

Effect of Maritime Trade on Inflation Rate in Nigeria (1990-2023)

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Abstract:

This study investigated the effect of maritime trade on inflation rate in Nigeria. The data used for the study were time series data sourced from the National Bureau of Statistics (NBS) annual abstract and Central Bank of Nigeria (CBN) statistical Bulletin, World Development Indicator (WDI), Nigerian Ports Authority (NPA) and Nigerian Shippers Council (NSC) which spanned between the period 1990 to 2023. For the dependent variables, the study utilized inflation rate and the components of maritime trade (oil trade, non-oil trade and containerized trade) served as the independent variables. The analytical techniques employed were Augmented Dickey Fuller (ADF) unit root test, Johansen cointegration test and bounds cointegration test. The unit root test revealed that all the variables were non-stationary at level but became stationary at first difference that is, integrated of order one $I(1)$. The evidence of the presence of cointegration amongst the variables formed the basis for estimating the model using error correction model (ECM). The short run results showed that oil trade has a negative and non-significant effect on inflation rate in Nigeria. Also, non-oil trade revealed an insignificant positive effect on inflation rate in Nigeria. Furthermore, the short run result revealed that containerized trade has a negative and statistically insignificant effect on inflation rate in Nigeria. Thus, the study recommended that government should prioritize agriculture, solid minerals, and manufacturing sectors through increased investment and export grants. Also, government should support indigenous businesses through export promotion strategies, trade openness, domestic protection measures. This will help generate employment, reduce inflation rate and put the country on a path to sustainable economic growth.

Keywords: Maritime Trade, Oil Trade, Non-Oil Trade, Containerized Trade, Inflation Rate

1. INTRODUCTION

Nigeria is yet to be exceedingly productive, effective, and remarkable in the function of maritime trade and global shipping (Zhang et al., 2023). According to the United Nations conference on trade and development (UNCTAD, 2023) statistics, 291 ships were berthed in the seaports of Nigeria in the year 2020. This raises an all-embracing need to determine the effect of maritime trade and economic development in Nigeria. The demand for maritime trade has necessitated the curiosity to measure its influence on the economic development in Nigeria.

Maritime trade outputs from oil and non-oil trades/containerized trade dealers as major stakeholders and consumers of port services become very important in identifying the factors that inhibit the choice of ports for oil/non-oil trade and containerized trade hence there is the need to ascertain how maritime trade affects real gross domestic products in Nigeria. Since one of the goals of maritime trade is to engage substantial workforce in the maritime sector, by contributing to the reduction unemployment rate in the country no matter how minimal it becomes imperative to optimize the use of global trade mechanisms to determine the significant and critical ways in which maritime trade affect unemployment rate in Nigeria (UNCTAD, 2024a).

Maritime trade provides opportunities to communicate with foreign counterparts, which enables the exchanges of goods and services. According to the International Monetary Fund IMF (2024) the EU accounted for 16.04% of the world's gross domestic product. However, the recent growth in some world countries was driven by the reduction of trade barriers policy (Chen, 2023). Despite the vast contribution of intentional maritime trade to economic development across the global regions, the Nigeria's sea ports are open and function for intentional trade since past decade. Nevertheless, the country's economic development is left behind. Adenigbo et al. (2023) posited that increase in the level of maritime trade usually leads to effective financial improvement through open border transactions, but the Nigeria's economic development recently experienced decline, as a result of the decrease in land border exchange and lack of new market opportunities through foreign earning.

Despite Nigeria's strategic coastal location and the dominance of maritime trade in the country's international commerce, the full potential of the maritime sector remains largely untapped in driving sustained economic growth. Over 90% of Nigeria's international trade by volume is conducted via seaports, yet the sector's contribution to reduce unemployment rate remains suboptimal. Additionally, the absence of capital, poor motivating factors for investors and inadequate incorporated transport framework have been discovered as a significant aspect of remarkable components affecting Nigerian maritime trade. Maritime trade is an exceptionally capital-intensive endeavour whether vessel purchase depends on sanctioning or refurbished vessel. Nigeria, with a shallow capital base, causes it to be challenging and almost infeasible, to activate the required finances for funding maritime trade. Therefore, there is a critical need to investigate the extent to which maritime trade influences inflation rate in Nigeria.

Objectives of the Study

This study seeks to investigate the effect of maritime trade on inflation rate in Nigeria. Based on this the following objectives shall be achieved:

- 1) To determine the extent to which oil trade has significant effect on inflation rate in Nigeria.
- 2) To investigate the extent to which non-oil trade has significant effect on inflation rate in Nigeria.
- 3) To find out the extent to which containerized trade has significant effect on inflation rate in Nigeria.

Research Questions

The purpose of this research is to evaluate the effect of maritime trade on inflation rate in Nigeria. In line with this the following research questions have been raised and investigated in this study:

- 1) To what extent does trade affect inflation rate in Nigeria?
- 2) To what extent does non-oil trade affect inflation rate in Nigeria?

3) To what extent does containerized-trade affect inflation rate in Nigeria?

Research Hypotheses

This research investigates the effect of maritime trade on inflation rate in Nigeria. Accordingly, the following hypotheses relating to the purpose and problems of the study have been formulated and for investigation:

Ho1: Oil trade has no significant effect on inflation rate in Nigeria.

Ho2: Non-oil trade has no significant effect on inflation rate in Nigeria.

Ho3: Containerized trade has no significant effect on inflation rate in Nigeria.

2. LITERATURE REVIEW

This section reviews the literature relevant to the study. Export-led theory and theory of international trade have been used to underpin the study. Also, the literature review has captured concepts like- maritime trade, oil trade, non-oil trade, containerized trade, inflation rate, empirical review as well as the summary of the literature review with evidence of gaps in literature.

Theoretical Framework

This study examines the effect of maritime trade on economic development in Nigeria. In this section the theoretical framework underpinning the study has been explored. Theories such as: Endogenous Growth Theory, Export-led theory and theory of international trade have been x-rayed in this section.

Export-Led Theory

Export-led theory suggests that a country can achieve economic growth by focusing on increasing its exports, rather than relying solely on domestic production and consumption. By expanding exports, a nation can benefit from larger markets, gain access to foreign capital, experience economies of scale, boost productivity, and stimulate job creation.

Export-led growth is an economic strategy where a country focuses on producing goods and services for export markets as the primary driver of economic growth and development. This approach emphasizes increasing exports to generate foreign exchange earnings and investment, which can then be used to import capital goods and raw materials to further expand production capacity.

The export-led growth theory provides the theoretical basis for this paper. This theory holds that exports are the result of economic growth and one of its key driving forces. Especially in the context of developing countries, exports have become an important channel for promoting capital accumulation and technological progress through paths such as expanding international markets, attracting foreign capital, creating jobs, and promoting industrial upgrading (Balassa, 1985).

Furthermore, export activities can form economies of scale in the production process, optimize resource allocation, bring about significant technological spillover effects, and thereby enhance total factor productivity. Helpman and Krugman further pointed out that foreign trade in an open economy can strengthen market competition, promote specialized division of labor and capital accumulation, and accelerate the optimization of industrial structures and technological upgrading. Overall, the export-oriented growth theory reveals the crucial

role of exports in stimulating production efficiency, enhancing international competitiveness, and supporting long-term economic growth.

Theory of International Trade

In the early 1900s a theory of international trade was developed by two Swedish economists Eli Heckscher and Bertil Ohlin. This theory has subsequently become known as the Heckscher–Ohlin model (H–O model) (Sanyal & Jones, 1982). The Heckscher–Ohlin model makes the following core assumptions (Ohlin, 1933): Labor and capital flow freely between sectors equalizing factor prices across sectors within a country. The amount of labor and capital in two countries differ (difference in endowments). Technology is the same among countries (a long-term assumption), and tastes are the same upon countries. International trade theory provides explanations for the pattern of international trade and the distribution of the gains from trade. The theory convinces most economists of the benefits of liberal trade. But many non-economists oppose liberal trade. This study is adopting the theory of international trade because it provides a valuable insight into the nature of the link between maritime trade and economic development.

