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SEABORNE TRADE AND ECONOMIC GROWTH IN NIGERIA FROM 1997 – 2022

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Keywords: *Seaborne trade, Shipping Export, Cargo Throughput, Real GDP, Industrial Employment*

Abstract: *Nigeria is currently and heavily reliant on oil exports. This makes the economy vulnerable to fluctuations in oil prices. Seaborne trade can help Nigeria to diversify its economy by supporting the development of new export industries, such as agriculture, manufacturing, and tourism. This quest to diversify the economy of Nigeria gave birth to this study. This study therefore, investigates the effect of seaborne trade on economic growth in Nigeria from 1997 - 2022 with its specific objectives such as to determine the effect of shipping export and cargo throughput on real GDP and the effect of shipping export and cargo throughput on industrial employment. Ex - post-facto research design was adopted to achieve the objectives of the study. The study is inferential and based on quantitative method of secondary data collection sourced from the National Bureau of Statistics (NBS), the United Nations Development Programme (UNDP) and Central Bank of Nigeria (CBN). The data collected were subjected to multivariate time series analysis using ARDL Bound Test approach in estimating the multiple regression model and Granger Causality used in estimating the effect of shipping export (Ship_exp) and cargo throughput (CTP) on Real Gross Domestic Product (RGDP) and industrial employment (Ind_emp) with the aid of E-views version 12.0. The sample size for this study is 25 years spanning from 1997 to 2022. The study findings show that in the short-run, shipping export (Ship_exp) had a positive and significant impact on RGDP while it had a positive and insignificant impact on RGDP in the long run. Meanwhile, cargo throughput (CTP) had a positive and significant impact on RGDP both in the short run and in the long run. The study further shows that shipping export and cargo throughput do not granger cause industrial employment. Based on the findings, the study recommends that the federal government should invest more in port infrastructure and promote export diversification.*

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I. Introduction

Seaborne trade has played a significant role in Nigeria's economic development for centuries. Nigeria's coastline of over 750 kilometers and its location on the Gulf of Guinea make it a natural hub for maritime trade. The nation's ports move a sizable amount of cargo, including crude oil, manufactured goods, and agricultural and industrial supplies. For many years, studies have been conducted on the connection between seaborne trade and economic growth in Nigeria. Early research emphasised how seaborne trade contributes to economic growth and foreign exchange revenues. Recent studies (Munim, & Schramm, 2018) have looked at the effects of seaborne trade on various facets of the economy, including employment, investment, and technological advancement. Research on maritime commerce and Nigeria's economic expansion has typically shown encouraging results. Seaborne trade, according to studies, significantly boosts economic expansion. The impact on exports of goods other than oil is particularly significant. Employment and investment are also benefited by seaborne trade (Hasanov, Javid, & Joutz, 2022).

Research considerations must take into account the maritime industry's contribution to national economic development. The ability of shipping operations to permit the interchange of massive quantities of goods between nations throughout the world supports global trade (Yeats, 1998). In order to successfully handle and tranship commodities from the sea to the hinterlands and vice versa, the maritime business includes a variety of shipping operations' components (Nam & Song, 2011). With the power to impact product sales and price shocks, the shipping industry plays a significant role in world trade (Kalouptsidi 2021). Due to the symbiotic relationship between globalisation and shipping, worldwide shipping operations have seen significant increase over time (Mishra 2018). Within the maritime sector, which is anticipated to expand by 2.4% between 2022 and 2026 (UNCTAD 2021), the shipping trade constitutes the global interchange of goods. According to CISION PR Newswire (2022), the value of international shipping containers hit US$9.5 billion in 2021 and was expected to reach US$15.3 billion by 2027. Various influences, including protectionism, digitization, e-commerce, consolidation, and climate change, will have an impact on predictions regarding the expansion of international shipping trade (UNCTAD 2018a, b). According to the United Nations (2016), shipping activities are the foundation of international trade and the global economy.

The shipping industry is vital to the global economy, according to the International Chambers of Shipping (2020), with a total value of US$14 trillion in 2019. According to Matekenya and Ncwadi (2022), maritime activities have a considerable favourable impact on all trade. The ocean is a natural resource endowment with enough of resources to help nations expand their economies sustainably (Erdoan, Akar, Ulucak, Danish, & Kassouri, 2021). It indicates that a nation with an abundance of seas and a favourable trade balance, where exports outpace imports, is anticipated to have economic prosperity. However, the amount of trade, the balance between import and export cargoes, and the currency valuation all affect how much growth and development a maritime nation would experience from the ocean (Apanisile and Oloba 2020).

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This results from the finding by Bittencourt and Agudelo (2021) that Colombian trade relations suffer from exchange rate instability. According to Adenigbo, Mageto, and Luke (2023) a country with a sizable ocean, a poor shipping trade balance, and volatile currency rates could not see sustained economic growth. The unpredictability of a nation's macroeconomic variables makes it difficult to control the shipping trade deficit effectively (Sakyi and Immurana 2021). This implies that, even in the case of a positive shipping trade balance, there is still uncertainty regarding the impact of exchange rate volatility on long-term economic growth (Siddique et al. 2020).

A literature search on shipping trade and economic growth in Nigeria, similar to Michail (2020), turned up few researches on this area of the marine sector. A descriptive approach was used by Osadume and Okuoyibo (2020), Owoputi and Owolabi (2020), and Ekpo (2012) to explore maritime shipping trade and economic development in Nigeria. A non-time series regression technique was used by Njoku, Olowolagba and Olisa (2020) and Elias, Agu and Eze (2018) to investigate Nigeria's external debt, external reserve, export and import values, and their impacts on economic growth. However, Osadume and Uzoma (2020) used the Autoregressive Distribution Lag (ARDL) to research the impact of trade, exchange rates, and inflation rates as well as economic progress as measured by the HDI—human development index.

