



## **NIGERIA-CHINA TRADE RELATIONSHIPS: THE DYNAMICS OF POWER EQUATION**

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### **Abstract**

*Trade relations are a pivotal component of a nation's economic development and diplomatic engagements, particularly in the context of globalization. Despite long-standing economic ties between Nigeria and China, the expected developmental impact of this relationship on the Nigerian economy has remained limited. This study critically examines the power dynamics underpinning Nigeria-China trade relations to identify strategies for promoting equitable and mutually beneficial economic exchange. Using Nigeria's Gross Domestic Product (GDP) as a benchmark, the analysis incorporates trade data on imports, specifically electrical power machinery, textile fabrics, iron and steel, telecommunications, and sound processing equipment, and exports, including petroleum and solid minerals. Bilateral exchange rates between Nigeria and China, adjusted for GDP, were also examined. Data covering the period from 1995 to 2022 were obtained from the United Nations Conference on Trade and Development (UNCTAD). Econometric diagnostics were conducted using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests to ensure data reliability. Findings reveal that China capitalizes on significant power asymmetries in the relationship, including the recurrent practice of deploying Chinese labor for projects that could be executed by local Nigerian workers. The study concludes that without strategic policy interventions, such imbalances may continue to*

*hinder Nigeria's economic gains from the partnership. Accordingly, it recommends the development of regulatory frameworks to safeguard domestic labor and ensure that future trade engagements contribute more effectively to Nigeria's sustainable development.*

*Keywords: Power Equation, Nigeria, China, Trade Relation, Dynamics*

## INTRODUCTION

As our world evolves into a global village, nations need to form mutual alliances with one another (Azeez, Dada & Aluko, 2014). One effective means of establishing these alliances is through international trade. This type of trade facilitates the exchange of goods and services and fosters healthy relationships among countries, regardless of their levels of economic growth and development. According to Azeez, Dada, and Aluko (2014), a nation engaged in international trade has no reason to fear hegemony or a loss of sovereignty, as such trade involves mutual agreements to exchange goods across borders. Conversely, a nation that refrains from participating in international trade may experience sluggish economic growth, given that no country is fully equipped with all the resources necessary for sustainable development.

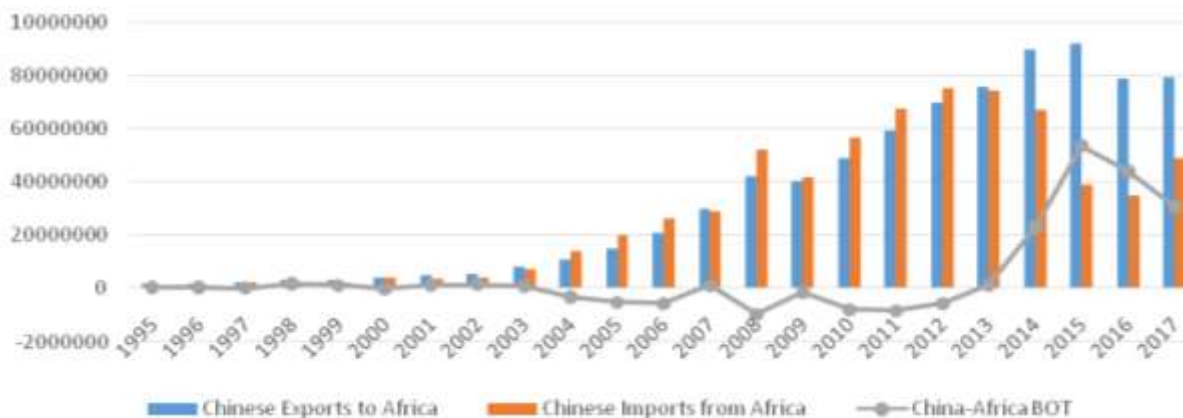
Okolie and Chime (2013) highlight, as cited in Omenka (2014), the inevitability of inter-state relations stemming from humanity's inherent tendency towards social connections. They state: "The world of a man is in a flux. The fluidity of social relations conduces to the search for social coalescence, partnership, and cooperation. Naturally, man is created with inbuilt and ever-elastic gregarious instincts that drive individuals to form social relations with others, primarily to secure their livelihoods. These gregarious instincts, combined with varying natural resource endowments, motivate people to partner with others to meet community needs. This landscape fundamentally opens new avenues for relations between and among states in a continually changing world." 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 resulting in outflow and inflow of foreign exchange. Thus, it is also called EXIM (Export and Import) Trade for providing, regulating and creating a 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, for instance, 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 the exportation of primary products to China and the 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 statistics from China Customs, the total import and export value of China-Africa trade reached US\$170 billion from January to December 2017, reflecting a year-on-year increase of 14.1%. This growth rate of 2.7 percentage points surpassed the overall increase in foreign trade for the same period in 2016. Specifically, China's exports to Africa amounted to US\$94.74 billion, marking a 2.7% rise, while imports from Africa totalled US\$75.26 billion, which represented a substantial increase of 32.8%. This growth in imports was notably 16.9 percentage points higher than the same period in 2016. Furthermore, Nigeria emerged as China's largest trade partner on the continent, with a trade surplus of US\$19.48 billion, down 45.2% year on year.