The Heckscher-Ohlin (H-O) theorem holds that trade between countries arise because different countries have different factor endowments. Thus, countries which are rich in labour will export labour intensive goods and those which are rich in capital will export capital intensive goods.

According to the H-O theorem, for instance, Nigeria will specialise on production of goods and services that require cheap labour available in the country, while USA will specialise on production of goods and services using cheap capital. The theory assumes that there are two commodities, two countries, no transport cost, no qualitative difference in factors of production, identical production functions, constant return to scale and full employment, among others.

International trade theory provides explanations for the pattern of international trade and the distribution of the gains from trade. The theory convinces most economists of the benefits of liberal trade. But many non-economists oppose liberal trade. Opponents include some who may have encountered trade theory but nevertheless fall prey to fallacious reasoning. This article attempts to convey why trade theory is so persuasive to economists and also to deal with why many non-economists are not persuaded.

The theory of international trade allows for effective and efficient participation in crude oil and non-oil shipment and it permits economies of scale not open to small protected economies. By introducing greater market competition of oil, non-oil and dry bulk shipment encourages a more efficient utilization of resources and greater economic development in real gross domestic products and reduction of unemployment rate.

Conceptual Review

Conceptual Framework

This study evaluated the effect of maritime trade on real gross domestic products in Nigeria. In carrying out the study three dimensions of maritime trade (independent variable or predictor variable) namely Oil Trade, Non-Oil Trade and Containerized Trade were examined. These dimensions would be adopted in line with the works of Olusegun (2020); Okwedy (2020) and Onyeabor (2018). Also, the dependent variable was Real Gross Domestic Products was appraised.

The study adopted part of the classification of economic performance in Nigeria espoused by Agbo et al. (2018); Ajayi and Araoye (2019) and Ahmed (2019) in maritime trade evaluation involving economic performance indicators.

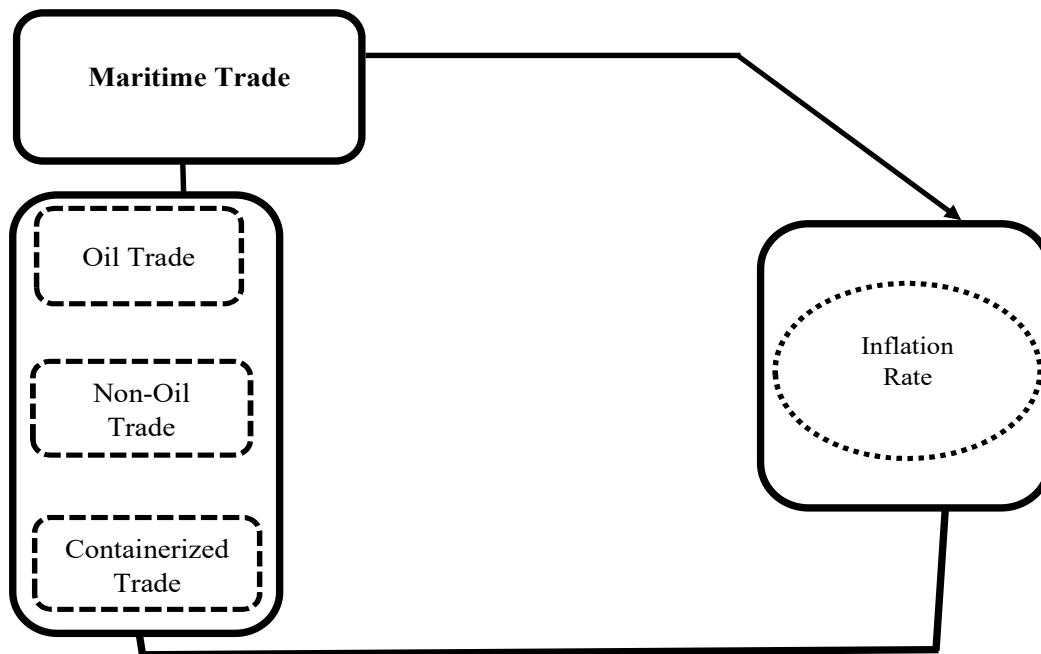


Figure 1: Conceptual Framework of the Effect of Maritime Trade on Inflation Rate in Nigeria (1981-2024)

Sources: UNCTAD, (2024a). Review of Maritime trade review of countries
https://unctad.org/system/files/official-document/rmt2023_ch7_en.;

Nwamuo C. (2019). Impact of International Trade on Economic Growth: The Nigerian Experience. *European Journal of Business and Management* 11 34.

Maritime Trade

Maritime Trade refers to the global movement of goods through sea routes, involving partnerships between nations, agencies, and industries to enhance security and efficiency in commerce. Maritime trade, the backbone of global commerce, involves the movement of goods via sea routes between ports, facilitating international trade and economic growth. It's a cost-effective method for transporting goods, with over 80% of world trade by volume traveling by sea (Khayat, 2024). Maritime trade is the lifeblood of the global economy, representing the backbone of international commerce by sea. It encompasses the movement of goods and commodities across oceans, connecting distant nations, fostering economic growth, and supporting countless industries worldwide (Matekenya, Nwadi, 2022).

The modern maritime trade industry is not without its challenges, including environmental concerns (such as emissions and oil spills), security threats (piracy and smuggling), and the imperative to align with ESG (Environmental, Social, and Governance) principles. Nevertheless, the resilience and adaptability of this industry remain evident as it continues to evolve and play a pivotal role in shaping the global economy (Odiegwu

& Zeb-Obipi, 2023). Maritime trade is the one transacted by persons, companies, agencies or governments through the sea. Stopford (2009) defines maritime trade as the movement of merchandise by vessels between the port of origin where merchandise is received from the exporter at the port of origin to the port of destination where merchandise is claimed by the importer. Nigeria's location and population make it a country of diverse economic capabilities with large investment opportunities as its maritime trade. The country has a coastline of over 750km and eight major ports excluding oil terminals with a cargo handling capacity of 35million tones per annum (WTO, 2023).

Maritime trade volume contracted marginally by 0.4 per cent in 2022, but UNCTAD projects it will grow by 2.4 per cent in 2023. Indeed, the industry remains resilient and UNCTAD expects continued but moderated growth in maritime trade volume for the medium term (Adenigbo et al., 2023).

Oil trade

Oil trading is the buying and selling of different types of oil and oil-linked assets with the aim of making a profit. As oil is a finite resource, its price can see massive fluctuations due to supply and demand changes (Chen, 2023). Oil and gas trades are dominated by three major markets in London, New York, and Singapore. These are well-established centers where many active buyers and sellers give rise to highly liquid markets. Such markets provide the opportunity for leveraged derivative investments, such as oil futures, and attract large inward risk capital. These markets provide low cost of entry and exit, and with exchange house regulation and guaranteeing the performance of the futures contracts traded on those exchanges (Azam & Feng, 2022).

The crude oil trade system is an important support for every country in providing industrial production materials, promoting economic development and guaranteeing military security. The international trade of crude oil is dominated by marine shipping, which, as a foundation for the large-volume and long-distance trade, has greatly enriched international economic cooperation in crude oil resources (Maduechesi et al., 2023). Crude oil plays a critical role in all modern economies and its trade is a vital element of the global energy supply chain ((Odiegwu & Enyioko 2022b).

Crude oil also is categorized as "sweet" or "sour" depending on the level of sulfur, which occurs either as elemental sulfur or in compounds such as hydrogen sulfide. Sweet crudes have sulfur contents of 0.5 percent or less by weight, and sour crudes have sulfur contents of 1 percent or more by weight. Generally, the heavier the crude oil, the greater its sulfur content. Excess sulfur is removed from crude oil during refining, because sulfur oxides released into the atmosphere during combustion of oil are a major pollutant (Duru et al., 2020).

