Impact of Selected Macroeconomic Variables on the Industrial Sector in Nigeria

John, Adayilo Elijah[1] , Dr. Anthony Ihuoma[2] , Dr. Modestus Nsonwu[3]

Veritas University, Bwari Abuja, Nigeria

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ABSTRACT

This study examined the impact of inflation, exchange rate, interest rate, credit to the private sector, and oil prices on Nigeria's declining industrial sector, employing the ARDL methodology to analyze 43 years of annual data (1981-2023). The findings revealed that macroeconomic instability, particularly inflation and exchange rate volatility, exerts significant adverse effects on industrial performance. In the long run, inflation and exchange rate depreciation negatively impact industrial output, reflecting structural vulnerabilities such as import dependency, rising production costs, and eroded investor confidence. Conversely, oil prices demonstrate a positive relationship with the share of industrial sector, underscoring the dual role of oil revenues in providing fiscal liquidity while simultaneously exposing the economy to Dutch Disease effects, where resource dominance stifles diversification. Notably, credit to the private sector and lending rates showed counterintuitive or insignificant effects, suggesting inefficiencies in financial intermediation and limited access to productive financing for industrial firms. The error correction mechanism confirmed a robust long-run equilibrium, with a high adjustment speed (77%) restoring deviations annually, validating the model's stability and reliability. It was therefore recommended that the Central Bank of Nigeria should prioritize inflation targeting frameworks to curb persistent inflationary pressures.

Keywords: Industrial sector, inflation, exchange rate, interest rate, oil prices, Dutch disease, economic growth, ARDL model.

INTRODUCTION

While economic growth and development are common goals for nations, their achievement is ultimately contingent upon the effectiveness of their macroeconomic policies. As economies evolve, the composition of output and employment naturally shifts, often moving from agriculture to manufacturing and later to services, accompanied by rising GDP per capita (Manoj et al., 2018). The ability of a country to expand its productive capacity, strengthen value-addition, and enhance technological progress is therefore closely tied to the performance of its industrial sector. For developing economies in particular, a strong industrial base is widely viewed as essential for narrowing income gaps and accelerating long-term growth (Abraham, 2023; Anthonia & Taiwo, 2017).

The industrial sector plays a pivotal role in driving economic expansion. Its performance is not only a key indicator of economic strength but also a critical determinant of employment creation, productivity improvement, technological upgrading, competitiveness, and sustained increases in per capita income. As the link between primary activities such as agriculture and mining and the services sector, the industrial sector facilitates the processing of raw materials and the production of essential goods. This connecting role positions it as an indispensable pillar for economies seeking to transition from low-value primary production to higher-value, diversified economic structures. In contemporary economic systems, the industrial sector therefore remains central to the production of goods, income generation, enhanced value chains, and broader economic resilience. Historical and contemporary experiences reinforce the importance of a strong industrial base. Germany is a notable example: despite limited natural resources and economic challenges such as the inflationary pressures of the 1920s, the country's manufacturing strength supported its emergence as the

largest economy in Europe and the third largest globally. Similarly, the rapid economic expansion witnessed in several Asian economies since the mid-20th century has been strongly linked to the development and consolidation of their industrial sectors (IMF, 2023; Adedoyin et al., 2022; Guilherme & Peter, 2020; Araujo et al., 2021; Zhang et al., 2019; Banga, 2016; Olamade et al., 2014; CBN, 2013; Constantin et al., 2009; Kayode, 1989).

The industrial sector which is a vital catalyst for economic growth in many developing countries has evidently registered poor performance in Nigeria, (Ezu et al, 2020). While the services sector has expanded sharply, rising from 32.3 per cent of GDP in 1980 to 55.52 per cent in 2024, the industrial sector's contribution has deteriorated from 52.2 per cent to 16.67 per cent within the same period (NBS, 2024). This sustained contraction indicates a process of declining share in the industrial capacity and productive diversity of the economy. Such a pattern is not only economically inefficient but also undermines Nigeria's long-term growth potential, as the industrial sector historically provides the most reliable path for productivity gains, innovation, and export competitiveness, (Chioma, 2020).