More specifically, the study by Adenigbo, Mageto, and Luke (2023) examined the impact of shipping trade on economic growth in Nigeria from 1970 to 2020 using the Vector Error Correction Model. In order to establish if Nigeria's economic growth is sustainable, the study looks at how real exchange rates, seaport imports, and exports, as well as GDP, interact. This study on seaborne trade and economic growth in Nigeria differs from the few studies in terms of analytical technique, choice of variables and data scope with focus on cargo throughput and shipping export as the proxies of seaborne trade then, Real Gross Domestic Product (RGDP) and industrial employment as the measures of economic growth with exchange rate and inflation rate as moderator variables. It is in the light of the above operational proxies that the purpose and the research hypotheses of this study were formulated as follows:

Purpose of the Study

The purpose of this study is to investigate the effect of seaborne trade on economic growth in Nigeria from 1997 to 2022 with the following specific objectives:

i. To determine the effect of shipping export and cargo throughput on real GDP
ii. To ascertain the effect of shipping export and cargo throughput on industrial employment

Research Hypotheses

Ho1: There is no significant effect of shipping export and cargo throughput on real GDP

Ho2: There is no significant effect of shipping export and cargo throughput on industrial employment

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Operational Framework

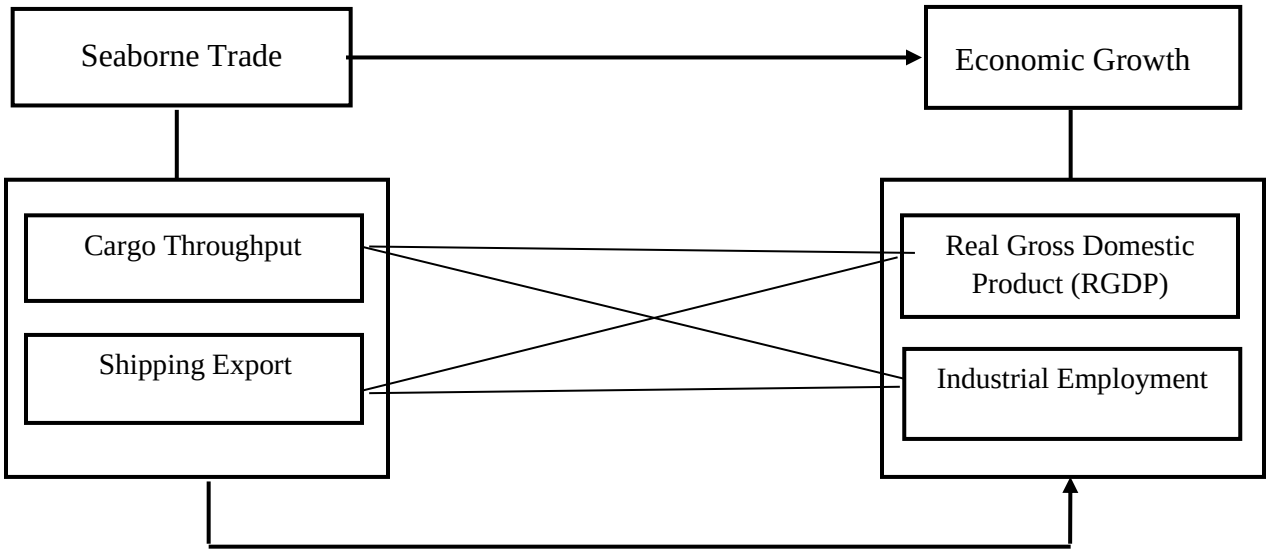

Figure 1.1: Operational framework of the relationship between seaborne trade and economic growth

II. Theoretical Framework

This study is anchored on Heckscher – Ohlin Theory developed by Eli Heckscher and Bertil Ohlin at the Stockholm School of Economics in the year 1933. This theory was used because it underpins the objective of our study.

The Heckscher-Ohlin Theory (HO)

The Heckscher-Ohlin theory was developed in 1933 by Swedish economists Eli Heckscher and Bertil Ohlin. Ohlin published a book in 1933 that combined work by Heckscher with approaches formed in his own doctoral thesis. He developed what is now referred to as the Heckscher-Ohlin theory of international trade. According to Dixit and Norman (1980), the Heckscher-Ohlin theory is a general equilibrium mathematical model of international trade. It asserts that nations would export items that maximise the use of locally available resources and import goods that utilise scarce resources (Krugman, 2009).

Ikechukwu, Fyneface, and Anochie 2022) point out that although the Heckscher-Ohlin theory has been useful in analysing patterns of international commerce, it has also come under fire for its implausible premises. For instance, (i) the theory does not account for technological disparities between nations, the importance of transportation costs, trade barriers, (ii) factors of production are perfectly mobile within a nation but not between nations, (iii) two nations produce two goods using two factors of production: labour and capital, etc. Despite its limitations, the Heckscher-Ohlin theory remains an important tool for understanding the forces that drive international trade.

III. Conceptual Review

Seaborne Trade

Seaborne trade is the transportation of goods by sea. It is the oldest and most important mode of international trade, accounting for over 80% of global trade by volume. The global economy depends on seaborne trade because it enables nations to specialise in the production of the

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goods and services they are most adept at producing and to trade these goods and services with other nations. The body of knowledge on seaborne trade is extensive and encompasses a wide range of subjects, such as its economics, the shipping industry, and its effects on the environment (Grammenos, 2013). The factors that affect the supply and demand for seaborne transport, as well as the costs of seaborne goods, are the subject of seaborne trade economics. The volume of international trade is one of the most significant elements affecting the demand for seaborne transportation. The amount of seaborne trade has increased together with the size of the world economy (Yang, Chang, 2019). The patterns of international trade are another crucial element. For instance, nations that are geographically apart from one another typically rely more on maritime trade than nations that are close.

The availability of ships and the cost of shipping determine the supply of seaborne transportation. The price of fuel, the cost of labour, and port fees are only a few of the variables that affect shipping costs (Hamelinck, Suurs, & Faaij, 2005). The combination of supply and demand determines the prices of seaborne goods. Freight rates typically increase when the demand for seaborne transportation is greater than the supply (Sanchez, Hoffmann, Micco, Pizzolitto, Sgut, & Wilmsmeier, 2003). On the other hand, freight prices typically decrease when the supply of seaborne transportation is greater than the demand.

