juselius, (1990) respectively. However, the Johansen cointegration technique has been found to be superior to the Engle and Granger approach because “it does not assume the existence of at most one single cointegrating vector” (Agbola, 2013). Furthermore, the Johansen cointegration technique’s assumption that all variables are endogenous as well as its lack of sensitivity to the choice of the explained variable are some reasons that justifies the superiority of this technique over the Engle and Granger two-step approach (Johansen and Juselius, 1990).

The Johansen cointegration technique identifies the number of cointegrating vectors through two test statistics, namely the trace and maximal eigenvalue tests which are expressed by equation (5) and (6) respectively:

$$\lambda_{trace} = -T \sum_{i=r+1}^p \ln(1 - \hat{\lambda}_i) \quad (5)$$

$$\lambda_{max} = -T(1 - \hat{\lambda}_{r+1}) \quad (6)$$

According to the results indicated in Table 4, (see appendix C) the trace tests suggest the presence of six cointegrated vectors while the maximal eigenvalue test depicts the existence of five cointegrated vectors all at the 5% level of statistical significance. The implication of the result of both tests is the rejection of the null hypothesis of no cointegration. This means that there is an existence of a long-run cointegrated relationship between economic growth and the independent variables earlier depicted in equation (1)

Ordinary Least Square (OLS) Estimation

The OLS regression test is aimed at investigating the impact that international trade (using import and exports as proxies) as well as other explanatory variables has on economic growth.

The results portrayed in table 5 (see appendix D) indicates an R^2 of approximately 0.98 which means that the goodness-of-fit measure adequately explains the systematic variation in the economic growth experienced in Nigeria. The adjusted R^2 of approximately 0.97 also supports this stance.

The result emanating from Table 5 indicates that Export has a significant positive association with economic growth in Nigeria. The implication of this result is that, *ceteris paribus*, increasing import will spur economic growth. However, Imports presents a significant negative relationship with economic growth. Based on this results, it can be concluded that international trade can only be viable if Nigeria develops export promotion strategies and reduce to the minimum its dependence on importation particularly on goods that have local substitutes.

The other explanatory variables such as FDI and Exchange rates both have a positive coefficient meaning that both variables have a positive association to Nigeria's economic growth, although they are both not statistically significant. It should be indicated that the result for Exchange rates goes against the aprior expectation indicated in Table 1 (see appendix A). On the other hand, inflation rate is found to have a negative coefficient which connotes a negative association with economic growth. Government expenditure however has a positive coefficient which is also statistically significant. This means that, increasing government expenditure perhaps in the areas of human capital development, infrastructure development and export promotion strategies such as providing tax holiday for local manufacturers and producers will result to a significant increase economic growth.

Granger Causality Test:

In order to examine the direction of causality between two variables, the Granger causality test is used. Theoretically, this econometric approach is based on the axiom that the future cannot cause the past however, the present or the future can be caused by the past (Granger 1980). In other words, a time series x can Granger-cause another time series y only when an added past values of time series x significantly contributes and provides an explanation to the systematic variations in time series y . The Granger Causality test used in this study takes the form of equation (7) and (8):

$$y_t = \sum_{i=1}^m \alpha_i X_{t-i} + \sum_{i=1}^m \beta_i y_{t-i} + u_{1t} \quad (7)$$

$$X_t = \sum_{i=1}^m \lambda_i X_{t-i} + \sum_{i=1}^m \delta_i y_{t-i} + u_{2t} \quad (8)$$

The result of the Granger causality test depicted in Table 6 (see appendix E) suggest a unidirectional causation running from GDP to Import. This means that, economic growth Granger-cause Import. However, the result failed to find a mutual correlation between Export and economic

growth in Nigeria in the period under review. Furthermore, Exchange Rate is found to Granger-cause Inflation Rate. Also, the result finds a one way causality running from Inflation Rate to Foreign Direct Investment.

