NIGERIA-CHINA BILATERAL TRADE RELATIONS: ECONOMIC GAIN OR DRAIN FOR NIGERIA?

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Abstract

This study empirically analyzed Nigeria-China bilateral trade relations with a view to determine its impact on growth of the Nigerian economy using data spanning from 1995-2020 with the Autoregressive and Distributed Lag (ARDL) technique. Independent variables such as trade values of electric power machinery imports, the textile fabrics imports, Iron and steel imports, Telecommunication and Sound Processing Machines imports, Petroleum and Solid Minerals exports as well as Nigeria-China bilateral exchange rates were regressed on real GDP of Nigeria. The secondary data used were obtained from UNCTAD. The econometric diagnostics for presence of unit roots in the series were conducted using the Augmented Dickey-Fuller technique and the Philip Peron unit root procedures. The tests indicate that the variables were integrated of either order 1(0) or order 1(1). Bounds testing approach in determining the co-integration among the variables in the various equations confirms the existence of long-run equilibrium. The error-correction model estimates provide evidence in support of restoration of long-run equilibrium after short-run distortion. Findings from the study revealed that bilateral trade components such as electric power machinery, iron and steel, telecommunication and sound processing machines and petroleum and solid minerals have significant impact on economic growth of Nigeria The study concluded that these items are the core trade drivers of economic growth from Nigeria-China trade relations. Consequently, the study recommended that the federal government should push towards increasing her production quota of petroleum products by lobbying the OPEC so as to increase export of petroleum and solid minerals to China for the growth of Nigeria economy.

Keywords: Economic Growth, Exports, Imports, Nigeria-China Bilateral Trade
JEL classification: F14, F62, O24, O40
I. Introduction

As the world evolves into a global village, it becomes eminent for a nation to be in mutual alliance with other nation(s) (Azeez, Dada & Aluko, 2014). One of the coherent ways to create such an alliance between or among nations is through international trade. International trade allows for the exchange of goods and services cum fostering of healthy relations among countries irrespective of their level of economic growth and development. According to Azeez, Dada and Aluko, (2014) country involved in international trade need not have fear of hegemony or loss of its sovereignty because it is a mutual agreement to engage in trade across their border. A nation not participating in international trade is at risk of a slow pace of economic growth due to the cogent fact that a country cannot be fully endowed with all the resources essential to be utilized for sustainable economic growth.

Okolie and Chime (2013) as cited in Omenka (2014) underscored the inevitability of interstate relations emanating from the inherent tendency of man for social relations, when they wrote:

“The world of a man is in a flux. The fluidity of social relations conduces into the search for social coalescence, partnership and cooperation. Naturally, man is created with inbuilt and ever elastic gregarious instincts which propel man to enter into social relations with other men basically to eke out a living. These gregarious instincts combine with differential natural resource endowments to induce man to develop the propensity to partner with others to address the needs of the community. Fundamentally, the scenario opens new vistas of relations between and among states in a world of change.”

International trade is recognized as the most significant determinant of economic growth of a country, all over the world (Omenka, 2014). The foreign trade of a country consists of inward (import) and outward (export) movement of goods and services which results into: outflow and inflow of foreign exchange. Thus it is also called EXIM (Export and Import) Trade for providing, regulating and creating necessary environment for its orderly growth. Several bilateral trade agreements have been entered into between and among countries of the world (Chand, 2009, as cited in Omenka, 2014).

Formal trade relations between China and African countries can be traced back to the late 1950s with major trade partners being countries in Northern Africa, especially Egypt (Nabine, 2009). The trade relations with Africa involved exportation of primary products to China, and importation of consumer and capital goods from China. Although there had been differences by country and time, this pattern did not change until recently. According to the statistics by China Customs, in January-December 2017, the import and export value of China-Africa trade amounted to US$170 billion, up 14.1% year on year, 2.7 percentage points higher than the general increase of foreign trade in the same period of 2016. Among these, China’s exports to Africa reached US$94.74 billion, up 2.7%; China’s imports from Africa reached US$75.26 billion, up 32.8%; with import growth remarkably 16.9 percentage points higher than that over the same period of 2016; the trade surplus for Nigeria was US$19.48 billion, down 45.2% year on year with Nigeria being China’s largest trade partner on the continent (Ministry of Commerce People’s Republic of China, 2018).
According to Kwanashie (2000), Nigeria formalised ties with People’s Republic of China on 10th February 1971, and has since then maintained good economic relations with her. China as economic partner to Nigeria has been very dogged and focused in her relations with Nigeria over the decades. Despite the ups and downs of Nigeria-China relations, the Chinese have continued to ensure that their market shares in Nigeria remain on a steady path of growth.

By 2005, bilateral trade between the two countries reached USD 2.8 billion. That year, China's exports to Nigeria were valued at USD 2.3 billion and its imports from Nigeria were estimated at USD 527.1 million. And by 2010, Nigeria-China trade was USD 7.700 billion, making Nigeria China's fourth biggest African trading partner, and the second largest Chinese export destination on the continent. However, China's exports to Nigeria and imports from Nigeria were USD 6.737 billion and USD 962.5 million, respectively. In 2014, trade volume between the two countries had reached a whooping sum of USD 18.1 billion, thus, making Nigeria China’s third largest export destination in Africa, after South Africa and Angola. Nigeria-China trade cooled to USD 14.94 billion and USD 13 billion in 2019 and 2020, respectively (Nigeria Bureau of Statistics, 2021). Whereas latest trade data has shown further that Nigeria imports and export trade with China in 2020 is put at USD12.139billion and USD1.75billion respectively and making Nigeria China’s largest trade partner on the continent (Nigeria Bureau of Statistics, 2020, United Nations Conference for trade and Development, 2021).