Aiello, Giallanza, and Mascarella (2020) assert that the shipping sector is in charge of the shipping of products by sea. The sector is made up of a variety of business kinds, such as shipping lines, shipbuilders, and port operators. The businesses that manage ships and move cargo between ports are known as shipping lines. The businesses that construct and repair ships are known as shipbuilders. Companies that manage and run ports are known as port operators (Lee & Nam, 2017). The shipping industry is quite cutthroatly competitive. Shipping companies strive to provide the most dependable service and the cheapest freight prices. Shipbuilders compete to provide the most affordable costs and the fastest turnaround times. In order to draw in the largest maritime traffic, port operators compete (Haralambides, 2002). There are several environmental effects of seaborne trade. Air pollution from ships is one of the biggest effects. Sulphur dioxide, nitrogen oxides, and particulate matter are only a few of the contaminants that ships release (World Health Organisation, 2006). These toxins have been linked to smog, acid rain, and climate change. Water pollution is another effect of seaborne trade on the environment. Ships can contaminate the water by discharging waste materials like sewage and oil. Both human health and marine ecosystems may be harmed by these pollutants.

Although seaborne trade is vital to the world economy, it also has a variety of negative effects on the environment. To ensure that seaborne trade stays effective and cost-effective while reducing its environmental impact, policies and technology must be developed (Benamara, Hoffmann, & Youssef, 2019). The seaborne trade sector is always changing. Lee, Song, and Ducruet (2008) list the following as some recent advancements in the sector: The rise of China as a major trading power has caused a shift in trade patterns, with more trade now flowing between Asia and other parts of the world; the development of new technologies, such as autonomous ships and blockchain, is

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transforming the seaborne transportation of consumer goods; and shipping industry.

Challenges facing the seaborne trade industry

The industry of seaborne trade faces a number of difficulties, such as: Environmental regulation is becoming stricter, forcing shipping lines to invest in cleaner ships and fuels; there is a shortage of skilled workers in the industry, such as seafarers and port workers; The industry is vulnerable to geopolitical shocks, such as wars and trade disputes. Despite these difficulties, it is anticipated that the seaborne trade sector would expand during the next few years (Müller-Casseres, Edelenbosch, Szklo, Schaeffer, & van Vuuren, 2021). The demand for seaborne transport will be fueled by the expansion of the global economy and the emergence of new markets, such as Africa (Rondinelli & Berry, 2000).

Cargo Throughput as a proxy of Seaborne Trade

The entire volume of cargo that a port handles over a specific time period is known as cargo throughput, often referred to as port throughput, and it is a crucial indicator of port performance. It can be divided into distinct types of cargo, such as containerized cargo, dry bulk cargo, and liquid bulk cargo (Grote, Mazurek, Gräbsch, Zeilinger, Le Floch, Wahrendorf, & Höfer, 2016). It is commonly measured in tonnes. According to Marlow and Casaca (2003), port throughput is significant because it serves as a leading indicator of the economic activity of a port and its hinterland. It is also important for shipping companies and other port users, as it helps them to plan their operations and to choose the most efficient ports to use.

There are a number of factors that can affect port throughput, including:

i. The size and capacity of the port
ii. The type of cargo that the port handles
iii. The efficiency of the port's operations
iv. The level of demand for port services from shipping companies and other users
v. The economic conditions in the port's hinterland

There is a large body of academic literature on port throughput. Some of the key findings from this literature include:

i. Port throughput has been growing steadily over the past few decades, driven by increasing global trade.
ii. The growth of port throughput has been particularly strong in Asia, which is now home to the world's largest ports.
iii. Containerized cargo is the fastest-growing type of cargo, and it now accounts for the majority of port throughput.
iv. Port throughput is highly correlated with economic growth.
v. Port efficiency is a key factor that affects port throughput.
vi. Port throughput is also affected by a number of other factors, such as the availability of land, the depth of the port's access channel, and the quality of the port's infrastructure.

As a result, it has been discovered that port throughput has a favourable effect on Nigeria's economic expansion. This relationship has been the subject of several studies, including Osadume (2020), who discovered that port revenue performance—covering elements like total income to gross registered tonnage and cargo throughput—significantly influences economic growth in the short run. A substantial association between port throughput and economic development was also revealed by Shi, Gu, Feng, and Liu's study from 2023, which found that port coal throughput in China has a beneficial impact

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on itself and reaches its maximum impact in the second phase. Additionally, it has been demonstrated that port privatisation and deregulation spur economic growth by increasing cargo throughput (Ndubisi, 2016). It is advised that authorities provide the proper legislative frameworks to address port infrastructure deficiencies, encourage increasing port usage, and invest in inland infrastructure to speed up cargo transfers and enhance port operations. In general, port throughput is a major factor in Nigeria's and other nations' economic growth.

Shipping Export as a Proxy of Seaborne Trade

International trade depends heavily on shipping, which is also essential to Nigeria's economic growth. The majority of the nation's seaborne trade is handled by eight major ports along the nation's more than 750 km of coastline. Although Nigeria's maritime sector is still growing, it has achieved tremendous strides in recent years. The government has spent money on expediting the customs clearance process and improving port facilities (Goh & Ang, 2000). As a result, shipping goods to and from Nigeria has become faster and less expensive.

Challenges Facing Shipping Export in Nigeria

Despite the progress made, there are still a number of challenges facing shipping export in Nigeria. These include:

i. High shipping costs: The cost of shipping goods to and from Nigeria is relatively high, compared to other countries. This is due to a number of factors, including poor infrastructure, high port charges, and corruption.

ii. Inefficient port operations: Nigerian ports are often congested and inefficient. This can lead to delays in the clearance and shipment of goods.

iii. Bureaucracy: The export process in Nigeria can be complex and time-consuming. This is due to the involvement of multiple government agencies and the need to obtain a number of permits and licenses.

