INSTITUTIONS, TECHNOLOGICAL CAPABILITY AND NON-OIL BALANCE OF TRADE IN NIGERIA: LESSONS FOR DEVELOPING COUNTRIES

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ABSTRACT

Motivated by the low contribution of non-oil trade to many developing countries' economies, the study assessed the effects of institutional and technological capability determinants on Nigeria's non-oil trade balance. The generalized method of moments (GMM) model was used on longitudinal data spanning from 1976 to 2024. The findings revealed that Nigeria's non-oil trade balance is significantly influenced by its own value in the immediate past period ($P \leq 0.01$), net inflow of foreign direct investment ($P \leq 0.1$), inflation rate ($P \leq 0.1$), and population growth ($P \leq 0.01$). However, while the effect of foreign direct investment inflow, population growth and the first lag of non-oil balance of trade were positive, the influence of inflation was negative. Also, a major challenge to the process that generates positive balance from non-oil trade in Nigeria is that bank credit to private sectors ($P > 0.1$) and the level of industrial production ($P > 0.1$) have no significant influence. The hypothesis that government revenue growth from oil exports plays a detrimental role in the growth of the non-oil trade balance was also rejected ($P > 0.1$). Given the result, public policies that build technological capability, promotes industrial production and attract more foreign direct investment into non-oil sectors as well as that that strictly controls inflation are recommended. Reforms that make the banking sector more efficient and supportive of manufacturing, industrial growth and trade are also needed.

Keywords: Non-oil balance of trade, Institutional factors, Technological capability factors, GMM model, Resource curse

INTRODUCTION

A positive trade balance signals strong international demand for goods from an exporting country, stimulates domestic production and creates jobs. A trade surplus further increases foreign exchange reserves, fosters economic growth, strengthens the domestic currency and boosts agricultural and manufacturing sectors for a trading country. A favorable balance of trade matters because it influences income, employment, macroeconomic stability and strategic options that make a country less reliant on foreign suppliers for critical goods. Furthermore, it is important for diplomatic relations and leverage.

Given the comparative advantage of many developing countries in agriculture and other sectors, rapid growth of these economies can be achieved through international trade. As evidence, a significant proportion of the moderate growth in developing countries' economies in 2024 was driven by trade, with trade surpluses in goods and services rising from USD696 billion in 2023 to USD772 billion in 2024 (UNCTAD 2025a). Merchandise in Asia and Oceania alone rose by 5.7%. Services also grew by 10%, with Asia again recording the fastest growth at 11.5%. In 2023, developing economies accounted for most global seaborne trade, with Asia alone discharging 47% and loading 32% of the total volume.

A report by the United States Department of Commerce (2025) further indicates the growing importance of Nigeria's trade with the United States of America, exporting goods worth USD6.4 billion in 2023 compared with imports valued at USD4.2billion

Positive change in a country's institutional capability or quality of government rules can improve its balance of trade by lessening uncertainties, spelling out and implementing what is acceptable and sanctioning what is not (North, 1990; Akande, 2016). Furthermore, a country's technological capability is crucial for the transfer of technology from abroad, its diffusion within the economy and the development of indigenous research and development (R&D) efforts that adapt, improve and innovate local technology.

Central to Nigeria's trade strategy have been import substitution and protectionism, export promotion, executive orders, incentives and regional integration through the African Continental Trade Agreement [AfCTA] (WTO, 2025). Trade modernization in Nigeria has prioritized trade digitalization, improved competitiveness and increasing transparency. According to the US Department of Commerce's International Trade Administration (2025), Nigeria's participation in international trade protocols includes membership in the World Trade Organization (WTO) and signatory status to the General Agreement on Tariffs and Trade (GATT). Nigeria ratified the WTO Trade Facilitation Agreement on January 20, 2017, and the amended WTO Agreement on Trade-Related Aspects of Intellectual Property Rights 1994 (TRIPS) Agreement on January 16, 2017. Conversations to reduce trade barriers in Nigeria are ongoing. Nigeria is also a signatory to the African Growth and Opportunity Accord (AGOA). AGOA is a trade program meant to establish stronger commercial ties between the United States and Sub-Saharan Africa. The Act establishes a preferential trade agreement between the U.S. and selected countries in the Sub-Saharan region. In terms of bilateral trade agreements, Nigeria has bilateral investment agreements with 31 countries, 15 of which are in force. The country also has double tax treaties with 13 countries and is a signatory to 21 investment-related instruments

