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A SECTORAL ANALYSIS OF THE EFFECT OF ECONOMIC OPENNESS ON ECONOMIC PERFORMANCE IN NIGERIA

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Abstract

The phrase "economic openness" describes how much non-domestic trade occurs and affects an economy's size and expansion. The aim of this study is to examine the effects of economic openness on Nigeria's microeconomic performance between 1981 and 2021, by focusing on the agricultural and the manufacturing sectors, using time series data and the Error Correction Model approach as the analytical technique. The results show that AOP immediately reacts negatively to DOP and ER, while MS reacts positively to DOP and ER within the lags of DOPt-2, DOPt-3, and ERt-2. Both the short-run and long-run models (ERt and ERt-2) show that ER does not explain changes in AOP and MS. The results also show that Agricultural Output (AOP) reacts immediately in a significant and positive way to Net Export (NE), while Manufacturing Sector Output (MS) reacts significantly and negatively to NE within the lags of NEt-2 and NEt-3, but significantly and positively to NE within the lag of NEt-4. Therefore, based on these findings, the study concludes that Nigeria's degree of economic openness, as assessed by its Degree of Openness (DOP), has a major role in bringing about both short- and long-term consequences for the real sector's optimal performance. On the basis of the study's findings, the following suggestions that to avoid stifling home output, the Nigerian economy should be increasingly opened to foreign commerce with caution and to benefit from economic openness, it is

important to increase the manufacturing and agricultural sectors' productivity and capacity by offering substantial loan assistance at low interest rates.

Keywords: Trade openness, Open economy, Microeconomic performance, Economic growth

INTRODUCTION

Economic stability in an open economy particularly depends on the level or amount of economic openness (Omekwe, 2018). This is due to the fact that a country's economic interactions with the rest of the world are used to measure its economic openness. Both academics and the general public have been interested in the significant impact that economic openness has had on national economies. Since the dawn of the modern era, no nation has managed to prosper without adopting economic openness in the form of global commerce, investment, and labour mobility. This is especially important for developing nations like Nigeria. Early in the 1980s, political economy literature in the field of comparative advantage used the phrase "economic openness" for the first time. Early economists like Adam Smith and David Ricardo introduced the idea in their writings as early as the 18th century. These ancient economists were concerned with both the advantages and disadvantages of free trade as well as how foreign commerce would affect the home economy. The phrase "economic openness" describes how much non-domestic trade occurs and affects an economy's size and expansion. When discussing the recent growth in economic openness generally, terms like trade openness, economic integration, trade liberalisation, and globalisation are frequently employed (Gräbner et al., 2018).

Trade freedom and the real exchange rate show that economic growth is getting a lot better. They have made a big difference in the growth of the economies of Ghana and Nigeria by creating jobs, sharing technology and know-how, and pushing the local private sector to do better in competition. For investments in Ghana and Nigeria to be more sustainable in the long run, they need to be spread out more (Oppong-Baah, 2022).

The openness index, which sums imports and exports of goods and services and divides this total by gross domestic product (GDP), is a widely used indicator of economic openness. The ratio's value increases with the country's exposure to foreign commerce. Economic openness can be assessed in terms of financial flows (like FDI and liabilities) or actual flows (like commodities and services).In an open economy, one would anticipate greater rates of economic development and a decrease in inequities, however this is not always the case. Trade openness does effectively link a nation to the rest of the global economy, but it does not necessarily result in lower levels of wealth, more economic growth, or a reduction in income

inequality. (Keman, 2019) correctly notes that the literature relates to demographic and regional variables on the one hand and political issues on the other to explain weak relationships.

Economic openness can be either surplus or deficit, beneficial or unwanted. When incoming payments from operations in the external sector are precisely sufficient and equal to incoming payments, it becomes desirable. A surplus position occurs when receipts exceed outgoing payments, whereas a deficit condition occurs when receipts are insufficient to cover outgoing obligations. Full employment, consistent economic growth, and a typically constant price level should all be attributes of a good open economy. This is consistent with the claim made by (Gbosi, 2015) that an economy with constant GDP growth, a low unemployment rate, and low inflation may be considered to be in a state of economic balance (Oppong-Baah, 2022).

A better knowledge of how economic openness affects a country's economic performance may be gained from the diverse political economy literature. Economic openness improves economic development over the long run by allowing access to products and services, which is a reality. achieving efficiency in the distribution of resources and raising the productivity of the production-related inputs through the spread of technology and knowledge (Keyo, 2017).

