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Determinants of Imports and Exports in Nigeria: Using Seemingly Unrelated Regression

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Abstract: *The study investigated the determinants of imports and exports in Nigeria. Data for the study was drawn from 1981 to 2023 and employed the Seemingly Unrelated Regression, in order to correct the problem of correlation between the error terms in the imports and exports equations. The finding showed that economic growth, population, oil revenue and trade openness exerted statistical impact on the imports. Similarly, the finding of the study showed that inflation rate, interest rate, trade openness, economic growth, population, oil revenue, and foreign exchange reserve have significant impact on the exports. Moreover, the finding showed that economic growth, population and oil revenue exerted different impact on exports and imports during the period under study. Lastly, the findings showed that sudden shock in the imports spill over to the exports in the period under study. The study therefore recommended that there is need to design effective policy that help in mitigating the spill- overs of effect from imports side to exports side.*
Keywords: imports, exports, Nigeria, seemingly unrelated regression

INTRODUCTION

The advent of international trade has led to all countries exploring the opportunities of importing goods and services that they are in need of and exporting goods and services they have in surpluses. These two fundamental components of international trade; that is, imports and exports are means by which countries of the world meet the needs of their citizens and further move forward technologically (Kumar, 2016). They are also the sources of foreign currency, capacity building, job creation, economic growth, and overall development. Growth and development cannot take place in a nation without the two (Kumar, 2016; Irzawati et al., 2024, Yudha et al., 2024; Rafiqui

et al. 2025). As important as the two fundamental components, they can be sources of challenges such as trade imbalances and over- reliance on international markets (Irzawati et al, 2024).
For instance, global market fluctuations, which create vulnerabilities can emerge as a result of an economy pursuing the policy of wanting to be self- sustaining through over- reliance on exports (Yudha et al. 2024; Rafiqui et al. 2025). At same time, imports can make country to be far away from self- sufficiency and depend on foreign markets (Irzawati et al. 2024). The multifaceted nature of these two fundamental components of international trade calls for their understanding because such provide the balanced approach that can be helpful in managing the economy and enhance long- term economic stability. One way of understanding imports and exports is to investigate their joint determinants, which are central to crafting of policies necessary for maximising benefits and mitigating risks associated with global trade (Irzawati et al., 2024).

Studies are rampant on the trade balances, and performances of imports and exports, especially in the emerging and developing economies. Studies such as Genc and Basar (2017) in Turkey; Huang (2024) in China; Arya (2024) in Nepal; Doan (2025) in Vietnam; and Islam et al. (2025) in Pakistan have examined some of the determinants of imports and exports. Islam et al (2025), which is one of the recent studies on determinants of imports and exports revealed that inflation rate, currency fluctuation and FDI were important factors. While the study by Aryal (2024) showed that real GDP, consumer price index and exchange rate are necessary factors influencing the imports and exports in Nepal. Also, considering Indonesia, Philippines, Malaysia and Thailand, Sieng et al. (2020) found out that imports and exchange rate are crucial determinants of trade balances in these economies.

Similar study like Islam et al. (2017) is necessary in Nigeria as a result of the significant macroeconomic fluctuations currently experience. Exchange rate volatility, changes in trade policies, and shifts in global demand are some of the macroeconomic fluctuations affecting the Nigerian economy, and call for updated empirical evidence on the determinants of trade. It is important to understand how variables like GDP, exchange rate, oil revenue, population influence imports and exports. Understanding these determinants help in improving Nigerian trade performance, diversifying exports, and achieving sustainable development.

Despite the availability of rich studies in many of these developing and emerging economies, studies of this nature are rare, especially those that effectively capture the dynamics of Nigerian trade's determinants. In addition, studies, which show that shocks to import can likely occur same time as shocks to exports. Lastly, the studies that treat imports and exports as two sides of the same 'trade balance'. This current study will use these as improvement from previous studies. It is on this basis that this study intend to investigate the determinants of imports and exports in Nigeria.

