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DETERMINANTS OF MARITIME SECTOR PERFORMANCE IN NIGERIA

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ABSTRACT:

This study investigates the determinants of the performance of maritime sector in Nigeria from 2000 to 2022. Specifically, the study examines how gross registered tonnage, cargo throughput, and oil prices affect maritime sector output. The study utilized data sourced from the Central Bank of Nigeria, Nigeria Port Authority, and World Bank statistical database. The study makes used of the descriptive statistics, stationarity, Granger Causality, and ARDL techniques at 5% level. The stationarity test reveals that the variables were stationary at level and first differences necessitating the ARDL F-bond test that validate the existence of long-run form. The ARDL long-run test shows gross registered tonnage and cargo throughput are positive but insignificant to maritime sector output; however, oil price is negative and insignificant to maritime sector output. The study concludes that gross registered tonnage, cargo throughput, and oil prices have a limited impact on the promotion of marine sector output. Therefore, the study recommends that the Nigerian Federal Government should consider hedging its oil price exposures as a means to guarantee a consistent and stable oil price, thereby fostering growth in the marine industry

KEYWORDS:

Output, GDP, CBN, Cargo, Shipping

1.0 Introduction

The marine industry plays a crucial role in the economic growth of nations, which should be taken into account in study. Shipping operations play a crucial role in enabling the efficient movement of large quantities of products between countries, therefore supporting global trade. The maritime industry comprises several elements of shipping operations that guarantee the efficient handling and transfer of commodities between the sea and the inland areas, and vice versa. The shipping industry plays a significant role in global trade, as it has the ability to impact product sales and price fluctuations (Kalouptsidi 2021). The global shipping industry has experienced significant expansion throughout time, mostly driven by the mutually beneficial connection between globalisation and shipping (Mishra 2018).

The shipping trade encompasses the worldwide transfer of products in the maritime sector, and it is projected to experience a 2.4% growth between 2022 and 2026 (UNCTAD, 2021). The global shipping container market was valued at US$9.5 billion in 2021 and is expected to reach US$15.3 billion by 2027 (CISION PR Newswire, 2022). The projections on the expansion of global shipping trade will be contingent upon various factors like protectionism, digitalization, e-commerce, consolidation, and climate change (UNCTAD, 2018). According to the United Nations (2016), marine transit, facilitated by shipping operations, plays a crucial role in supporting global trade and economy. The International Chambers of Shipping (2020) also stated that the shipping industry is a crucial component of the global economy, with a total worth of US$14 trillion in 2019. Matekenya and Ncwadi (2022) found that shipping activities had a considerable and favourable influence on overall trade.

Nevertheless, contemporary shipping operations are exceedingly advanced and necessitate a substantial amount of financial resources. Shipping entails a significant degree of commercial risk. Consequently, the traditional maritime nations offer very advantageous and attractive investment incentives to the shipping industry (Ekpo, 2012). Significantly, investments in the shipping industry do not provide quick profits, which consequently leads to most financial institutions being hesitant to provide loans in this particular sector. Consequently, domestic maritime companies are facing growing challenges in getting loans for ship acquisitions. It is crucial to take into account the issue of concessionary fiscal and monetary incentives that are unavailable to shippers in Nigeria (Njoku, Olowolagba, &Olisa, 2020). This hampers the growth of foreign investment in the Nigerian shipping industry.

A number of research (Michail, 2020; Ekpo, 2012; Owoputi& Owolabi, 2020; Osadume&Okuoyibo, 2020) have investigated the correlation between shipping commerce and economic growth. Currently, none of these studies have examined the elements that impact the success of the marine sector in Nigeria. This study differs significantly from past studies by utilising gross registered tonnage, cargo throughput, and oil prices as key factors in determining the performance of the marine sector. This study aims to examine the impact of registered tonnage, cargo throughput, and oil prices on the production of the maritime sector in Nigeria.