In spite of these efforts, however, the impact of international trade on the Nigerian economy has been limited. As evidence, decreased government revenue from non-oil trade, high unemployment, widespread poverty, an increased inflation rate and exchange rate fluctuations coexist with the country's participation in trade with the rest of the world (Okungowa et al., 2024). This raises the question of what factors distort Nigerian non-oil balance of trade? Empirical analysis by Aladejare and Said (2014) addressed the question of the determinants of non-oil exports in Nigeria using a bound cointegration test. Andohol *et al* (2024), on the other hand, applied the Auto-regressive Distributed Lag model (ARDL) to examine the influence of trade liberalization and non-oil export on economic growth in Nigeria. Similarly, Ichoku *et al.* (2013) studied the determinants of Nigeria's non-oil trade balance import demand using ordinary least squares regression. However, the question of the role of institutional and technological capability factors in Nigeria's non-oil trade balance has been left unanswered.

Also, given the often invalidity of regression modeling of performance data when residual endogeneity is not controlled for, the paper examines the role of institutional and technological capability factors in Nigeria's non-oil trade balance using the generalized method of moments (GMM) approach. The rest of the paper is structured as follows. Section 2 presents the literature review, while Section 3 describes the data and the empirical model. Section 4 presents the results and their discussions, while Section 5 is the conclusion and recommendations

2 REVIEW OF RELATED LITERATURE

2.1 Institutional and Technological Capability Determinants of International Trade

Theoretical and conceptual literature discussed trade-induced growth in developing economies from the lens of technological catch-up (Fagerberg, 1997), quality of government rules/institutions, financial sector development, form of government, country size, among others

2.1.1 Technological capability and Trade

Defined as a country's capacity to put new ideas into practice by developing new products and processes, technological capability plays a key role in international trade and economic development. Trade is considered a major channel of international technology transfer. According to Grossman and Helpman (1991), trade can foster technology transfer through the channels of production and information. Through trade with countries that are technological leaders, developing countries can gain access to intermediate products and capital equipment of higher quality (vertical differentiation) and broader variety (horizontal differentiation). They can also gain access to more open channels of communication about production methods, product design, organizational methods and market conditions. Countries can adapt to the use of foreign technologies in their imported products, often at lower cost than innovation would require. This follows the proposition that intra-industry trade is more effective for technology transfer because countries are more likely to absorb foreign technologies when their imports are from the same sectors as the products they produce and export. Indeed, the possibility of using foreign technology in domestic production will likely be greater when the country is already a large producer of the same types of goods as it imports, particularly if it is to maintain its competitiveness in international markets.

Empirical studies of Coe, Helpman and Hoffmaister (1997) and Jaumotte (1998) on the role of trade in cross-country technology transfer confirmed the significance of technology transfer on trade. Overall, through trade, developing countries can improve their system of production of goods for export by developing their own technology or by borrowing and adapting technology of their trading partners.

2.1.2 Financial deepening and trade

A well-developed financial market influences the balance of trade by acting as a catalyst for international trade. An efficient financial market provides necessary capital for exports, lowers transaction costs, and eases financing constraints. UNCTAD (2025b) explains that a well-developed financial system allows firms to better manage risks and increase their competitive advantage in trade.

Furthermore, access to finance helps trading firms overcome trade costs (including both fixed and variable trade costs) involved in international trade transactions (Chaney 2016; Foley and Manova 2015; Leibovici 2021; Manova 2013).

The development of the domestic financial market can also provide firms with greater opportunities for insurance and allow them to diversify risks, thereby reducing the uncertainty that could arise from greater trade openness (Svaleryd and Vlachos, 2002). By implication, frictions in financial markets distort firms' export decisions and serve as an important barrier to international trade (Amiti and Weinstein, 2011; Foley and Manova, 2015; Kohn *et al.,* 2016; Leibovici, 2021; Minetti and Zhu, 2011). UNCTAD (2025b) further points out that financial markets, institutions and motives affect the production and trade of goods and services, making trade increasingly sensitive to financial factors such as movements in interest rates or shifts in investor sentiment.