Impact of Shipping Export on the Nigerian Economy

The Nigerian economy heavily depends on shipping export. It produces earnings in foreign currency, adds to employment, and promotes the expansion of domestic industries. According to a World Bank Group (2018) analysis, the shipping sector boosted Nigeria's GDP by $10.4 billion in that year. This accounts for around 3% of the nation's GDP. Over a million people work in the maritime sector in Nigeria. Direct employment in ports and shipping firms as well as indirect employment in adjacent sectors like logistics and transportation are all included in this (Sheffi, 2012). Ekpo (2012) claims that export shipping help domestic firms expand by giving them a way to transfer goods to foreign markets. Nigeria, for instance, is a significant exporter of manufactured commodities, agricultural goods, and oil and gas.

Ways of Improving Shipping Export in Nigeria

There are a number of things that can be done to improve shipping export in Nigeria. These include:

i. Reducing shipping costs: The government can reduce shipping costs by investing in port infrastructure, streamlining customs procedures, and reducing corruption.

ii. Improving port efficiency: The government can improve port efficiency by reducing congestion, improving cargo handling procedures, and automating port operations.

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iii. Reducing bureaucracy: The government can reduce bureaucracy in the export process by simplifying procedures and reducing the number of permits and licenses required.
iv. The government can also support shipping export by providing financial incentives to exporters and by promoting Nigeria's exports in international markets.

The Nigerian economy is heavily dependent on shipping exports. It produces earnings in foreign currency, adds to employment, and promotes the expansion of domestic industries. The Nigerian maritime sector is still growing, and it faces a lot of difficulties. By lowering shipping prices, enhancing port effectiveness, streamlining bureaucracy, and assisting exporters, the government can boost shipping export in Nigeria.

Economic Growth

Economic growth is an increase in the production of goods and services in an economy over a period of time. The percentage change in real gross domestic product (GDP) from one year to the next is typically used to measure it. Real GDP, as defined by Callen (2008), is the sum of the values of all the products and services produced in a nation within a specific year. In other words, rather of measuring price increases, it assesses the actual growth in the production of products and services. Economic growth is important because it can lead to a number of benefits, including:

i. Higher wages and incomes
ii. More jobs and opportunities
iii. A better quality of life
iv. Increased tax revenue for the government
v. More resources to invest in public services and infrastructure

Economic growth can be driven by a number of factors, including:

i. Increases in the labour force
ii. Increases in capital investment
iii. Technological innovation
iv. Improved productivity

However, there are also a number of factors that can hinder economic growth, such as:

i. Political instability
ii. Corruption
iii. Natural disasters
iv. Economic recessions

Economic growth is a crucial sign of an economy's health, according to Hajian and Kashani (2021). It is crucial for enhancing people's lives and building a society that is more affluent and inclusive. The largest economy in Africa and one of the economies with the quickest growth rates is Nigeria. But there have also been certain difficulties for the nation lately, such as low economic growth, rising inflation, and poverty (Amar & Pratama, 2020). There are a number of factors that have been identified as determinants of economic growth in Nigeria. These include:

i. Natural resources: Nigeria is endowed with a number of natural resources, including oil and gas, agricultural land, and minerals. These resources have the potential to drive economic growth if they are managed effectively.
ii. Infrastructure: Nigeria has a large and growing population, but its infrastructure is underdeveloped. This can hinder economic growth by making it difficult to transport goods and services and to do business.
iii. Human capital: Nigeria has a young and growing population, but its human capital development is low. This means that many Nigerians lack the skills and knowledge necessary to participate fully in the economy.

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iv. Political stability: Nigeria has a history of political instability, which can deter investment and hinder economic growth.
v. Economic policies: The government's economic policies can have a significant impact on economic growth. For example, policies that promote investment and trade can help to drive economic growth.

Challenges to Economic Growth in Nigeria

Despite its potential, Nigeria faces a number of challenges to economic growth. These include:

i. Corruption: Corruption is a major problem in Nigeria. It can deter investment, hinder economic growth, and lead to inequality.
ii. Insecurity: Nigeria faces a number of security challenges, including terrorism, insurgency, and banditry. This can create a difficult environment for businesses to operate in and can deter investment.
iii. Climate change: Nigeria is vulnerable to the impacts of climate change, such as droughts and floods. This can damage crops, disrupt infrastructure, and lead to food insecurity.

Plausible Solutions to the Challenges of Economic Growth in Nigeria

There are a number of things that can be done to promote economic growth in Nigeria. These include:

i. Addressing corruption: The government needs to take steps to address corruption. This includes strengthening institutions, enforcing anti-corruption laws, and prosecuting corrupt officials.
ii. Improving security: The government needs to improve security by investing in the security forces, tackling the root causes of insecurity, and engaging in dialogue with stakeholders.
iii. Investing in infrastructure: The government needs to invest in infrastructure, such as roads, electricity, and transportation. This will make it easier to do business in Nigeria and will attract investment.
iv. Improving human capital development: The government needs to improve human capital development by investing in education and healthcare. This will create a more skilled and productive workforce.
v. Implementing sound economic policies: The government must put into effect sensible economic measures that encourage trade and investment. This involves easing business regulatory burdens, fostering macroeconomic stability, and eliminating poverty.

To improve the lives of Nigerians, the economy must grow. To solve the obstacles to economic growth and build a more wealthy and inclusive Nigeria, the government and the business sector must collaborate (Enwin, Ikiriko, & Alikor, 2021). In addition to the aforementioned, the government can encourage innovation and entrepreneurship, as well as the development of the agricultural and manufacturing sectors, to boost economic growth.

Measures of Economic Growth

Numerous important measures and indicators that offer information about the overall state and performance of an economy are often used to measure economic growth. By combining these metrics, politicians, economists, and businesses may better understand the status of an economy and decide on economic policy, investments, and resource allocation. Some of the measures of economic growth are Gross Domestic Product, Real GDP, Per Capita GDP, Employment and unemployment rate, balance of trade, Gross

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national Product. Gross National Income etc. But for the purpose of this study, Real GDP and Industrial employment rate are used as the measurement of economic growth.