2.0 Literature Review

Shipping commodities both domestically and internationally is made easier by Nigeria's extensive coastline. For the benefit of its more than 200 million inhabitants, Nigeria has access to tremendous marine resources (Onuoha, 2021). According to Atakpa (2021), 34.1% of Nigeria's landmass is comprised of maritime space, which encompasses around 315,240 sqkm of coastline water and 852 km of coastline land. Nigeria possesses twelve nautical miles of territorial waters, twenty-four

nautical miles of the contiguous zone, and two hundred nautical miles of international coastal seas, according to Okoye (2021). There are nine seaports in the country, and they all handle a lot of shipping.

In a report detailing the rise in shares of the world merchant fleet value in 2021, the United Nations Conference on Trade and Development (UNCTAD) ranked Nigeria as the top flag of registration, highlighting the prominence of the country's maritime industry (Dentons, 2022). Furthermore, it is worth noting that Nigeria holds significant importance for both Africa and the world marine economy, according to the International marine Organisation (IMO) (Egole, 2022). Nigeria handles over 80% of the maritime activity on the coast of West Africa, according to Onyenucheya (2022). Over half of Nigeria's GDP comes from maritime exports, which led Atoyebi (2022) to conclude that the sector has achieved global stature in the world market. Now that UNCTAD and the IMO have acknowledged it, Nigeria's maritime industry can undoubtedly dictate the trade volume of African and non-African nations alike. Because it affects the rate of growth in other industries, Nigeria's shipping industry is crucial to the economic liberation of nations. According to Onyenucheya (2022), the Nigerian shipping industry is a veritable treasure that might propel the country's economy to new heights.

According to research by Lane and Pretes (2020), there is a strong correlation between marine dependency and GDP per capita. This suggests that countries with access to the ocean get the benefits of shipping. Consistent with this, a Chinese study by Jiang et al. (2018) indicated that exports significantly affect the trade index along the Persian Gulf and European routes, whereas freight index significantly affects exports along the Southeast Asian and Taiwanese shipping routes. The link between shipping connections and trade has also been proven by researchers including Hoffmann et al. (2017), Lun and Hoffmann (2016), and Fugazza and Hoffmann (2017).

In their study, Osadume and Okwuoyibo (2020) analyse the factors influencing Maritime Trade in Nigeria. The study's findings indicate that maritime trade plays a significant role in fostering economic growth. Njoku, Olowolagba, and Olisa (2020) analyse the impact of shipping trade on Nigeria's economic growth during the period of 1981-2016. The study utilised descriptive, co-integration, and regression methods to analyse each variable. The findings indicate a significant correlation between GDP and external reserves. The findings indicate a significant statistical relationship between GDP and shipping trade. Osadume and Edih (2020) analyse the relationship between port revenue performance and economic growth over the period of 2010 to 2019. The study found that gross registered tonnage had a significant positive impact on financial growth. On the other hand, the operating surplus to working revenue had a negative impact, but it was also substantial. However, the working surplus to cargo throughput had an insignificant effect on financial growth. Osadume and Uzoma (2020) examine the relationship between maritime trade and economic development. The study demonstrates that maritime trade has a significant impact on economic development, with a mutually influential relationship and strong co-integration between the two.

3.0 Methodology

The methodology of ex post facto research design is utilised in this study. This is due to the fact that the researcher was unable to manipulate the data as it was derived from complete events. A dataset including yearly time series data from 2000–2022, covering the research period, is utilised. The 22 observations that make up the dataset were sourced from the World Bank's and the Central Bank of Nigeria's (CBN) statistical databases. Due to the lack of composite data, the sample size is limited to this time period. A number of statistical methods (Descriptive statistics, stationarity, Granger

causality, and ARDL) were employed in this study with a significance level of 5. Our model is changed into: so that we can achieve our goals:

$$LNMSOP = f(LNGRT, LNCGPT, LNOILP) \quad 3.1$$

$$LNMSOP_t = \beta_o + \beta_1 LNGRT_t + \beta_2 LNCGPT_t + \beta_3 LNOILP_t + \mu_t \quad 3.2$$