An economist's report highlighted that political and policy commitments between China and Africa have bolstered and broadened in recent years. Since its inception in 2000, the Forum on China-Africa Trade Cooperation (FOCAC) has aimed to cultivate closer ties between the two regions. At the latest FOCAC conference, which took place at the end of 2021, China announced a shift away from state-backed projects in Africa, attributing this change partly to the impact of COVID-19. The emphasis will now be on enhancing reciprocal trade between China and Africa, promoting investments from private Chinese firms in Africa, and fostering deeper cooperation between the two regions. The graph depicted in Figure 1 illustrates these developments.

Figure 1: China-Africa Bilateral Trade Pattern (1995-2017) in thousand USD



Source: United Nations Conference for Trade and Development (UNCTAD) (2018)

The trade relations between the Federal Republic of Nigeria and the People's Republic of China were officially established on February 10, 1971, a decade after Nigeria gained independence from the British Empire. These relations have since expanded significantly, driven by increasing bilateral trade and strategic cooperation. China has become one of Nigeria's key trading and export partners. While Nigeria maintains trade relations with Taiwan

and has a representative office in Taipei, it issued a joint communiqué with China in 2005, reaffirming that Beijing is "the only legitimate government representing the whole of China" and declaring Taiwan an unalienable part of its territory (Shinn & Eisenman, 2012).

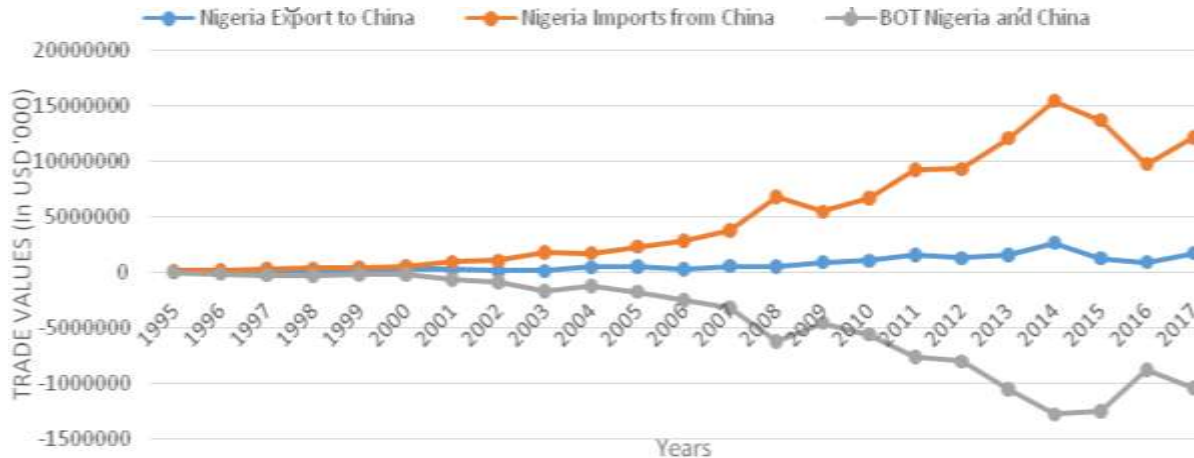
Nigeria has an embassy in Beijing, a consulate in Guangzhou, and consulates-general in both Shanghai and Hong Kong. In turn, China maintains an embassy in Abuja and a consulate-general in Lagos (Embassy of the Federal Republic of Nigeria, China, 2022). Bilateral trade soared to approximately \$3 billion in 2006, a significant increase from just \$384 million in 1998 (Lan, 2007). During Chinese President Hu Jintao's visit in 2006, China secured four oil drilling licenses and committed to investing \$4 billion in oil and infrastructure projects in Nigeria. Additionally, both nations agreed on a four-point plan to enhance bilateral relations, with a key focus on expanding trade and investment in agriculture, telecommunications, energy, and infrastructure development (Ojeme, 2013).

Moreover, China agreed to acquire a controlling stake in the Kaduna oil refinery, expected to produce 110,000 barrels per day (17,000 m<sup>3</sup>/d) (Lan, 2007). Nigeria also committed to prioritizing Chinese oil firms for contracts related to oil exploration in the Niger Delta and Chad Basin. In 2006, China further pledged a loan of \$1 billion to Nigeria to assist in upgrading and modernizing its railway networks (Kuo, 2017).

In 2005, Nigeria agreed to supply Petro to China with 30,000 barrels per day (4,800m<sup>3</sup>/d) of oil for \$800 million. In 2006, the CNOOC purchased a share for \$2.3 billion in an oil exploration block owned by a former defence minister. China has also pledged to invest \$267 million to build the Lekki free trade zone near Lagos (Eisenman, 2023). However, the "flooding" of Nigerian markets with cheap Chinese goods has become a sensitive political issue, as combined with the importation of second-hand European products. It has also adversely affected domestic industries, especially in textiles, and led to the closure of 65 textile mills and the laying-off of 150,000 textile workers over a decade and that is why the Nigerian militants threatened to attack Chinese workers and projects in the Niger Delta.