According to the National Bureau of Statistics (2020), between 2016 and 2020, Nigeria's trade deficit with China was USD 16.9 billion. Although the balance of trade is skewed in favour of China, Nigeria-China trade accounts for 8.3% of China's total trade with Africa, and 42% of China's trade with the Economic Community of West African States (ECOWAS). China accounts for over 21 percent of Nigeria’s import, the country's biggest import trading partner according to 2018 first-quarter figures from the Nigerian Bureau of Statistics. But the state does not feature in Nigeria’s top 10 export partners as Nigeria’s main export trading partners in Q1 of 2018 were Netherlands (20.5 percent), India (18.2 percent), Spain (8.3 percent), the United States of America (8.2 percent) and France (6.3 percent).

With Nigeria being Africa’s largest economy and Chinese biggest trading partner in Africa, and China being the largest economy in Asia, it becomes necessary for this study is to analyse the impact of Nigeria-China bilateral trade relations on economic growth in Nigeria between 1995 and 2020; with the view to highlighting the bilateral trade components of both economies.

**Statement of the Problem**

International trade theories have it that world economies become prosperous through international trade activities as a major factor of openness which influences a country’s growth rate by impacting upon the level of economic activities and facilitating the transfer of resources across borders (Smith, 1776; Ricardo, 1817; Hecksher & Ohlin, 1933 as cited in Adeleye, Adeteye & Adewuyi, 2015).

The imbalance in trade (in favour of China) has been alleged to the mono economic structure of the Nigerian economy as the structure of trade between the two countries is marked by differences in exports; China exports a diversified range of goods to Nigeria such as machinery, textiles fabrics, iron and steel, telecommunication and sound processing machines, agricultural raw materials, etc (see figure 3).
while Nigeria only export about 10 percent of its manufactured goods; a rate which is very low as against 90 percent of crude oil and other raw materials exports to China (see table 4).

The mono-export bilateral trade pattern of the nation has crippled the productive capacity of the country and has caused growth instability. As many economic indicators show, Nigeria’s economy has experienced different growth stages. The Gross Domestic Product (GDP) growth rate recorded negative growth in the early 1980s (-2.7% in 1982, 7.1% in 1983 and -1.1% in 1984). The growth rate increased steadily between 1985 and 1990 but fell sharply in 1986 and 1987 to 2.5% and -0.2%. Except in 1991 when a negative growth rate of -0.8% was recorded, 1990s witnessed an unstable growth. However, the growth rate has been relatively high since 2001 until mid 2014 when it began to fall from 6.54% in 2014Q2 (CBN, 2014) to -0.36% in 2016Q1 and then to -2.06% in 2016Q2, and further down to -2.24% in 2016Q3 but rose by 1.92% in 2017 before experiencing a trough of -1.79 in 2020 (NBS, 2020). As a result of this, economic planning has become difficult following the instability in growth.

As steps towards remedying the trade imbalance between the two countries through industrialization and export diversification for Nigeria, China signed agreements of cooperation with Nigeria in 2000 in the fields of agriculture, industry and trade, and further pledged commitments in a number of other areas. Some of these areas included sending medical personnel and agricultural experts to assist in the development of new model farms. China also agreed to buy Nigerian palm kernels, cocoa, cashew nuts and cotton. A further agreement involved manufacturing Nigeria-focused farming tools in China (Ubi, 2018). Notwithstanding all the above agreements, the trade imbalances between the two countries persisted and widened.

The developments from the above enumerated concerns have informed series of unanswered or partially answered questions as to whether Nigeria has really reaped the benefit of trading with an economic buoyant nation like China particularly with regard to the economic impact of the key traded items between the both nations. Therefore, this study seeks to unravel whether the key traded items between the both countries [electric power machinery (EPM), the textile fabric (TXF), Iron and steel (IRS), Telecommunication and Sound Processing
Machine (TSM), as well as Petroleum and Solid Minerals (PSM)] have favourable economic implication for a budding economy like Nigeria.

2. Literature Review

Theoretical Literature Review

Export-Led growth hypothesis theory was employed in this study as it identifies the importance of export as the key determinants of economic growth.

The Import Led Growth Hypothesis (ILGH)

As developed by Grossman and Helpman in 1991, the Import-Led Growth (ILG) Theory, unlike the export-growth nexus, does not show a perfect and straightforward relationship between imports and economic growth mainly because imports are to a larger extent considered as a leakage to the circular flow of national income i.e. most import expenditure reduces national income resources (Nyasulu 2013, as cited in Grossman and Helpman, 1991). However, economists generally pointed that the effect of imports on economic growth emanates from the fact that imports enable a country to acquire factors of production it cannot produce by itself and within its territorial boarders due to the absence or inadequacy of the necessary manpower, technology, skills etc. Several analyses of the impact of imports on economic growth have by and large hinged on providing answers to the question of whether or not international trading in technological knowledge promotes the attainment of higher national output between and within countries. Imports are considered to be the main diffusion conduit in this international trade of capital and technology because not only does imported foreign technical expertise contain the potential to increase domestic production levels, but also because imports are a potent proxy for economic interactions between a country’s citizens and other nations of the world (Ram, 1990).

In line with the analysis above, Coe and Helpman (1993) noted several channels through which imports impact on economic growth (especially GDP growth). They note firstly that the importation of intermediate capital goods may increase a country’s productive capital stock levels which in the end would lead to economic growth. Secondly, imports increase GDP levels by enabling countries with low technical know-how (i.e. inside a technological frontier) such as developing countries, to adapt and adopt advanced technological inventions from those with higher technical expertise (i.e. frontier nations) such as developed nations. Thirdly, imports or international trade offers countries the opportunity to learn from others more efficient methods of resource allocation which have a huge bearing on productivity and increased national income levels. Coupled with this is that imports can improve the quality of indigenous or domestic technologies through creation of competition which forces domestic industries to improve their production techniques (Nyasulu, 2013). This improvement in the quality of domestic production energizes productivity and hence leads to increases in the level of national output.