Non-Oil Trade

Non-oil trade simply expressed are items other than crude oil (petroleum products) that are sold in the foreign exchange market only to generate cash are conveyed to the selling points (Ewubare et al., 2017). Farm products exports construction and manufacturing exports solid mineral exports and place in the international appear to be the four primary parts of Nigeria's non-exports industry. Agricultural commodities goods produced solid minerals entertainment and vacation services and other non-oil trade commodities are limitless (Onuorah 2018). Non-oil goods transport comprises the movement of agricultural products, solid minerals, textiles, manpower, etc. to where they be sold (Maduechesi, 2023).

Non-oil good is made up of every other thing we export from Nigeria except petroleum products. Manufacturing exports consist of textiles, beer, cocoa butter, plastic products, processed timber, tyres, soap, detergent and

fabricated iron rods. Agricultural, export merchandise includes cocoa, groundnut, palm oil, cotton, rubber (natural), yam, palm products, fish and shrimps (Saeed et al., 2021). Generally, the transportation of non-oil products is the conveyance of those commodities excluding crude oil (petroleum products), which are sold in the international market for the purpose of revenue generation.

Non-oil trade is the trading on those commodities excluding crude oil (petroleum products), which are sold in the international market for the purpose of revenue generation (Ewubare et al., 2017). The Nigeria's non-oil trades sector is structured into four broad constituents which are the agricultural exports, manufactured exports, and solid mineral exports and services exports (Agbo Agu. E. & Eze, 2018). The non-oil trade products are unlimited as they include agricultural crops, manufacturing goods, solid minerals, entertainment and tourism services etc (Azam & Feng, 2022).

Containerized Trade

Containerized trade, a cornerstone of modern global commerce, involves transporting goods in standardized containers, revolutionizing shipping efficiency and reducing costs by facilitating easy transfer between trucks, trains, and ships (Adepoju, O2020). Containerization is the predominant form of unitization of export cargoes today, as opposed to other systems such as the barge system or palletization (Cariou, 2020). Road-and-rail containers, sealed boxes of standard sizes, were used early in the century; but it was not until the 1960s that containerization became a major element in ocean shipping, made possible by new ships specifically designed for container carrying. Large and fast, container ships carry containers above deck as well as below; and their cargoes are easily loaded and unloaded, making possible more frequent trips and minimum lost time in port (Adenigbo et al., 2023).

Container trade and port industry are seen as key factors for the development of countries and the globalization of the world economy. Especially international line and container operators have great investment and infrastructure opportunities and thanks to these opportunities, International large companies built huge ships to transport cargoes, and as a natural consequence of this, they needed modern ports and equipment (Chen, 2023). When the trend of world container trade in recent years is examined, it is seen that especially Far East ports, the USA and European ports generate a large part of the container trade in the world (UNCTAD, 202d).

Containerization, is the process of unitization of cargoes in exports. Containerization is the predominant form of unitization of export cargoes, as opposed to other systems such as the barge system or palletization. The containers have standardized dimensions (Gobna et al., 2022). The standardization of container sizes and corner fittings has revolutionized global trade and transformed the logistics industry. Before, containers of various sizes and corner fittings posed a challenge to efficient stacking and transportation of goods (Ajudua et al., 2021).

Inflation Rate

Inflation is an economic concept that refers to the rate at which the general level of prices for goods and services is rising, and subsequently, purchasing power is falling. Central banks attempt to limit inflation, and avoid deflation, in order to keep the economy running smoothly (Afolabi et al., 2017).

Inflation is defined as a sustained increase in the overall price level over time. During periods of high inflation, the value of the domestic currency diminishes which negatively affects the economy (Folorunso and Abiola,

2000). Nigeria is witnessing high inflation with economic and social implications. As real income falls, due to the eroded purchasing power of the currency, there is a reduction in the amount of goods and services each unit of the currency can buy. Confronted with an already diminished disposable income, consumers are now faced with higher prices owing to higher production costs. The high inflation trend in the country has also led to increased demand by workers, especially those in the public sector, for higher wages. Furthermore, the desire to save and invest has been on the decline, adversely affecting economic growth (Ajayi, & Olasehinde, 2020).

In Nigeria, the inflation rate, a measure of the general price increase of goods and services, is calculated using the Consumer Price Index (CPI), which tracks the change in prices of a basket of 740 common items consumed by households (Adams & Olamide Bello, 2022). Nigeria's inflation rate rose for the fourth straight month, hitting a near 30-year high of 34.8% in December 2024, up from 34.6% in the prior month. Food inflation, which constitutes more than 50% of Nigeria's inflation basket, eased to 39.84% in December from 39.93% the month before. On a monthly basis, the CPI index rose by 2.44% in December, slowing from a 2.64% surge in November. The National Bureau of Statistics is currently rebasing the consumer price index used to track household expenditure. The changes will come into effect at the end of this month.

Nigeria's annual inflation rate dropped to 23.18% in February 2025, its lowest level since June 2023, from 24.48% in January. Meanwhile, food inflation eased to 23.51%, marking its lowest rate since September 2022, compared to 26.08% in the previous month. The decline in inflation is primarily attributed to a technical adjustment in the base year, as the National Bureau of Statistics rebased the Consumer Price Index to 2024 from 2009 in January 2025. On a month-on-month basis, the CPI increased by 2%. Source: National Bureau of Statistics, Nigeria (UNCTAD, 2024b)

In Nigeria, the Consumer Price Index (CPI) measures the change over time in prices of 740 goods and services consumed by people for day-to-day living. The index weights are based on expenditures of both urban and rural households in the 36 states. The most important categories in the CPI are: Food & Non-alcoholic Beverages (52% of the total weight), Housing, Water, Electricity, Gas & Other Fuel (17%), Clothing & Footwear (8%). Transports account for 7% and Furnishings & Household Equipment Maintenance for 5%. Others include: Education (4%); Health (3%); Miscellaneous Goods and Services (2%); Restaurants and Hotels (1%); Alcoholic Beverages, Tobacco & Kola (1%); Recreation & Culture (1%); and Communications (1%).

Nigeria's inflation rate dropped to 24.48% in January 2025, from December's 34.80%, following the rebasing of the CPI index by the country's statistical office to more accurately reflect changes in consumption patterns. The National Bureau of Statistics (NBS) clarified that the decline in the rebased inflation rate does not reflect a decrease in the general price level, attributing the drop to the new base year (2024) being closer to the current period. Rebased food inflation, which constitutes more than 50% of Nigeria's old inflation basket, was 26.08% year-on-year in January, down from 39.84% in December when the old methodology was applied. Similarly, the rebased core index which excludes the prices of volatile agricultural produce and energy stood at 22.59% on year in January, down from 29.28% in the month before. The broader trend shows that inflation has climbed sharply as a result of moves by President Bola Tinubu to end costly subsidies and devalue the local naira currency. Inflation can be caused by a variety of factors, such as an increase in production costs, a decrease in the supply of money, or an increase in government spending. When the cost of goods and services goes up, each unit of currency buys fewer goods and services; therefore, inflation reflects a reduction in the purchasing power of money.

There are different views on inflation, Inflation can be seen as the increase in prices of all commodities and services in an economy, it is also a decline in the purchasing power of any given currency, inflation also occurs when the government of a nation resorts to financing its deficit for fiscal activities, this is because the government through the Central Bank may print extra money to finance that deficit. The reduction in the standard of living due to high inflation reduces the purchasing power and impacts the low-income groups and further impairs inequality in the society (Ewubare & Onuchukwu, 2022).

Empirical Review

Adepoju (2020) investigated new seaport development-prospects and challenges: Perspectives from Apapa and Calabar Seaports. The purpose of the study was to examine and analyze the efficiencies of the Apapa and Calabar seaports in order to determine the need for any investment in seaport development. Descriptive analysis and stochastic frontier analysis (SFA) were used to examine seaports' challenges and determine the efficiency of the ports. Secondary data and responses of the stakeholders and shipping companies were collected through 2008–2017 Real Gross Domestic Products of the selected seaports and a well-structured questionnaire. The study found draught level cost of shipment ease of access to industries and condition of other modes of transportation as major challenges linked to the Calabar Seaport but found the Lagos Apapa seaport quite efficient. The study recommended that investment decisions to build a new seaport or dredge to upgrade the existing ones should be analyzed carefully as demand should be the driving force for new port establishment: when a port cannot generate enough traffic it may not yield returns on investment as expected.