In 2010, trade between Nigeria and China amounted to US\$7.8 billion (Oliseh, 2020). By 2011, Nigeria had become the fourth largest trading partner of China in Africa, and in the first eight months of 2012, it climbed to the third position (Gires, 2018). In April 2018, Nigeria entered into a currency swap agreement with China valued at \$2.4 billion, effective for three years (Austine, 2013). By 2019, bilateral trade between the two nations had reached \$19.27 billion. Given that Nigeria is Africa's third-largest economy and China's foremost trading partner on the continent, while China stands as the largest economy in Asia, this study aims to explore the dynamics of the power equations within the Nigeria-China trade relationship. The objective is to highlight the bilateral trade components of both economies, as illustrated in Figure 2.

Figure 2: Nigeria-China Bilateral Trade (1995-2017)

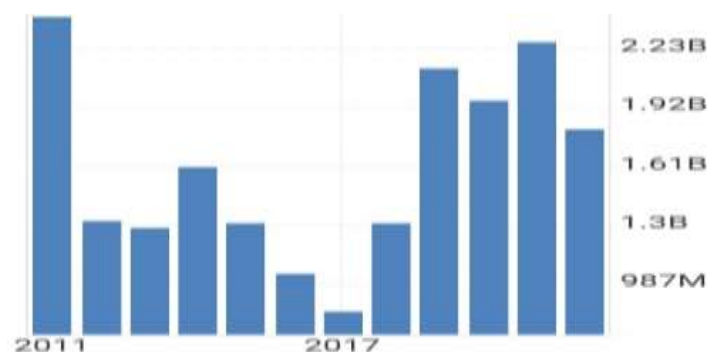


Source: UNCTAD database (2018) (in thousand dollars)

### Problem Statement

International trade theories suggest that global economies prosper through international trade activities, which serve as a key factor of openness. This openness influences a country's growth rate by affecting the level of economic activities and facilitating the cross-border transfer of resources (Smith, 1776; Ricardo, 1817; Heckscher & Ohlin, 1933, as cited in Adeleye, Adeteye & Adewuyi, 2015). The trade imbalance has been attributed to the mono-structural nature of the Nigerian economy, as the trade dynamics between Nigeria and China reflect significant differences in exports. China supplies Nigeria with a diverse array of products, including machinery, textile fabrics, iron and steel, telecommunications equipment, sound processing machines, and agricultural raw materials. Below are graphs illustrating the major components analyzed in the study regarding Nigeria's imports from China and China's imports from Nigeria, measured in USD.

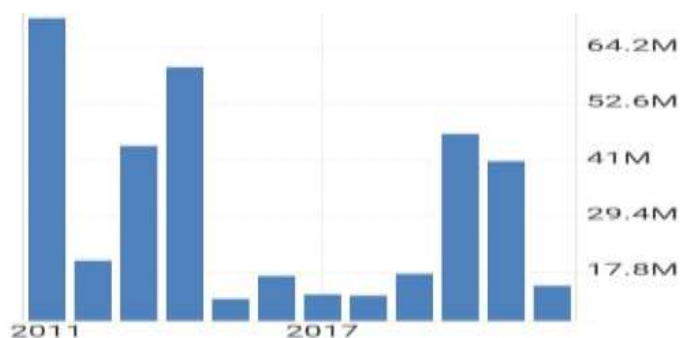
Figure 3: Nigeria Imports from China of Electric Power Machinery



Source: UN Com-Trade

According to the United Nations COMTRADE database on international trade, Nigeria Imports from China of Electric Power Machines was US\$1.8 Billion in 2022.

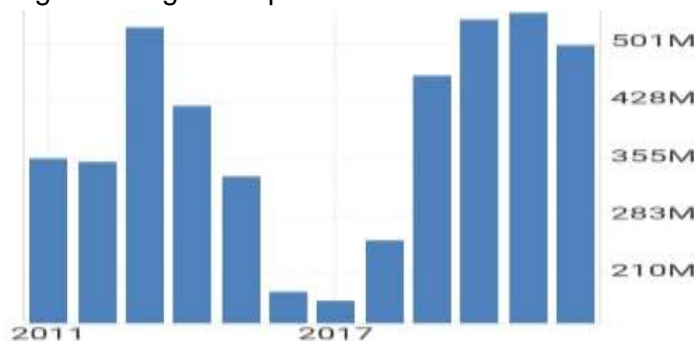
Figure 4: Nigeria Imports from China of Textile fabric



Source: UN Com-Trade

Nigeria's Imports from China of textile fabric were US\$15.27 million during 2022, according to the United Nations COMTRADE database on international trade.