The challenges are further compounded by the unprecedented exit or downsizing of both domestic and multinational firms. Over the past decade and more recently between 2023 and 2024 major players across manufacturing, consumer goods, food processing, pharmaceuticals, and technology sectors have either shut down, divested or substantially scaled back operations. Companies such as Unilever Nigeria PLC, Procter & Gamble Nigeria, GlaxoSmithKline Consumer Nigeria Ltd, ShopRite Nigeria, Sanofi-Aventis, Microsoft Nigeria, and PZ Cussons Nigeria PLC, among others, have exited or weakened their Nigeria presence due to rising production costs, exchange rate instability, energy shortages, insecurity, and deteriorating business conditions. The cumulative effect of these exits is severe: recent estimates suggest Nigeria may lose up to ₦94 trillion in economic output over the next five years, in addition to worsening unemployment, weakening industrial linkages, shrinking export capacity, and heightened economic fragility (Arinze, 2024).

Various macroeconomic variables, such as inflation, exchange rate, interest rate, and even oil prices have continued to exacerbate the current trend where the share of the industrial sector to growth is declining in Nigeria. This is because the industrial sector responds to the behaviours of these macroeconomics variables. For instance, the ability of the industrial sector to access capital is dependent on the prevailing interest rate regime. Furthermore, the inflation rate shapes the movement in the demand for manufactured goods, first the input factors, and second, the demand for manufactured goods, without which manufacturing becomes less attractive (Ferreira & de Santana Ribeiro, 2019; Halkos et al., 2021). The exchange rate regime (especially in import-oriented economies like Nigeria) affects the ability of the industrial sector in maximizing trade openness that will support factor inputs like machinery, raw-material and technological transfer. An increase in oil prices will lead to a rise in production costs for industries reliant on energy, as transportation and manufacturing inputs will equally soar, as is the case today. High oil prices often accelerate decline in the industrial sector directly by raising operational costs and pushing companies to offshore.

Hence, by exploring historical trends, policy frameworks, and economic data, this study will identify the key drivers behind the declining state of industries and evaluate potential strategies for revitalizing the sector. The study will also seek to know the role of government policies and infrastructure development in promoting or hindering growth in the industrial sector in Nigeria. It is noteworthy that most studies before now excluded oil prices, as to ascertain whether rise or fall in its prices has any impact on the decline in industrial sector share in Nigeria. This study will fill that gap by introducing the oil price macroeconomic variable.

LITERATURE REVIEW

Despite the broad consensus on the strategic importance of the industrial sector, empirical evidence on how macroeconomic variables influence its performance remains both mixed and context-dependent. A dominant strand of the literature converges on the view that macroeconomic instability constitutes a major constraint on industrial growth. Within this perspective, key indicators such as inflation, exchange rates, foreign direct investment, interest rates, and unemployment are identified as critical channels through which macroeconomic

conditions shape industrial outcomes. A large body of studies; including those by Romanus et al. (2024), Thankgod & Nwikina (2023), Paulo & Joaquim (2023), Odey and Agunobi (2023), Felix et al. (2023), Anochie (2023), Anthony (2023), Omolola et al. (2023), Martin and Ezeanyaeji (2022), Adedoyin et al. (2022), Adigun et al. (2022), Elisangela et al. (2021), Pam et al. (2021), Ndife (2020), Chioma (2020), Ezu et al. (2020), Fabrizio et al. (2019), Olabode (2018), Manoj et al. (2018), Khan et al. (2018), Ghulam et al. (2018), Okafor et al. (2018), Akinmulegun & Falana (2018), Dan & Yao (2017), Okonkwo & Egbulonu (2016), Lawal (2016), Erinma (2016), Chikezie (2015), Emerenini and Ajudua (2014), Nwole (2013), Yakubu & Jibrin (2013), Audu & Amaegberi (2013), Adegboyega et al. (2023), Opaluwa et al. (2010), Hacker et al. (2009), and Christopher (2002), consistently emphasize that unfavourable macroeconomic conditions tend to undermine industrial performance.

However, rather than uniformly presenting these variables as constraints, a closer examination of this literature reveals important variations in how their effects manifest. For instance, while inflation and exchange rate volatility are frequently associated with rising production costs and reduced competitiveness, the severity of these effects appears to depend on structural characteristics such as the degree of import dependence, policy credibility, and financial market development, (Odey & Agunobi, 2023; Manoj et al., 2018; Nwole, 2013). Similarly, interest rates and foreign direct investment are often treated as linear determinants of industrial output, yet their influence may be contingent on the efficiency of credit allocation and the absorptive capacity of the domestic economy, (Akinmulegun & Falana, 2018; Chikezie, 2015). This suggests that macroeconomic variables do not operate as isolated drivers but interact with institutional and structural conditions, thereby producing heterogeneous outcomes across studies. Consequently, the apparent consensus in the literature masks underlying complexities regarding transmission mechanisms and the contextual sensitivity of results.