According to Jackson (2015), economic openness is a crucial facilitator of development, job creation, and the alleviation of poverty. Economic openness helps private businesses to increase productivity, provide employment, and raise incomes. It results in increased productivity and innovation through competition for domestic businesses. Increased personal freedom and choice as well as greater earnings and geopolitical advantages all result from it. It also helps to reduce poverty. By promoting specialisation, trade openness corrects resource allocation and decreases local prices. Additionally, it reduces domestic business owners' profit margins and increases the operational effectiveness of local companies through heightened competition. Increased trade volume is a result of international commerce, and this growth benefits business owners since it means more opportunity to profitably grow businesses and create jobs. Increasing production diversity and reduced prices help households with middle-class and lower incomes.

Economic transparency had proven important for learning about and comprehending a nation's economic progress. Connections between the domestic economy and global trade now have a profound impact on a country's development and prosperity. Even if population size and resource availability have an impact on economic openness, it nevertheless adds to a country's prosperity. Daily developments in globalisation lead to more competition on world markets, which increases the need for nations to be more competitive. In order to gain from openness, competition is important. How successfully a nation can turn the chances that openness gives into potentials depends on how competitive its economy is. Three regions make up this: The

first section refers to monetary, financial, exchange rate, and fiscal policies that have an impact on the business environments. Thirdly, it has to do with both physical and social infrastructure. Second, it has to do with institutions that entail effective governance.

Nigeria has historically been open to foreign investment, thus it is predicted that this would have a positive impact on the nation's development overall and especially on the lives of the people, homes, businesses, and industries that make up the nation as a whole. Contrarily, the advantages of economic openness didn't seem to have fully materialised. It becomes important for us to look at how economic openness affects things. This study's goal is to discover the effects of economic openness on Nigeria's microeconomic performance between 1981 and 2021. Given the significance of manufacturing to an economy, the manufacturing and agricultural subsectors of the industries will be used in this study to represent Nigeria's microeconomic performance, and economic openness will be assessed in relation to actual flows of commodities and services.

LITERATURE REVIEW

Oppong-Baah, et. al., (2022) seek to fined-out how trade freedom affects economic growth in Ghana and Nigeria from 1998 to 2017. The dependent variable is economic growth. Using Random effect calculated models, on the other hand, inflation and investment have little effect on economic growth. According to the study, there is no heteroskedasticity in the data, and there is also no clustering. To protect economic growth, it is suggested that the governments of these countries put in place means and policies to deal with the real exchange rate and trade impacts. About inflation, these countries' governments can take steps to stop and control it, since a rise in inflation hurts economic growth.

Adebosin, et. al, (2019) examined Nigeria's industrialisation and economic expansion between 1981 and 2016. CBN statistics bulletin was utilised for the annual time series data. OLS method was used to estimate the data. The findings indicated that while foreign investment does not have an impact on economic development in Nigeria, industrialization and inflation rate do. Even while industrialisation enhances Nigeria's economic growth, the nation's rate of economic expansion is inflationary.

Malefane & Odhiambo (2018) looked at the relationship between economic expansion and trade openness in South Africa. The study used the ARDL bound testing techniques to assess the dynamic influence of trade openness on economic development. The study, in contrast to other studies, makes use of four trade openness proxies, each of which focuses on a distinct component of trade openness. The first proxy is the ratio of exports plus imports to GDP, the second is the ratio of exports to GDP, the third is the ratio of imports to GDP, and the

fourth is an index of trade openness that takes into consideration the sizes and geographies of the various countries. The analysis finds that, when the ratio of total trade to GDP is utilised trade openness has a positive and substantial influence on economic growth.

Mohammed & Shuaibu (2017) investigated how trade liberalisation produces poverty. The use of an integrated calculated general equilibrium micro simulation model, built from Winter's framework for trade liberalisation that focuses on product and factor market channels, is a significant addition. The model was calibrated using data inputs from a social accounting matrix from 2006 that were reconciled with data on the income and expenditures of heterogeneous households derived from the Nigerian standard survey from 2004. The Foster-Grear-Theoerbecke index was used to calculate the moral and urban poverty consequences associated with trade liberalisation. Policy simulations reflecting real trade decreases were run. Results show that trade liberalisation in the industrial and agricultural sectors has a moderately negative impact on poverty, with the effect being comparatively more evident in urban areas. According to the study's findings, trade liberalisation should be used in conjunction with other policies to combat poverty because the government cannot entirely rely on it to solve the growing prevalence of poverty in Nigeria.