The global financial cycle also influences world trade trends, creating vulnerabilities that may lead to currency volatility. The latter makes imports and debt repayments more expensive and shifts global risk appetite that may cut off credit for exporters. Financial volatility may also be particularly important for developing markets, as it hits them harder and more often.

2.1.3 Property Rights and Trade

Property rights, particularly intellectual property rights (IPR), act as a cornerstone of international trade by protecting innovations, trademarks, and trade secrets, which encourages foreign investment, technology transfer, and high-value exports. Strong IPR enforcement helps control commercial use of products abroad, fostering fair competition, while weak enforcement can hinder technology transfer and export quality (North 1990; Cooter and Ulen, 2004).

According to Levchenko (2004); Nunn and Trefler (2013), the presence of sophisticated production capabilities is usually associated with strong property rights, institutions and contract enforcement. Several empirical studies have also linked domestic property rights and contract rules with industry capability to produce goods of varying complexity and trade outcomes. For example, in a study of eighty-four countries from 1975 to 1995, Heitger (2004) found that security in property rights and legal framework transparency are the ultimate causes of economic growth, whereas differences in physical and human capital and technology are proximate causes. Three other empirical studies link measures of national legal institutions with industry complexity to explain trade in complex and simple goods. Ferguson and Formai (2009) further relate institution-driven comparative advantage and the export of complex goods to contract enforcement.

Bekowitz *et al* (2006) found evidence suggesting that countries with strong legal institutions tend to export goods from more complex industries and import goods from less complex industries. Ma *et al* (2012) similarly found that a stronger legal system in terms of contract enforcement and low corruption (distortion of property rights) is conducive to greater exports of goods from complex industries.

Krishna and Levchenko (2009) offered empirical evidence linking industry complexity to volatility and comparative advantage in both complex and simple industries. They find that countries with less complex industrial sectors produce and trade fewer complex goods due to less rigorous contract enforcement or to lower levels of human capital**.** Therefore**,** the absence of an effective system of property rights may prevent or impede the formation of vertically integrated firms and collaborative clusters capable of producing more sophisticated goods.

2.1.4 Dutch Disease and Resource Curse Hypothesis

The failure of many resource-rich countries to benefit from natural resource wealth, and the failure of their governments to respond positively to public welfare, has been linked to the resource curse. According to NGRI (2015), a large increase in natural resource revenue of a country can hurt other sectors of an economy, particularly export-based manufacturing, by causing inflation or exchange rate appreciation and shifting labor and capital from the non-resource sector to the resource sector. The detrimental effect of natural resources on other sectors of the economy may include stunted manufacturing sectors or a precipitous decline in manufacturing. However, these consequences are averted in countries with good absorptive capacity and those that are able to transform resource revenue inflows into tangible investments, such as roads and electricity. Countries that use resource revenue to invest in areas that generate non-resource-sector growth or place a portion of their resource revenue in foreign assets can also avert the negative consequences of the resource curse (NGRI, 2015). Other negative consequences of over-dependence on natural resources may include the loss of democracy and the rise of authoritarianism, conflict in the affected country, and inefficient government spending and borrowing.

2.1.5 Democracy, Country Size and Trade

Higher-quality democracy could increase international trade by improving governance, reducing trade barriers, and promoting economic freedom (Abeliansky-Krenz, 2015; Baro, 1996). A democratic regime can increase trade because it is associated with better enforcement of the rule of law and stronger protection of property rights. This helps provide better market conditions and create fair, competitive markets (Abeliansky-Krenz, 2015). Furthermore, democratic countries tend to have more stable, transparent institutions that lower transaction costs and encourage higher trade volumes. Yu (2010) further explains that democracy may affect trade through trade costs and product quality.

In international trade theory, a country's size is determined by its share of global trade in a specific commodity, rather than by geographical or population size alone. Large countries influence world prices and terms of trade through significant market share, while small countries are typically price-takers with higher trade-to-GDP ratios. Large countries can cause global price volatility with production changes, whereas small economies must trade to overcome limited domestic market scale (Alesina, 2012).