In contrast to this predominantly constraint-oriented perspective, another strand of the literature offers a more refined and, in some cases, optimistic interpretation of industrial sector dynamics. Authors such as Robert & Ramana (1997) and Christopher (2009) argue that changes in the industrial sector's contribution to output should not necessarily be interpreted as evidence of decline or inefficiency. Instead, they situate such changes within the broader process of structural transformation, where differential productivity growth across sectors, particularly between manufacturing and services drives resource reallocation over time. From this viewpoint, a declining industrial share may reflect improvements in overall economic efficiency and shifting comparative advantage, rather than macroeconomic mismanagement or sectoral weakness.

Hence, the concentration of empirical studies on developing economies, particularly Nigeria, underscores the importance of context in shaping these relationships. The findings reported by studies such as Opaluwa et al. (2010), Nwole (2013), Akinmulegun & Falana (2018), and Adedoyin et al. (2022), among others, suggest that structural rigidities, policy inconsistencies, and exposure to external shocks may amplify the negative effects of macroeconomic variables. This raises an important question as to whether the observed industrial outcomes are primarily driven by macroeconomic mismanagement or by deeper structural and institutional constraints that condition how these variables operate.

THEORETICAL FRAMEWORK

Theoretically, this study is anchored on the Dutch Disease theory as formalized by Corden and Neary (1982), which explains how a boom in the natural resource sector can generate adverse structural consequences for other productive sectors of the economy. In the Nigerian context, the discovery and subsequent expansion of crude oil exports from the 1970s provide a classic illustration of this phenomenon. The rapid inflow of oil revenues led to a substantial increase in foreign exchange earnings, triggering the spending effect, which appreciated the real exchange rate of the naira. This appreciation made non-oil exports, particularly, manufactured goods and agricultural products less competitive in international markets, while simultaneously encouraging import dependence, (Adegboyega et al. 2023; Ndife 2020; Chioma, 2020). However, beyond mere appreciation, the volatility of global oil prices introduced instability into Nigeria's exchange rate dynamics. Periods of oil price booms strengthened the currency artificially, whereas sharp declines in oil prices often led to exchange rate depreciation, macroeconomic instability, and inflationary pressures. These

fluctuations created uncertainty, discouraged long-term industrial investment, and raised input costs for domestic firms reliant on imported capital and intermediate goods, (Odey & Agunobi, 2023).

In addition, the Dutch Disease theory helps explain distortions in credit allocation and inflationary trends within the Nigerian economy. The dominance of the oil sector attracted disproportionate financial and policy attention, often leading to preferential credit allocation toward oil-related activities and government spending, while the industrial sector remained underfunded (Opaluwa et al., 2010). This misallocation of financial resources constrained industrial expansion and technological upgrading. Furthermore, large oil revenues contributed to excess liquidity in the economy, fuelling inflation, especially when not effectively sterilized. Rising inflation eroded purchasing power, increased production costs, and further weakened the competitiveness of local industries. Consequently, the interaction between oil price movements, exchange rate volatility, inflation, and skewed credit distribution reinforces a cycle of industrial decline. Rather than fostering broad-based economic development, the oil boom entrenched structural imbalances that undermined Nigeria's industrial base, reflecting the core theme of the Dutch Disease theory.

METHODOLOGY

The study relies predominantly on secondary data sourced from various repositories:

Table 1: Description of Variables

Variable	Description	Source
INF	Inflation rate	National Bureau of Statistics
IND	Share of Industrial Sector	Central bank of Nigeria/National Bureau of Statistics
EXR	Exchange rate	Central bank of Nigeria
Oil	Oil prices	Nigerian National Petroleum Corporation
CPS	Credit to private Sectors	Central bank of Nigeria
LR	Lending rate	Central bank of Nigeria

Source: Author's computation, 2024

Model Specification

Interestingly, in accordance with a study on Impact of macroeconomic variables on the manufacturing sector in Nigeria by Adedoyin et al., (2022), inflation rate, interest rate, and exchange rate were observed to have a negative impact on the manufacturing sector in Nigeria because when these variables increase, manufacturing in Nigeria decreases. Furthermore, findings from the study showed that despite Nigeria being an oil-producing country, higher energy prices have continued to impact negatively on industrial output, largely, because the economy relies on imported fuel. The scholars, hence, proposed that policymakers keep a focus on the inflation rate, the exchange rate, and the interest rate since these would help the manufacturing industry. The reason for the above was because of the reductin of the exchange rate, which would favour the manufacturing industry since the industry would be able to import plants and equipment easily to aid in the production process. The need to focus on the interest rate was also essential since the interest rate was used in the growth of the manufacturing industry; hence a high interest rate would limit the ability of the manufacturing industry to obtain money for growth.