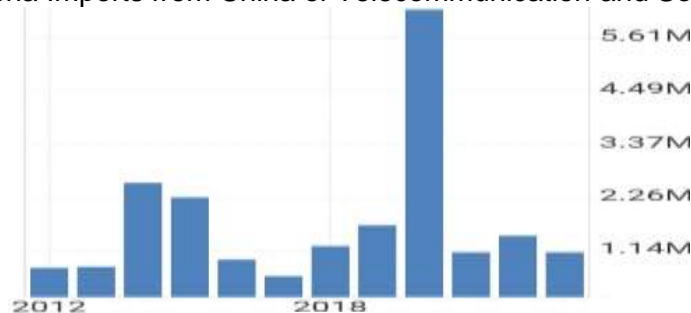
Figure 5: Nigeria Imports from China of Iron or Steel



Source: UN Com-Trade

Nigeria's Imports from China of iron or steel were US\$499.16 million during 2022, according to the United Nations COMTRADE database on international trade.

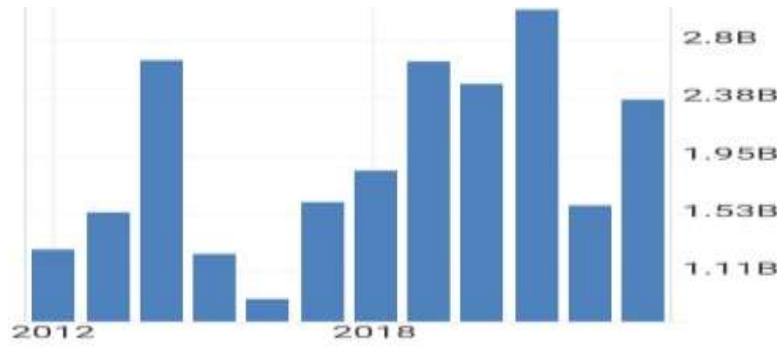
Figure 6: Nigeria Imports from China of Telecommunication and Sound Machines



Source: UN Com-Trade

The graph shows that Nigeria's Imports from China of Telecommunication and Sound Machines were US\$1.14 million during 2023.

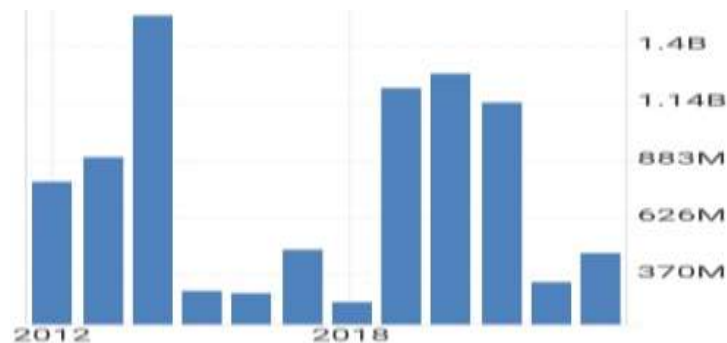
Figure 7: China Imports from Nigeria



Source: UN Com-Trade

The above graph portrays China's Imports from Nigeria, which were US\$2.37 billion in 2023.

Figure 8: China Imports from Nigeria of Petroleum and Solid Minerals



Source: UN Com-Trade

China's Imports from Nigeria of Petroleum and Solid minerals were US\$469.64 million during 2023, according to the United Nations COMTRADE database on international trade.

While Nigeria only export about 10 per cent of its manufactured goods, a rate which is very low as against 90 per cent of crude oil and other raw materials exports to China. The mono-export 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, the 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, 2022 and 2023 (NBS, 2024). As steps towards remedying the trade imbalance or power equation in the trade 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 several 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).

Despite the agreements in place, trade imbalances and the power dynamics between the two countries have persisted and even widened. The issues outlined above have led to a series of unanswered or partially answered questions regarding whether Nigeria has truly benefited from trading with an economically robust nation like China, particularly in relation to the economic impact of the key items traded between the two countries. This study aims to explore whether specific traded items—namely Electric Power Machinery (EPM), Textile Fabric (TXF), Iron and Steel (IRS), Telecommunication and Sound Processing Machines (TSM), as well as Petroleum and Solid Minerals (PSM)—have favorable economic implications for a developing economy such as Nigeria. In other words, is there a power dynamic at play within the trade relationship? While other researchers have examined different items, none have specifically focused on the items at the center of this study.

## LITERATURE REVIEW

### Power Equation

China's economic power significantly influences its relationship with Nigeria. China is one of Nigeria's largest trading partners, with trade volumes heavily tilted in China's favor. The power equation here lies in China's economic dominance, which allows it to dictate the terms of trade, investment, and loans, shaping Nigeria's economic policies and development trajectory (Obi, 2019). China's financial and technical assistance in Nigeria's infrastructure development projects illustrates a power equation in which the ability to provide large-scale funding and expertise in building infrastructure projects gives it leverage over Nigeria. The terms of these projects, including loan conditions, repayment terms, and project ownership, demonstrate the power dynamics between the two countries.



China's increasing influence in Africa, including Nigeria, is a manifestation of power equations in geopolitics. Through diplomatic initiatives, investments, and strategic partnerships, China aims to expand its influence and counterbalance the influence of other global powers in the region. Nigeria, as a significant African economy, plays a crucial role in China's geopolitical strategy on the continent (Akinwotu, 2020). Nigeria's vast natural resources, such as oil and minerals, arable land, are a point of interest for China's resource-hungry economy. The power equation lies in China's ability to secure favorable trade deals and access to Nigeria's resources, often through agreements that benefit China more than Nigeria. This dynamic reflects asymmetrical power relations in trade negotiations and resource exploitation. China's cultural and soft power initiatives, including language programs, cultural exchanges, and media dissemination, contribute to shaping narratives about China in Nigeria. The power equation here involves China's efforts to enhance its cultural influence and soft power in Nigeria, potentially influencing public opinion, attitudes, and policies towards China (Jiang, 2020).