The ILGH is found relevant to this study owing to the fact that it emphasizes on “imports” which increase the variety of goods available in the economy, especially in terms of factor inputs that can enhance production as a key determinant of economic growth of any country.

The Export-Led Growth Hypothesis (ELGH)

The export-led growth hypothesis postulates that export is the main determinant of overall economic growth of any country. One of the main arguments in support of the hypothesis is that export growth may affect total factor productivity through dynamic spillover effects on
the rest of the economy (Feder, 1983). Empirical studies based on the production function framework include exports because of this spillover effect. In short, this is “learning by doing” or more precisely “learning by exporting” (Tyler, 1981; Lucas, 1988).

In this theory, there are several ways in which exports can potentially cause an increase in productivity. An expansion in exports may promote specialization in production of export products which in turn may boost productivity levels and may cause the general level of skills to rise in the export sector. This then leads to a reallocation of resources from the (relatively) inefficient non-trade sector to the higher productive export sector. This productivity change leads to output growth (Waithe, Lorde & Francis, 2011).

The core theoretical criticism of the export-led growth model among others is that it suffers from a fallacy of composition whereby it assumes that all countries can grow by relying on demand growth in other countries. When the model is applied globally in a demand-constrained world, there is a danger of a beggar-thy-neighbour outcome in which all try to grow on the backs of demand expansion in other countries, and the result is a global excess supply and deflation (Palley, 2002). Despite this criticism, the ELGH is still relevant to this study because it emphasizes export as the key determinant of economic growth.

**Empirical Literature Review**

Edouniekumo and Opukri (2013) examined the contributions of international trade (proxy with export and import values) to economic growth in Nigeria measured by real gross domestic product (RGDP). 27period time-series data obtained for a period of 1983 – 2010 was analyzed using Augmented Dickey-Fuller (ADF) test, Ordinary Least Square (OLS) statistical technique, Johansen co-integration test and Granger Causality test. The results showed that positive relationship exists between the variables and there is co-integration among the variables. The Granger Causality test realized a uni-directional relationship showing that RGDP Granger cause export and import Granger cause RGDP and export.

Abughalia and Abusalem (2013), investigated the empirical analysis on the Libyan economy and its structural changes, with special reference to Libyan foreign trade during the last three decades (1980–2010) using descriptive analysis methodology and employing exchange rates, balance of payments, total imports, total exports and GDP at market prices in Libya as variables. The study observed that the gains from export were higher than the loss for import, where this situation has led to positive balance of payment.

Balaguera, Florica and Ripollés (2012) investigated the relationship between foreign trade and economic growth in Spain from 1900-2012 using Results from Johansen’s, Toda’s and Yamamoto’s methodologies and using variables such as energy imports, non-energy imports, energy exports, non-energy exports, and real gross domestic products. For the first six decades of the 20th century, a sub-period characterised by an inward oriented trade policy, they found that economic growth is somewhat independent of foreign trade. But later on this outcome contradicts with findings for the sub-period after the Stabilisation and Liberalisation Plan in 1959, where a causal network among variables is supported. They found that both energy exports and energy imports have been a direct cause of the economic growth observed since the sixties.

Abughalia and Abusalem (2013) conducted an empirical study on the Libyan economy and its structural changes, with special reference to Libyan foreign trade during the last three decades (1980-2010). The analysis was conducted using descriptive analytical methods and
statistical tools such as linear regression analysis with variables such as total import, total export, exchange rate and gross domestic products (GDP). The study observed that the trade process between Libya and the EU has experienced some success, leading to more economic cooperation through bilateral relations, promoting the private sector to play its role in the trade process during the period of study. The gains from export were higher than the loss for import, where this situation has led to positive balance of payment.

Adelowokan and Maku (2013) examined the effect of trade and financial investment openness on economic growth in Nigeria using time series variables such as fiscal deficit, inflation, lending rate, foreign direct investments, trade openness and GDP growth rate between 1960 and 2011. Estimates from the reported dynamic regression model indicated that trade openness and foreign investment exert positive and negative effect on economic growth respectively. Also, the partial adjustment term, fiscal deficit, inflation and lending rate were found to be growth increasing. It was evidenced that long-run relationship exists among trade openness, foreign investment, and economic growth in Nigeria.

Arodoye and Iyoha (2014) studied the nexus between international trade and economic growth in Nigeria making using quarterly time-series data of GDP at constant prices, total exports, total import and exchange rates for the period 1981 to 2010. The OLS results indicated that there is a stable, long-run relationship between international trade and economic growth and they concluded that trade policies which are in favour of export expansion should be encouraged because exports are a driver of economic growth.

Lynn (2015) analysed the Relationship between Foreign trade and Economic growth in Myanmar over the period 1990-2014. The empirical analysis and general descriptive statistics approach are used in this research consisting three variables namely Gross domestic Product (GDP), Import and Exports and used secondary data. Findings therefore included that Myanmar foreign trade has negative impact on the economy and export sector will be helpful to improve the economic growth in Myanmar.

Adeteye (2015) studied the impact of International Trade on Economic Growth in Nigeria (1988-2012), by using net export (being total export less total import) and Balance of Payment to examine how the international trade impact on the Gross Domestic Product for the economic growth. The total import, total export, gross domestic product, balance of payment was used for the variable in the study. Co-integration and error correction modeling are used in this study for finding the long-run relationship between economic activities and international trade. Findings from the research posits that import has negative impact on the economy and export is the main factor, which led great output, and international trade plays an important role in economic growth of Nigeria.