2.2 Econometric Model for Trade Outcome Analysis

Economic outcomes are generally modeled as a function of factors in the production process (Mishra, 2007). The Cobb-Douglas production function, for example, models the outcome as a product of the proportions of output allocated to capital and to labor. Mathematically, this corresponds to:

$Y_t = K_t^{\alpha} L_t^{(1-\alpha)} \varepsilon_t$ ..... (i)

Where Y represents the outcome variable of all industries in time t, K is the total amount of capital and L represents the total amount of labour and ε_t is the random error term that captures the totality of the unknown factors affecting the outcome Y. Introduction of additional variable I that captures the effect of social structure and capability factors on productivity of the inputs in the manner of Jones (2002) leads to:

$Y_t = IK_t^{\alpha} L_t^{(1-\alpha)} \varepsilon_t$ .....(ii)

Variable I represents the influence of social structure and technological capabilities on capital and labor factors. Depending on its value, the parameter I can augment (I>1) or debilitate (I<1) the combined effect of capital and labor. Thus, understanding the trade outcome variable depends on the magnitude and direction of social structure and technological capability factors. Put differently, equation (ii) implies that endowment of capital and labor creates trade outcome as moderated by institutional and technological capability constraints.

Suppressing capital and labor factors in equation (ii) directly evaluates the role of the social and technological variables on outcome (Y_t). This reparameterization has been the basis for several models, including Tinbergen's (1962) gravity model, which analyzes bilateral trade in terms of distance, size and the ease of the exporting country's access to other markets.

Predicting trade outcomes using regression models is affected by multicollinearity and endogeneity. Endogeneity bias occurs when an explanatory variable is correlated with the error term. Endogeneity from simultaneous-equation bias arises when a predictor is jointly determined with the dependent variable, and shocks to the dependent variable may be passed through to the endogenous predictor. Predicting the dependent variable with endogenous predictors yields inconsistent estimates as sample size increases, potentially leading to wrong inferences, misleading conclusions and incorrect theoretical interpretations. Ketokivi and McIntosh (2017) point out that researchers might not even obtain the correct signs of coefficients if endogeneity bias exists.

Given that the central issue in models correcting residual endogeneity centers around the relationship between model residual and the predictors, expanding a polynomial $f(x)$ from the central point, x=a, to a neighborhood x=b using Taylor expansion provides information about the model residual at every point predicted by the model such that:

$$f(b) \approx f_{(a)} + af'_{(a)(b-a)} + \frac{f''_{(a)(x-p)}{}^{2}}{2!} + \frac{f'''_{(a)(b-a)}{}^{3}}{3!} + \cdots \ldots\ldots\ldots\ldots \frac{f^{n-1\prime}_{(a)(b-a^{n-1})}}{(n-1)!} + \frac{f^{n\prime}_{(a)(b-a)^{n}}}{n!}$$

(iii)

The error function $\epsilon_n(x) = f(b) - f(a)$ explicitly isolates the approximate value of the residual that may correlate with endogenous predictors at this point

Using the generalized method of moments (Arellano, 2003; Arellano and Bond, 1991), two-stage least squares (2SLS) or the dynamic least squares regression models strip the error term and endogenous predictors of their relationship, yielding consistent estimates. The instrumental variable (IV) approach finds replacement instruments from the list of exogenous variables in the system that are correlated with the endogenous explanatory variable ($Cov(X_i Z_I) \neq 0$) but uncorrelated with the error term ($Cov(X_i \varepsilon) = 0$) [Woodbridge, 2015]. In the GMM model, lags of the endogenous predictors are used as valid instruments that capture variations in the endogenous variable without being correlated with the error term. The two-stage least squares (2SLS), on the other hand, first regresses the endogenous regressor on its instruments to obtain its predicted value in the first stage. The endogenous regressor is then replaced with the predicted value in the structural equation, and then OLS is run.

3.0 DATA AND ESTIMATED MODEL

3.1 Data

The data for the study were longitudinal time series data spanning from 1976 to 2024. These were collected from the databases of the World Bank and the Central Bank of Nigeria. Details on the nature, sources, measurements and units of the variables used in the analysis are presented in the Appendix. The non-availability of data on measures of doing business, including property rights, was a limitation, making direct measurement of government rules or institutions impossible.