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LITERATURE REVIEW

Theoretical review

Various theories exist in the literature to explain the determinants of imports and exports. One of the oldest theory on imports and exports is the comparative advantage developed David Ricardo. This theory supports the existence of trade we have today. This theory, according to Sammut-Bonnici et al. (2020), states that production of goods and services in countries of the world are maximised when there is specialisation; and countries should specilaise in goods and services, where they have comparative advantage. Yeung (n.d) adds that comparative advantage is an important concepts as far as international economics is concerned and greatly used when issues relating free trade emerged. This theory is at the core of the neoclassical trade theory and a cornerstone of the economic theory; and is propelled by technology or factor endowment (Costinot n.d). As argue by Yang (n.d), the production cost is the opportunity cost, in which the comparative advantage has its footing. Comparative advantage has been criticised for having assumptions that may not hold in the context of globalisation and environmental sustainability; in additions, the lack of incorporation into the theory issues such as institutional framework and ecological impacts.

Another theory to consider is the Heckscher- Ohlin theory, which Jeyarajah (2025) saw as an extension of comparative advantage because it was proposed as an alternative to it. In line with Jeyarajah (2025), Hecscher- Ohlin theory replaced price mechanism with labour theory of values. This theory provides an explanation on international trade by showing that countries should utilise their abundant factors of production of export goods that required such and import goods that required scarce factors. This theory is focused on relative factor abundance, and explains how the relative factor abundance influences the long – term trade dynamics in a globalised economy ((Lu, 2024). As explained Negishi (2014), this theory assumed difference in the factor endowments among nations and further assumed that technology is same among the countries, as well. The major limitations of the theory is that it fails to account for technological advancements, government policies and consumer preferences (Lu, 2024; Jayerajah, 2025).

Furthermore, the gravity model, though one of the relatively new models in the international trade theory, because it was just added to the family of economic theory (Anderson & Anderson, 2010). The model states that bilateral trade flows are determined by the GDP sizes and transportational costs, and influences by geographical distance, trade agreements, regional integrations, and social and cultural elements (Brakman et al., 2010; Dincer, 2013). This model is frequently used in estimation in empirical relationships, especially in modeling trade volumes and its barriers; and most successful tool in empirical models in economics (Kalirajan, 2008; Anderson & Anderson, 2010; Brakman et al. 2010).

Lastly, new trade theory, which was developed by Paul Krugman, and the theory revealed that economies of scale and imperfect competitions are key drivers of trade (Krugman, 1979). According to Fan (2008), this theory provides explanation o firm- level trade patterns, export

contribution to economic growth, and intra- firm trade through endogenous models. Fan continued by saying that only a fragment of the firms engaged in exports. Tang (2010) adds that new trade theory helps to understand the relationship between firm productivity and export behaviour. As such, exports can be enhanced through higher productivity of the firms. In line with, Altameemi (2024) and Ridha et al. (2025), the new trade theory shows that there is positive relationship between trade liberalisation and economic growth in the developing countries.

Empirical review

According Baek et al. (2025), income and exchange rates significantly influence trade balance in Korea; and how the government spending and interest rates exerted diverse impact on the trade balance, as well. Doan (2025) examines the Vietnam's trade balance from 2010 to 2023, and using import – export statistics, his findings showed that growth- driven import demand, export competitiveness and policy interventions greatly influenced the trade balance. Islam et al. (2025) focuses on Pakistan and their study centred on the relationship between international trade performance and macroeconomic variables. Drawing from quarterly data from 2011 to 2024 and engaging the autoregressive distributed lag (ARDL), their findings showed that currency fluctuation boost exports significantly, and inflation exerted positive impact on both exports and imports in the long run. Their findings further showed that FDI enhanced imports, while interest rates has negligible impact on trade performance in the long run. The short run of Islam et al. displayed some forms of mixed results for currency fluctuation; and inflation and interest rates varied in the contribution to the trade performance.