Mevel, deAlba, and Oulmane (2016) investigated the effects of regional trade integration on reindustrialization via free trade agreements and trade facilitation in North African countries using the Applied General Equilibrium model between 1990 and 2013. It found that free trade agreements stimulate the exports of North African countries from many major industries. Thus, a continental free trade area with trade facilitation measures seems to give support to industrialization in North African countries.

Stephen and Obah (2017) adopted multiple regression estimation techniques to examine the impact of international trade on economic growth in Nigeria from 1981 to 2015. The model specified economic growth measured by gross domestic product as dependent on international trade proxy by non-oil imports, oil imports, Non-oil exports, and oil exports.
The study discovered that international trade has a significant positive impact on economic growth in Nigeria.

From the foregoing, attempts have been made to first, define the major concepts of the research topic. The various theories surrounding the work were x-rayed. Unlike every other studies reviewed in this study, this study intends to identify the economic impact of bilateral trade flows between Africa’s largest economy (Nigeria) and her largest import partner (China) with special emphasis on top (five) tradable items between the both countries which are Electric Power Machinery, Textile Fabrics, Iron and Steel, Telecommunication and Sound Processing Machines, as well as Petroleum and Solid Minerals. Quite different from other studies, is the inclusion of the exchange rate between Nigerian naira and Chinese Renminbi as control variable for this study which will help in no small measure to capture the actual effect of Nigeria-China bilateral trade relations on economic growth of Nigeria from 1995 to 2020. This is equally apt as it forms the top five traded items between the two countries and it will, in no small measure, help policy makers in the country to monitor trends on the trading of these products for economic benefits of the trading nations – especially, Nigeria.

3. Method

Analytical Framework

The import and export-led growth hypotheses form the theoretical framework of this study. The export-led growth theory as modeled by Waithe et al. (2011) starts with a simple neoclassical production function:

\[ Y_t = A_t K_t^\alpha L_t^\beta \]  

(3.1)

where \( Y_t \) denotes the aggregate production of the economy at time \( t \); \( A_t \) is the level of total factor productivity; \( K_t \) and \( L_t \) are the levels of the capital stock and the stock of labour respectively; and \( \alpha \) and \( \beta \) are constants between zero and one that measure capital and labour’s share of income respectively. This function was modified to include exports (in line with the export led growth model) and imports (in line with the import led growth model). The inclusion of exports as an input provides an alternative procedure to capture total factor productivity growth. On the assumption that total factor productivity (\( A_t \)) can be rewritten as a function of exports (\( X_t \)), imports (\( M_t \)), and other exogenous factors (\( C_t \)) assumed to be uncorrelated with \( X_t \) and \( M_t \), the following equations result:

\[ A_t = f(M_t, X_t, C_t) = M_t^\gamma X_t^\delta C_t \]  

(3.2)

Combining equation (3.2) with (3.1), we obtain:

\[ Y_t = C_t K_t^\alpha L_t^\beta M_t^\gamma X_t^\delta \]  

(3.3)

where the superscript terms are the elasticities of production with respect to \( K_t \), \( L_t \), \( M_t \) and \( X_t \).

The model of this study is derived from the model of Waithe et al. (2011) seen above. This is done with some modifications as a result of the variables of the study. Equation (3.3) shows that:

\[ Y_t = f(C_t, K_t, L_t, M_t, X_t) \]  

(3.4)
But for this study, RGDP represents $Y_t$ while EPM, TXF, IRS, TSM, represent $M_t$ whereas PSM represents $X_t$. The model here excludes all other variables in equation (3.4) to include other independent variables chosen for the study. Thus, the functional form of the model in this work is stated as follows:

$$RGDP = F\{EPM, TXF, IRS, TSM, PSM, EXR\}$$  
(3.5)

Where: RGDP = Real Gross Domestic Product; EPM = Electric Power Machinery; TXF = Textile Fabrics; IRS = Iron and Steel; TSM = Telecommunication and Sound Processing Machines; PSM = Petroleum and Solid Minerals; EXR = Naira exchange rates with Chinese Remnibi

For the purpose of empirical computation equation 3.5 converges to a mathematical form as given below:

$$RGDP = \beta_0 + \beta_1EPM + \beta_2TXF + \beta_3IRS + \beta_4TSM + \beta_5PSM + \beta_6EXR$$  
(3.6)

The econometric and logarithmic transformation of equation (5) produces:

$$\ln RGDP_t = \beta_0 + \beta_1\ln EPM_t + \beta_2\ln TXF_t + \beta_3\ln IRS_t + \beta_4\ln TSM_t + \beta_5\ln PSM_t + \beta_6\ln EXR_t + \mu_t$$  
(3.7)

Where

$\beta_0$ is the intercept of the regression equation; $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and $\beta_6$ are the coefficient of the variables which will be estimated in achieving the goal of this study. $\mu$=error term; $\ln$ = the natural logarithm notation.

We shall use Akaike Information Criteria (AIC) to determine the optimal lag length of the model (Udoye, 2009). This method has gain prominence recognition among econometricians. There may be possibility of the model processing nuisance lag length after applying the AIC. If that occurs, we shall introduce Granger–marginalization procedure so as to drop the redundant lag(s). This will make our model parsimonious.

This study adopts the ARDL bound testing approach developed by Pesaran, Smith and Shin (2001) to estimate the long run equilibrium and to establish the direction of causation between variables using E-views 9.1 statistical software.