Ndikom et al. (2018) investigated the influence of time on seaborne oil trade in Nigeria. The study used the statistical tools of trend analysis simple regression analysis and independent sample t-test to analyze the data obtained. The study found that there is a significant difference between the export oil trade and import oil trade. The difference favours sea borne Oil trade indicating that more Oil trade has been handled/facilitated by the seaports over the time period covered in the study than containerized trade.

Bensassi et al., (2019) empirically examine the effect of FDI inflows into Nigeria on real gross domestic product (RGDP) growth and how these external inflows can bring about achieving goal-of mobilizing additional financial resources for developing countries from multiple sources. The study found that labour quality has a positive and significant effect on RGDP in line with theory. Omodero and Alpheaus (2019) carried out a study on the effect of foreign debt on the economic growth of Nigeria. The regression results indicate that foreign debt exerts a significant negative influence on economic growth while foreign debt servicing has a strong and significant positive impact on economic growth. Oladimeji and Muhammed (2017) investigated the effect of international business on SMEs growth in a competitive environment particularly Nigeria. It was also revealed that the exchange rate has a significant effect on SMEs growth in Nigeria and the level at which exchange rate affects SMEs growth is relatively high.

Yakubu and Akanegbu (2018) examined trade openness and economic growth: Evidence from Nigeria. The study used multiple regression of ordinary least square estimation. The study findings revealed that trade liberalization did not cause growth during the period of the study. Osabohien et al., (2019) investigated the impact of agricultural export on Nigeria's economic growth. The results from the ARDL technique revealed that agricultural exports significantly affect Nigeria's economic growth this suggests that a 1percent increase in agricultural export will boost economic growth in Nigeria by approximately 25 percent.

Onuorah (2018) examined trade liberalization and economic growth in Nigeria. The results/findings revealed that the independent variables: DOP, INF, FDI, BOT and NEXP have positive significant impact on GDP while EXR and BOP shows a negative impact.

Osidiye et al., (2018) assessed the impact of Trade Liberalization on some selected manufacturing sectoral groups. The results of analysis led to the conclusion that trade liberalization does not have significant impact on FBT, CKM and BM in Nigeria. FDI is positively signed and thus have direct impact on the three sub-sectors. Agbo et al., (2018) reviewed the impact of international trade on the economic growth of Nigeria in Enugu Nigeria. The results of the study showed that there is a significant impact of export trade on the Nigerian economic growth. The study also revealed that there is no significant impact of import trade on the Nigerian economic growth.

Effect of International Maritime Trade on Inflation Rate

Moreover, Lloyd and Odiegwu (2019) observed that there is a positive static relationship between liner shipping liberalization and real Inflation Rate by using Granger causality and Static and Dynamic Regression analytical models. In addition, Lloyd and Odiegwu (2019) indicated that there is a positive and vital effect on liner shipping and Inflation Rate by applying the open international maritime trade strategies. For the data collected to analyze the relationship between the variables the period between 2000-2018.

Likewise, Şeker (2020) went further to conclude that Inflation Rate and linear shipping connectivity have a significant positive impact on exports in the EU and Turkey. The researcher applied his research to the panel time series model and use the data of exports liner shipping connectivity and GDP for European countries and Turkey covering the period between 2004 and 2017.

Nze et al., (2018) views the concept of ship turnaround time measured in hours or days as the operational indicator of Unemployment Rate which measure the time at which a vessel leaves the port completely i.e. the difference between the arrival time of vessel at the port and the departure time of vessel from the port. Apparently, this indicator measures how time efficient a port/terminal is when rendering services to vessels i.e. loading and discharging (Nze et al., 2018; Somuyiwa & Ogundele 2015).

Similar studies by Eniola et al., (2014) and UNCTAD (2019) view ship turnaround time as the aggregate of the times a vessel spent in port commencing from when the vessel arrived at the port got handled (discharged or loaded) at the berth and departed the port. From the foregoing it is viewed that ship turnaround time for a given period of time t (STRT $_t$) is a function of the time the ship spends waiting for berth (AWB $_t$) in days or hours and the time she spent at berth being worked (TAB $_t$) in days/hours. That is: $STRT_t = AWB_t + TAB_t$. This can be determined and recorded each day vessel is worked on in the port.

However, port statistical reports express this as annual figures representing the average STRT $_t$ figures per annum. UNCTAD (2019) observes that the ship turnaround time is a key economic performance indicator and indicator of trade efficiency that determines connectivity and trade costs. According to UNCTAD (2019) each hour of ship time saved in a port helps ports carriers and shippers save money on port infrastructure investments capital expenditures on ships and inventory holding costs of merchandise goods. These cost savings achieved through low ship turnaround time in ports is transferred to the prices of imported finished goods and export raw materials in the various economies to bring about a multiplier effect that reduces export duty rates and improves the living standard of the general society.

Available empirical evidence notes the existence of negative consequences of high ship turnaround time in Nigerian ports. For example, studies by Monday et al., (2021) carried out a study on the assessment of Inflation Rate in Eastern Nigeria ports. The study found that there was a decline in the number of vessels that called at the port in 2018 by 2.72% when compared to the previous year. It also notes that long turnaround time in the ports is culminating in serious challenges of port congestion high Unemployment Rate and further linked to the inadequacy of port facilities infrastructure and superstructure. The implied economic implications of the inefficiencies according to Monday et al. (2021) is that most shippers will prefer to call at other ports within the region with less congestion better port facilities and sophisticated cargo handling equipment. The study therefore hypothesizes that: Ho1, Ho2 and Ho3: Oil Trade, Non-Oil Trade and Containerized Trade have no significant effect on inflation rate in Nigeria.

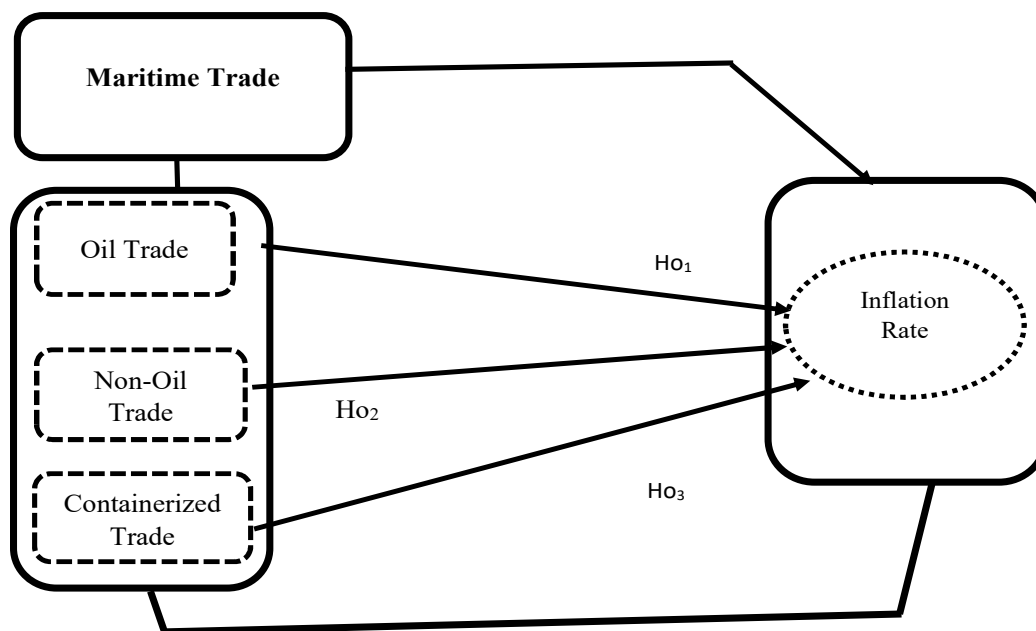


Figure 2: Operationalized Framework of the Effect of Maritime Trade on Inflation Rate in Nigeria (1990-2023)

Sources: UNCTAD, (2024a). Review of Maritime trade review of countries
[https://unctad.org/system/files/official-document/rmt2023_ch7_en.](https://unctad.org/system/files/official-document/rmt2023_ch7_en;);

Nwamuo C. (2019). Impact of International Trade on Economic Growth: The Nigerian Experience. *European Journal of Business and Management* 11 34.