In a multivariate framework, Keyo (2017) investigated the effect of trade openness on economic development in the instance of Cote d'Ivore over the years 1965–2014, using capital stock, labour, and trade openness as regressors. He applied the Granger causality tests as well as the ARDL. According to the study, trade openness offers both short- and long-term benefits for economic growth. Additionally, it demonstrates a favourable and significant complementary link between capital development and trade openness in fostering economic growth.

Using data from transition economies, trade, and the global market between 1995 and 2013, Silajdzic & Mehic (2017) investigated the link between trade openness and economic development experimentally. Theoretical prepositions demonstrate that, despite the fact that trade openness increases economic efficiency, trade liberalisation may have unfavourable effects due to market imperfections, differences in technology, and endowment. The study shows that openness as evaluated by trade intensity indicators may result in false assumptions regarding the relationship between trade growth and openness.

Afolabi, et. al, (2016) looked at exchange rate economic development nexus. The data analysis method employed was the Ordinary Least Square (OLS) approach. According to the study, Economic Growth is positively and strongly impacted by Exchange Rate, and vice versa. The paired Granger causality test was used to determine the short-run directionally relationships between exchange rates and national economic growth. Additionally, there is a relationship between the exchange rate and economic expansion.

In their study, Okoye, et. al, (2016) looked at Nigeria's industrial growth and economic openness. The research looked at how much the trend in production performance of Nigeria's industrial sectors during the post-reform period may be attributed to changes in various important economic variables, including trade openness, exchange rate, lending rate, and financial depth. Utilising economic methods based on the Vector Error Correction Model, data from 1986 to 2014 were evaluated. According to the study, currency rates, loan rates, and trade openness all have a considerable negative influence on industrial production. Additionally, there is proof that the financial deepening has had a considerable positive influence on industrial production. The Granger causality estimate demonstrates that trade openness and industrial production are causally correlated in both directions as well as a weak causal influence of financial deepening on industrial output. Additionally, there is proof that industrial expansion increases the need for financial resources through having a direct influence on loan rates.

In their study, Brown & Bidemi (2015) looked at Nigeria's balance of payments and fiscal policy initiatives. The goal of their analysis was to determine how much Nigeria's BOP situations have changed between 1980 and 2012 as a result of changes in fiscal policy. For the research, annual average data from 1980 to 2012 were used. The data analysis approach employed was the co-integration/ECM method. According to Moroso, based on the size and degree of significance of the coefficient and p-value, government tax income has a positive and substantial impact on BOP in Nigeria, but government spending and debt have a negative and significant impact. They came to the conclusion that the volume of public money available, the direction of public expenditure, and its execution all affect how successfully fiscal policy promotes a favourable BOP.

Nosakhare, et. al (2014) used quarterly time-series data from the first quarter of 1981 through the fourth quarter of 2010 to analyse evidence of the relationship between international trade and economic development in Nigeria. In order to properly take into consideration its feedbacks, a vector autogressive model was adopted. According to the study, there is a consistent, long-term link between international commerce and economic growth. Foreign trade innovations and "own shocks" are the main causes of economic development variation in Nigeria, with variable disposition being the end outcome.

Olufemi, (2014) conducted a research on the relationship between trade openness and economic growth in Nigeria: further evidence on the causation question. The study looked at the relationship between the openness variable and economic growth using data from the Nigerian economy. He claims that past studies conducted in Nigeria interpreted the output variable-export trade variable regression results as supporting trade liberalisation as a growth driver without taking other factors into account. He tested the relationship between several openness

metrics and economic growth. The results show that openness and growth have a one-way connection. They suggest that, depending on Nigeria's economic progress, a higher level of openness will be advantageous.

Using time-series data from 1971 to 2009, Kogid, et. al, (2014) conducted research on the impact of currency rates in Malaysia. Real and nominal GDP, as well as the exchange rate, all have an impact on economic growth. The results of testing methods for autoregressive distributed lag (ARDL) limits were employed. It suggests that real exchange rate, nominal and real rates, and economic growth exhibit long-run co-integration, with real exchange rate recording a strong positive coefficient. A systematic exchange rate through monetary policy should be properly developed in order to promote the stability and sustainability of economic growth in Malaysia.