4. PRESENTATION AND ANALYSIS OF RESULTS

Unit Root Test

The stationarity of the time series data used for analysis in this study is the Augmented Dickey Fuller (ADF) and the Philip Peron test as shown in the table below:
Table 4.1: Unit Root Test Result

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF T-Stat</th>
<th>Order of Integration</th>
<th>PP T-Stat</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln(RGDP)</td>
<td>-6.148730</td>
<td>I(1)</td>
<td>-5.138747</td>
<td>I(1)</td>
</tr>
<tr>
<td>ln(EPM)</td>
<td>-3.666141</td>
<td>I(0)</td>
<td>-3.805420</td>
<td>I(1)</td>
</tr>
<tr>
<td>ln(TXF)</td>
<td>-3.683687</td>
<td>I(0)</td>
<td>-3.770256</td>
<td>I(1)</td>
</tr>
<tr>
<td>ln(IRS)</td>
<td>-5.283781</td>
<td>I(1)</td>
<td>-5.316539</td>
<td>I(1)</td>
</tr>
<tr>
<td>ln(TSM)</td>
<td>-3.929768</td>
<td>I(1)</td>
<td>-4.202802</td>
<td>I(1)</td>
</tr>
<tr>
<td>ln(PSM)</td>
<td>-6.610232</td>
<td>I(1)</td>
<td>-4.539975</td>
<td>I(1)</td>
</tr>
<tr>
<td>EXR</td>
<td>-9.382800</td>
<td>I(1)</td>
<td>-4.710766</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation using eviews 9.1 (2022)

In table 4.1 we summarize the results of the Augmented Dickey Fuller (ADF) and the Philip Peron (PP) unit root test. This result implies that the means and variances of the data in variables follow uniform trend and inferences from the data can be relied upon for effective policy making. Thus, the appropriate modus operandi of analysis that captures the combination of I(1) and I(0) stationary variables, according to Pesaran et al (2001), is the ARDL model which would be employed for the study.

Lag Length Selection

For this analysis, we would make use of the SC and HQ as the choice for the selection of our optimal lag length.

Table 4.2: Lag Length Result

<table>
<thead>
<tr>
<th>Lag Length</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>12.45834</td>
<td>12.65950</td>
<td>12.53925</td>
</tr>
<tr>
<td>1</td>
<td>-12.82411</td>
<td>-11.21483</td>
<td>-12.17681</td>
</tr>
<tr>
<td>2</td>
<td>-16.15263</td>
<td>-13.13524*</td>
<td>-14.93895*</td>
</tr>
<tr>
<td>3</td>
<td>-15.36602</td>
<td>-10.94051</td>
<td>-13.58596</td>
</tr>
<tr>
<td>4</td>
<td>-14.80158</td>
<td>-8.967956</td>
<td>-12.45513</td>
</tr>
<tr>
<td>5</td>
<td>-16.87514</td>
<td>-9.633394</td>
<td>-13.96231</td>
</tr>
<tr>
<td>6</td>
<td>-17.22125</td>
<td>-8.571395</td>
<td>-13.74204</td>
</tr>
<tr>
<td>7</td>
<td>-16.79223</td>
<td>-6.734253</td>
<td>-12.74663</td>
</tr>
<tr>
<td>8</td>
<td>-18.37616*</td>
<td>-6.910065</td>
<td>-13.76417</td>
</tr>
</tbody>
</table>

Note: * indicates lag order selected by the criterion

Source: Authors’ compilation using eviews 9.1 (2022)

Based on the result in table 4.2 the lag length which minimises SC and HQ is lag two; thus our optimal lag length. Given our optimal lag length as two, we proceed to test for long-run relationship among the variables.

Cointegration test

To investigate the presence of long-run relationships among the variables, the bound testing under Pesaran, et al. (2001) procedure is used. The bound testing procedure is based on the F-test. The F-test is basically a test of the assumption of no cointegration among the variables against the premise of its existence.
Table 4.3: Bound Test Result

<table>
<thead>
<tr>
<th>F-Statistics</th>
<th>1% Lower bound</th>
<th>1% Upper bound</th>
<th>5% Lower bound</th>
<th>5% Upper bound</th>
<th>10% Lower bound</th>
<th>10% Upper bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.91758</td>
<td>3.15</td>
<td>4.43</td>
<td>2.45</td>
<td>3.61</td>
<td>2.12</td>
<td>3.23</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation using eviews 9.1 (2022)

Given the result of the Bound Test in table 4.3 the F-statistic value should be compared with the Pesaran critical value at traditional levels of significance. Since the F-statistic 28.91758, is greater than the upper bound critical value at 5% level of significance (3.61). This implies that the null hypothesis of no cointegration cannot be accepted at the 5% level of significance and this therefore confirms the existence of long-run relationship among the variables. The next step is to estimate the ECM short-run dynamics which result is presented in table 4.4 below:

Presentation of ARDL Result

Table 4.4: ARDL short-run Error Correction Model Result
Dependent Variable: (LRGDP)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.451253*</td>
<td>0.247086</td>
<td>5.873468</td>
<td>0.0000</td>
</tr>
<tr>
<td>LRGDP(-1)</td>
<td>0.835089</td>
<td>0.028961</td>
<td>28.83538</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(LEPM)</td>
<td>-0.045633*</td>
<td>0.013581</td>
<td>-3.60119</td>
<td>0.0227</td>
</tr>
<tr>
<td>D(LEPM(-1))</td>
<td>-0.007049</td>
<td>0.014160</td>
<td>-0.49796</td>
<td>0.6234</td>
</tr>
<tr>
<td>D(LEPM(-2))</td>
<td>-0.003868</td>
<td>0.013243</td>
<td>-0.292105</td>
<td>0.7728</td>
</tr>
<tr>
<td>D(LTXF)</td>
<td>0.018665</td>
<td>0.010985</td>
<td>1.699082</td>
<td>0.1028</td>
</tr>
<tr>
<td>D(LTXF(-1))</td>
<td>-0.003896</td>
<td>0.017195</td>
<td>-0.226548</td>
<td>0.8228</td>
</tr>
<tr>
<td>D(LTXF(-2))</td>
<td>0.001658</td>
<td>0.017057</td>
<td>0.097175</td>
<td>0.9234</td>
</tr>
<tr>
<td>D(LIRS)</td>
<td>-0.003556</td>
<td>0.002674</td>
<td>-1.329795</td>
<td>0.1966</td>
</tr>
<tr>
<td>D(LIRS(-1))</td>
<td>-0.001851</td>
<td>0.003844</td>
<td>-0.481563</td>
<td>0.6347</td>
</tr>
<tr>
<td>D(LIRS(-2))</td>
<td>0.000237</td>
<td>0.003871</td>
<td>0.061290</td>
<td>0.9517</td>
</tr>
<tr>
<td>D(LTSM)</td>
<td>0.001816</td>
<td>0.008630</td>
<td>0.210488</td>
<td>0.8351</td>
</tr>
<tr>
<td>D(LTSM(-1))</td>
<td>0.005256</td>
<td>0.011960</td>
<td>0.439480</td>
<td>0.6644</td>
</tr>
<tr>
<td>D(LTSM(-2))</td>
<td>-0.001488</td>
<td>0.011292</td>
<td>-0.131739</td>
<td>0.8963</td>
</tr>
<tr>
<td>D(LPSM)</td>
<td>0.005248*</td>
<td>0.001098</td>
<td>4.780873</td>
<td>0.0001</td>
</tr>
<tr>
<td>D(LPSM(-1))</td>
<td>0.000584</td>
<td>0.000471</td>
<td>1.242070</td>
<td>0.2267</td>
</tr>
<tr>
<td>D(LPSM(-2))</td>
<td>-0.001948**</td>
<td>0.000734</td>
<td>-2.653688</td>
<td>0.0142</td>
</tr>
<tr>
<td>D(EXR)</td>
<td>-0.004001**</td>
<td>0.001346</td>
<td>-2.972108</td>
<td>0.0068</td>
</tr>
<tr>
<td>D(EXR(-1))</td>
<td>-0.000295</td>
<td>0.002521</td>
<td>-0.117197</td>
<td>0.9077</td>
</tr>
<tr>
<td>D(EXR(-2))</td>
<td>-0.000315</td>
<td>0.002523</td>
<td>-0.124968</td>
<td>0.9016</td>
</tr>
<tr>
<td>ECT(-1)</td>
<td>-0.164911*</td>
<td>0.028961</td>
<td>-5.693427</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R² = 0.999995; Adj. R² = 0.999982; D.W = 1.703750; F- Stat = 78535.70; Prob (F-Stat) = 0.000000

** significant at 5% * significant at 1%
Source: Authors’ compilation using eviews 9.1 (2022)

Table 4.4 shows the impact of some selected core Nigeria-China traded items on the real gross domestic products of Nigeria for the period 1995 to 2020. The results suggest that previous real gross domestic products [RGDP (-1)] exerts positive and statistically significant
impact on the current RGDP. A unit increase in RGDP increases real gross domestic products by 0.84 units after the first period. Electric power machinery imports in the first period [EPM (-1)] and the second period [EPM (-2)] have negative and statistically insignificant impact on current RGDP. While the impact of EPM imports on current RGDP at the current period [EPM] is negative and statistically significant. A unit rise in electric power machinery imports shrinks real gross domestic products down by 0.045633 units after the current period. However, current RGDP falls by 0.007049 units and 0.003868 units, following a unit rise in EPM imports in the first period and after the second period respectively.

On the impact of textile fabrics on real gross domestic products in Nigeria, the results reveal that the impacts of TXF imports on RGDP in the current period [TXF] and after the second period [TXF (-2)] are positive and statistically insignificant, while the impact after first period [TXF (-1)] is negative and statistically insignificant. A unit rise in TXF import after the first period causes RGDP to decrease by 0.03896 units, while RGDP rises by 0.018665 units and 0.001658 units, following a unit rise in TXF imports in the current period and after the second period respectively.

Iron and steel imports in the current period [IRS] and after the first period [IRS (-1)] have negative and statistically insignificant impact on current RGDP, while the impact of iron and steel imports on real gross domestic products after the second period [IRS (-2)] is positive and statistically insignificant. A unit rise in IRS imports pulls the real gross domestic products down by 0.003556 units and 0.001851 units in the current and first periods respectively, while RGDP rises by 0.000237 units after the second period.

Telecommunication and Sound Processing Machine imports in the current period [TSM] and after the first period [TSM (-1)] have positive, though statistically insignificant impact on current RGDP. Also the impact of TSM imports on RGDP after the second [TSM (-2)] is negative and still insignificant. A unit rise in TSM imports increases RGDP by 0.001816 units and 0.005256 units in the current and first periods respectively, while RGDP falls by 0.001488 units after the second period of TSM.

On the impact of Petroleum and Solid Minerals (PSM) exports on real gross domestic products of Nigeria, the results indicate that PSM in current period and after the first period [PSM (-1)] have positive impact on current RGDP, while the impact of PSM exports on RGDP after the second period [PSM (-2)] is negative, though significant. PSM at current period and second period have significant impact on RGDP. A unit rise in PSM exports causes real gross domestic products to increase by 0.005248 units and 0.000584 units in the current and first periods respectively, while RGDP falls by 0.001948 units after the second period of PSM.

Also, on the Nigeria-China bilateral exchange rates on real gross domestic products in Nigeria, reveals that the impacts of exchange rates on real gross domestic products in the first period [EXR (-1)] and after the second period [EXR (-2)] are negative and statistically insignificant, while the impact at the current period [EXR] is negative though statistically significant. A unit rise in EXR after the current period, first period and the second period causes RGDP to decrease by 0.004001 units, 0.000295 units and 0.000315 units respectively.