$\beta_1 > 0$, $\beta_2 > 0$, and $\beta_3 > 0$

Where, MSOP = Contribution of maritime sector to GDP, GRT = Gross registered tonnage, CGPT = Cargo throughput, OILP = Oil price, Ln = Natural logarithm, β_o = Intercept, β_1, β_2, and β_3 = Constant parameters, μ_t = Error term

4.0 Results and Discussion

Table 1: Descriptive Statistics

	LNMSOP	LNGRT	LNCGPT	LNOILP
Mean	10.81183	18.76900	17.91664	3.981134
Median	11.05058	18.71385	18.06921	4.042876
Maximum	12.09032	19.06839	18.25929	4.695468
Minimum	8.852325	18.58798	17.18049	3.187592
Std. Dev.	0.996288	0.144728	0.326065	0.460544
Skewness	-0.547407	0.798539	-0.805944	-0.147585
Kurtosis	2.126235	2.324842	2.322973	2.074197
J-Bera	1.880331	2.881228	2.929195	0.904894
Prob	0.390563	0.236782	0.231171	0.636070
Sum	248.6721	431.6870	412.0828	91.56608
Sum Sq. Dev.	21.83696	0.460816	2.339004	4.666212
Observations	23	23	23	23

Source:E-views Output

LNMSOP, LNGRT, LNCGPT, and LNOILP have their annual averages as 10.81183, 18.76900, 17.91664, and 3.981134, respectively. LNMSOP, LNGRT, LNCGPT, and LNOILP greatest and smallest valuesare 12.09032 and 8.852325, 19.06839 and 18.58798, 18.25929 and 17.18049, and 4.695468 and 3.187592, respectively. LNMSOP, LNGRT, LNCGPT, and LNOILP deviate from their mean by 0.996288%, 0.144728%, 0.326065%,and 0.460544%, respectively. Except for LNGRT which skewed positively (0.798539), LNMSOP, LNCGPT, and LNOILP (-0.547407, -0.805944, and -0.147585, respectively) are skewed negatively. LNMSOP, LNGRT, LNCGPT, and LNOILP are platykurtic since their values (2.126235, 2.324842,2.322973, and 2.074197, respectively) are less than 3. Similarly, the J-Bera shows that LNMSOP, LNGRT, LNCGPT, and LNOILP are normally distributed at 5%, this is because the p-values (0.390563, 0.236782, 0.231171, and 0.636070, respectively) are below 5% level.

Table 2: ADFStationarity Test

Variables	T-Stat @ Level	T-Critical @ level	P-value @ level	T-Stat @ 1st Diff.	T-Critical @ 1st Diff.	P-value @ 1st Diff.	Order of Integration
LNMSOP	-5.060876	-3.004861	0.0005	-	-	-	I(0)
LNGRT	-2.393263	-3.004861	0.1548	-4.989473	-3.020686	0.0008	I(1)
LNOILP	-2.387715	-3.012363	0.1568	-3.375136	-3.012363	0.0240	I(1)
LNCGPT	-2.009094	-3.012363	0.2809	-6.674852	-3.012363	0.0000	I(1)

Source:E-views Output

In exception of LNMSOP, after being differenced once, all the other factors (LNGRT, LNOILP, and LNCGPT) are stationary. This connotes that at their respective stationarity levels, their ADF values were more than their critical values. Additionally, their p-values were smaller than 5% threshold established for this study. Thus, the next thing we do is to make used of the ARDL F-bound to determine the existence of long-run form among the variables.