Khoso and Doudpoto (2025) examined the dynamic relationships between some macroeconomic variables and exports in Pakistan, using Vector Autoregression (VAR) approach. Their findings showed that interest rates and inflation are leading determinants of economic variability. Among others, their findings showed that there was asymmetric reaction between trade indicators and domestic and foreign shocks. Findings from Aryal (2024) showed that import is significantly influenced by real GDP and the consumer price index (CPI) in the import model while consumer price index, exchange rate and real GDP significantly influenced the export in the export model in Indian. In the study conducted by Hassan et al. (2024), changes in exchange rates were associated with decrease exports and alterations in interest rate had negative correlation with exports. In addition, Hassan et al. found out that fluctuations in inflation rates could be associated with higher export volumes in emerging economies.

The interest of Huang (2024) is the analysis of factors influencing China's imports and exports. His findings showed that the influences of producer price index (PPI) and consumer price index (CPI) were highly significant while that of RMB exchange rate was relative small on export and import. The findings of Huang further showed that the impact of producer price index and consumer price index on imports and exports depends on import while that of GDP depends on imports. One of the studies in Vietnam was Le (2023) and it focused on the relationship between trade balance and macroeconomic factors. Le reviewed studies from 2002 to 2021 on trade balance

of Vietnam with member countries of the Regional Comprehensive Economic Partnership (RCEP) and his findings, which were parallels with previous studies showed that tariffs, trade openness, augmenting GDP, and foreign direct investment were significant in boosting Vietnam's long- term trade balance with RCEP member nations. Chitauro (2021) examined the impact of FDI on exports in Zimbabwe from 2016 to 2020 and his findings showed that FDI did not have significant effect on growth and this drastic effect on export performance in the country.

Also, in the study by Puntoon et al. (2021), which relied on a sample of 85 countries and covered the period between 1990 and 2017, one could see that GDP per capita exhibited positive impact on trade openness in low- income, middle- income, and high- income countries. From the study of Altayligil and Cetrez (2020) on 97 developing and developed countries covering data from 1986 to 2013, one could see that fiscal balance, economic growth, terms of trade, exchange rate, trade openness, state of economic development, oil dependency, financial market development, macroeconomic stability and institutional quality were significant in the determination of current account balances. Sieng et al. (2020) estimated the determinants of exports in Indonesia, Philippines, Malaysia and Thailand and the determinants of exports considered were import, exchange rate, FDI, inflation and crude oil. The results obtained by them from the analysis of data from 1981 to 2016 showed that import and exchange rate positively and significantly influenced exports in Indonesia, Philippines, Malaysia and Thailand. They further found out that FDI negatively and significantly affected export in the three economies. The objective of the study by Mirdala et al. (2019) was to investigate the effect of determinants of exports and imports in 21 European Union member countries, using disaggregated analysis. Their findings showed that the role of imports in aggregate export functions and the aggregate functions showed the high contribution of domestic demand to the imports dynamics.

The focus of Abbas and Waheed (2018) was on the macroeconomic determinants of import flow in Bahrain. Abbas and Waheed employed augmented gravity model on panel data of 42 trading partners, from 2000 to 2016. Their findings showed that income of the trading partners, GDP and export flow influence Bahrain's imports and negatively influenced by relative price. The findings further showed that Bahrain exhausted import potential with Asian trading partners but has import potential with Africa and America, and some selected Middle Eastern and European markets. Using augmented gravity model and panel data of 38 major trading partners of Pakistan from 2000 to 2013, Munir and Sultan (2017) showed that Pakistan has import potential with Norway, Philippines, Portugal and Greece; and exhausted its import potential with Malaysia, Indonesia, and Kuwait. Their findings also showed that Pakistan has export potential in Switzerland and Hungary and exhausted its export potential with Sri Lanka, Bangladesh and UAE.

Ali et al. (2014) considered the effects of foreign direct investment on economic growth in Pakistan from 1980 to 2012. Their findings showed that FDI and labour force participation significantly influenced economic growth during the period under study. The focus of Genc and Basar (2017)

was in the investigation of the macroeconomic effects of OECD countries on Turkey's foreign trade from 1996 to 2014. Genc and Basar revealed that increase in per capita income, urban population, export indices and export in the OECD countries tended to have positive impact on Turkey's economy. Using structural vector autoregression, Prasad and Gable (1997) did a study on the relationship between international trade and macroeconomic fluctuations in industrial economies. Their findings showed that response to different types of macroeconomic shocks are subjected to the joint dynamics of output, exchange rates, and trade variables.