The result also show that the ECT(-1) is negative and significant. The significant of ECT is evidence that causality runs in at least one direction. The ECT(-1) of -0.16 is the speed of adjustment from the short-run equilibrium to the long-run equilibrium. This means that 16% of the error is corrected in each time period. This low speed of adjustment implies that it will take approximately six quarters being about 1.5 years to correct all errors/deviations and bring
the economy back to equilibrium. The values of the R-Square and Durbin-Watson also indicates that the ARDL estimate is not spurious, since the value of Durbin-Watson is greater that the R-Square.

Table 4.5: ARDL normalized Long-run coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEPM</td>
<td>0.242736*</td>
<td>0.080773</td>
<td>3.005161</td>
<td>0.0063</td>
</tr>
<tr>
<td>LTXF</td>
<td>-0.005164</td>
<td>0.025903</td>
<td>-0.199367</td>
<td>0.8437</td>
</tr>
<tr>
<td>LIRS</td>
<td>0.032615**</td>
<td>0.011885</td>
<td>2.744259</td>
<td>0.0116</td>
</tr>
<tr>
<td>LTSM</td>
<td>-0.154044**</td>
<td>0.073920</td>
<td>-2.083930</td>
<td>0.0485</td>
</tr>
<tr>
<td>LPSM</td>
<td>0.038965**</td>
<td>0.009792</td>
<td>3.979368</td>
<td>0.0006</td>
</tr>
<tr>
<td>EXR</td>
<td>0.014803*</td>
<td>0.003094</td>
<td>4.784014</td>
<td>0.0001</td>
</tr>
<tr>
<td>C</td>
<td>8.800219*</td>
<td>0.192585</td>
<td>45.695229</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

** significant at 5% * significant at 1%

Source: Authors’ computation (E-views9.1), 2022.

In the normalized estimated long run coefficients as shown above, textile fabric (TXF), and Telecommunication and Sound Processing Machine (TSM) show negative relationship whereby any unit change in TXF and TSM will lead to a 0.52% and 15% change in RGDP respectively in the long run. Also, electric power machinery (EPM) imports, Iron and steel (IRS) imports, Petroleum and Solid Minerals (PSM) exports as well as Nigeria-China bilateral exchange rates (EXR) showed positive and significant impact on the economic growth in Nigeria in the long run. Although, the importation of Telecommunication and Sound Processing Machine (TSM) pose a negative but significant impact on the economic growth in Nigeria. The result further implies that a unit increase in EPM, IRS, PSM and EXR will lead to a 24%, 3.3%, 3.9% and 1.5% increases in RGDP respectively in the long run and vice versa. The model is checked for autocorrelation using the Breusch-Godfrey Serial Correlation LM Test which is shown in table 4.7 below

Table 4.6: Serial Correlation Test

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>2.549699</td>
<td>Prob. F(2,21)</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>16.41224</td>
<td>Prob. Chi-Square(2)</td>
</tr>
</tbody>
</table>

Source: Authors’ computation (E-views9.1), 2022

The Table 4.6 above presents the result of the Breusch-Godfrey test for serial correlation. From the value of the prob Chi-Square of 0.0003, we cannot reject the null-hypothesis of no auto correlation which is desirable in the model. This therefore indicates the absence of autocorrelation in the model.

Table 4.7: Heteroskedasticity Test: Breusch-Pagan-Godfrey Test

<table>
<thead>
<tr>
<th>Heteroskedasticity Test: Breusch-Pagan-Godfrey:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>1.202341</td>
<td>Prob. F (60,23)</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>63.69318</td>
<td>Prob. Chi-square(60)</td>
</tr>
<tr>
<td>Scaled explained SS</td>
<td>8.737967</td>
<td>Prob. Chi-square(60)</td>
</tr>
</tbody>
</table>

Source: Authors’ computation (using E-views 9.1), 2022
The Breusch-Godfrey test for heteroscedasticity is conducted to check if errors have constant variance or not. The null hypothesis is that the errors are homoscedastic (no heteroscedasticity). Note that this test follows a chi square distribution. We compare the estimated chi square probability value with the critical chi-square probability at 5% level of significant. From the result obtained $X^2 \text{Prob} = 0.3479$ which is not statistically significant; therefore we accept the null hypothesis and conclude that there is homoscedasticity in our data and implying that the residuals have constant variance.

**Discussion of Findings**

The study centred on the analyses of the Nigeria-China bilateral trade relations and implication for economic growth in Nigeria. Economic growth was measured by the macroeconomic indicator of real gross domestic product (RGDP) whereas the key traded items between the both countries are electric power machinery (EPM), the textile fabric (TXF), Iron and steel (IRS), Telecommunication and Sound Processing Machine (TSM), as well as Petroleum and Solid Minerals (PSM). Nigeria-China bilateral exchange rates (EXR) was included as a control variable in the model.

Investigating petroleum and solid mineral export from Nigeria to China as it impacts on economic growth of Nigeria, this has been observed to be a key driver of Nigeria’s economic growth. This product has over the years served as a fulcrum to the economic growth quest for Nigeria despite the clamour for resource diversification among some scholars. The finding negates that of Uzonwanne (2015) who posited that the continual emphasis on petroleum exports has led to an eventual neglect of agriculture which has, in addition, led to the constant depreciation in GDP of the country. The negation of this may have been courtesy of the significant reforms such as Petroleum Industry Governance Bill (PIGB) amongst others, put in place by the government of the day.