Table 3: ADFStationarity Test

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LNMSOP)
Selected Model: ARDL(1, 0, 0, 1)

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.596002	10%	2.72	3.77
K	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.672367	10%	-2.57	-3.46
		5%	-2.86	-3.78
		2.5%	-3.13	-4.05
		1%	-3.43	-4.37

Source:E-views Output

The ARDL test shows that the F-stat and t-stat values (4.596002 and -4.672367, respectively) are above the I(1) and I(O) bound values (3.23 and -2.86) and (4.35 and -3.78) respectively. This implies the existence of long-run form among the variables at the 5% level. The next is the examination of the ARDL long-run test result.

Table 4: ARDL Test

Dependent Variable: LNMSOP
Dynamic regressors (1 lag, automatic): LNGRT LNCGPT LNOILP
Fixed regressors: C
Selected Model: ARDL(1, 0, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGRT	0.365080	1.193205	0.305966	0.7636
LNCGPT	1.319079	1.503849	0.877135	0.3934
LNOILP	-0.150029	0.526236	-0.285099	0.7792
CointEq(-1)*	-0.078019	0.016698	-4.672367	0.0003

R-squared	0.655592	Mean dependent var	0.147182
Adjusted R-squared	0.619338	S.D. dependent var	0.079082
S.E. of regression	0.048792	Akaike info criterion	-3.076391
Sum squared resid	0.045232	Schwarz criterion	-2.927612
Log likelihood	36.84030	Hannan-Quinn criter.	-3.041343
F-statistic	18.08356	Durbin-Watson stat	2.394219
Prob(F-statistic)	0.000040		

Source: E-views Output

LNGRT is positive (0.365080) and insignificant (0.7636) to LNMSOP. This suggests that a unit rise in LNGRT will cause LNMSOP to rise by 0.365080 unit. Though LNCGPT is positive (1.319079), it is insubstantial (0.3934) to LNMSOP. This suggests that a unit rise in LNCGPT will cause LNMSOP to rise by 1.319079 units. LNOILP is negative (-0.150029) and insignificant (0.7792) to LNMSOP. This suggests that a unit rise in LNOILP will cause LNMSOP to decline by 0.150029 unit.CointEq(-1) is negative (-0.078019) and significant (0.0003). This reveals that disequilibrium in the short-run are corrected are at a speed of 7.8019% in the long-run.

The Adj-R-sqd of 0.619338 suggests that LNGRT, LNCGPT, and LNOILP explains 61.93% variations in LNMSOP while the remainder of 38.07% are caused by other factors not included in this model. The F-stat (p-val) of 0.000040 and D-W of (2.394219) shows that the model is well-fitted and free from initial autocorrelation respectively.

Table 5: Granger Causality Test

Variables	Obs.	F-stat.	P-values
LNGRT – LNMSOP	22	0.33794	0.5679
LNMSOP – LNGRT		0.70837	0.4105
LNCGPT – LNMSOP	22	0.02220	0.8831
LNMSOP – LNCGPT		7.11566	0.0152
LNOILP – LNMSOP	22	0.19139	0.6667
LNMSOP – LNOILP		0.49459	0.4904

Source:E-views Output

The result reveals no support from any of the determinants (LNGRT, LNCGPT, and LNOILP) to maritime sector output (LNMSOP). This connotes that for the period under investigation, maritime sector performance is not supported by any of the outlined determinants. However, LNMSOP promotes LNCGPT. After this, we carryout the post estimation test.

Table 6: Post-Estimation Test

Test	F-Statistic	Prob.
Autocorrelation	1.266081	0.3123
Heteroskedasticity	2.602820	0.1232

Source:E-views Output

The autocorrelation and heteroskedasticity p-values (0.3123 and 0.1232, respectively) shows the absence of autocorrelation and heteroskedasticity in the model.