METHODOLOGY

The theoretical framework for this study comprises of David Ricardo's Comparative Advantage, Heckscher- Ohlin factor endowment model, and the gravity model of trade. The integration of these three theories shed light on the determinants of imports and exports in Nigeria. The comparative advantage provides the reason why Nigeria involved in trade, which is the desire to exports goods that are produce at lower opportunity cost and imports goods that production seem to be less efficient. The Heckscher- Ohlin framework adds that engagement in trade by Nigeria is shaped by surplus availability of natural resources and labour, and constrained by the scarcity of capital and advanced technology. Complementing the Comparative Advantage and Heckscher-Ohlin framework is the gravity model. The gravity model showed that volume of trade can be influenced by GDP, the GDP of its trading partners, exchange rate movement, population, FDI, foreign exchange reserve and trade policies. From these three theories, it is clearly seen that Nigerian trade flows depend productivity differences, factor endowments, and macroeconomic factors.

The models for this study are made of system of equations, which show the joint determinants of imports and exports. The models are specified as follows;

Imports equation,

$$lnIMP_t = \beta_1 + \beta_{1,1} lnGDP_{1,t} + \beta_{1,2} lnPOP_{1,t} + \beta_{1,3} lnOILR_{1,t} + \beta_{1,4} lnREXR_{1,t} + \beta_{1,5} MANU_{1,t} + \beta_{1,6} INT_{1,t} + \beta_{1,7} INF_{1,t} + \beta_{1,8} TRAD_{1,t} + \beta_{1.9} lnFEXR_{1,t} + \mu_{1.t} \quad (1)$$

Export equation,

$$lnEXP_t = \beta_2 + \beta_{2,1} lnGDP_{2,t} + \beta_{2,2} lnPOP_{2,t} + \beta_{2,3} lnOILR_{2,t} + \beta_{2,4} lnREXR_{2,t} + \beta_{2,5} MANU_{2,t} + \beta_{2,6} INT_{2,t} + \beta_{2,7} INF_{2,t} + \beta_{2,8} TRAD_{2,t} + \beta_{2,9} lnFEXR_{2,t} + \mu_{2,t} \quad (2)$$

In the equation (1) and (2), *ln*IMP = log of imports, *ln*EXP = log of exports, *ln*GDP = log of GDP, *ln*POP = log of population, *ln*OILR = log of oil revenue, *ln*REXR = log of real exchange rate, MANU = manufacturing capacity utilsation rate, TRAD = trade policies proxy by trade openness, INF = inflation rate, INT = interest rate, *t* = time, μ = disturbance error, and βs = parameters to be estimated.

The table below contained information on explanations of the variables used in the model.

Table 1: Description, measurement and expected signs

S/No	Variable	Description	Measurement	Expected sign
1.	*ln*IMP	It is the total monetary value of imports expressed in log.	Log	
2.	*ln*EXP	It is the total monetary value of exports expressed in log.	Log	
3.	*ln*GDP	It is the proxy for economic growth. It is the log of the GDP	Log	+
4.	*ln*POP	It is the log of the actual number of people in Nigeria	Log	+
5.	*ln*FEXCR	It is the monetary value of the total foreign exchange reserves	Log	+
6.	INF	Inflation	Rate	-
7.	INT	Interest rate	Rate	-
8.	TRAD	Trade openness is the proxy for trade policies	Rate	+
9.	*ln*REXR	It is the log of real exchange rate	Log	-
10.	*ln*OILR	It is the log of oil revenue	Log	+
11.	MANU	It is the manufacturing capacity utilisation rate and proxy for industrial activities.	Rate	+