Ogbuabor, et. al, (2013) explored the impact of trade liberalisation on informality and the openness of the Nigerian economy between 1970 and 2011 was examined. Ordinary least squares (OLS) approach was used in the investigation. The results of the long-run model show that informality in Nigeria is considerably and positively impacted by state regulatory actions whereas openness, while not statistically significantly, improves informality.

Using autogressive distributed lags and the ECM approach, Amini, et. al, (2012) investigated the impact of trade liberalisation on BOP and economic development in Iran. Tests were conducted on the real exchange rate, trade balance, trade liberalisation, and foreign income. According to their research, trade liberalisation has beneficial long-term effects on the trade balance and economic growth.

Utilising Ordinary Least Squares (OLS), Usman, et. al, (2012) conducted a study on the causal relationship between exports and economic growth to determine how exports affect economic growth in Pakistan. The evidence points to a significant and favourable effect on economic growth.

RESEARCH METHODOLOGY

Methodological Framework

This study intends to use both descriptive and quantitative techniques in its examination. Data are used in descriptive statistics to help with population descriptions or numerical computations. It also entails giving organised and condensed material in an understandable style. Therefore, the trend on some of the variables included in the study between 1981 and 2021 will be analysed using basic averages, tables, histograms, kurtosis, and more.

Using the Ordinary Lease Square (OLS), the research will examine how the independent factors affect the dependent variables. The chosen approach offers the best linear unbiased estimate and is straightforward. To determine the specific series under consideration's order of integration, a unit root test will be carried out. To determine if the variables have a long-term relationship or not, an error correction test is conducted after the co-integration test.

Model Specification

The model is consistent with the study of Silajdzic and Mehic (2018) with a little change, although it is based on the endogenous growth theory proposed by Arrow (1962), Lucas (1988), and Romer (1990). From 1995 to 2016, Silajdzic and Mehic created a model of real GDP per capita (GDP) as a function of the country's tariff rate (TRate), domestic investment (DI), government balance (GB), and openness ($\frac{x+m}{GDP}, \frac{x}{GDP}, \frac{M}{GDP}$)

The current study examines the effect of economic openness on Nigeria's real economy. The outputs of the industrial and agricultural subsectors (AOP and MS) serve as proxies for the dependent variable, the real economy. While the explanatory factors for DOP from 1981 to 2021 are exchange rate (ER), net export (NE), and rate of exports plus imports divided by GDP ((x+m)/GDP). The functional connection for this study is therefore defined as follows in order to examine the impact of these explanatory variables on the real sector of the Nigerian economy, as represented by the outputs of the agricultural and manufacturing sub-sectors.

$$AOP = f(\frac{x+m}{GDP}, ER, NE) \quad 1$$

$$MS = f(\frac{x+m}{GDP}, ER, NE) \quad 2$$

Where:

AOP = Agricultural Sector Output

MS = Manufacturing Sector output

$\frac{x+m}{GDP}$ (DOP) = Degree of Openness which expresses the real flows of goods and services

ER = Exchange rate

NE = Net Export

Equations (1) and (2) can be re-written as….

$$AOP = a_0 + a_1\frac{x+M}{GDP} + a_2ER + a_3NE \quad 3$$

$$MS = b_0 + b_1\frac{x+M}{GDP} + b_2ER + b_3NE \quad 4$$

Consequently, the econometric from of the models are state as:

$$AOP_t = a_0 + a_1(\frac{x+M}{GDP})_t + a_2ER_t + a_3NE_t + U_t \quad 5$$

$$MS_t = b_0 + b_1 \frac{x+M}{GDP} + b_2 ER + b_3 NE + U_t \quad 6$$

Where:

AOP_t = Agricultural Sector Output at time 't'

MS_t= Manufacturing sector output at time 't'

NE_t= Net exports at time 't'

$\frac{x+M}{GDP}$ (DOP) = Degree of or Trade openness at time 't'

U_t = stochastic variable (error-term) at time 't'

a_i and b_i= $coeficient$ of the variables

A priori expectations of signs of the parameters as enclosed in equation (1) are:

a_1 & b_1> 0;a_2 & b_2< 0;a_3 & b_3> 0

Sources of Data

The needed data for this research comprise time series data from CBN statistical bulletin between 1981-2021 on the;

a. Output of the Agricultural sector
b. Output of the manufacturing sector
c. Volume of export
d. Volume of import
e. Nominal exchange rate
f. Real GDP

The rational for the choosing these time series data most especially the exogenous variables is because they are key macroeconomic determinant of a countries openness and given the Nigerian economy dependent to some degree on international trade for her manufacturing and manufactured goods and the acquisition of equipment for her agricultural sector. These variables are deemed suitable for investigating trade openness in the Nigeria context.