5. CONCLUSION

This study empirically investigated the contribution of international trade (Import and Export) towards the growth of Nigeria's economy using data from 1971 to 2012. The ADF and P-P unit root test results show that all variables are integrated in the order of one $I(0)$. The results from the Johansen cointegration test indicated the presence of a long-run cointegrated relationship between economic growth and the tested explanatory variables. The result from this study also portrayed that Import is negatively associated to economic growth while exports has a positive coefficient which suggests that it contributes positively towards increasing Nigeria's economic growth. On the other hand, inflation rate is found to have a negative coefficient Government expenditure however suggested a positive coefficient which is also statistically significant. The Granger causality tests finds a unidirectional causation running from GDP to Import. However, the result failed to find a mutual correlation between Export and economic growth.

This study therefore suggest that policymakers should develop export promotion strategies. In addition to this, the government should be put in place strategies geared towards discouraging the importation of goods that have local substitutes.

APPENDIX

Appendix A

Table 1: Aprior Expectation

Variable	Expected sign	Expected result
Export	Positive (+)	It is expected that the relationship between export and GDP to be positive
Import	Positive (+)	It is expected that the relationship between import and GDP to be positive
Exchange Rate	Positive (-)	It is projected that the relationship between exchange rate and GDP to be negative
FDI	Positive (+)	It is expected that the relationship between FDI and GDP to be positive
Expenditure	Positive (+)	It is expected that the relationship between Expenditure and GDP to be positive
Inflation	Positive (-)	It is expected that the relationship between Inflation and GDP to be negative

Appendix B 1

Table 2: Results of Stationarity (ADF Unit Root) Test

VARIABLE	<u>ADF TEST STATISTICS</u>		<u>CRITICAL VALUES (5%)</u>		ORDER OF INTEGRATION
	Constant	Constant and Trend	Constant	Constant and Trend	
lnGDP	-6.121	-6.112	-2.935	-3.523	I(0)
lnIMP	-4.735	-4.649	-2.935	-3.523	I(0)
lnEPT	-7.048	-6.956	-2.935	-3.523	I(0)
lnEXR	-5.204	-5.137	-2.935	-3.523	I(0)
lnFDI	13.315	-13.275	-2.935	-3.523	I(0)
lnEXPD	-5.547	-5.508	-2.935	-3.523	I(0)
lnINF	-7.025	-6.989	-2.935	-3.523	I(0)

Source: Author's Computations with Eviews 8.0

Appendix B 2

Table 3: Results of stationarity (Philips Peron) test

VARIABLES	<u>P-P TEST STATISTICS</u>		<u>CRITICAL VALUES (5%)</u>		ORDER OF INTEGRATION
	Constant	Constant and Trend	Constant	Constant and Trend	
lnGDP	-6.140	-6.115	-2.935	-3.523	I(0)
lnIMP	-4.575	-4.489	-2.935	-3.523	I(0)
lnEPT	-7.046	-6.954	-2.935	-3.523	I(0)
lnEXR	-5.195	-5.128	-2.935	-3.523	I(0)
lnFDI	-14.511	-17.469	-2.935	-3.523	I(0)
lnEXPD	-5.556	-5.521	-2.935	-3.523	I(0)
lnINF	-15.727	-15.581	-2.935	-3.523	I(0)

Source: Author's Computations with Eviews 8.0

Appendix C

Table 4. Results of the Johansen Cointegration test

No. of CE(s)	Trace statistic	0.05 critical value	Prob.	Max-eigen statistic	0.05 critical value	Prob.
None	224.580**	125.615	0.000	60.091**	46.231	0.00
At most 1	164.488**	95.753	0.000	52.104**	40.077	0.00
At most 2	112.384**	69.818	0.000	35.097**	33.876	0.03
At most 3	77.2866**	47.856	0.000	26.626	27.584	0.065
At most 4	50.660**	29.797	0.000	25.200**	21.131	0.012
At most 5	25.459**	15.494	0.001	16.680**	14.264	0.020
At most 6	8.778**	3.841	0.003	8.778**	3.841	0.003

Notes: ** connotes the rejection of the hypothesis at the 5% significance level.