3.2 Estimated model

The generalized method of moments (GMM) regression model was used. The use of the model was motivated by the likely bidirectional causal relationship between the non-oil balance of trade and some of its predictors. The assumption that "exogenous variables in a model are probably never truly exogenous" (Ketokivi & McIntosh, 2017) further motivated the use of the model. Given the strong correlation between the contemporaneous form of the model predictors (Table 1) and the notion that the past is the best predictor of the present, the independent variables were entered in their first lag. The estimated GMM model finds true parameter values that make the expected value of the moment function of the data and parameter equal to zero such that:

$E[(g(X_i, \emptyset_i)] = 0$ …….(iv)

where X_i $are\ the\ expalanatory\ variables$ and $\emptyset_i$ are the parameters of the function

Re-parameterizing equation (iv) in terms of instruments and model residual yields:

$E[(g(Z_i, \varepsilon_i)] = 0$

Where Z_i , are the instruments which enter into the model in their second and third lag forms; ε_i are the residuals of the function; E is the expectation operation.

Replacing ε_i with $Y_{it} - \theta_0 - \theta_i X_{it}$ yields the estimated explicit covariance function:

$E[(g(Z_{it}(\ Y_{it} - \theta_i X_{it})]=0$, ……..(v)

Where,Y_{it}=non-oil balance of trade (million naira); X_i are the predictors, including:

Log(non-oilbalt (-1))	first lag of log of non-oil balance of trade (million naira)
Log(fdi(-1))	=first lag of foreign direct investment net inflow (BOP, current USD)
Log(gdp(-1))	=first lag of log of GDP (current USD)
Log(indpro(-1))	= first lag of log of industrial production (value added percent of GDP)
Log(infr(-1))	= first lag of log of inflation rate (annual, %),
Log(mercht(-1))	=first lag of log of merchandise trade (%GDP)
Log(pop(-1))	=first lag of log of population (total number of people)
Log(lendr(-1))	=first lag of log of lending rate (%)
Log(non-oilim(-1))	= first lag of log of non-oil imports (million Naira)
Log(oilexp(-1))	= first lag of log of oil exports (million Naira))
Log(combkcr(-1))	= first lag of log of commercial bank credit to private sectors (million naira)
θ_i	are the parameters associated with the predictors

4 RESULT AND DISCUSSIONS

The result of correlation analysis in Table 1 indicates that many of the contemporaneous values of the predictor variables are related to each other; therefore, the variables entered into the GMM model are in their first lag rather than their contemporaneous forms. Table 2 and Figures 1 & 2 present the results of the GMM model. The impact of the democracy dummy variable and the exchange rate was found to hurt both model fit and the statistical significance of other variables in the model and were therefore expunged. The goodness of fit statistics (Adjusted R square (0.95) and the standard error residual (SER=0.09)) chose the double logarithm function ahead of the exponential function as the lead model. The Sargan test of joint validity of the instruments was used in preference to the Hansen J test, which divides the instruments into subgroups, as residual homoscedasticity can reasonably be assumed. The non-significance of Sargan J statistics (P > 0.1) indicates that the instruments used in the regression are orthogonal to the residual or that the endogenous regressors were substantially stripped of their relationship with the model residual.

The result from the lead model indicates that Nigeria's non-oil trade balance is significantly influenced by its own value in the immediate past, foreign direct investment net inflow (P≤ 0.1), inflation rate (P≤ 0.1) and population growth (P≤ 0.01). However, while foreign direct investment inflow, population growth and the first lag of non-oil balance of trade improved non-oil balance of trade, the effect of inflation was negative. Investments by multinationals can substantially increase manufacturing and industrial production for export because FDI generates employment, enhances value addition and complements domestic investments by bringing with it a package of capital, technology and managerial expertise, thus promoting access to foreign markets and enhancing local and national tax revenues (Borensztein et al., 1998; Danescu and Nistor, 2012; Amighini, 2017; and Gammeltoft, 2021).