Estimation Techniques

To identify the characteristics of the time series data that will be utilised in the development of this study, the study must do certain diagnostic testing. They consist of: Model for correcting errors: It will be necessary to set up the Error Correction Mechanism (DCM) to test the dynamic connection if the variables are determined to be integrated. The ECM's main function is to match the extend adjustment that runs from the short-run equilibrium level to the long-run equilibrium level. A larger parameter coefficient denotes a slower rate of short-run to long-run model modification.

RESULTS AND DISCUSSION

Table 1 displays the information that was gleaned from several issues of CBN's statistics bulletin. The information is shown in tabular format, with the year, Manufacturing Sector Output (MS), Net Export (NE/X), Total Imports (M), and Degree of Economic Openness (DOP) defined mathematically as $\frac{x+m}{GDP}$ making the columns.

Descriptive Statistics

Table 1: Descriptive Statistics

Variable	AOP	DOP	ER	MS	NE
Mean	6281.853	0.302105	88.66474	2421.438	4839.150
Median	1467.690	0.320000	97.40500	769.9250	1526.850
Maximum	27371.30	0.590000	306.0800	12455.53	20004.50
Minimum	17.05000	0.070000	0.610000	26.89000	7.500000
Std. Dev.	8016.148	0.126045	87.19053	3389.260	5866.438
Skewness	1.132594	-0.070700	0.799139	1.537255	0.958232
Kurtosis	3.039364	2.413515	2.964293	4.168000	2.624999
Jarque-Bera	8.126651	0.576267	4.046631	17.12667	6.037985
Probability	0.017192	0.749662	0.132216	0.000191	0.048850

The sample size for all the variables in the aforementioned descriptive statistics is 41 observations covering the years 1981 to 2021. According to the maximum and minimum values listed in the table for the variables under observation, the greatest AOP value for the observation period was 27371.30, and the lowest was 17.05000. Over the same observation period, DOP, an expression of (x+m)/GDP, had its lowest and greatest values of 0.070000 and 0.590000, respectively. Additionally, it is demonstrated that ER has a bottom and peak of 0.610.000 and 306.0800, respectively, in its nominal form. While NE(X) achieved lowest and maximum values of 7.500000 and 20004.50 respectively within the same observation period, MS reached a bottom of 26.89000 and a peak of 12455.53 during that time.

After ranking the observations of each individual variable from highest to lowest, the mean value and accompanying median values of the variables under observation show, respectively, the average of the achieved values of each variable over the period of observation and their accompanying achieved middle values. AOP is therefore 6281.853, DOP is 0.302105, ER is 88.66474, MS is 2421.438, and NE(X) is 4839.150 on average.

According to the average values (6281.853 and 2421.438) and maximum values (27371.30 and 12455.53) for the two dependent variables, AOP and MS, respectively, the agricultural sector appears to have performed better than the manufacturing sector in Nigeria between 1981 and 2021.

AOP had the greatest variation from the mean of all the variables, with a standard deviation of 8016.148. This standard deviation figure indicates that the observations of AOP are spread out from the mean at an average distance of 8016.148, which is on the high side and suggests that AOP is spread out over a wide range of values from its mean value of 6281.853. Thus, there may have been several actions in the agriculture sector from 1981 to 2021 that contributed to the wide range of production values from the sector's mean. While MS and NE show that they are separated from their mean values on average distances of 3389.260 and 5866.438 for MS and NE, respectively, with standard deviation values of 3389.260 and 5866.438.

DOP's list standard deviation value of 0.126045 indicates that it is most evenly distributed around its mean value of 0.302105.

The measurement of skewness reveals both its magnitude and its departure from the distribution. Despite having mirrors with normal skewness values of 0.75 and 0.95, respectively, ER and NE are positively skewed and platykurtic since their kurtosis values of 2.96 and 2.62, which are both smaller than 3, indicate such. Because ER and NE are positively skewed and flattened kurtices, respectively, their observations are more highly skewed than their respective mean values.