Therefore, drawing inspiration from Adedoyin's et.al., (2022) model, this study seeks to adapt and expand upon the existing framework by incorporating additional variables, while dropping some in order to address

identified gaps in the research landscape. This is because while they focussed on the manufacturing sector alone, we will be focussing on the entire industrial sector.

The model of the study is therefore, specified as follows:

IND =f (INF, EXR, Oil, CSP, and LR) …… (***eqn***. 1)

Where:

IND= Share of Industrial sector

INF = Inflation rate

EXR = Exchange Rate

Oil = Oil prices

CSP = Credit to private sector

LR = Lending rate (which proxies the interest rate)

Further specifying the model in the econometric form (stochastic form) equation (1) becomes:

$IND = a_0 + a_1 INF + a_2\ EXR + a_3 Oil + a_4 CSP + a_5 LR + Ut$ …… (***eqn***. 2)

$a_1 < 0,\ a_2 < 0,\ a_3 >< a_4 >< a_5 >< 0$

Where:

a_0= the intercept of the regression line

a_1, a_2, a_3, a_4, a_5= the slope of the regression line

Ut = error term or stochastic element

The ARDL model estimated is specified as follows:

$$\Delta IND_t = \beta_0 + \sum_{i=1}^{n} \beta_1\, \Delta IND_{t-i} + \sum_{i=0}^{n} \beta_2\, \Delta INF_{t-i} + \sum_{i=0}^{n} \beta_3\, \Delta EXR_{t-i} + \sum_{i=0}^{n} \beta_4\, \Delta OIL_{t-i} + \sum_{i=0}^{n} \beta_5\, \Delta CPS_{t-i} + \sum_{i=0}^{n} \beta_6\, \Delta LR_{t-i} + \phi_1 IND_{t-i} + \phi_2 INF_{t-i} + \phi_3 EXR_{t-1} + \phi_4 OIL_{t-1} + \phi_5 CPS_{t-1} + \phi_6 LR_{t-1} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (\boldsymbol{eqn}.3)$$

In equation 3 $\Delta \mathrm{IND_t}$ is the difference of Share of Industrial to GDP at time t, β_o is a constant term $\beta_1, \beta_2, \beta_3, \beta_4$, β_5 and β_6 are the coefficients of the independent variables estimated. The $\phi_1, \phi_2, \phi_3, \phi_4, \phi_5\ and\ \phi_6$, are the lag operators, while ε_t is the error term.

The Error Correction Model (ECM) representation of equation 1 is expressed as follows:

$$\Delta IND_t = \beta_0 + \sum_{i=1}^{n} \beta_1\, \Delta RIND_{t-i} + \sum_{i=0}^{n} \beta_2\, \Delta INF_{t-i} + \sum_{i=0}^{n} \beta_3\, \Delta EXR_{t-i} + \sum_{i=0}^{n} \beta_4\, \Delta OIL_{t-i} + \sum_{i=0}^{n} \beta_5\, \Delta CPS_{t-i} + \sum_{i=0}^{n} \beta_6\, \Delta LR_{t-i} + \pi_1 ECT_{t-1} + \varepsilon_{1t}$$ --------- (***eqn***. 4)

The ECM parameters have the same description of the ARDL parameters described in equation 1, $\pi_1 ECT_{t-1}$ is the error correction term that measures the speed of adjustment.

DATA PRESENTATION AND ANALYSIS

Table 2: Descriptive Statistics with Original/Untransformed Data

	IND (₦ Billions)	INF (%)	EXR (₦/$)	Oil (US$)	CPS (₦ Billions)	LR (%)
Mean	16.596	19.079	127.971	47.049	6398.733	16.831
Median	14.624	13.007	118.567	33.290	948.464	16.940
Maximum	34.661	72.836	645.194	114.210	39293.150	29.800
Minimum	9.931	5.388	0.618	12.630	75.456	8.900
Std. Dev.	5.766	16.281	142.785	31.875	8991.024	4.463
Skewness	1.259	1.867	1.548	0.816	1.624	0.287
Kurtosis	4.163	5.473	5.555	2.370	5.584	3.511
Jarque-Bera	13.792	35.949	28.877	5.486	30.878	1.059
Probability	0.001	0.000	0.000	0.064	0.000	0.589
Observations	43	43	43	43	43	43

Source: Researcher's computation, (2025).