3. METHODOLOGY

Research Design

Research design is the blueprint that guides the researcher in acquiring and generating necessary data for the study (Akujuru & Enyioku 2018; Saeed et al. 2021 and Odiegwu & Zeb-Obipi, 2023). So, this study adopted the

ex-post facto research design which requires the usage of historical data to forecast future trends employing regression techniques. The focus of an ex-post facto research design is to effectively explain the characteristics of a population or a social phenomenon in the past (Akujuru & Enyioku 2018).

Method of Data Collection

Secondary sources of data were used as the main data collection sources in which accuracy, availability, adequacy, authority, scope, suitability and sources of data were considered for relevance. So, the relevant data for this study were collected from the annual reports and accounts of Nigerian Ports Authority, National Bureau of Statistics and Central Bank of Nigeria Annual Statistical Bulletins of the various years in question from their official website. The data collected were from the period of 1990-2023.

Operational Measures of Variables

There are two major variables in this study — Maritime trade (MT) and the Inflation Rate was used to measure the dependent variable.

Model Specification

This research work adopts the model of Odiegwu and Enyioko (2022a) and Chang et al. (2020) with slight modifications and blending (for example; real gross domestic products and inflation rate, unemployment rate, foreign exchange rate and containerized trade). The researchers expressed economic performance indicators as a function of Maritime trade (MT).

Their models are stated thus:

$$\text{INFR} = \beta_0 + \beta_1 \text{OTR} + \beta_2 \text{NOTR} + \beta_3 \text{CTR} + U_t \text{ -----(1)}$$

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + e \text{ -----(2)}$$

$$\text{INFR} = f(\text{OTR}, \text{NOTR}, \text{CTR})$$

Where;

INFR = Inflation Rate

OTR = Oil Trade

NOTR = Non-Oil Trade

CTR= Containerized Trade

Apriori Expectation

The apriori expectations adopted the findings of Odiegwu and Enyioko (2022a); Chang et al. (2020); Agbo et al. (2018) which all stated a positive significant effect of maritime trade on economic performance variables/parameter indicators. Under this model testing, the descriptive and stationarity testing were done on all the variables and apriori reasoning, that the economic performance indicators will flow in the same direction as maritime trade (Lloyd & Odiegwu, 2019; Nwaogbe et al. 2020).

Techniques of Data Analyses

The data generated/collected was subjected to analysis. This study applied ARDL and ECM methods of estimation. The statistical programme tool used to do the analyses was Eviews 10. Several data analyses techniques were employed for the purposes of analyzing the collected data set and drawing conclusions based on them. The following analytical techniques and steps were followed:

Test for Stationarity

In carrying out this research work, it is important to test the stationarity properties of the time series. It has been observed of late that the body of statistical estimation theory is based on asymptotic convergence theorems which assume that the data are stationary and do not have mean reverting characteristics. In real life and with time series data, the asymptotic assumption most often does not hold. This implies that the data are found to be non-stationary as opposed to stationarity assumption. The problem of stationarity lies with the fact that spurious regression commonly arises where the non-stationary series are used. Using the Augmented Dickey Fuller (ADF) Test (Fuller, 1976; Dickey and Fuller, 1979) the model. The Philip Peron (1988) test (PP) is different from the ADF test in that it makes provision for a drift term, time trend or structural break or shifts.

Test for Serial Correlation

In a time, series or panel data model, this is correlation between the errors in different time periods. A series is said to be serially correlated where the data are correlated across time and the errors arise from adjacent time periods.

The Durbin-Watson (DW) Statistic: The Durbin-Watson (DW) statistic is a test used in regression analysis to detect autocorrelation (serial correlation) in the residuals, checking if errors from one period predict errors in the next, with values from 0 to 4.

The Breusch-Godfrey Statistic: This is a joint test for autocorrelation that will allow examination of the relationship between the mean of the error term and its lagged values at the same time.

4. RESULTS

Presentation of Data

Time series data on annual oil trade, non-oil trade, containerized trade, real GDP, inflation rate, unemployment rate and foreign exchange rate from 1990 to 2023 used for this study are presented below:

Table 1: Time series data on annual oil trade, non-oil trade, containerized trade, real GDP, inflation rate, unemployment rate and foreign exchange rate for Nigeria covering the period from 1990 – 2023.

Year	Oil Trade Billion M/T	Non-Oil Trade Billion M/T	Containerized Trade (Per unit) TEU	Inflation Rate (%)
1990	112699.60	42904.40	123101	7.36
1991	124630.30	86393.30	136230	13.01
1992	220945.40	127817.50	152791	44.59
1993	254914.90	129484.60	135342	57.17
1994	243059.80	125788.20	111300	57.03
1995	1083391.20	622397.90	196888	72.84
1996	1448394.60	423775.40	199844	29.27
1997	1379401.90	707977.40	236683	8.53
1998	893640.70	695634.70	286657	10.00
1999	1381138.70	670346.80	344354	6.62
2000	2141718.09	789027.60	344229	6.93
2001	2077052.08	1149082.1	483223	18.87
2002	2011155.83	1245717.1	545797	12.88
2003	3392032.26	1776089.4	588593	14.03
2004	4807586.91	1782239.9	513954	15.00
2005	7937877.86	2109513.2	575242	17.86
2006	7901768.64	2531431.3	637055	8.23
2007	8878727.22	3342983.7	431950	5.39
2008	11177365.98	4803508.0	612982	11.58

2009	9174200.04	4912775.8	653584	12.54
2010	13057662.52	7117787.9	685937	13.74
2011	17366751.38	8865778.2	839977	10.83
2012	17324246.83	7581636.0	880597	12.22
2013	16561219.19	8140219.1	992666	8.50
2014	14222131.08	9278810.2	1063486	8.05
2015	9909705.44	10011521.	939379	9.01
2016	10563230.42	7752748.3	808587	15.70
2017	15528695.64	9264293.4	822706	16.50
2018	20968131.07	11184309.	775842	12.10
2019	20238224.32	20122277.	344354	11.40
2020	13775162.11	19357622.	344229	13.25
2021	23385521.96	18773484.4	483180	16.95
2022	34067954.98	20298725.9	545797	18.85
2023	44293666.72	24596787.7	588596	24.66

Source: Nigerian Port Authority (NPA), Nigerian Shippers Council (NSC), Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS) and World Development Indicators (WDI)(1990-2023)

The descriptive statistics which summarize and organize the characteristics of the variables are presented in table 2 below:

Descriptive Statistics

Table 2: Summary of Descriptive Statistics of the Variables

	OTR	NOTR	CTR	INFR
Mean	9938353.	6188850.	512503.9	18.27912
Median	8408303.	2937208.	529875.5	12.94500
Maximum	44293667	24596788	1063486.	72.84000
Minimum	112699.6	42904.40	111300.0	5.390000
Std. Dev.	10326430	7046017.	273989.7	15.90238
Skewness	1.427041	1.194902	0.203042	2.180516
Kurtosis	5.184774	3.337017	2.043747	6.855680
Jarque-Bera	18.30195	8.251724	1.529041	48.00357
Probability	0.000106	0.016150	0.465557	0.000000
Observations	34	34	34	34

Source: Author's computation using E-views software (2025)

Table 2 reveals that oil trade has a mean value of 9938353, a minimum value of 112699.6, a maximum value of 44293667, and a standard deviation of 10326430, indicating that the data is dispersed around its mean because the standard deviation is greater than the mean value. Correspondingly, the mean value and standard deviation of non-oil trade are 6188850, and 7046017 respectively which showed that the data is scattered around its mean as the standard deviation is greater than the mean value. Contrariwise, the descriptive statistics revealed that containerized trade has a mean value of 512503.9, minimum value of 111300, maximum value of 1063486 and a standard deviation of 273989.7 implying that the data is convergent to its mean value because the standard deviation is lower than the mean value. In the same manner, the descriptive statistics for inflation rate, mean value of 18.27912 the corresponding standard deviation of 20455.36 indicates that their data are centered around their respective mean values.