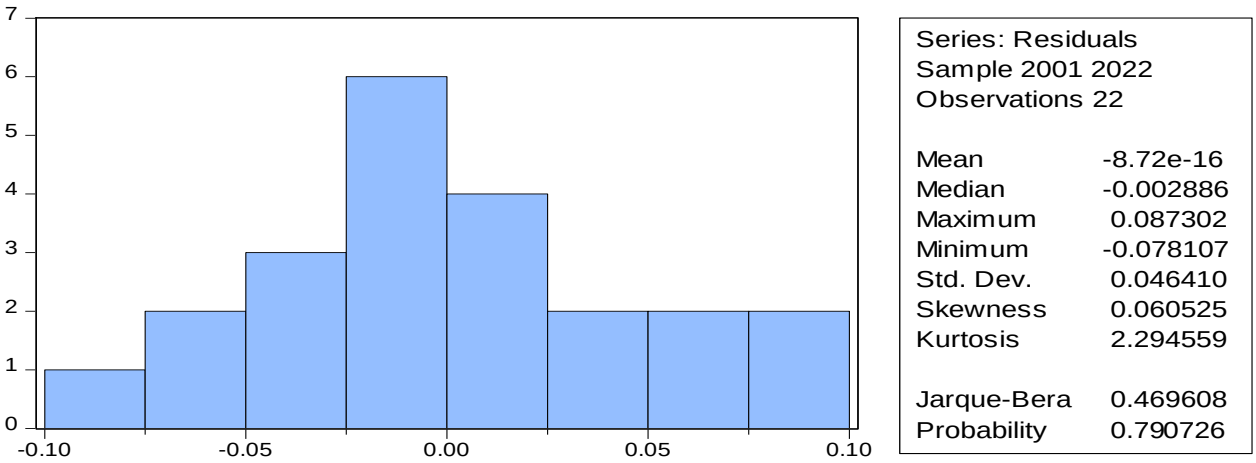

Figure 1: Normality Test

The J-Bera p-value (0.790726) and the bell-shaped curve suggest that the model is normally distributed at the 5%.

Discussion of Findings

The cargo throughput has a beneficial impact on the output of the maritime sector, albeit it is not significant. This indicates a positive correlation between cargo throughput and maritime sector output; however, the relationship is not significant. The lack of significant link can be attributed to the lengthy amount of time it takes for vessels to complete their journeys and the increased fees imposed on these vessels at ports, which in turn impacts the overall production of the maritime industry.
The gross registered tonnage has a positive impact on the output of the maritime sector, albeit the effect is not significant. This implies that the expansion in gross registered tonnage will require an increase in output from the maritime sector; however, this increase is not large. This is due to the sporadic transportation of commodities from Nigeria to other nations, stemming from its dependence on natural resources. Furthermore, the underutilization of shipping transit as a method to foster the growth of the Nigerian economy.

The impact of oil price on maritime sector output is both negligible and statistically insignificant. This indicates that there is a negative correlation between the increase in oil prices and the output of the maritime sector. The rise in oil prices is offset by the significant inflation and devaluation of the Nigerian currency against the US dollar, resulting in a decline in the production of the marine industry. According to Jibrin (2020), a significant increase in oil prices will result in an economic shock for a country like Nigeria, which heavily depends on imports.

5.0 Conclusion and Recommendations

We investigated the determinants of the performance of maritime sector in Nigeria from 2000 to 2022. Specifically, the study examines how gross registered tonnage, cargo throughput, and oil prices affect maritime sector output. The study makes used of the descriptive statistics, stationarity, Granger Causality, and ARDL techniques at 5% level.The study concludes that there is no significant impact of gross registered tonnage, cargo throughput, and oil prices on the production of the marine sector in Nigeria.

According to this, the study suggests that the Federal Government of Nigeria should consider hedging its oil price exposures as a means to guarantee a consistent and steady oil price, hence stimulating activity in the marine industry. In order to enhance Nigeria's gross tonnage capacity, it is imperative for the federal government to implement policies that prioritise the Nigerian Sovereign Investment Authority (NSIA). This will effectively stimulate port rehabilitations and transportation networks.

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