### **Trade Relation**

Trade relations refer to the economic interactions and exchanges that occur between countries or entities engaged in international trade. These relations encompass the import and export of goods, services, raw materials, and machinery, along with the procurement of various goods and services. Effective trade relations contribute to an economy that is open, dynamic, and cooperative, positioning the involved countries favorably in the global landscape. When two nations establish trade relations, they typically work to reduce or eliminate tariffs, import quotas, export restraints, and other trade barriers, thereby promoting trade and investment (Kagan & Walter, 2020).

Trade relations facilitate the expansion of a country's market for goods through collaborative negotiations between nations. However, this can also lead to the closure of smaller companies that struggle to compete with large multinational corporations. The advancement of trade relations promotes the principles of trade liberalization and encourages the concept of open borders for trade.

### **Empirical Literature Review**

This aspect of the study looked at some of the works that have been written by scholars about this topic.

Balaguer, 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 was somewhat independent of foreign trade. But later on, this outcome contradicts 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.

Edoumiekumo and Opukri (2013) examined the contributions of international trade to economic growth in Nigeria, measured by real gross domestic product (RGDP). Twenty-seven (27) period time-series data obtained from 1983 to 2010 were analyzed using the Augmented Dickey-Fuller (ADF) test, the Ordinary Least Squares (OLS) statistical technique, the Johansen co-integration test and the Granger Causality test. The results showed that a positive relationship exists between the variables, and there is co-integration among the variables. The Granger Causality test realized a unidirectional relationship, showing that RGDP Granger causes export, and import Granger causes RGDP and export.

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 product (GDP). The study observed that the trade process between Libya and the EU has experienced some success, leading to more economic cooperation through trade relations, promoting the private sector to play its role in the trade process during the period of study. The gains from exports were higher than the losses from imports, where this situation has led to a 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 effects 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 a 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 use of quarterly time-series data of GDP at constant prices, total exports, total imports 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 used in this research consists of three variables, namely Gross Domestic Product (GDP), Imports and Exports and uses secondary data. Findings therefore include that Myanmar's foreign trade has a negative impact on the economy, and hence, they recommend that the 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 international trade impacts the Gross Domestic Product for economic growth. The total import, total export, gross domestic product, and balance of payment were used as the variables in the study. Co-integration and error correction modelling are used in this study to find the long-run relationship between economic activities and international trade. Findings from the research posit that import has a negative impact on the economy, and exports are the main factor, which leads to great output, and international trade plays an important role in the 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 study 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.

Distinct from other studies, this research incorporates the exchange rate between the Nigerian naira and the Chinese Renminbi as a control variable. This inclusion will significantly aid in accurately assessing the impact of Nigeria-China trade relations on Nigeria's economic growth from 1995 to 2020. Given that this exchange rate is among the top five traded items between the two countries, it will greatly assist policymakers in Nigeria in monitoring trends in these trades for the economic benefits of both nations, particularly Nigeria.

### **Theoretical Literature Review**

The export-led growth hypothesis theory was employed in this study as it identifies the importance of exports 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 out 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 borders 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 widely regarded as a key conduit for the diffusion of capital and technology in international trade. This is not only because imported technical expertise can significantly enhance domestic productive capacity, but also because imports serve as an important proxy for a country's economic engagement with the global community (Ram, 1990). Building on this perspective, Coe and Helpman (1993) identify multiple channels through which imports contribute to economic growth, particularly in terms of GDP expansion. Firstly, the importation of intermediate and capital goods can augment a nation's productive capital stock, ultimately stimulating economic growth. Secondly, imports facilitate the transfer of advanced technologies from technologically advanced (frontier) countries to those with lower technical capabilities (non-

frontier nations), enabling developing economies to adapt and integrate cutting-edge innovations into their production systems.

Furthermore, international trade—especially imports—allows countries to learn more efficient methods of resource allocation from their global partners, which has a significant impact on productivity and national income levels. Imports can also contribute to the enhancement of domestic technological quality through competitive pressure, compelling local industries to improve their production techniques to remain competitive (Nyasulu, 2013). These improvements energize productivity and lead to increased national output. The Import-Led Growth Hypothesis (ILGH) is thus highly relevant to this study, as it emphasizes the role of imports in expanding the range of goods, particularly factor inputs available in an economy. This expansion is critical in driving production efficiency and fostering sustained economic growth.