Source: Author's Computations with Eviews 8.0

Appendix D

Table 5: Results of the Ordinary Least Squares Test

Variables	Coefficient	Standard Error	Test Statistics
Constant	-0.005	0.006	-0.769
logIMP	-0.219**	0.024	-8.980
logEPT	0.303**	0.017	17.129
logEXR	0.018	0.021	0.849
logFDI	0.004	0.011	0.404
logEXPD	0.902**	0.036	24.498
logINF	-0.002	0.007	-0.282

Notes: ** connotes the rejection of the hypothesis at the 5% significance level. R-squared 0.98
Adjusted R-squared 0.97,

Source: Author's Computations with Eviews 8.0

Appendix E

Table 3: Pair Wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Probability	Decision
IMP does not Granger Cause GDP	0.702	0.502	Fail to Reject Null
GDP does not Granger Cause IMP	3.344**	0.046	Reject Null
EPT does not Granger Cause GDP	0.114	0.892	Fail to Reject Null
GDP does not Granger Cause EPT	1.740	0.190	Fail to Reject Null
EXR does not Granger Cause GDP	0.471	0.627	Fail to Reject Null
GDP does not Granger Cause EXR	1.776	0.184	Fail to Reject Null
EXPD does not Granger Cause GDP	0.545	0.584	Fail to Reject Null
GDP does not Granger Cause EXPD	0.729	0.489	Fail to Reject Null
INF does not Granger Cause GDP	0.091	0.912	Fail to Reject Null
GDP does not Granger Cause INF	0.339	0.714	Fail to Reject Null
FDI does not Granger Cause GDP	0.009	0.990	Fail to Reject Null
GDP does not Granger Cause FDI	0.287	0.752	Fail to Reject Null
EPT does not Granger Cause IMP	2.610	0.087	Fail to Reject Null
IMP does not Granger Cause LEPT	0.129	0.879	Fail to Reject Null
LEXR does not Granger Cause LIMP	0.581	0.564	Fail to Reject Null
LIMP does not Granger Cause LEXR	0.501	0.610	Fail to Reject Null
LEXPD does not Granger Cause LIMP	1.869	0.169	Fail to Reject Null
LIMP LIMP does not Granger Cause LEXPD	1.924	0.161	Fail to Reject Null
LINF does not Granger Cause LIMP	0.647	0.529	Fail to Reject Null
LIMP does not Granger Cause LINF	0.458	0.636	Fail to Reject Null
LFDI does not Granger Cause LIMP	0.407	0.668	Fail to Reject Null
LIMP does not Granger Cause LFDI	0.862	0.430	Fail to Reject Null
LEXR does not Granger Cause LEPT	0.236	0.790	Fail to Reject Null
LEPT LEPT does not Granger Cause LEXR	2.310	0.114	Fail to Reject Null
LEXPD does not Granger Cause LEPT	1.601	0.216	Fail to Reject Null
LEPT LEPT does not Granger Cause LEXPD	0.743	0.483	Fail to Reject Null
LINF does not Granger Cause LEPT	0.035	0.964	Fail to Reject Null

LEPT does not Granger Cause LINF	0.138	0.871	Fail to Reject Null
LFDI does not Granger Cause LEPT	0.569	0.571	Fail to Reject Null
LEPT does not Granger Cause LFDI	0.634	0.536	Fail to Reject Null
LEXPD does not Granger Cause LEXR	0.905	0.413	Fail to Reject Null
LEXPD does not Granger Cause LEXPD	0.217	0.805	Fail to Reject Null
LINF does not Granger Cause LEXR	2.982	0.063	Fail to Reject Null
LINF does not Granger Cause LEXR	3.623**	0.037	Reject Null
LFDI does not Granger Cause LEXR	1.161	0.324	Fail to Reject Null
LFDI does not Granger Cause LEXR	0.766	0.472	Fail to Reject Null
LINF does not Granger Cause LEXPD	0.177	0.838	Fail to Reject Null
LINF does not Granger Cause LEXPD	0.157	0.854	Fail to Reject Null
LFDI does not Granger Cause LEXPD	0.408	0.667	Fail to Reject Null
LFDI does not Granger Cause LEXPD	0.272	0.763	Fail to Reject Null
LFDI does not Granger Cause LINF	0.242	0.786	Fail to Reject Null
LINF does not Granger Cause LFDI	4.114**	0.024	Reject Null

Notes: ** connotes the rejection of the hypothesis at the 5% significance level. Number of observation: 40; Lag: 2. Source: Author's Computations with Eviews 8.0

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