Source: Authors' survey

The equation (1) and equation (2) were estimated using Seemingly Unrelated Regression (SUR). The Seemingly Unrelated Regression helps to solve the problem of serial correlation of the error terms in system equations. In this study, there is possibility of unobserved shocks to affect both imports and exports simultaneously. As such, the error terms of the two equations could correlate, and we accounted for this by using contemporaneous correlation to check whether the use of SUR was justified or not. We proceed in the estimation by carrying out descriptive statistics and unit root tests first. These two served as the pre- diagnostic test to ensure that properties of the variables were reliable to be included in the estimation. We also carried out post- diagnostic test, specifically joint Jarque- Bera test and Wald test. These were done to be sure that the residual was normally distributed and also to check whether the impact of each independent variables is statistically different between imports and exports. We specified the restrictions as:

$$C(1)_{1,i} = C(2)_{2,i} \quad (3)$$

Where $C(1)_{1,i}$ = coefficients in the imports equation and $C(2)_{2,i}$ = corresponding coefficients in the exports equation.

We failed to reject the Null (H_0) when the p > 0.05 and concluded that the difference is not statistically significant.

DATA ANALYSIS AND DISCUSSION

This section deals with the analysis of the data engaged in the study including the explanation of the characteristics of the series.

Descriptive statistics

Table 2a: Descriptive statistics

	INF	INT	lnEXP	lnFEXR	lnGDP	lnIMP
Mean	19.079	17.116	3.108	4.000	3.891	2.967
Median	13.007	17.260	3.427	3.973	4.061	3.286
Maximum	72.836	29.800	4.589	4.724	5.370	4.627
Minimum	5.388	7.750	0.944	2.351	2.144	0.701
Std. Dev.	16.281	4.617	1.176	0.612	1.082	1.232
Skewness	1.867	0.347	-0.624	-0.633	-0.308	-0.524
Kurtosis	5.473	3.498	2.011	2.522	1.669	1.906
Jarque-Bera	35.949	1.306	4.547	3.285	3.856	4.108
Probability	0.000	0.521	0.103	0.194	0.146	0.128
Observations	43	43	43	43	43	43

Source: Authors' computation

Table 2b: Descriptive statistics

	lnREXC	lnOILR	lnPOP	MANU	TRAD
Mean	2.264	2.790	8.125	13.785	0.317
Median	2.222	3.232	8.125	12.061	0.337
Maximum	2.638	3.948	8.357	21.098	0.528
Minimum	1.874	0.861	7.881	6.553	0.091
Std. Dev.	0.218	1.059	0.145	5.211	0.121
Skewness	-0.519	-0.681	-0.028	0.154	-0.287
Kurtosis	2.508	1.977	1.759	1.316	2.229
Jarque-Bera	1.607	5.197	2.766	5.250	1.654
Probability	0.448	0.075	0.251	0.073	0.437
Observations	43	43	43	43	43

Source: Authors' computation

Table 2 above showed the statistical properties of the various series employed in the SUR models. There were slight differences between the values of the mean and the median, except in inflation rate (INF). This indicates existence of consistent data points in the series, which may have been as a results of the data being in rate and natural logarithm. The values of standard deviations in each

series was quite low except in inflation rate (INF). The value of standard deviation obtained for inflation rate suggested the presence of the outliers and volatility in the series. In addition, the Jarque Bera probability for each of the series showed that the series were all normally distributed, except for the inflation rate (INF). The probabilities were higher than α at 0.05 level of significance. The Jarque Bera probability for inflation rate (INF) confirmed further the existence of outliers in the series. One good observation from Table 1 was that log transformation was successful in making the series conformed very well to expected statistical properties.