### ***The Export-Led Growth Hypothesis (ELGH)***

The Export-Led Growth Hypothesis (ELGH) posits that exports serve as a primary driver of a country's overall economic growth. One of the key arguments supporting this hypothesis is that growth in exports can positively influence total factor productivity through dynamic spillover effects across the broader economy (Feder, 1983). Empirical studies rooted in the production function framework often incorporate exports precisely due to these productivity-enhancing spillovers. This phenomenon is commonly described as “learning by doing” or, more specifically, “learning by exporting” (Tyler, 1981; Lucas, 1988). The hypothesis identifies several pathways through which exports can stimulate productivity gains. For instance, an increase in exports may encourage greater specialization in the production of export goods, thereby enhancing productivity levels and elevating the skill base within the export sector. Consequently, this process may lead to the reallocation of resources from the relatively inefficient non-tradable sectors to the more productive export-oriented sectors, ultimately driving economic output (Waithe, Lorde, & Francis, 2011).

However, the ELGH is not without its theoretical critiques. A principal concern is the fallacy of composition, which assumes that all countries can simultaneously achieve growth through export expansion. In a globally demand-constrained environment, such a strategy risks resulting in a “beggar-thy-neighbour” scenario, where countries attempt to grow at the expense of others, potentially leading to excess global supply and deflationary pressures (Palley, 2002). Despite these limitations, the Export-Led Growth Hypothesis remains pertinent to this study, as it underscores the critical role of exports in fostering economic growth, particularly in developing economies such as Nigeria.

## METHOD

The import and export-led growth hypotheses form the theoretical framework of this study is modelled by Waithe et al. (2011). It started with a simple neoclassical production function:

$$Y_t = A_t K_{\alpha t} L_{\beta t} \quad (1)$$

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 and imports. 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  $M_t$ , hence the following equations result:

$$A_t = f(M_t, X_t, C_t) \quad (2)$$

Combining equation (2) with (1), we obtain:

$$Y_t = C_t K_{\alpha t} L_{\beta t} + M_{\delta t} X_{\gamma t} \quad (3)$$

Where, the superscript terms are the elasticities of production with respect to  $K_t$ ,  $L_t$ ,  $M_t$  and  $X_t$ .

## Model Specification

The model of this study is derived from the model of Waithe et al. (2011). This is done with some modifications as a result of the variables of the study.

From equation 3, RGDP represents  $Y_t$ , whereas  $M_t$  represents imports. Import was disaggregated to capture the trade values of imports of electrical power machinery, textile fabrics, iron and steel, telecommunications and sound processing machines. The export ( $X_t$ ) figures encompass solid minerals and petroleum, and bilateral exchange rates between Nigeria and China as a control variable.

Thus, the functional form of the model in this work is stated as follows:

$$RGDP = f(IMP, EXP, EXCH) \quad (4)$$

From equation (4), we can have the mathematical form as follows:

$$RGDP = \beta_0 + \beta_1 IMP + \beta_2 EXP + \beta_3 EXCH + u \quad (5)$$

Where, RGDP is the dependent variable. IMP, EXP and EXCH are the explanatory variables, and  $u$  is the error term or stochastic disturbance term.

The expected signs of coefficients or a priori expectations are:  $\beta_1 > 0$ ;  $\beta_2 > 0$ ;  $\beta_3 > 0$ .

The error correction mechanism (ECM) model is employed due to the small sample size of the study, which consists of 32 observations using quarterly data from 1995 to 2022. In this study, E-Views (version 12) software is used for the analysis, selected for its support of various time series analysis methods. Unit root tests, Bound Tests, Breusch-Godfrey Serial Correlation LM Test, and others are also conducted on the data using the same software, with data sourced from the United Nations Conference on Trade and Development (UNCTAD) covering the years 1995–2022.

## ANALYSIS AND RESULTS

The data used in the study are summarised in the table for a better understanding of the nature of the series. Analysis includes unit root test, co-integration test and error correction test. The unit root test was used for observing the stationarity of the time series data since presence of trend implies non stationarity while its absence means a stationarity test series. Augmented Dickey Fuller (ADF) was used for unit root test or test of stationarity in the study. The results of the stationarity test are summarized on Tables 1.

Table 1: Unit root (ADF test)

VARIABLES	ADF test statistic	Critical 5%	Order	Remarks
RGDP	-4.097851	-3.632896	I(0)	Reject $H_0$
IMP	-5.242460	-3.644963	I(0)	Reject $H_0$
EXP	-14.09675	-4.008157	I(1)	Reject $H_0$
EXCH	-3.978756	-3.603202	I(1)	Reject $H_0$

Source: Authors' Computation Using Eviews 12

Decision Rule: Reject  $H_0$  if the ADF test value is greater than the 5% critical value, otherwise accept. From the above result, the results imply that the variables of the model are integrated of order zero and one. Specifically, the ADF test values of RGDP, IMP, EXP and EXCH are greater than their critical values at 5% respectively.

Table 2: Unit root (Philip Peron (PP))

Variables	PP test statistics	5% critical values	Order of integration	Remarks
RGDP	-4.167745	-3.632896	1(0)	Stationary
IMP	-8.368010	-3.595026	1(1)	Stationary
EXP	-5.223132	-3.658446	1(0)	Stationary
EXCH	-3.658619	-3.595026	1(1)	Stationary

Source: Authors' Computation Using Eviews 12

Similarly, the result from Philip Peron's result shows that IMP and EXCH were stationary at first difference while RGDP and EXP were stationary at level as their PP test statistic are greater than the 5% critical value.