Furthermore, the distribution of data for all the variables (oil trade, non-oil trade, containerized trade and inflation rate) showed they are skewed to the right of the normal distribution curve given their positive skewness values. Additionally, the kurtosis value for non-oil trade is slightly greater than 3 implying that their curves have similar kurtosis to a normal distribution. Also, the kurtosis values for oil trade and inflation rate are all higher than 3, indicating that their curves are more peak. On the other hand, containerized trade has kurtosis value below 3, which showed that the curve is less peak. Furthermore, the probability values of the Jarque-Bera statistics revealed that containerized trade and non-oil trade, are normally distributed at 5 percent significance level while oil trade, inflation rate and foreign exchange rate are not.

The trends of the series which spanned through the study period (1990-2023) are presented to provide some insights into the data distribution as presented in Figure 1- 2.

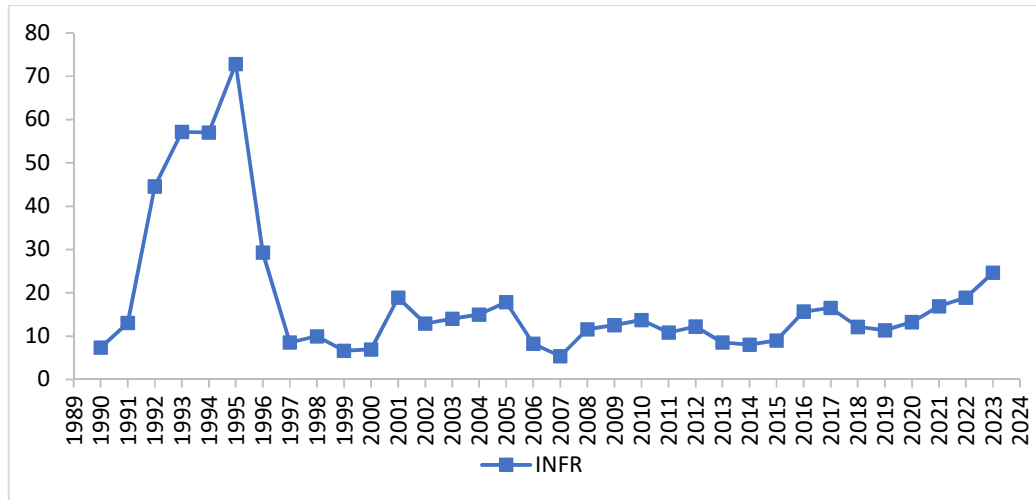


Figure 1: Trend of Inflation Rate in Nigeria (1990-2023)

Source: CBN Statistical Bulletin (1990-2023)

Since 1990, Nigeria's inflation rate has exhibited significant fluctuations, reflecting a mix of economic policies, external shocks, and internal challenges. As observed from the graph, the rate of inflation increased from 7.36 percent in 1990 to the maximum level of 72.84 percent in 1995 which could be attributed to economic mismanagement and the implementation of structural adjustment programs. A decline in inflation was observed from the Mid-1990s to 2000s with a record low of 5.39 percent in 2007, this was influenced by tighter monetary policies and improved fiscal discipline. However, global economic crises and domestic issues like insecurity and volatile oil prices have periodically disrupted this stability, resulting in persistently high inflation rates in recent years.

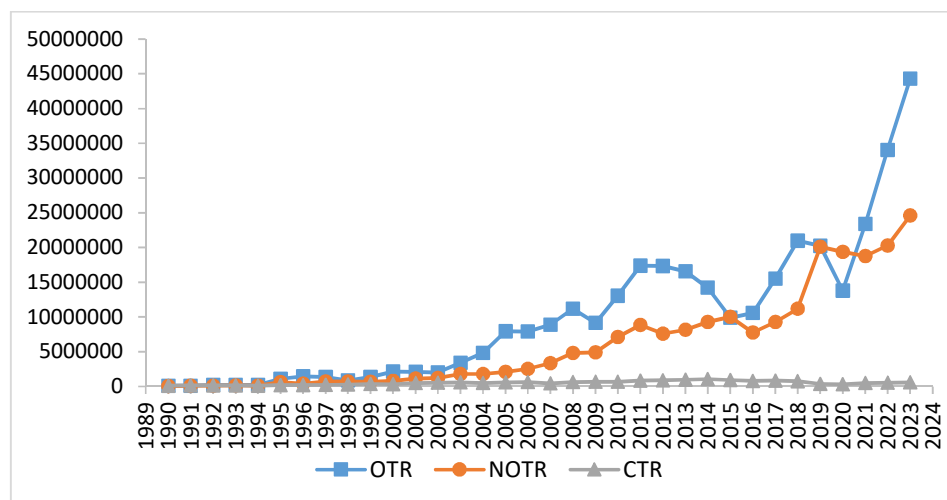


Figure 2: Trends of Oil Trade, Non-Oil Trade and containerized trade in Nigeria (1990-2023)

Sources: Nigerian Ports Authority (NPA), Nigerian Shippers Council (NSC) and CBN Statistical Bulletin.

As observed from the graph in Figure 2, the volume of oil trade in Nigeria was 112699 billion M/T in 1990 and increased to 1448394 billion M/T in 1996 and declined to 893640 billion M/T in 1998. It rose from 2141718 billion M/T in 2000 to 11177365 billion M/T in 2008 and by 2018 stood at 20968131 billion M/T in 2018. The volume of oil trade plunged to 13775162 billion M/T in 2020 and increased to 23385521 billion M/T in 2021 and followed an upward trend since then. The upward and downward trend of oil trade in Nigeria may be due to external factors like global oil price volatility and demand, as well as internal issues like oil theft, pipeline sabotage, and infrastructure challenges. These issues impact production and lead to inconsistencies in export volume and revenue.

Since 1990, Nigeria's non-oil trade has shown a complex trend, characterized by both growth and decrease. The graph clearly showed that non-oil trade trended upwards from 1990 where it stood at 42904 billion metric tons to 622397 billion M/T in 1995 and then fluctuated downwards to 423775 billion M/T in 1996. The non-oil trade in Nigeria experienced an upward trend in the early 2000s and increased to 10011521 billion M/T in 2015. It suddenly declined to 7752748 billion M/T in 2016 and followed an upward swing to 20122277 billion M/T in 2019 and then declined in 2020 to 19357622 billion M/T and in 2021 to 18773484 billion M/T but rebounded in 2022 to 20298725 billion M/T and rose to 24596787 billion M/T in 2023. The oscillations in Nigeria's non-oil trade since 1990 may be attributed to domestic policies, global economic shock, exchange rate fluctuations and over-reliance on oil which has hindered development of other sectors like agricultural and manufacturing.

Furthermore, containerized trade in Nigeria have had mixed trends with periods of both increase and decrease. It swung upward as it increased from 123101 twenty-foot equivalent unit in 1990 to 152791 per unit TEU in 1992 and then saw a decline in 1994 where it fell to 111300 per unit TEU. However, it followed an upward trend afterwards and by 2006 rose to 637055 per unit TEU and fluctuated downwards again in 2007 to 431950 per unit TEU. Containerized trade in Nigeria assumed an upward trend from 2008 to 2014 where it stood at 1063486 per unit TEU and experienced a plunge from 2015 to 344229 per unit TEU in 2020 and has been on the upward trend since then. The variations in containerized trade in Nigeria may be driven by global commodity demand, energy prices, poor infrastructure, international trade agreements and policies. These factors affect import and export volumes, lead to volatile freight rates and inefficiencies in cargo handling.