On the other hand, the continual textile fabrics (TXF) importation from China has been observed to be antithetical to the growth of the Nigerian economy. This may have resulted from the neglect of the home based textile industry by continual reliance by Nigerians on textile import while its once vibrant industries face near extinction. This finding lends credence to the findings of Diogu, Nwigwe, Anne and Diogu (2014) who have drawn attention to the continual dependence on foreign fabrics and eventual crippling of the economy to have stemmed from factors such as insufficient raw materials, smuggling of foreign textiles, and shortage of electric power and spare parts for textile industrial machines. This has eventually led to the reduction of output of goods and services which would have improved the performance of economic growth through GDP growth.

Furthermore, the rising demand for electric power machinery from China has been seen as a viable alternative to the epileptic electricity supply from the power authorities in the country. This importation, as observed in the study, declines economic growth only in the short run. This may be a result of the importing firms trying to cover costs in the short run but are yet to breakeven. As more and more efficient operations are continued in the long run, firms generate improved revenue from using the electric power machinery imported from China thereby fueling the prospect of achieving the macroeconomic goal of economic growth in Nigeria. This submission is in tandem with the findings of Ezenekwe, Anthony & Uzonwanne (2018) who concludes that energy consumption by industry, agriculture, transport, commercial, and residential are more relevant to the growth of Nigerian economy in the short run than in the long run. These consumptions accordingly, are usually from the
electric power machines which are often used for powering the budding firms and industries in the country for long run economic prosperity in Nigeria.

As discovered from the findings equally, the Iron and Steel importation from China by Nigeria has been a viable venture for the economy in the long run. This may have been as a result of the status of Nigeria as a developing economy, of which key sectors such as the agricultural, housing, telecommunication, manufacturing, as well as the oil and gas sector requires great input of the iron and steel for the economy to realize its full potential. As agreed by Ohimain (2012), the economy of the country cannot be strong and vibrant without growth in its iron and steel sector or without the use of iron and steel in the manufacturing sector. This growth in the Nigerian economy can only be realized in the long run with continual importation of the Iron and steel by Nigeria from China.

The importation of the telecommunication and sound processing machines has once strengthened the growth prospect of Nigeria. However, findings from the study revealed that the promising impact of the imports on the lots of the Nigerian economy has portended to be harmful and deleterious in the long run. As agreed by David (2013), real investment in telecommunication exerts adverse pressure on economic growth in Nigeria. This could have been as a result of the liberalization which integrated the telecommunications industry in which at least competition and market forces are allowed to operate and determine economic activities in the industry. Thereby, creating room for dumping and ‘killing’ of the budding indigenous telecommunication and sound processing machines producing firms and eventual ‘cremation’ of the economy.

Further findings from the Nigeria-China bilateral exchange rate has shown that Nigeria has attained foreign reserve accretion following the emphasis on the Chinese yaun and the perceived de-emphasis on the dollar following the several agreements. This is factual following the long run positive impact of the rate on the real GDP performance in the country. Nigeria as an import dependent economy has most of its import bill and international trade transactions settled in dollars. This practice has heavily impacted the foreign currency earnings and reserve of the country positively. With the operationalization of this BCSA, the enormous pressure has been taken off the dollar, while allowing more dollar earnings to be retained in the foreign reserve. This has further strengthened the Nigeria-China exchange rate effect on the Nigeria economic growth. Akinlola and Lawal (2015) lent credence to this finding when he posited that in the long run, the results showed that exchange rate had significant impact on the industrial production in Nigeria which invariably translates into economic growth for Nigeria.

EPM = Electric Power Machinery; TXF = Textile Fabrics; IRS = Iron and Steel; TSM = Telecommunication and Sound Processing Machines; PSM = Petroleum and Solid Minerals; EXR = Naira exchange rates with Chinese Remnibi

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

The study investigated the impact of Nigeria-China bilateral trade relations on economic growth of Nigeria during the period 1995 – 2020. It is the prediction of economic theory that trade enables an economy to enjoy the benefit of commodities she would not have been able to access as well as earn revenue from the sale of her proceeds which in turns leads to
increased economic activity thereby raising output production and impacting positively on the real gross domestic product. In line with our findings which revealed that bilateral trade components such as electric power machinery, iron and steel, telecommunication and sound processing machines and petroleum and solid minerals have significant impact on economic growth of Nigeria, the study concludes that economic growth is expressively driven by importation of electric power machinery, importation of iron and steel, reduction on importation telecommunication and sound processing machines from China as well as and massive exportation of petroleum and solid minerals to China and to improve economic growth, government must pay close attention to them.

Recommendations

The study's findings infer several policy implications and recommendations that could be useful or policy designation and implementation. Some of these are outlined below:

1. Following the negative nexus existing between the telecommunication machine imports and the economic growth, the government should as a matter of urgency, reduce drastically the massive importation of telecommunication and sound processing machines (such as telephones, speakers, microphones, head sets, etc) from China. This will help curb dumping for the betterment of Nigeria’s economy in the long run.

2. Results of the study also surprisingly revealed that textile fabrics imports from China has not been effective in engendering growth in Nigeria. Policies should be made to ensure that our home based textile firms be revived by giving them subsidies to ensure a cost reduction output and match with local demand for textile fabrics.

3. Despite the reliance on petroleum and solid mineral export to China from Nigeria, the federal government should still strengthen production quota of petroleum products by lobbying the OPEC so as to increase export of petroleum and solid minerals to China for the growth of Nigeria economy.

4. Following the significant impact of the Nigeria-China bilateral exchange rates on Nigeria’s economic growth, the federal government should deemphasize on the use of dollar for international transactions. The availability of Nigerian Naira to Chinese businesses is expected to shore up the Foreign Direct and Portfolio Investment into Nigeria which eventually will shore up economic growth for Nigeria.
REFERENCES