The statistical distribution of these macroeconomic indicators especially inflation, exchange rate, and credit highlights a macroeconomic environment that is highly volatile, risk-prone, and often unfriendly to industrial development. Non-normality in key variables indicates the presence of frequent economic shocks, policy inconsistencies, and structural weaknesses, all of which contribute to the sustained decline of Nigeria's industrial sector.

Table 3: Unit root test

Augmented Dickey Fuller Test (At Level)						
	IND	**INF**	**EXR**	**OIL**	**CPS**	**LR**
t-Statistic	-2.130**	-1.871*	-0.818	-0.393	1.591	-0.227
Prob.	0.034	0.059	0.356	0.536	0.970	0.599
Augmented Dickey Fuller Test (At First Difference)						
t-Statistic	-4.451***	-6.773***	-5.337***	-5.872***	-2.510**	-9.890***
Prob.	0.000	0.000	0.000	0.000	0.014	0.000
Phillips & Perron (At Level)						

t-Statistic	-3.437***	-1.727*	0.011	-0.217	2.884	-0.293
Prob.	0.001	0.080	0.681	0.602	0.998	0.574
Phillips & Perron (At First Difference)						
t-Statistic	-4.306***	-11.054***	-5.133***	-6.073***	-2.510**	-9.951***
Prob.	0.000	0.000	0.000	0.000	0.014	0.000

Note: The asterisk ***, ** and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Lag Length based on SIC and Probability based on MacKinnon (1996) one-sided p-values

Source: Researcher's computation, (2025).

The unit root tests using ADF and PP show that only industrial output and inflation were stationary at level, while exchange rate, oil prices, credit to the private sector, and lending rate were non-stationary. However, after first differencing, all variables became stationary at highly significant levels under both tests, indicating that most variables are integrated of order one, I(1). This mixture of I(0) and I(1) variables implies that the ARDL modelling approach is appropriate for the analysis, as it can accommodate different orders of integration without leading to spurious results.

Table 4: Granger Causality Test Results (Toda-Yamamoto Approach)

The Toda-Yamamoto causality test was applied to examine directional relationships among six macroeconomic variables: Industrial GDP (IND), Inflation (INF), Exchange Rate (EXR), Lending Rate (LR), Oil Prices (OIL), and Credit to the Private Sector (CSP). It was selected due to its robustness to mixed integration orders.

Dependent Variable	Granger-Causing Variable	Chi-Sq	df	p-value	Causality
CPS	OIL	5.762	1	0.0164	OIL ⇒ CPS
EXR	CPS	6.680	1	0.0098	CPS ⇒ EXR
IND	INF	4.245	1	0.0394	INF ⇒ IND
IND	LR	6.455	1	0.0111	LR ⇒ IND
INF	OIL	4.876	1	0.0272	OIL ⇒ INF
OIL	EXR	6.293	1	0.0121	EXR ⇒ OIL

The Toda-Yamamoto Granger causality results reveal several significant and interconnected relationships among the macroeconomic variables. Oil prices were found to Granger-cause both credit to the private sector and inflation, highlighting the strong influence of oil price movements on domestic liquidity conditions and price stability. Credit to the private sector also Granger-causes the exchange rate, suggesting that credit expansion can exert pressure on the foreign exchange market. In addition, industrial output is Granger-caused by inflation and lending rate, underscoring the sensitivity of industrial performance to macroeconomic stability

and financing costs. Exchange rate changes were also found to Granger-cause oil revenues, reflecting valuation effects on oil earnings.

Table 5: Bound Test

Null Hypothesis: No levels relationship				
Test Statistic	**Value**	**Significance**	**Lower bound I(0)**	**Upper bound I(1)**
F-statistic	4.845***	10%	2.08	3
k	5	5%	2.39	3.38
		1%	3.06	4.15

Note: The asterisk *** denote statistical significance at 1%levels, respectively.

Source: Researcher's computation, (2025).