### Test for Co-integration

Given that the series are integrated of order zero and one, that is  $I(0)$  and  $I(1)$ , the Bound cointegration approach is found worthy in ascertaining if a long run relationship exists between the variables of the model.

Null hypothesis ( $H_0$ ): There is no cointegration among the variables.

Alternative hypothesis ( $H_1$ ): There is cointegration among the variables.

Table 3: Bounds Test

<b>F-Statistics = 1.45</b>		
Critical Value Bounds		
<b>Significance levels</b>	<b>I(0) Bounds</b>	<b>I(1) Bounds</b>
10%	2.72	3.77
5%	3.32	4.35

Source: Authors' Computation Using Eviews 12

The result verifies that there is no evidence of cointegration among the variables. This is because the F-Statistics value (1.45) is less than the lower and upper critical bounds for all the significant levels. This led to the acceptance of the null hypothesis of no co-integration. Since the bounds test indicated the presence of short-run relations among the variables, we then go further to estimate the error correction model to ascertain the short-run coefficients of the variables of the model.

### Evaluation of Estimates

The satisfactory results obtained from the unit root and co-integration tests motivated the estimation. The error correction model regression result of this study is presented below

Table 4: Error Correction Model Result

<b>Dependent Variable: D(RGDP)</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
D(IMP)	0.015900	0.004837	3.316021	0.0053
D(EXP)	0.006015	0.002330	2.650246	0.0269
D(EXCH)	-0.081929	0.036795	-2.231944	0.0398
C	0.687273	1.011117	0.679716	0.5086
ECT(-1)	-0.652474	0.289365	-2.254847	0.0420
$R^2 = 0.64$	Adj- $R^2 = 0.54$	F-stat = 21.70	Prob. F = 0.00	D.W = 1.95

Source: Authors' Computation Using Eviews 12

The coefficient of imports (IMP) is 0.015, which implies that with the influence of all other variables held constant, an increase in the IMP by one per cent on average will lead to

an increase in RGDP by 0.015 percentage point. The coefficient export (EXP) is 0.006, which suggests that all things being equal, as EXP increases by one per cent on average, RGDP will increase by about 0.006 percentage points. The coefficient of exchange rate (EXCH) is -0.08, which implies that with the influence of all other variables held constant, an increase in the exchange rate by one per cent on average leads to a decrease in RGDP by about 0.08 percentage point. The coefficient of the constant implies that if imports, exports and exchange rate are set equal to zero, RGDP increases by about 0.68 percentage points. The coefficient of error correction term ECT is -0.65, and this indicates feedback of about 65.0% of the previous year's disequilibrium. This also implies the speed with which RGDP adjust from short-run disequilibrium to changes in import (IMP), export (EXP) and exchange rate (EXCH) to attain long-run equilibrium of 65.0% within one year.

$R^2$  and Adjusted  $R^2$  From the regression table, it can be observed that the multiple coefficients of determination ( $R^2$ ) is given as 0.64. This means that about 64% of the variation in RGDP is explained by IMP, EXP and EXCH. The adjusted  $R^2$  is reported as the multiple coefficients of determination adjusted to take into account the degrees of freedom associated with the sum of squares. The Adjusted  $R^2$  is given as 0.54. This implies that about 54.0% of the fluctuations in the dependent variable (RGDP) are jointly explained by the fluctuations in the explanatory variables. Empirical result from the Durbin-Watson (D-W) test shows that there is no evidence of autocorrelation. The Durbin-Watson Statistic lies within the tabulated upper and lower bounds of the Durbin-Watson Statistic. The F-statistic shows that there is a joint significance of the variables used in the model, which implies that there is a strong relationship between the regressand (RGDP) and the regressors IMP, EXP, as well as EXCH. This decision is based on the probability of the F-statistic, which is less than 5%.

### Autocorrelation Test

Table 5: Breusch-Godfrey serial correlation LM test

F- Statistics	0.611	Prob. F (2,11)	0.5599
Obs* R-squared	1.801	Prob. Chi-square (2)	0.4062

Source: EViews 9

Serial correlation is defined as correlation between members of a series of observations ordered in time (Gujaratti 2013). The test is to see if there are residuals that are correlated with each other.

The decision rule is based on the probability of the chi-square.

$H_0$ : There is no serial correlation among the independent variables.

*Decision rule:*

Accept  $H_0$  if the probability of the chi-square is greater than 0.05 of no serial correlation.

Reject  $H_1$  if the probability of chi-square is less than 0.05 of the presence of serial correlation.

From the serial correlation LM tests, the chi-squared probability is greater than 0.05, that is (0.4062), we accept  $H_0$ . This means that there is no serial correlation between the dependent variables

## Heteroscedasticity Test

Table 6: Heteroscedasticity Test:

F- Statistics	0.116	Prob f (4,13)	0.9743
Obs* R-squared	0.622	Prob. Chi-square (4)	0.9605

Source: EViews 9

According to Gujarati (2013), Heteroscedasticity means unequal measures of an observed value of the dependent variable around the regression line

$H_0$ : There is no Heteroscedasticity

$H_1$ : There is Heteroscedasticity

*Decision rule:*

Reject  $H_0$  if Obs\* R-squared of the probability chi-square is less than 5%. From the result above, since the Obs\* R square of the probability chi-square is greater than 0.05, i.e. 0.9605, we therefore reject  $H_0$  and conclude that errors in the regression have constant variance.