Table 1 Correlation between Contemporaneous value of Determinants of Non-oil Balance of Trade in Nigeria

	FDI net inflow	GDP	Industrial prod.	Inflation rate	Merchantil-e trade	Pop.	Lending rate	Non-oil import	Oil export	Commerc i-al bank credit	Exchange rate
FDI net inflow	1										
Gross domestic product (GDP)	0.49**	1									
Industrial production	-0.50**	-0.78**	1								
Inflation rate	-0.18	-0.12	0.30*	1							
Merchantile trade	0.04	-0.41**	0.41*	-0.13	1						
Population	0.48**	0.88**	-0.92**	-0.22	-0.37	1					
Lending rate	0.18	-0.07	-0.17	-0.02	-0.23	0.20	1				
Non-oil import	0.17	0.66**	-0.71**	-0.12	-0.21	0.81**	-0.09	1			
Oil export	0.24	0.58**	-0.66**	-0.14	-0.11	0.77**	-0.05	0.95**	1		
Commercia l bank credit	0.15	0.65**	-0.72**	-0.15	-0.22	0.81**	-0.11	0.97**	0.95**	1	
Exchange rate[1]	0.31*	0.70**	-0.83**	-0.17	-0.22	0.90**	0.08	0.92**	0.87**	0.83**	1

Source: Data analysis, 2026

***(*) -Significant at 1% (10%) [1] -Excluded from regression model for hurting model fitness

Large population size, on the other hand, can increase manufacturing and industrial growth, and therefore the value of exports, through the channels of cheap labor and a ready market for local consumption. On the other hand, inflation may undermine the trade balance because a high rate of inflation hinders manufacturing growth by creating uncertainty around business decisions and rendering discounted investment opportunities unprofitable.

The result also indicates that industrial production and commercial banks' credit to private sectors do not significantly drive Nigeria's non-oil balance of trade. The existence of weak technological capability and monetary policy, as well as inefficient banking institutions in a country, are often detrimental to its industrial growth and export trade. After excluding the indirect influence of oil export on the exchange rate, the result rejects (> 0.1) the proposition that government revenue expansion from oil exports plays a negative role in non-oil balance of trade. Thus, the slow growth in Nigeria's non-oil balance of trade cannot be attributed to government focus on revenue from oil export.

Table 2: Generalized Method of Moments (GMM) Estimates of the Effect of Institutional and Technological Capability Factors on Non-oil Balance of Trade in Nigeria

Double log function				Exponential function		
Variable	Coefficient	t-value	Prob	Coefficient	t-value	Prob
Log(non-oil balt(-1))	0.62***	4.87	0.00	0.92*	1.75	0.09
Log(fdi(-1))	0.13*	1.73	0.09	-0.00	-0.24	0.81
Log(gdp(-1))	-0.11	-1.06	0.30	0.00	0.43	0.67
Log(indpro(-1))	0.24	0.34	0.74	-0.01	-0.03	0.97
Log(infr(-1))	-0.06*	-1.71	0.10	-0.01	-0.13	0.90
Log(mercht(-1))	-0.13	-1.15	0.26	0.03	0.49	0.63
Log(pop(-1))	0.35***	3.28	0.00	0.00	0.17	0.87
Log(lendr(-1))	0.04	0.26	0.80	-0.02	-0.18	0.86
Log(non-oilim(-1))	0.14	0.85	0.40	-0.00	-0.04	0.97
Log(oilexp(-1))	-0.10	-0.40	0.69	-0.00	-0.64	0.52
Log(combkcr(-1))	-0.10	-0.62	0.54	-0.00	-0.37	0.71
Adj R2=0.85; SER=0.09; Inst var rank=13; J stat.= 1.47 (Prob =.47)				Adj R2=0.59; SER=0.96; Inst var rank=13; J stat.= 0.79 (Prob =.67)		