The Bounds Test results indicate the existence of a long-run equilibrium relationship among industrial output and the selected macroeconomic variables. The computed F-statistic of 4.845 is significant at the 1% level and exceeds the upper bound critical value of 4.15, leading to the rejection of the null hypothesis of no cointegration. This provides strong evidence of a stable long-run relationship among industrial output, inflation, exchange rate, oil prices, credit to the private sector, and lending rate. Consequently, the use of the ARDL long-run framework and the associated Error Correction Model (ECM) is empirically justified for analysing the dynamics of Nigeria's industrial sector.

Table 6: Long and Short run Impact of selected macroeconomic variables on the share of the industrial sector in Nigeria

Long Run				**Short Run**			
Variable	Coefficient	Std. Error	Prob.	Variable	Coefficient	Std. Error	Prob.
Constant	-0.225	0.083	0.017	DLOG(INF,2)	-0.045***	0.009	0.000
DLOG(INF)	-0.087*	0.046	0.079	DLOG(EXR(-1))	-0.003	0.019	0.878
LOG(EXR(-1))	-0.043**	0.020	0.050	DLOG(OIL)	0.090*	0.018	0.000
LOG(OIL)	0.111***	0.025	0.001	DLOG(CPS,2)	0.032	0.040	0.436
DLOG(CPS)	-0.138*	0.073	0.079	D(LR,2)	-0.001	0.001	0.360
D(LR)	-0.005	0.007	0.430	ECT (-1)	-0.773***	0.111	0.000
Model Evaluation							
R-squared	0.877	DW- stat	2.333				

Adjusted R-squared	0.821						

Note: The asterisk ***, ** and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Source: Researcher's computation, (2025).

The results show that inflation and exchange rate instability are major constraints on Nigeria's industrial sector across both the short and long run. Inflation exerts a consistently negative effect, with short-run price volatility having a particularly strong and disruptive impact on industrial planning and investment, while sustained inflation erodes competitiveness over time. Exchange rate depreciation also harms industrial output in the long run, reflecting the sector's dependence on imported inputs, although its short-run effect is muted. In contrast, oil prices positively influence industrial performance in both periods, largely through revenue and demand channels, but this benefit highlights the sector's structural dependence on volatile global oil markets.

Financial variables display mixed outcomes. Credit to the private sector negatively affects industrial output in the long run, suggesting misallocation of funds away from productive industrial activities, while lending rates are insignificant, indicating deeper structural constraints beyond borrowing costs. The significant and large error correction term confirms a stable long-run equilibrium and rapid adjustment to shocks. The findings underscore the need for macroeconomic stability, effective exchange rate management, and targeted financial sector reforms to support sustainable industrial growth, in line with existing empirical evidence in the literature.

Table 7: Post-estimation residual diagnostics

Technique	F-Stat & JB/ (Prob)	Null Hypothesis	Decision
Serial Correlation	2.64943 (0.111)	No serial correlation	Accepted
Heteroskedasticity	0.560644 (0.861)	Homoscedascity	Accepted
Normality	0.170 (0.427)	Normal distribution	Accepted

Note: Values in bracket are the probability values of the F-stat and Jarque-Bera tests for residual diagnostics.

Source: Researcher's computation, (2025).

The post-estimation diagnostic tests confirm the adequacy and robustness of the ARDL model. The Breusch-Godfrey LM test indicates no serial correlation in the residuals, the Breusch-Pagan-Godfrey test confirms homoscedasticity, and the Jarque-Bera test shows that the residuals are normally distributed, as all associated p-values exceed the 5% significance level. Together, these results imply that the model satisfies the classical linear regression assumptions, ensuring unbiased and efficient estimates and reliable statistical inference. Consequently, the findings on the macroeconomic determinants of the declining industrial sector's share in Nigeria's GDP are empirically sound and credible.