Real Gross Domestic Product (RGDP)

Real GDP is a measure of the value of all goods and services produced in a country in a given year, adjusted for inflation. It is determined by subtracting the nominal GDP from the GDP deflator, an index of prices that tracks changes in the cost of goods and services over time. Real GDP, which accounts for the effects of inflation, is a more accurate indicator of economic growth than nominal GDP, claim Mishchenko, Naumenkova, Mishchenko, and Ivanov (2018). For instance, if inflation is 4% yet nominal GDP rises by 5%, real GDP has actually fallen by 1%. Real GDP is a crucial economic statistic because it allows for comparisons between the economic performances of various nations and the tracking of an economy's development over time (Farooq, Anwar, Ahad, Shabbir, & Imran, 2021). It is also used to calculate other important economic indicators, such as the standard of living and the unemployment rate.

The literature on real GDP is vast and covers a wide range of topics, including its definition, measurement, limitations, and its relationship to other economic variables. Some of the key findings from this literature include:

i. Real GDP is one of the most important indicators of economic growth.
ii. It is calculated by adjusting nominal GDP for inflation using a price index.
iii. Real GDP is measured using a variety of methods, including the production approach, the income approach, and the expenditure approach.
iv. Real GDP is not a perfect measure of economic well-being, as it does not take into account factors such as income distribution, environmental quality, and leisure time.
v. Real GDP growth is driven by a number of factors, including productivity growth, population growth, and investment.
vi. Real GDP growth is associated with a number of positive outcomes, such as higher living standards, lower unemployment, and reduced poverty.

Real GDP and a number of other economic factors, including investment, population growth, and productivity growth, are tightly correlated. According to Straehl and Ibbotson (2017), productivity growth, which is defined as an increase in output per unit of input, is a major contributor to long-term real GDP growth. Higher real GDP growth may also result from population growth, but this is dependent on a variety of variables, including the availability of resources and jobs. Investments enable firms to grow and generate more products and services, which contributes to real GDP growth (Brynjolfsson & Hitt, 2000).

Alternative measurements of economic well-being that go beyond real GDP have drawn more attention in recent years. These measurements frequently concentrate on elements like economic distribution, environmental quality, and social capital, according to Modie-Moroka (2009). These metrics show promise for delivering a more full picture of how people are faring in an economy, even though they are still in the development stage.

Limitations of real GDP

Real GDP is an important economic metric, but it's also crucial to understand its limitations. All facets of economic well-being, including income inequality, environmental quality, and leisure time, are not taken into account by real GDP. Real GDP growth can also be influenced by

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elements that aren't always long-term viable, including debt-financed investment (Bhaduri, Laski, & Riese, 2006). Real GDP is a useful indicator of economic expansion, but it's crucial to understand its limitations. To provide a more complete view of the state of an economy, it should be utilised in conjunction with other economic indicators (Anderson, 2014).

Employment Rate

The percentage of the working-age population that is employed is known as the employment rate. It is computed by dividing the number of employed persons by the population of working age, which is commonly seen as being individuals between the ages of 15 and 64. According to Scheffler, Campbell, Cometto, Maeda, Liu, Bruckner, and Evans (2018), the employment rate is a crucial measure of the strength of a nation's labour market. A high employment rate typically indicates that there are many open positions and that people can easily obtain employment (Nickell, 1997). On the other side, a low employment rate may indicate a market downturn or other issues with the labour force. According to Iversen and Rosenbluth (2006), a variety of variables can affect the employment rate, such as the general health of the economy, the population's age and gender distribution, and the degree of education and skill in the labour market.

Limitations of the Employment Rate

It's crucial to be aware of the limitations of the employment rate even though it's a useful indicator of the state of the labour market. According to Dahl, Nesheim, and Olsen (2009), the employment rate does not account for the nature of the jobs, the pay rate, or the amount of hours worked. Additionally, those who are unemployed but not actively looking for work are not included in the employment rate. According to Klasen and Lamanna (2009), the employment rate is a crucial economic statistic that can be used to monitor changes in a nation's labour market over time and to compare the economic performance of various nations. To acquire a more complete view of the state of the labour market, it is crucial to be aware of the limitations of the employment rate and utilise it in conjunction with other economic indicators.

IV. Empirical Review

Numerous previous studies on maritime commerce and economic expansion have been conducted by academics. According to a study by Lane and Pretes (2020), there is a strong correlation between marine dependency, which is typical of coastal countries, and Gross Domestic Product (GDP) per capita, showing that shipping is beneficial to most nations with access to the ocean. The result indicates the value of import and export shipping to the development of maritime nations' economies. Accordingly, Jiang et al.'s (2018) research in China discovered that exports have a negative significant impact on the trade index along the Persian Gulf and European shipping routes, while the freight index has a negative significant impact on exports in the Southeast Asian and Taiwanese shipping routes.

Adenigbo, Mageto and Luke, (2023) study usd the Vector Error Correction Model, to carry out the analyses of the effect of shipping trade on economic growth in Nigeria from 1970 to 2020. The study examines the effect of seaport imports, exports, and real exchange rates on GDP to determine if Nigeria's economic growth is sustainable, that is if the current pattern of shipping imports and exports for economic growth will not hamper future economic development. The cointegration test established a short- and long-term causality from import,

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export and exchange rates to GDP. The result showed that Nigeria's economic growth is import dependent and that, in the long run, import and exchange rates significantly affect GDP. The study further indicates that the present export volume does not significantly contribute to GDP growth. The results imply that building an economic system on an import-dominated trade system is not sustainable for future development. The study recommended strategic initiatives to maintain the economic growth rate while promoting export through local production.

The study of Adeleye Adeteye and Adewuyi (2015) examines the impact of international trade on economic growth in Nigeria, using net export (I .e total export less total import) and Balance of Payment as proxies for international trade while Gross Domestic Product represent economic growth. The study employed regression analysis as the method of analysis using co-integration and error correction modelling techniques to find the long-run relationship between economic performance and international trade

Usman and Ibrahim (2010) studied the impact of change in external reserve positions of Nigeria on domestic investment, inflation rate and exchange rate. Using a combination of ordinary least square (OLS) and vector error correction (VEC) methods, it was observed that change in external reserves in the country only influences foreign direct investment (FDI) and exchange rates and no influence of it was found on domestic investment and inflation rates. The results suggest that there is the need for broader reserve management strategies that will aim at maximizing the gains from oil export revenue by utilizing more of these resources to boost domestic investment. This research considered external reserve as a dependent variable over exchange rate and foreign direct investment. In our study, external reserve was considered as an independent variable since it is one of the major factors of gross domestic product.