Data Analysis

Unit Root Test

Unit root test is carried out to confirm the stationarity of the variables examined in the model to ensure that the risk of running a spurious regression is avoided as much as possible and to guide against the loss of vital information linked to the random walk of the modeled variables (Granger & Newbold, 1976). Procedures of the Augmented Dickey-Fuller (ADF) unit root analysis were applied and the outputs are presented in Table 3.

The result of the augmented Dickey-Fuller test of stationarity at level and first difference are presented in Table 3:

Table 3: Unit Root Test Results

Variables	ADF Test Statistics				Integration Orders
	Level	Critical Value at 5%	1st_diff.	Critical Value at 5%	
$\log infr_t$	-2.4249	-2.9540	-4.7459	-2.9604	I(1)
$\log otr_t$	-1.8064	-2.9540	-5.3865	-2.9571	I(1)
$\log notr_t$	-2.1954	-2.9540	-8.0618	-2.9571	I(1)
$\log ctr_t$	-1.9096	-2.9540	-5.6538	-2.9571	I(1)

Source: Author's compilation from output of E-Views 10 (2025)

The unit root test results revealed that inflation rate (INFR), oil trade (OTR) and non-oil trade (NOTR) and containerized trade (CTR) were non-stationary in their level form but became stationary at first difference that is integrated of order one I(1). Therefore, Johansen cointegration test is most appropriate in testing for co-integration amongst the variables of interest in our model (Inflation rate).

Inflation Rate Model

The test for long run relationship (s) amongst the utilized variables was conducted by applying the Johansen cointegration test. Details of the result are reported in the table below.

Table 4.

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace		0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.557291	53.07620	47.85613	0.0149
At most 1	0.387498	27.00124	29.79707	0.1016
At most 2	0.227074	11.31473	15.49471	0.1929
At most 3	0.091548	3.072432	3.841466	0.0796

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's compilation from output of Eviews 10 (2025)

The result from table 4 indicates one cointegrating equation between the regressand and the regressors as apparent in the Trace Statistics value being greater than the critical value at 0.05 significance level. This outcome establishes the existence of a long run relationship amongst the variables examined in the model and therefore provides the empirical basis for estimating the error correction model.

Estimation of The Error Correction Model (ECM) For Inflation Rate Model

The model was estimated using an Error Correction Model (ECM) which is applicable when the variables are cointegrated. ECM captures both the long-term equilibrium and the short-term dynamics of how variables return to that equilibrium after a deviation. The result is reported in Table 5.

Table 5: Parsimonious ECM Estimates (Sample: 1990-2023)

Dependent Variable: LOGINFR				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.084050	0.094958	-0.885125	0.3849
D(LOGINFR(-1))	0.467528	0.158679	2.946375	0.0070
D(LOGOTR)	0.301891	0.257548	1.172174	0.2526
D(LOGNOTR)	0.192372	0.285395	0.674056	0.5067
D(LOGCTR)	-0.147801	0.318783	-0.463641	0.6471
ECM(-1)	-0.679835	0.155312	-4.377210	0.0002
R-squared	0.550887	F-statistic		4.205527
Adjusted R-squared	0.419896	Prob(F-statistic)		0.003735
Durbin-Watson Stat	2.026889			

Source: Author's computation from output of Eviews 10 (2025)

The short run results from table 4.9 above revealed that Nigeria's inflation rate in the past period has a positive and statistically significant effect on the current inflation rate at 0.05 significance level given the corresponding probability value of 0.0070. This implies that a percent increase in the inflation rate from the past time period will push up inflation rate in Nigeria in the current period by 0.467528 percent.

The estimated coefficient of oil trade has a positive on inflation in Nigeria. This indicates that one percent increase in oil trade will lead to 0.301891 percent increase in inflation rate. Also, the positive relationship between oil trade and inflation rate was found to be insignificant at 0.05 level.

The findings also showed that non-oil trade in the current period has positive and non-significant effect on inflation rate which indicates that a percentage increase in non-oil trade in the current period leads to an increase in inflation rate by 0.192372 percent.

Furthermore, the findings revealed that containerized trade has a negative effect on inflation rate in Nigeria suggesting that one percent rise in containerized trade reduces inflation rate by 0.147801 percent. However, the negative effect of containerized trade on inflation rate in Nigeria was found to be non-significant determination (R^2) is estimated at 0.5508 which implies that 55 percent of the variations in inflation rate are explained by the independent variables examined in the model (oil trade, non-oil trade and containerized trade).

Also, the Durbin-Watson Statistics value of 2.02 falls within the acceptable range and implies that there is no autocorrelation in the residuals of a regression model. Additionally, the probability value of the F-statistics (0.0037) indicates that the independent variables are collectively significant in explaining changes in inflation rate in Nigeria. Furthermore, the error correction coefficient is negative (-0.6798), rightly signed and highly significant given the associated probability value of 0.0002 suggesting any deviation from the long-run equilibrium is corrected at a speed of 67.9 percent.

Post-estimation Tests

Inflation Rate Model

As

Table 6: Inspection of CLRM Assumptions for Inflation Rate Model

Tests	CLRM Problem	Test Stats.	Prob.	Decision
Breusch-GodfreyLM	Serial Correlation	0.2778	0.8703	Serial independence
Breusch-Pagan-Godfrey	Heteroscedasticity	3.8153	0.8008	Constant Variance
Jarque Bera	Normality Test	1.1180	0.5717	normally Distributed
Ramsey RESET	Model Specification	0.1044	0.7494	Model is not misspecified
CUSUM	Stability	-	-	Model is Stable

Source: Author's computation from output of Eviews 10 (2025)

presented in Table 6, the Breusch-Godfrey Serial correlation LM test result shows there is complete absence of

autocorrelation in the estimated stochastic term. The test illustrated that, the chi-square statistics value is 6.2039 with a probability value of 0.1021 for model 1, 0.2778 with a probability value of 0.8703 Hence, the null hypothesis is accepted at 0.05 significance level. This implies that serial autocorrelation is not present in the stochastic term.

The heteroscedasticity analysis based on the Breusch-Pagan-Godfrey method showed that there is no existence of heteroscedasticity in the stochastic term as the null hypothesis is accepted. The chi-square value 12.459 and probability value of 0.2554 for model 1, 3.8153 led to the study upholding the null hypothesis.

The Jarque-Bera Normality test results indicate that their residuals are normally distributed. Thus, the null hypothesis is not rejected as the Jarque Bera test statistic values in the examined models exceed 0.05 significance level.

The Ramsey's reset test result shows that there is no functional or specification error, given the F-Statistic of 0.52116 and a probability value of 0.4791 for model 1, 0.1044 and 0.7494 for model 2, 0.1962 and 0.6672 for model 3 and 0.0047 and 0.9461 for model 4 respectively

The stability test conducted using the cumulative sum (CUSUM) indicates that the parameters are stable and no structural breaks exist in the series. Figure 4.5 - 4.8 show that the respective plots of the cumulative sum (CUSUM) lie within the 5 percent critical level.