Unit root test

Having obtain right statistical properties about each of the series, we proceed to test the stationarity properties of each series as well. This was done to ensure that each of the series was stationary at the first difference. Table 3 below presented the results and the table showed that all of the series were of integrated order 1, *I (1).*

Table 3: Unit Root Test

Variable		ADF Statistics	ADF Critical	Order
lnIMP	Level	-0.671	-2.933	
	First difference	-6.081	-2.935	1(1)
lnEXP	Level	-1.251	-2.933	
	First difference	-7.571	-2.935	1(1)
INF	Level	-3.083	-2.600	
	First difference	-5.964	-2.935	1(1)
INT	Level	-2.279	-2.937	
	First difference	-6.125	-2.937	1(1)
lnFEXR	Level	-2.372	-2.937	
	First difference	-7.666	-2.937	1(1)
lnGDP	Level	-1.498	-2.933	
	First difference	-3.543	-2.935	1(1)
lnOILR	Level	-1.684	-2.933	
	First difference	-6.351	-2.935	1(1)
lnPOP	Level	-1.061	-2.951	
	First difference	-3.163	-2.951	1(1)
lnREXCR	Level	-2.278	-2.933	
	First difference	-5.113	-2.935	1(1)
MANU	Level	-1.089	-2.933	
	First difference	-8.537	-2.935	1(1)
TRAD	Level	-2.514	-2.933	
	First difference	-5.689	-2.937	1(1)

Note: 5% level of significance
Source: Authors' survey

Regression output

Table 4: SUR Output

Dependent variable: Import, Export			
	Import Coefficient		**Export Coefficient**
Constant	19.026		-11.170
	(2.478)*		(-2.273)*
INF	-0.0002		0.001
	(-0.256)		(2.658)*
INT	0.004		0.006
	(1.091)		(2.952)*
lnFEXR	0.038		0.073
	(1.091)		(3.084)*
lnGDP	1.820		0.570
	(8.703)*		(5.100)*
lnOILR	-0.386		0.262
	(-3.569)*		(4.542)*
lnPOP	-2.857		1.301
	(-2.776)*		(2.367)*
lnREXR	0.144		-0.056
	(1.561)		(-1.115)
MANU	0.009		0.003
	(1.282)		(0.877
TRAD	1.519		1.328
	(8.555)*		(13.999)*
Determinant residual covariance:		6.12E-06	
R-squared	0.997		0.999
Adjusted R- squared	0.996		0.998
S.E. of regression	0.080		0.089
Durbin –Watson stat	1.437		2.422
Cross correlation coefficient		-0.309	
Jarque Bera – Individual Model	0.013		4.300
	0.994[b]		0.116[b]
Jarque Bera – Joint		4.272	
		0.118[b]	

Note: *5% level of significance, [b] Probability
Source: Authors' computation

The results in Table 2 showed that the coefficient of determinations (R- squared) were 0.997 and 0.999 respectively for import and export models, which showed that 99.7% and 99.9% variations in imports and exports were explained by their determinants. The Durbin Watson statistics were 1.437 and 2.442 respectively, which indicated the existence of serial correlation in import model but non- existence in export model. The value of the determinant of the residual covariance matric

stood at 0.00000612, which is an indication of high degree of fit and showed that the choice of Seemingly Unrelated Regression was appropriate because it effectively captures the dynamics of Nigeria's imports and exports determinants. Having confirmed the appropriateness of the pre-diagnostic values, we proceed to the explanation of results obtained in the coefficients.

The coefficients of the inflation rate (INF) differed in terms of sign, size and significance between imports and exports. In the imports side, inflation rate exerted negative and negligible impact on import while, on the exports side, inflation exerted positive and negligible significant impact on export. This result showed that higher inflation produces reduction in imports. As such, the influence of inflation on imports could be seen as not meaningful and reliable in Nigeria during the period under study. As regard exports, inflation seemed to be associated with an increase in exports. This result can be deemed to be robust and reliable. The economic reasons for this result could be associated to currency depreciation; a push toward exporting as firms seek foreign exchange earnings to hedge against inflation; and a stronger export performance in sectors like oil, where prices are determined internationally.

Looking at the coefficients of interest rates, one could see that interest rate exerted positive but statistically insignificant on import. This can be due to increase capital inflows and finance of import – dependent sectors by the government. It also reflected that the interest rate positively and significantly influenced exports performance. This robust result for export performance can be attributed to indirect role of monetary policy, capital flows, and exchange rate dynamics. Further on the table is the coefficients of the log of foreign exchange reserves. The results showed that the signs of the coefficient were positive in imports model and exports model. The positive coefficient of the log of foreign exchange reserves in the import model theoretically supported import expansion but not strong enough to be empirically confirmed. In the export equation, the foreign exchange reserves significantly influenced exports performance. It can be concluded that there is a strong link between export earnings and reserve accumulation.