Source: Data analysis, 2026

***(*) -Significant at 1% (10%)

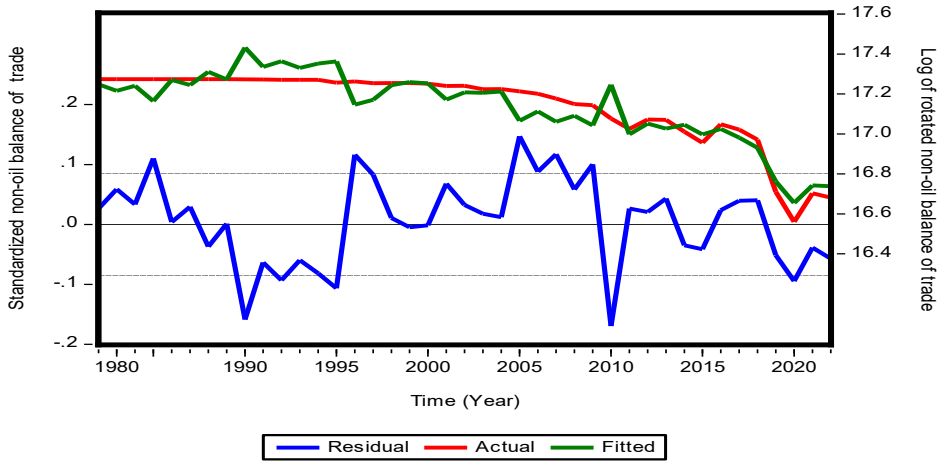

Figure 1. Fit of Double logarithm Model of Institutional and Technological Capability Determinants of Non-oil Balance of Trade in Nigeria
Source: Data Analysis, 2026

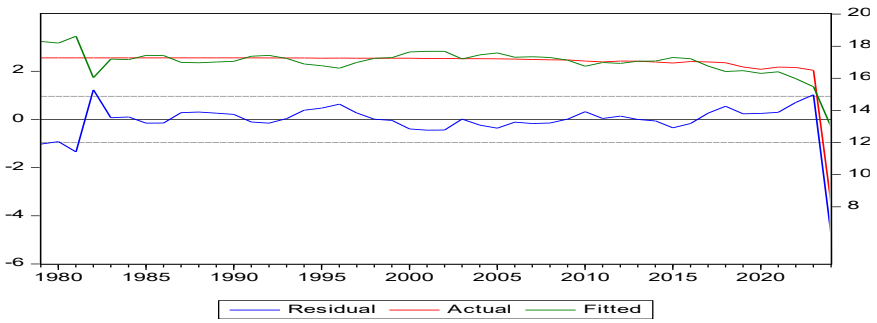

Figure 2. Fit of Exponential Model of Institutional and Technological Capability Determinants of Non-oil Balance of Trade in Nigeria
Source: Data Analysis, 2026

5 CONCLUSION AND RECOMMENDATIONS

The findings lead to the conclusion that Nigeria's non-oil trade balance is significantly influenced by its own value in the immediate past period, net foreign direct investment inflows, the inflation rate and population growth. However, while the effect of foreign direct investment inflow, population growth and the first lag of non-oil balance of trade was positive, the effect of inflation was negative. Furthermore, a major challenge to the process that generates a positive non-oil trade balance in Nigeria's case is that commercial banks' credit to the private sector and industrial production had no significant influence on it. The hypothesis that government revenue growth from oil exports plays a detrimental role in the non-oil balance of trade in Nigeria's case was also rejected. Given the result, it is recommended that policies promoting technological development and industrial production through increased foreign direct investment in non-oil sectors, as well as those that strictly control inflation, be implemented. Reforms that make the banking sector more efficient and supportive of trade, manufacturing, and industrial growth are also needed.

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Appendix

Information on variables used in the analysis

Measure/Category	Variable/Proxy	Acronym	Unit	Source	Span
Market and trade-related capabilities	Non-oil balance of trade	Non-oilbalt	Million Naira	CBN	1976-2024
	Population	Pop	Number of people	World Bank	Ditto
	Merchandise trade	Mercht	% GDP	World Bank	Ditto
	Non-oil-import trade volume	non-oilim	Million Naira	CBN	Ditto
	Gross Domestic Product (GDP)	gdp	Current USD	World Bank	Ditto
Strength and quality of financial institutions	Annual inflation rate	infr	Percent (%)	World Bank	Ditto
	lending rate	lendr	Percent (%)	World Bank	Ditto
	Commercial banks' credit to private sector	combkcr	Billion Naira	CBN	Ditto
	Exchange rate	exchr	Naira/Dollar ratio	CBN	Ditto
Technological capability	Volume of industrial production	indpro	Value-added percent of GDP	World Bank	Ditto
	Foreign direct investment net inflow	fdi	BOP, in current USD	World Bank	Ditto
Natural resource revenue	Aggregate value of oil export	oilexp	Million Naira	CBN	Ditto