The other variables AOP and MS are leptokurtic and as such peaked curved, and being positively skewed, the observations AOP and MS, like ER and Ne, have more higher values than their respective mean values. The other variables have skewness values of 1.132594 and 0.799139, respectively, and their kurtosis values are above 3.

DOP is platykurtic and negatively skewed with a skewness value of -0.070700 and a kurtosis value of 2.41, which is less than 3. Additionally, because DOP is negatively skewed and platykurtic, it has flattened curves and more lower values than its mean.

The skewness and kurtosis of the series are compared to those from a normal distribution using the jarque-bera (JB) test. The variables DOP and ER are normally distributed, indicating the absence of outliers in them, while AOP, MS, and NE are not normally distributed, indicating the presence of outliner, necessitating the conduct of a stationarity test. The JB values for these variables are 8.126651 for AOP, 0.576267 for DOP, 4.046631 for ER, 17.12667 for MS, and 6.037985 for NE. As a result, the variables MS and NE have data points that significantly differ from other observations of MS and NE, but AOP, DOP, and ER do not, based on the JB values and their probability values.

Model Estimation and Interpretation of Results

Often times when a non-stationary time series is regressed on another the result is spurious. A spurious regression describes a situation where no linear relationship actually exists between a dependent variable and an independent or a set of independent variables with high R^2 or adjusted R^2 and few statistical significant t-ratios. To avoid the estimated regression being spurious, thus to test for unit root, the Augmented Dickey-Fuller Unit Root Test is conducted.

Table 2: Augmented Dickey-Fuller Unit Root Test

Variable	Level	First difference	Critical Value @5%	Lag(s)	Model	Order of Integration
AOP	1.651984	-4.401112***	-2.957110	1	Trend & Intercept	I(1)
ER	-1.945688	-4.548298***	-3.540328	1	Trend & Intercept	I(1)
MS	1.493103	-5.061383***	-3.5442841	1	Trend & Intercept	I(1)
NE(X)	-2.454121	-3.921273***	-3.5442841	1	Trend & Intercept	I(1)
DOP	-2.508426	-7.947960***	-3.5403281	1	Trend & Intercept	I(1)
ECM (-1)	-2.596870***			0	None	I(0)

Given that most macroeconomic variables are non-stationary at level, the results of our ADF unit root test show that all the variables, including output in the manufacturing and construction sectors, exchange rate, net export, and degree of openness, were non-stationary at level but became stationary at their first difference. As a result, the stationarity test result is consistent with the reality.

The Cointegration Bounds Test

The cointegration boundaries test aims to determine the degree of association (whether short-run or long-run) between the variables integrated at the same order (i.e. I(1)), in their linear combination. Therefore, given the crucial limits values at orders I(0) and I(1), we may determine whether or not the variables are co-integrated using the bounds test.

Table 3: Results from the Bounds Test for Cointegration

Using Model 3 (Constant): Unrestricted Constant and No Trend

Dependent Variable	F-Statistic	5% Critical Bounds Values at I(0)	at I(1)	Cointegration	Decision
LogAOP	2.806450	2.86	4.01	NO	Estimate a Short-run Model
LogMS	5.934762*	2.86	4.01	YES	Estimate a Long-run Model

Bounds test indicates 1 cointegrating eqn(s) at the 0.05 critical bounds level
* denotes rejection of the Ho. at the 0.05 level

The first equation with logAOP as the dependent variable retains the Ho of no cointegration (no long-term relationship between the variables) because 2.80 2.86 and 4.01 at orders I(0) and I(1), respectively, while the second equation with logMS as the dependent variable rejects the Ho of no cointegration because 5.93 > 2.86 and 4.01 at orders I(0) and I(1), respectively.

The results of the bounds test for cointegration indicate that the first model's variables with logAOP as their dependent have a short-run relationship, necessitating the estimation of a short-run model. In contrast, the second model's variables with logMS as their dependent have a long-run relationship, necessitating the estimation of a long-run model.

Model Estimation

Given the results of the Bounds test for cointegration, a short-run model is estimated to determine the direction and size of the existing short-run relationship among the variables. This model depicts the existence of a short run relationship of the variables of the first model with the dependent variable being logAOP. The direction and size of the current long-run relationship between the variables of the second model with logMS as a dependent variable are examined using an Error Correction Model (ECM), a long-run estimation model.