Similarly, both imports equation and exports equation have coefficients of log of GDP with positive signs. It showed that economic growth positively influenced imports and exports but the coefficient was higher in import equation relative to the export equation. This suggests that the imports rose faster than the exports in the period under study. This finding confirmed the existence of Prebish- Singer Hypothesis or Thirlwall's Law in Nigeria, which likely emerged from preference for sophisticated foreign goods in larger quantity than the demand for primary exports in Nigeria. Contrary to the results obtained in the coefficients of log of GDP is the results for the coefficients of log of oil revenue, the coefficients differed in signs. In the import equation, the coefficient of the log of oil revenue was negative and significant, which suggested the possibility of less reliance on foreign goods when oil earnings are strong, especially during the windfall. In the export equation, the coefficient of the log of oil revenue was positive and significant. This result showed that oil revenue drives export performance in Nigeria and exports likely depend heavily on the oil sector in the period under study.

Also, on the table, we have the coefficients of log of population, which was negative and significant in the imports equation and positive and significant in the exports equation. This result from the import equation might have been attributed to increase domestic production capacity or reduction in the purchasing power per capita. While, at the exports side, rising population is essentially significant for export performances. As such, these findings reflected the importance of population in expanding labour supply and domestic production. Moreover, the coefficients of real exchange rate (REXR) were positive in import equation and negative in the exports equation. The result from the import equation on real exchange suggested that imports consist basically are on essential capital goods, raw materials, or refined fuel. These essential goods lack substitution locally. As such, imports seemed to be inelastic in Nigeria, on one hand. On the other hand, the results from the export equation showed that exports in Nigeria are heavily dominated by oil (denominated in USD). Not only that, the quantity of oil to be exported is subjected to the quotas assigned to Nigeria by OPEC and global demand rather the domestic exchange rate relative to the Naira. This is a pure reflection of existence of 'Dutch Disease' or structural rigidities in Nigeria. These structural rigidities may likely override the competitive advantages commonly associated with currency depreciation.

Closely examining the coefficients of manufacturing capacity utilisation (MANU) showed that the coefficient has positive sign and not significant in the imports equation and, positive and not significant, as well, in the exports equation. This result from the imports equation showed that manufacturing firms are capital imported dependent, which can be referred to as 'input effect'; and non- significant nature of the coefficient suggested that the industrial activity in Nigeria is too weak. From the exports equation, we saw that the manufacturing firms seemed to struggle to meet domestic demand and unable to meet the demand of the export market. This can be regarded as a supply- side constraint. Lastly, the coefficients of trade policies proxy by trade openness were positive and highly significant in both imports and exports equations. This showed that Nigerian economy is being linked to the global trade system through policy- driven openness. As such, there is 'virtuous cycle' where the growth in trade activity is causing the economy to be more opened.

Before we went into Wald test, we looked at some post- diagnostic statistics, namely the normality test and cross correlation coefficient. The Jarque Bera statistic reported no issue while the contemporaneous correlation coefficient between imports and exports showed that a value of -0.309 could be seen as means that a sudden increase in import is associated with a sudden decrease in export. This result clearly demonstrated the Nigerian economic environment, where shock in oil production, which leads to shortage of foreign exchange dampened import.