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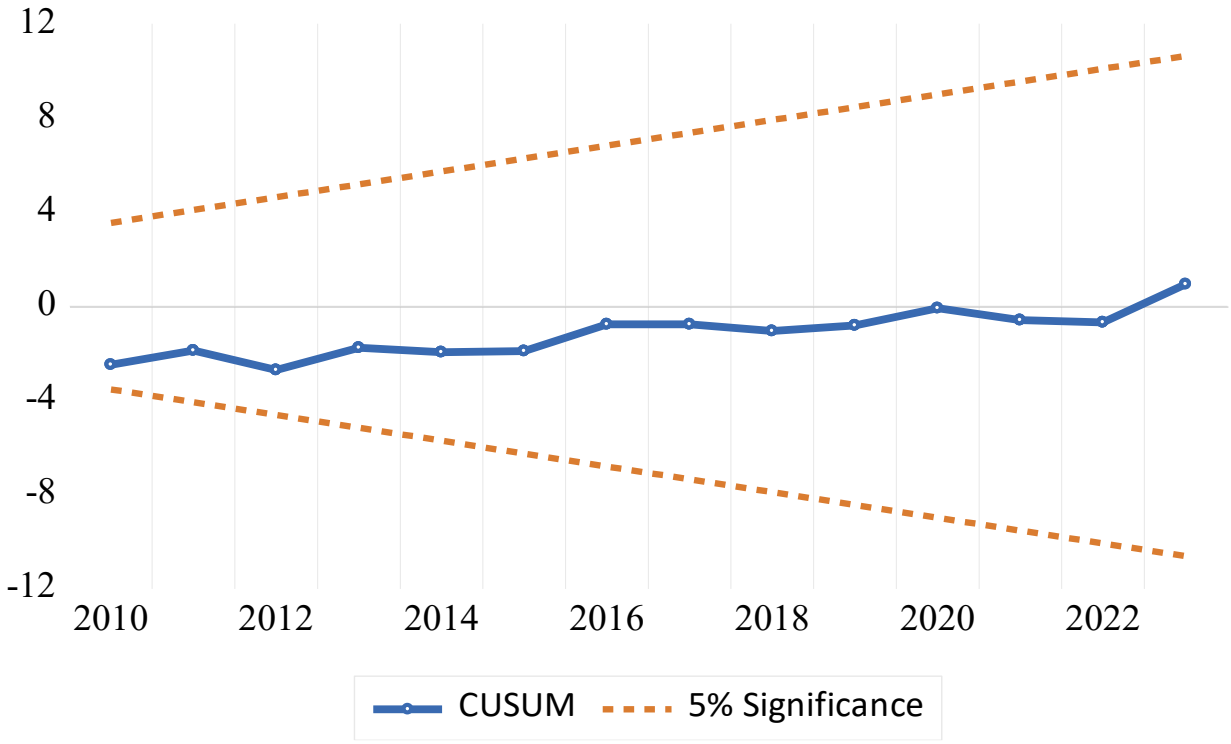
Stability test of the estimated models

Figure 1: CUSUM Test for the Models



Source: Researcher's computation, (2025).

The CUSUM (Cumulative Sum of Recursive Residuals) stability test result, as shown in the graph, provides insights into the structural stability of the estimated ARDL model over the sample period. The solid blue line represents the cumulative sum of the recursive residuals, while the dashed orange lines indicate the critical bounds at the 5% significance level. The key interpretation criterion here is whether the CUSUM line remains within the 5% critical bounds throughout the sample period.

From the plot, it is evident that the CUSUM line stays entirely within the upper and lower critical bounds. This outcome leads us to accept the null hypothesis of parameter stability at the 5% significance level. In essence, there is no evidence of structural breaks or instability in the coefficients of the estimated model during the period under review.

This confirms that the model is structurally stable over time, which strengthens the credibility and reliability of the long-run and short-run estimates obtained. It also implies that the estimated relationships between the industrial sector's share of GDP and the selected macroeconomic variables are consistent and not distorted by time-specific shocks or regime changes during the studied period.

DISCUSSION OF FINDINGS

The findings confirm a persistent decline in Nigeria's industrial sector since the 1980s, driven by macroeconomic instability and structural distortions consistent with the Dutch Disease framework. Heavy dependence on oil revenues has diverted policy focus and investment away from industrialization, creating sectoral imbalances and weakening infrastructure and human capital development (Corden & Neary, 1982). High inflation and sustained exchange rate depreciation emerged as major long-run constraints, with inflation eroding purchasing power and investment confidence and exchange rate depreciation raising production costs in Nigeria's import-dependent industrial structure (Rodrik, 2008; Adedoyin et al., 2022). Although exchange rate adjustments are often expected to enhance competitiveness, Nigeria's experience shows that, without

reducing import dependence, depreciation instead fuels cost-push inflation and undermines industrial viability over time (Chikezie, 2015; Khan et al., 2018).