Ijirshar, Joseph and Godoo (2016) investigated the relationship between external debt and economic growth in Nigeria for the period of 1981-2014. The study used both descriptive and econometric tools. The analysis of unit root was performed on each of the variables incorporated in the model and the result showed that, all the variables were not stationary at level but achieved stationary after first difference at 5% level of significance. The regression results showed a significant relationship between external debt and economic growth in Nigeria. However, external debt stock impacted positively while external debt service impacted negatively on the annual growth rate of the Nigerian economy both in the long run and the short run. The study also considered external debts as dependents variable over some economic growth in Nigeria

The study of Ikpechukwu, Olowolagba and Olisa (2020) investigated the appraisal of shipping trade influence on the economic growth in Nigeria from 1981-2016. The study used secondary data collected from the Central Bank of Nigeria. The main objectives are to examine the trend of shipping trade in Nigeria as well as determine the influence of economic growth on gross domestic product (GDP). The study employed both descriptive and influential tools. The study adopted cointegration regression method for the analysis of each of the variables (shipping trade, external reserves and external debts). The results show that there is a statistically significant relationship between GDP and external reserves with p-value 0.0190. Also the result revealed that there is a statistically

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significant relationship between GDP and shipping trade with p-value 0.000. However, shipping trade and external reserves contributed positively at 1% and 5% level of significance respectively while external debts impacted negatively to GDP at 5% level of significance with a long run variance of cointegration regression.

V. Material and Methods

This study empirically investigates the relationship between seaborne trade and economic growth in Nigeria using shipping export and cargo throughput as the proxy for seaborne trade, while Real Gross Domestic Product (RGDP) and industrial employment rate as the measures of economic growth. Ex - post-facto research design was adopted to achieve the objectives of the study. The study is inferential and based on quantitative method of secondary data collection sourced from the National Bureau of Statistics (NBS), the United Nations Development Programme (UNDP) and Central Bank of Nigeria (CBN). The data collected were subjected to multivariate time series analysis using ARDL Bound Test approach in estimating the multiple regression model and Granger Causality used in estimating the impact of shipping export (Ship_exp) and cargo throughput (CTP) on Real Gross Domestic Product (RGDP) and industrial employment (Ind_emp). The sample size for this study is 25 years spanning from 1997 to 2022.

The model specification follows a general form as follows:

RGDP = F(Ship_exp, CTP, EXCR, INFL) .... (1)

ARDL Bounds Test Approach was used in estimating the multiple regression models above

Ind_emp = F(Ship_exp, CTP) ....(2)

Granger causality approach was used in estimating the impact of shipping export (Ship_exp) and cargo throughput (CTP) on industrial employment (Ind_emp)

Where,
RGDP = Real Gross Domestic Product
Ind_emp = Industrial Employment
Ship_exp = Shipping Export
CTP = Cargo Throughput
EXCR = Exchange Rate
INFL = Inflation Rate

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VI. Results

Table 1: Descriptive Statistics

	RGDP	Ind_emp	Ship_exp	CTP	EXCR	INFR
Mean	49318.47	11.48173	9240882	57229157	171.6144	11.86743
Median	50042.36	11.45603	8835612	65192919	148.8802	12.09511
Maximum	72393.67	12.6612	19910534	84951927	400.0412	18.87365
Minimum	23231.12	10.14651	751856.7	16582805	21.8861	5.388008
Std. Dev.	18008.98	0.681795	6122849	21970078	96.65722	3.684947
Skewness	-0.143414	-0.311364	0.130766	-0.458682	0.844231	0.128002
Kurtosis	1.479874	2.268076	1.850267	1.824135	3.029642	2.123127
Jarque-Bera	2.492765	0.961983	1.448213	2.316893	2.970609	0.869212
Probability	0.287543	0.61817	0.484758	0.313974	0.226433	0.64752
Sum	1232962	287.0433	2.31E+08	1.43E+09	4290.361	296.6859
Sum Sq. Dev.	7.78E+09	11.15628	9.00E+14	1.16E+16	224222.8	325.8921
Observations	25	25	25	25	25	25

Source: Computation by Researcher Using Eviews 12.0

Table 1 show that the mean, median and the standard deviation reveal an even spread and variation for the series. The mean, median, maximum, minimum and the standard deviation shows a positive and a healthy trend. The Jarque-Bera probability value of RGDP, Ind_emp, Ship_exp, CTP, EXCR and INFL are 0.28, 0.61, 0.48, 0.31, 0.22 and 0.64, respectively. These values are higher than 0.05, showing that they are normally distributed.

Table 2: Correlation Analysis

	RGDP	IND_EMP	SHIP_EXP	CTP	EXCR	INFR
RGDP	1					
IND_EMP	0.43	1				
SHIP_EXP	0.90	0.26	1			
CTP	0.95	0.30	0.88	1		
EXCR	0.83	0.64	0.76	0.74	1	
INFR	0.17	0.25	0.14	0.15	0.40	1

Source: Computation by Researcher Using Eviews 12.0

From the correlation analysis in Table 2, it is glaring that RGDP, Ind_emp, Ship_exp, CTP, EXCR and INFL are all positively correlated. The strongest positive correlation value is between RGDP and CTP with a correlation coefficient of 0.95.