Table 5: Wald Test

Variable	Chi- square statistic	DF	Prob.	Decision
INF	1.737	1	0.188	No statistical significant difference
INT	0.146	1	0.702	No statistical significant difference
lnFEXR	0.403	1	0.526	No statistical significant difference
lnGDP	22.137	1	0.000	Statistical significant difference
lnOILR	22.247	1	0.000	Statistical significant difference
lnPOP	10.108	1	0.002	Statistical significant difference
lnREXR	2.932	1	0.087	Statistical significant difference
MANU	0.411	1	0.522	No statistical significant difference
TRAD	0.718	1	0.397	No statistical significant difference

Level of significance = 5% and 10%
Source: Authors' computation

In the above table, we presented the summary of the results of the Wald tests on the joint significant of each of the variable on imports and exports. From the results in Table 3, we could see that the impact of log of gross domestic product (lnGDP), log of oil revenue (lnOILR) and log of population (lnPOP) significantly differed on imports and exports in the period under study. The p-values of the Chi-square of the Wald Tests were 0.000, 0.000 and 0002 respectively for log gross domestic product (lnGDP), log of oil revenue (lnOILR) and log of population (lnPOP). The result obtained for GDP could be described as a situation of 'asymmetric income elasticity', where the growth in economy only increase the demand for import rather the capacity of the Nigerians to export. This means that the Nigerian economy tends to exhibit a biased sensitivity to GDP fluctuations; as such, import responds more aggressive to economic expansion than the export. This might have come from high marginal propensity to import and structural export constraints.

While the results for Wald test on oil revenue could be attributed to an absolute structural divergence, where proceed from oil has been used in the financing of import and non- oil exports. This showed that the oil revenue in Nigeria could not be seen as a 'neutral' factor; in the sense that, it treats import and export differently. This result revealed the presence of 'resource curse' and 'Dutch disease' in Nigeria. One conclusion that can be made from this Wald Test result is that there is 'asymmetric oil dependency' because the oil revenue was a significant driver of import demand but failed to provide commensurate positive influence on the export performance.

Furthermore, the result of the Wald test on population showed the response of the growing population towards its impact on import and the capacity to export; and the massive structural gap in how such expansion translates into trade activity. This result revealed a shift in the domestic absorption of goods, which can be called 'demographic demand gap and demographic trade imbalance'. Demographic demand gap, in the sense that, the expanding population only promotes consumption of imported goods without proportionate influence on export; and it revealed

demographic trade imbalance because surpluses from export may likely be consumed by the rising domestic demand leading to trade balance deficit.

From Table 2, the p- value of the real exchange rate (REXR) of the Wald test was 0.087, and this can be termed as marginal significant. Though it did not meet the 5% threshold, in volatile economy such as Nigeria, this cannot be ignore. The results revealed a marginal difference in the effect of exchange rate fluctuations on import and export. It further indicated the subtle asymmetries in price sensitivity, which can be seen as indication of import and export respond similarly to currency movements.

Lastly, the p- values of the Wald test showed that inflation rate (INF), interest rate (INT), foreign exchange reserve (FEXR), manufacturing capacity utilisation (MANU) and trade policies proxy by trade openness (TRAD) showed that their impact did not differ on export and import performances in Nigeria. This means inflation rate, interest rate, foreign exchange reserves, manufacturing capacity utilisation and trade openness exerted symmetric influences on both trade flows in the period under study. One factor that can be deduced from these results is that the economy is highly import- dependency and the export- producing sectors also relied heavily on imported capital goods.

CONCLUSION AND RECOMMENDATIONS

This study has examined the determinants of imports and exports in Nigeria, using Seemingly Unrelated Regression (SUR). The Seemingly Unrelated Regression was adopted in order to account for possible correlation of the error terms in the two equations. The data for the study covered the period between 1981 and 2023. The unit root test was carried out to be certain that each variable was stationary. The findings of the study showed that economic growth, population, oil revenue and trade openness were significant in the imports equation. In the exports equations, the findings showed that inflation rate, interest rate, trade openness, economic growth, population, oil revenue, and foreign exchange reserve were significant in the period under study. In the addition, the findings of the study showed that economic growth, population and oil revenue differed on their effect on imports and exports in the period under study. Lastly, the findings showed that a sudden increase in import triggered a sudden decrease in exports in the period under study. Based on these findings, the study recommended that there is need to stablise the economy through effective monetary and fiscal policies that take account of currency fluctuations. Also, there is need to implement policies that will reduce reliance on capital importation. Lastly, there is need to boost industrial production in Nigeria, as to uplift the role of the industries, especially in meeting domestic and possibly in earning foreign exchange.

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