Since the Ho. of the first bounds test is retained, indicating no cointegration, a short-runmodel is estimated as follows:

Table 4: The Estimated Short-Run Model Result

Dependent Variable: LOG(AOP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.382830	0.312321	1.225757	0.2290
LOG(MS)	0.468346	0.143302	3.268233	0.0025
DOP	-1.670061	0.615160	-2.714840	0.0105
ER	-0.000715	0.001030	-0.694097	0.4925
LOG(NE)	0.631756	0.114199	5.532061	0.0000
R-squared	0.945768	Mean dependent var		7.047263
Adjusted R-squared	0.949134	S.D. dependent var		2.459662
F-statistic	1568.588	Durbin-Watson stat		1.922036
Prob(F-statistic)	0.000000			

Given that the Ho. of the second bounds test is rejected, indicating that there is cointegration (a long run relationship exists amongst the variables), the ECM representation is estimated as follows:

Table 5: Estimated Error Correction Model (ECM) Result

Dependent Variable: D(LOGMS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.105818	0.040072	2.640705	0.0149
D(LOGMS(-1))	0.343980	0.220384	1.560823	0.1328
D(LOGAOP)	0.227736	0.102325	2.225619	0.0366
D(DOP(-2))	1.076930	0.348270	3.092228	0.0053
D(DOP(-3))	1.110863	0.346779	3.203379	0.0041
D(ER(-2))	0.001503	0.000973	1.544359	0.1368
D(LOGNE(-2))	-0.195840	0.076158	-2.571508	0.0174
D(LOGNE(-3))	-0.160109	0.076371	-2.096447	0.0478
D(LOGNE(-4))	0.112962	0.039728	2.843394	0.0095
ECM(-1)	-0.132200	0.314541	-0.420294	0.0378
R-squared	0.602933	Mean dependent var		0.180480
Adjusted R-squared	0.582315	S.D. dependent var		0.097516
F-statistic	34.16595	Durbin-Watson stat		1.943291
Prob(F-statistic)	0.008980			

According to the limits test for cointegration, which measures the strength of the link between the explained and explanatory variables, AOP instantly responds to changes in DOP, ER, and NE whereas MS does so with temporal delays. The foregoing short-run and long-run models' coefficient estimates and statistical characteristics, thus, shed light on the direction of the immediate and lag-time influences of DOP, ER, and NE, respectively, on AOP and MS.

The results demonstrate that AOP immediately reacts negatively to DOP and ER, while MS, within the lags of DOP_{t-2}, DOP_{t-3}, and ER_{t-2}, reacts favourably to DOP and ER, with coefficient values of 1.076930, 1.110863, and 0.001503 respectively for DOP_{t-2}, DOP_{t-3}, and ER_{t-2}. However, given the prob. values of 0.4925 and 0.1368 for ERt and ERt-2, respectively, it is demonstrated that ER, both at the short-run and long-run (ERt and ER_{t-2}), is statistically not significant. Thus, it can be correctly inferred from the results that Degree of Openness (DOP) has a significant short-term negative effect on Agricultural output (AOP) and a significant long-

term positive effect on Manufacturing Sector Output (MS), while Exchange Rate (ER) is unable to adequately explain either short-term changes in Agricultural output (AOP) or long-term changes in Manufacturing Sector Output.

The hypothesis that there is no meaningful association between degree of openness (DOP) and agricultural production (AOP) and manufacturing sector output (MS) is thus rejected in light of the aforementioned data. On the other hand, the hypothesis that exchange rate (ER) has no discernible impact on agricultural output (AOP) and manufacturing sector output (MS) is still true.

According to the estimated results, manufacturing sector output (MS) reacts negatively and significantly to net export (NE) within the lags of NE_{t-2} and NE_{t-3}, but significantly positively to NE_{t-4}. In contrast, agricultural output (AOP) reacts instantly, significantly, and positively to net export (NE). As a result, both the Ho that claims there is no substantial association between NE and AOP and the Ho that claims there is no major relationship between NE and MS are rejected.

The error correction term (-1) is accurately supplied based on the ECM estimation. Given its coefficient and prob. values of -0.132200 and 0.0378, respectively, it is adverse and statistically significant. The Bounds test for cointegration shows that the variables in the model are cointegrated, i.e., there is a long-term connection between the variables, and the coefficient of the ECM's sign is negative. According to the ECM's coefficient, disturbances or shocks from the previous year return to equilibrium in the long-run, or present period, to the tune of 0.132200 percent.