Table 3: Unit Root Test

Variables	**ADF Test: Levels**		**ADF Test: First Difference**		**Order of Integration**
	ADF Test Statistic	**p-vavlues**	**ADF Test Statistic**	**p-vavlues**	
RGDP	-0.7480	0.8164	-3.0104	0.0482	**1(1)**
Ind_emp	0.5167	0.8197	2.1853	0.0306	**1(1)**
Ship_exp	-0.1309	0.9346	4.8385	0.0008	**1(1)**
CTP	-1.6264	0.4542	-6.7868	0.0000	**1(1)**
EXCR	2.0591	0.9997	-3.7122	0.0106	**1(1)**
INFL	-2.7393	0.0817	-5.3539	0.0002	**1(1)**

Source: Computation by Researcher Using Eviews 12.0

Table 3 shows that all the variables are stationary at order 1(1)

Table 4: ARDL Bounds Test for Cointegration

Model Specification	**F-Statistic**	**5% Upper Bound Value**	**Decision**
RGDP = F(Shp_exp, CTP, EXCR, INFL)	38.34	3.49	Reject H0

Source: Computation by Researcher Using Eviews 12.0

As shown in Table 4, the study observed all the F-statistics are greater than the respective computed upper bound of critical values from the linear ARDL bounds tests. It signifies the existence of long-run cointegration in the model **RGDP = F(Shp_exp, CTP, EXCR, INFL)**. In particular, as shown in table below, hence, we reject the null hypothesis of no longrun relationship.

Test of Hypothesis One (Model 1)

To examine the effects of shipping export (Ship_exp) and cargo throughput (CTP) on real gross domestic product (RGDP), the ARDL model was used:

RGDP = *F*(Shp_exp, CTP, EXCR, INFL),,,(3.1)

Table 5

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Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob**
ARDL Short run Estimate				
D(SHIP_EXP)	0.0002	0.0000	5.1513	0.0001
D(CTP)	0.0001	0.0000	6.6305	0.0000
D(INFR)	-31.1975	28.2221	-1.1054	0.2864
ECM	-0.2269	0.0130	-17.5131	0.0000
R-squared=0.866949, Adjusted R-squared=0.846992. Durbin-Watson stat=2.156347				
ARDL Long run Estimate				
SHIP_EXP	0.0004	0.0004	1.0072	0.3298
CTP	0.0008	0.0001	8.2385	0.0000
EXCR(-1)	-24.2841	19.6798	-1.2340	0.2362
INFR	365.4279	298.2186	1.2254	0.2393
EC = RGDP - (0.0004*SHIP_EXP + 0.0008*CTP -24.2841*EXCR(-1) + 365.4279*INFR + 5896.1564)				

Source: Computation by Researcher Using Eviews 12.0

Table 5 shows that in the short-run, shipping export (Ship_exp) had a positive and significant impact on RGDP while it had a positive and insignificant impact on RGDP in long run. Meanwhile, cargo throughput (CTP) had a positive and significant impact on RGDP both in the short run and long run.

Test of Hypothesis Two (Model 2)

To examine the effects of shipping export (Ship_exp) and cargo throughput (CTP) on industrial employment (Ind_emp), the granger causality method was used:

$$Ind\_emp_t = \propto_1 + \sum_{i=1}^{j} \alpha_i \, Ind\_emp_{t_t} + \sum_{i=1}^{m} \beta_i \, \text{Ship\_exp}_{t-i} + \sum_{j=1}^{n} \delta_j \, \text{CTP}_{t-j} + \varepsilon_{1t} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3.11.1)$$

$$VOLINR_t = \propto_1 + \sum_{i=1}^{m} \beta_i \, \text{Ship\_exp}_{t-i} \sum_{i=1}^{j} \alpha_i \, Ind\_emp_{t_t} \sum_{j=1}^{n} \delta_j \, \text{CTP}_{t-j} + \varepsilon_{1t} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3.11.2)$$

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$$VOLEXR_t = \propto_1 \sum_{j=1}^{n} \delta_j \, \mathrm{CTP}_{t-j} + \sum_{i=1}^{m} \beta_i \, \mathrm{Ship\_exp}_{t-i} + \sum_{i=1}^{j} \alpha_i \, Ind\_emp_t + \varepsilon_{1t} \quad (3.11.3)$$

Table 6: Pairwise Granger Causality Tests
Date: 10/15/23 Time: 09:20
Sample: 1997 2022
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
SHIP_EXP does not Granger Cause IND_EMP	25	1.23678	0.3138
IND_EMP does not Granger Cause SHIP_EXP		0.27903	0.7597
CTP does not Granger Cause IND_EMP	25	1.59147	0.2310
IND_EMP does not Granger Cause CTP		0.61775	0.5502
CTP does not Granger Cause SHIP_EXP	25	1.66350	0.2173
SHIP_EXP does not Granger Cause CTP		5.17592	0.0168

Source: Computation by Researcher Using Eviews 12.0
Table 6 shows that shipping export (Ship_exp) and cargo throughput (CTP) do not granger cause industrial employment.

Residual and Stability Diagnostics for Model One

Table 7: Auto-correlation
Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.210575	Prob. F(2,13)	0.8128
Obs*R-squared	0.753108	Prob. Chi-Square(2)	0.6862

The Breusch-Godfrey test used to indicate whether there is autocorrelation in the model or not. In the Breusch-Godfrey Serial Correlation LM Test, the null hypothesis states that the residuals are not serially correlated. The table 7 for LM test indicates that there is no sign of autocorrelation as the F and Chi-Square probabilities at the 5% level of significance are 0.8128 and 0.6862 respectively.

CUSUM of Squares

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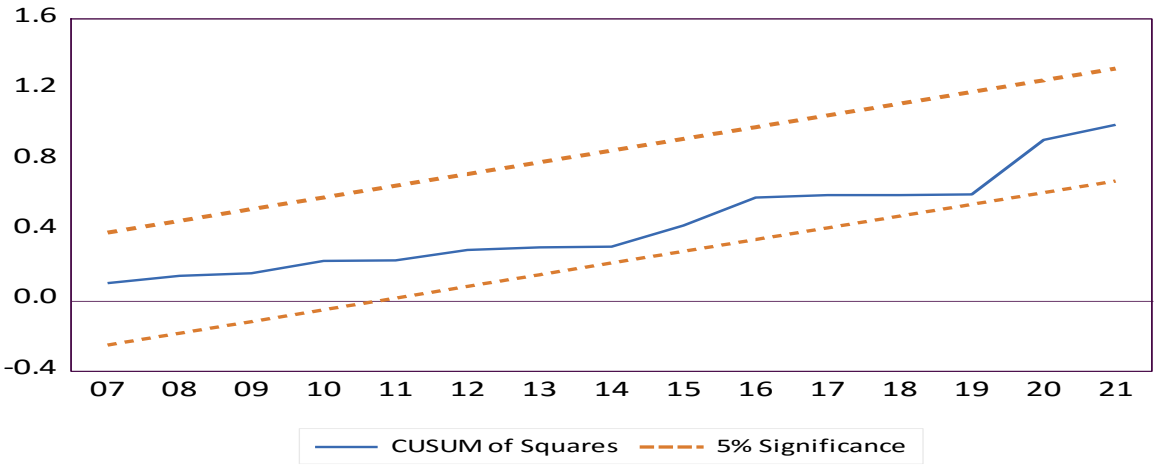