Oil prices exhibit a positive short- and long-run relationship with industrial output, reflecting temporary fiscal expansions and demand effects during oil booms; however, this masks deeper structural weaknesses, as oil revenues often reinforce import dependence and crowd out non-oil productive sectors (Omolola et al., 2023). Financial sector dynamics further highlight systemic inefficiencies, with credit to the private sector exerting a negative long-run effect on industrial output due to misallocation toward low-risk, non-productive activities, in line with credit rationing theory (Stiglitz & Weiss, 1981; Anthony, 2023). The insignificance of lending rates, despite their high levels, supports the investment-climate argument that infrastructure deficits, policy inconsistency, and insecurity outweigh financing costs in shaping industrial investment decisions (World Bank, 2005). Together, these findings underscore the need for macroeconomic stabilization, targeted industrial finance, and policies that transform oil revenues into sustainable industrial linkages.

CONCLUSION AND POLICY RECOMMENDATIONS

This study provides a comprehensive empirical assessment of the macroeconomic determinants influencing the declining share of Nigeria's industrial sector in GDP, employing the ARDL methodology to analyze 43 years of annual data (1981-2023) both short-run dynamics and long-run equilibrium relationships. The study examines the impact of inflation rate, exchange rate, lending rate (which proxies interest rate), oil prices and credit to private sector on the share of industrial sector to GDP. The findings reveal that macroeconomic instability, particularly inflation and exchange rate volatility, exerts significant adverse effects on industrial performance. In the long run, inflation and exchange rate depreciation negatively impact industrial output, reflecting structural vulnerabilities such as import dependency, rising production costs, and eroded investor confidence. Conversely, oil prices demonstrate a positive relationship with the share of industrial sector, underscoring the dual role of oil revenues in providing fiscal liquidity while simultaneously exposing the economy to Dutch Disease effects, were resource dominance stifles diversification. Notably, credit to the private sector and lending rates show counterintuitive or insignificant effects, suggesting inefficiencies in financial intermediation and limited access to productive financing for industrial firms. The error correction mechanism confirms a robust long-run equilibrium, with a high adjustment speed (77%) restoring deviations annually, validating the model's stability and reliability.

Based on the findings from this study, we suggest:

1. The Central Bank of Nigeria should prioritize inflation targeting frameworks to curb persistent inflationary pressures, which erode industrial competitiveness. This requires tightening monetary policy through disciplined open market operations and adjusting the monetary policy rate (MPR) to anchor inflation expectations. Concurrently, a managed exchange rate regime should be adopted to reduce volatility. The CBN could implement a hybrid system combining periodic interventions in forex markets with strategic accumulation of foreign reserves to stabilize the naira.
2. To counteract the "Dutch Disease" effect, Nigeria must institutionalize mechanisms to channel oil windfalls into industrial development. A Sovereign Wealth Fund (SWF) should be expanded to allocate a fixed percentage (e.g., 20%) of oil revenues to critical industrial infrastructure, such as power plants, transportation networks, and industrial parks. Legislation should mandate that a portion of oil earnings be ring-fenced for sector-specific investments, including renewable energy projects to reduce reliance on costly diesel generators. Additionally, an Oil Price Stabilization Fund could be established to cushion the economy during oil price crashes, ensuring steady funding for industrialization even during revenue shortfalls.
3. Although interest rate was observed to have no much impact on the sector, addressing credit misallocation through the establishment of a National Industrial Development Bank (NIDB) to provide long-term, low-interest loans to manufacturing firms could be a game changer. Commercial banks should be incentivized (via tax breaks) to allocate 15-20% of their loan portfolios to industrial projects, particularly SMEs in agro-processing and machinery.

4. Prioritize investments in energy infrastructure to resolve chronic power shortages, which inflate production costs. Fast-track the completion of the National Integrated Power Projects (NIPPs) and incentivize private-sector participation in renewable energy (e.g., solar mini-grids) through tax holidays and feed-in tariffs. Simultaneously, rehabilitate transport corridors (e.g., Lagos-Kano rail lines, Apapa Port) to reduce logistics bottlenecks.

Future research could expand on this work by integrating geopolitical variables such as insecurity and climate-induced disruptions (e.g., flooding) into the model which perhaps would provide a more holistic understanding of Nigeria's industrial challenges, particularly as these factors disproportionately affect agricultural input sourcing and rural industrialization. Also, employing alternative methodologies, such as nonlinear ARDL to capture asymmetric effects of oil price shocks or Vector Error Correction Models (VECM) for deeper causality analysis, could refine the findings.

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