According to the short-run and long-run models' adjusted R2, the explanatory factors can account for 94.91% of the variance in the first dependent variable (AOP) in the short run. However, across time, the explanatory factors can only account for 58.23% of the variance in the second dependent variable (MS).

The short-run model and ECM's respective R-squared values of 95.47% and 60.29, and F-statistics values of 1568.588 and 34.165, with probability of 0.000 and 0.008, respectively, are very significant. This indicates that the dependent and independent variables in each model are jointly significant, which suggests that the models are deemed statistically significant since the variables fit the models well.

The study, for instance, both supports and refutes the work of Adamu and Dogan (2016), who discovered that trade openness significantly and favourably affects industrial production in both the long-run and the short-run using the autoregressive distributed lag (ARDL) bounds testing approaches. It supports Adamu and Dogan's (2016) findings that DOP is long-term positively correlated with MS and does not refute their findings that DOP is likewise long-term

negatively correlated with AOP. The results of DOP's long-term analysis are consistent with those of Nosakhare, Adrodoya, and Milton's (2014) study, which found a steady, long-term association between foreign trade and economic growth by employing a vector autogressive model.

DOP disagrees with apriori expectation in the long-run analysis but negates it in the short-run analysis. The short-run negative relationship between DOP and AOP that was discovered, which defies a priori expectations, emphasises how primitive and grossly underdeveloped Nigeria's agricultural practises are, as well as the country's inability to compete successfully as it becomes more open to foreign competition as a result of increased globalisation. This viewpoint may also be used to explain why ER is ineffective in explaining changes in AOP. It demonstrates that there may be a disconnect between the external sector, whose operations are more strongly impacted by the current exchange rate, ER, and the agriculture sector in Nigeria. Nigeria's agricultural sector is still plagued by primitive and underdeveloped practises, making it unable to benefit from rising economic globalisation. Neither is it fully engaged in the export of outputs (because of its primitive practises, which result in subpar international output) nor is it fully engaged in the import of factor inputs (because of its labor-intensive, traditional practises).

Following these justifications, the results of this study—whether they support or refute those of apriori studies or other studies of a similar nature—remain crucial given that they show the immediate (short-run) and lag-time (long-run) effects of the independent variables, DOP, ER, and NE, on the dependent variables, AOP and MS.

CONCLUSION AND RECOMMENDATIONS

The background information primarily focuses on the importance and uniqueness of an economy's level of economic openness to its overall economic stability. Several initiatives have been undertaken throughout the years with the goal of maximising the benefits of economic openness. We have witnessed efforts like the creation of processing zones for export products to increase exports, the transfer of publicly owned enterprises to the private sector to achieve operational efficiency, and the aggressive promotion of foreign direct investment (FDI) to improve development The National Economic Empowerment Development Strategy (NEEDS), a programme that prioritises the creation of jobs for economic growth and development, the structural adjustment programme (SAP) reforms of 1986, which included changes to the nation's foreign exchange system, trade policies, business, and agricultural regulations, the vision 2020, the Yar'Adua regime's 7 points agenda, and the transformation agenda, may not have been successful despite their (the attempts') best efforts.

Any country should strive towards economic openness, especially when inflows of funds from activity in the external sector exceed or balance outflows. Higher levels of economic development and a decrease in inequality in an open economy are predicted outcomes of a high degree of openness or economic openness with regard to real flows (goods and services) or to financial flows (e.g. FDI and liabilities). Thus, any national government that wants to expand its real sector must continue to maintain the appropriate level of economic openness. Therefore, based on these findings, the study concludes that Nigeria's degree of economic openness, as assessed by its Degree of Openness (DOP), has a major role in bringing about both short- and long-term consequences for the real sector's optimal performance. As such managing the countries level of external flow of funds, good and services should be managed by a special agency designed for ensuring inflow from the external sector do not exceed outflow. On the basis of the study's findings, the following suggestions are made: to avoid stifling home output, the Nigerian economy should be increasingly opened to foreign commerce with caution; to benefit from economic openness, it is important to increase the manufacturing and agricultural sectors' productivity and capacity by offering substantial loan assistance at low interest rates; credits to the manufacturing and agricultural sectors should be thoroughly monitored by the authorities in charge to make sure that money is not being misdirected to improve the performance of the sectors and to improve the trade balance, export promotion measures with a focus on local content in production should be stepped up. Further studies can be done on exchange rate and real output dynamics as it relates to trade openness, using different analytical approach.

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