Figure 1.2
CUSUM Test

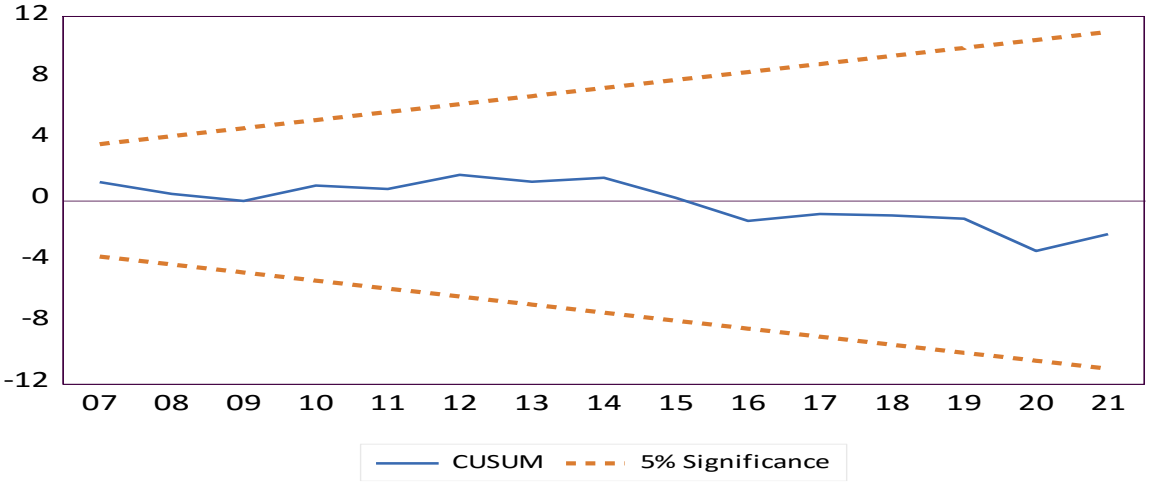

Figure 1.3

Since the Cusum test and Cusum of Squares Test lines are between the five percent (5%) lines, it indicates the stability of the residuals.

VII. Discussion of Findings

The test of hypotheses was carried out using secondary data collection method sourced from the National Bureau of Statistics (NBS), the United Nations Development Programme (UNDP) and Central Bank of Nigeria (CBN). The data collected were subjected to multivariate time series analysis using ARDL Bound Test approach in estimating the multiple regression model and Granger Causality used in estimating the impact of shipping export (Ship_exp) and cargo throughput (CTP) on Real Gross Domestic Product (RGDP) and industrial employment (Ind_emp). Thus, it will be vital to test the hypotheses of this study and relate it to the empirical review.

On the test of hypothesis One (Ho1) using the ARDL Bounds Test Approach, the finding shows

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that in the short-run, shipping export (Ship_exp) had a positive and significant impact on RGDP while it had a positive and insignificant impact on RGDP in long run. Meanwhile, cargo throughput (CTP) had a positive and significant impact on RGDP both in the short run and long run. This finding is in support of the study of Osadume and Uzoma (2020) who studied maritime trade and economic development in Nigeria using ARDL Bounds testing and discovered a positive and significant effect of trade openness on human development index with a significant p-value of 0.0461 at the 5% level of significance.

On the test of hypothesis Two (Ho2), the granger causality test approach was used and the findings show that shipping export (Ship_exp) and cargo throughput (CTP) do not granger cause industrial employment. This finding is in corroboration with the study of Adenigbo, Mageto and Luke (2023) that studied the effect of shipping trade on economic growth in Nigeria using the Vector Error Correction Model (VECM) approach and found that the present export volume does not significantly contribute to GDP growth.

VIII. Conclusion and Recommendations

This study empirically investigated seaborne trade and economic growth in Nigeria from 1997 – 2022 for a period of twenty five (25) years using multivariate time series analysis. The dependent variable was measured by real GDP and industrial Employment, while the independent variable was proxied by cargo throughput and shipping trade. The study is anchored on Hechscher - Ohlin theory developed by Eli Heckscher and Bertil Ohlin in 1933. This theory supports the findings of this study.

Two hypotheses were postulated in this study. Based on the test of the hypotheses using ARDL Bound approach, the results show that seaborne trade proxied by shipping export and cargo throughput exert significant impact on economic growth (real GDP and industrial employment). While the granger causality test conducted shows that shipping export and cargo throughput do not granger cause industrial employment. Based on the abovementioned, the following recommendations were made:

i. The federal government should invest in port infrastructure. Nigerian ports are often congested and inefficient, which can add to the cost of doing business and discourage foreign investment. Investing in port infrastructure, such as dredging deeper channels and expanding container terminals, would help to improve the efficiency of seaborne trade and make Nigeria more attractive to foreign investors.

ii. Export diversification should be promoted. Nigeria is heavily reliant on the export of oil and gas. This makes the economy vulnerable to fluctuations in oil prices. Promoting export diversification would help to reduce Nigeria's reliance on oil and gas and make the economy more resilient.

IX. Limitations and Recommendations for further Study

This study is limited to determining if Nigeria's economic growth is sustainable in the face of shipping export and cargo throughput. Further studies may be carried out using other developing countries as case study and adopt other macroeconomic variables that this study could not cover.

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