## DISCUSSION OF FINDINGS

Given the positive and significant impact of imports, which primarily consist of electrical power machines, textile fabrics, iron and steel, and sound machines, it is posited that they contribute to enhancing Nigeria's industrial capacity, improving infrastructure quality, and facilitating technological advancements in the short run. For instance, importing electrical power machines can bolster Nigeria's energy infrastructure, addressing power shortages and supporting industrial growth in the short run however, in the long run 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. Similarly, importing textile fabrics and sound machines can fuel the textile and entertainment industries, fostering economic diversification and job creation.

On the other hand, Nigeria's exports to China predominantly comprise solid minerals and petroleum products. These exports underscore Nigeria's role as a supplier of raw materials to China's manufacturing and energy sectors (Uzonwanne, et al., 2022). The positive implications of these exports include revenue generation, foreign exchange earnings, and economic growth. Exporting solid minerals and petroleum allows Nigeria to monetise its natural resources, support government spending on social and economic development programs, and stabilise its balance of payments.

The result also shows a negative and significant impact of exchange rate and RDGP on the Nigerian-China trade relationship. A depreciating Nigerian currency relative to the Chinese yuan would make Nigerian exports less expensive for Chinese buyers. This could lead to a decline in Nigerian exports to China (Kanu, et al. 2020). At the same time, a weaker Nigerian currency would make imports from China more expensive for Nigerian businesses and consumers. This could lead to higher production costs for Nigerian industries reliant on imported Chinese raw materials or machinery, potentially reducing their competitiveness both domestically and internationally. Higher import costs could contribute to inflationary pressure in Nigeria, as businesses pass on increased production costs to consumers. This could erode purchasing power and reduce real incomes, impacting domestic consumption patterns and overall economic growth (Oseni, et al., 2023).

A sustained negative impact of the exchange rate on RGDP could exacerbate Nigeria's trade deficit with China, leading to concerns about the country's balance of payments position. Persistent trade imbalances could put pressure on Nigeria's foreign exchange reserves and exchange rate stability, potentially necessitating policy interventions to manage currency fluctuations. A volatile exchange rate environment could create uncertainty for investors, both domestic and foreign, looking to engage in bilateral trade or invest in Nigeria-China economic ventures (Oyeranti et al., 2010). Uncertainty surrounding future exchange rate movements may dampen investment sentiment and inhibit long-term economic development initiatives.

## CONCLUSION

This study explored the dynamics of power asymmetries in the narrative of Nigeria–China trade relations. Grounded in economic theory, which asserts that international trade enhances access to foreign goods and creates revenue streams through exports—thereby stimulating output and positively influencing real GDP—the research examined the structural and empirical dimensions of Nigeria's trade with China. The findings reveal that Nigeria's imports from China—particularly electric power machinery, iron and steel, telecommunications,

and sound processing equipment—alongside its exports of petroleum and solid minerals, exert a significant influence on the country's economic growth.

The analysis further establishes that Nigeria's growth trajectory is substantially influenced by increased imports of electric power machinery and iron and steel, a reduction in imports of telecommunications and sound processing machines, and the large-scale export of petroleum and solid minerals to China. However, the current structure of trade remains skewed in favor of China, as Nigeria continues to export largely unprocessed raw materials while importing technologically advanced manufactured goods. This reinforces a power imbalance that positions Nigeria on the less advantageous side of the bilateral trade relationship. To address this asymmetry, there is an urgent need for Nigeria to develop and implement trade policies that promote value addition in its export sectors, enhance industrial capacity, and leverage trade not just for economic growth, but for structural transformation and long-term national development.

## RECOMMENDATIONS AND WAY FORWARD

1. Nigeria must endeavour to develop its solid mineral value chain. In doing so, decent jobs will be created for her youthful population. Exporting finished products will strengthen her currency and help her to exit the negative side of the power differential.
2. Nigeria has no reason to be importing steel from China if it can eliminate corruption in its system and revitalise its steel industries. Revitalising the steel industry will stimulate her rapid industrialisation and global economic competitiveness.
3. The electric power machine that Nigeria imports is a heavy environmental polluter. Nigeria is more a gas country than petroleum. Nigeria has a comparative advantage of using gas to produce electricity and do away with power electric machines. This will enhance her strength in the power equation.
4. Following the significant impact of the Nigeria-China bilateral exchange rates on Nigeria's economic growth, the federal government should deemphasise the use of the 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
5. Nigeria imports refined petroleum products from China. She can avoid this by developing the petroleum value chain industries in Nigeria.
6. China exploits the huge power differential between it and Nigeria to the extent of bringing in their labourers for jobs that Nigerian labourers can do better. In this vein, the Nigerian government must evolve a policy that will checkmate the export of Nigerian labour.

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