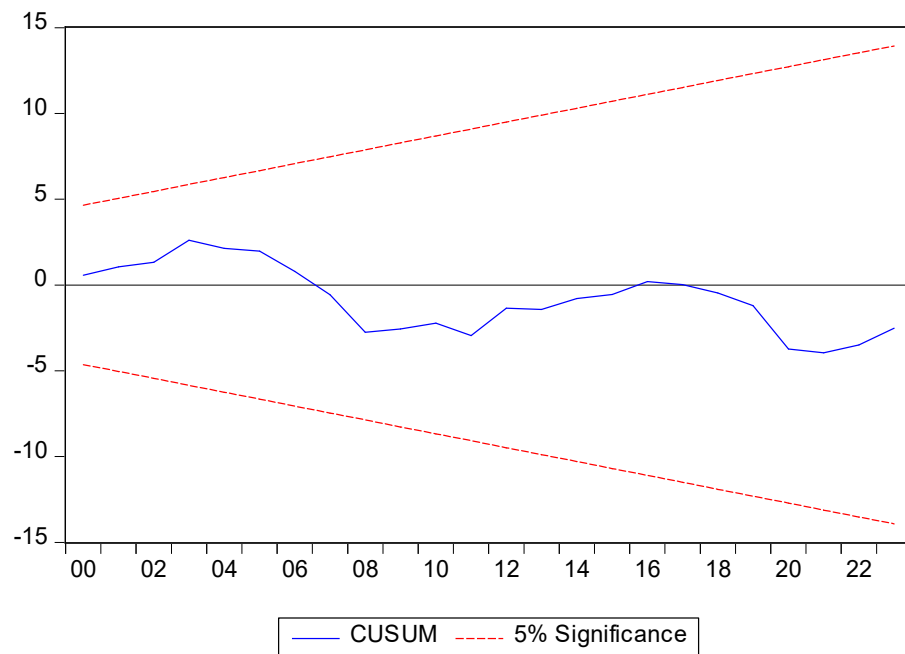


Figure 3: Plot of Cumulative Sum (CUSUM) For Inflation Model

DISCUSSION

The findings from investigating the effect of maritime trade on inflation rate in Nigeria covering the period between 1990 -2023 provide essential insights into how the components of maritime trade; oil trade (OTR), non-oil trade (NOTR) and containerized trade affect Nigeria's inflationary rate performance. The empirical results

were discussed to ascertain if the specified objectives of the study were achieved and also link the findings with the theoretical expectations. The findings were equally discussed in line with the stated hypotheses to ascertain if the null hypotheses are to be rejected or not.

Effect of Maritime Trade (Oil Trade, Non-Oil Trade and Containerized Trade) on Inflation Rate in Nigeria.

The ECM short run results showed that oil trade has a positive effect on inflation rate in Nigeria suggesting that one percent increase in oil trade will lead to a rise in inflation rate by 0.30189 percent. This result is in line with empirical findings of Sani et al. (2020) and Zivkov et al. (2019) which revealed that oil trade has a positive effect on inflation. This outcome may be attributed to Nigeria's heavily reliance on oil making its economy vulnerable to fluctuations in oil prices, which have a ripple effect on production costs and the general price level. However, the positive effect of oil trade on inflation rate in Nigeria was found not to be statistically significant given the corresponding probability values of 0.2526. Hence, we fail to reject the null hypothesis and submit that oil trade has insignificant positive effect on inflation rate in the short run.

Additionally, the short run estimated coefficient of non-oil trade revealed it has positive effect on inflation rate in Nigeria suggesting that one percent rise in non-oil trade will lead to increase in inflation rate in Nigeria by 0.19237 percent. This may be due to depreciation of the naira as it leads to higher import costs that ripple through the economy and affect production costs and other supply chain disruptions which result in higher prices of goods and services in Nigeria (Keystone Bank, 2023). Also, oil price shocks affect domestic inflation in countries through both direct and indirect channels: directly through increases in prices of refined oil products, which spill over to the Consumer Price Index (CPI), and indirectly through price changes in goods and services, which utilize oil or oil products as inputs in the production process (Zivkov et al. 2019).

Furthermore, the positive effect of oil trade on Nigeria's inflation rate in the short run was found not to be statistically significant at 0.05 significance level given the associated probability value of 0.5067. Hence, we fail to reject the null hypothesis since the probability value is greater than 0.05. In effect, the findings indicate that changes in non-oil trade does not determines the extent of increase or decrease in Nigeria's inflation rate. Based on the short run result, the study submits that non-oil trade has a non-significant positive effect on inflation rate in Nigeria.

Furthermore, the short run result revealed containerized trade has a negative effect of inflation rate in Nigeria indicating that one percent increase in containerized trade will lower inflation rate by 0.14780. This result deviates from Studies by Uzonwanne, et al. (2020) who found that increased freight transportation cost significantly influences the prices of commodities in the domestic markets. Also, De Souza, Goh, Lau and Tan (2014) opined those challenges of high transportation limit availability rates and accessibility to market commodities, with subsequently effect of commodity price increments and inflation. In addition, the negative effect of containerized trade on inflation rate in Nigeria in the short run was found not to be statistically significant at 0.05 significance level given the probability value of 0.6471. Hence, we fail to reject the null hypothesis since the probability value is greater than 0.05. Based on the short run result, the study submits that containerized trade has a negative and non-significant effect on inflation in Nigeria.

The result of the short run estimate shows that crude oil transport has positive effect on inflation rate in Nigeria. This finding is also synonymous with the long run estimate which highlighted that crude oil transport has positive effect on inflation rate. The estimated coefficients of non-oil transport showed it is consistent with the theoretical expectation of the study Furthermore, the positive effect of crude oil transport on inflation rate in Nigeria was

found to be statistically significant in the short run at 0.05 level as indicated by its associate probability value of 0.0237. Therefore, we reject the null hypothesis and conclude that crude oil transport has a positive significant effect on inflation rate in Nigeria.

Contrariwise, the short run result showed that dry bulk transport has negative effect on inflation rate in Nigeria which indicates that a percentage increase in dry bulk transport will lead to a decrease in real GDP by 0.0105 percent. This outcome is similar to the long run result that shows dry bulk transport has negative effect on inflation rate which may be due to the environmental pollution that affects the normal living conditions of human caused by Marine operations in ports (Zafar & Mohammad, 2018). In addition, the negative effect of dry bulk transport on human development both in the short run and long run was found not to be statistically significant at 0.05 significance level given the probability values of 0.9978 and 0.3880 respectively. Hence, we fail to reject the null hypothesis since the probability value is greater than 0.05. In effect, the findings indicate that changes in dry bulk transport does not determine the extent of increase or decrease in real GDP. Based on the short run and long run results, the study submits that dry bulk transport has negative and non-significant effect on human development in Nigeria.

Furthermore, Mgbomene et al. (2025) found that the short run and long run estimated coefficient of non-oil transport has positive effect on inflation rate in Nigeria which is consistent with a priori expectation of the study. This implies that a one percent rise in non-oil transport increases inflation rate significantly in the short run and long run respectively.

5. Conclusion

Nigeria's maritime trade, particularly containerized and non-oil trade has untapped potential to drive economic development by: reducing inflation rate through good and effective monetary/fiscal policies, creating employment and moderating inflation. Evidently, the study concluded that:

The short run of oil trade has a negative and non-significant effect on inflation rate; non-oil trade revealed a positive and not statistically significant effect on inflation rate; the short run result revealed that containerized trade has a negative and statistically insignificant effect on inflation rate in Nigeria.

In the short run oil trade has insignificant positive effect on inflation rate; non-oil trade has a positive and non-significant effect on the inflation rate; containerized trade revealed a not significant negative effect on inflation rate in Nigeria.

Oil trade has insignificant negative effect on unemployment rate in the short run; contrariwise, oil trade has a negative and statistically significant impact on unemployment rate in the long run; non-oil trade has positive and statistically significant effect on unemployment rate in the long run and containerized trade has negative and significant effect on unemployment rate.

Recommendations

Some of the major policy recommendations of this study are as follows:

To boost oil trade, the policy focus of government should be on increasing domestic production, diversifying the economy beyond oil, and addressing issues like oil theft and insecurity. Specifically, revamping refineries to meet domestic demand, prioritizing exports of refined products.

To promote growth in Nigeria's non-oil trade, government should prioritize agriculture, solid minerals, and manufacturing sectors through increased investment and export grants. Also, government should support indigenous businesses through export promotion strategies, trade openness, domestic protection measures, reducing bureaucratic hurdles and simplify export processes to make it easier for businesses to export non-oil products. This will help generate employment, increase inflation rate and put the country on a part to sustainable economic growth.

To foster containerized trade growth in Nigeria, policies of the government should focus on infrastructure development, technological innovation, and streamlining regulations. This includes investing in modern port facilities, promoting intermodal transportation, and implementing electronic customs procedures. Encouraging digitalization and fostering a more transparent and less corrupt environment are also crucial for attracting investment and ensuring efficiency.

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