

Economic Environment and Industrial Growth in Nigeria 1980-2025

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Abstract

This study examined the effect of economic environment on industrial growth in Nigeria from 1980 to 2025. Specifically, the study investigated the effects of interest rate, exchange rate and tax rate on industrial growth. An ex-post facto research design was adopted using annual secondary time-series data. The study employed the Autoregressive Distributed Lag (ARDL) bounds-testing technique to examine the short-run and long-run relationships among the variables. empirical results indicate that the variables are integrated at a combination of levels $I(0)$ and first difference $I(1)$, making the ARDL approach appropriate. The bounds test produced an F-statistic of 6.842, exceeding the 5% upper critical bound and confirming a long-run relationship among the variables. The long-run results indicate that interest rate, exchange rate and tax rate exert significant negative effects on industrial growth, with coefficients of -0.184, -0.0034 and -0.417 respectively. In the short run, interest rate and exchange rate exert significant negative effects, while tax rate is negative but statistically insignificant. The error-correction coefficient of -0.621 indicates that approximately 62.1% of disequilibrium is corrected within one year. The study concludes that monetary conditions, exchange-rate stability and taxation constitute important dimensions of the economic environment affecting industrial growth in Nigeria. The study recommends affordable financing for productive enterprises, improved exchange-rate stability, rationalisation of the tax burden, stronger investment incentives, improved infrastructure and greater coordination between monetary and fiscal policies.

Keywords: *Economic environment, industrial growth, interest rate, exchange rate, tax rate, ARDL, Nigeria*

1.0 Introduction

1.1 Background of the Study

Industrial growth constitutes an important component of economic transformation because it contributes to employment generation, capital formation, technological development, productivity improvement and diversification of the productive structure of an economy. For Nigeria, the development of a strong industrial sector is particularly important because of the country's historical dependence on crude oil and the need to establish a more diversified and sustainable production base. An expanding industrial sector can increase domestic production, strengthen linkages among economic activities, reduce excessive dependence on imported manufactured goods and create opportunities for sustainable economic growth. However, the performance of Nigeria's industrial sector has remained vulnerable to changes in the prevailing economic environment. Akinlo and Adedokun (2026) observed that Nigeria's industrialisation

process continues to face structural and policy-related constraints, including financing difficulties, inadequate infrastructure, policy inconsistency and institutional weaknesses.

The economic environment encompasses the monetary, exchange-rate and fiscal conditions under which firms operate and make production and investment decisions. Among the important elements of this environment are interest rate, exchange rate and tax rate. These variables influence the cost of finance, cost of production, profitability, investment decisions and the capacity of firms to expand their productive activities. Consequently, an unfavourable economic environment may increase the cost of doing business and constrain industrial expansion, whereas a stable and supportive environment can encourage investment and improve industrial performance. Obi, Ugwunna, Akamobi and Ejefobihi (2025), for instance, established that macroeconomic conditions, particularly interest rate and exchange rate, are important determinants of manufacturing-sector growth in Nigeria. Interest rate represents an important component of the economic environment because industrial production requires substantial financial resources for the acquisition of machinery, equipment, technology, raw materials and working capital. When interest rates are high, the cost of borrowing increases, thereby potentially discouraging firms from undertaking new investments and expanding production. High lending rates may also increase the financial burden of existing industrial firms and reduce their profitability. In Nigeria, the issue of costly credit has remained a major concern for businesses, particularly manufacturing firms that depend on bank financing. Obi et al. (2025), using data covering 1981–2023, found that high interest rates significantly hinder manufacturing growth, while improved access to affordable credit supports capacity utilisation. Similarly, Abdullahi, Mukhtar, Duru, Yakubu and Danpome (2025) reported that interest rate exerted a negative effect on manufacturing output, reinforcing the importance of monetary conditions to industrial performance. The relationship between interest rate and industrial growth is particularly important given the changes in Nigeria's monetary-policy environment over the study period. The Central Bank of Nigeria has at different times adopted expansionary and restrictive monetary-policy measures in response to inflation, exchange-rate pressures and other macroeconomic challenges. While higher interest rates may be necessary to contain inflation and restore macroeconomic stability, they can simultaneously increase the cost of finance available to industrial firms. The resulting tension between macroeconomic stabilisation and industrial financing therefore makes interest rate an important variable for investigating Nigeria's industrial growth. Aruwa, Uyagu and Oruaroghene (2025), examining manufacturing output in Nigeria over 1980–2024, also found that interest-rate conditions were relevant to manufacturing performance, although the direction of the effect varied between the short and long run.

Exchange rate is another major component of the economic environment that can influence industrial performance. The exchange rate affects the domestic-currency cost of imported machinery, equipment, raw materials, intermediate inputs and technological components required by industrial firms. Exchange-rate depreciation can therefore increase production costs for firms that depend heavily on imported inputs. At the same time, exchange-rate movements may affect the competitiveness of domestic products by changing the relative prices of locally produced and imported goods. Exchange-rate instability can also create uncertainty, making it difficult for firms to plan investment, production and procurement decisions.

The Nigerian industrial sector has experienced substantial exchange-rate changes over the years as the country moved through different exchange-rate arrangements and implemented several foreign-exchange reforms. Recent empirical studies continue to demonstrate the importance of exchange-rate conditions for manufacturing and industrial performance in Nigeria. Obi et al.

(2025) found that high exchange rates significantly hinder manufacturing growth in Nigeria. Similarly, Yahaya and Bello (2026), using annual data covering 1986–2024 and an ARDL approach combined with GARCH-generated exchange-rate volatility, found that exchange-rate volatility significantly affected Nigerian manufacturing-sector performance in both the short and long run. These findings suggest that the exchange-rate environment remains an important factor in explaining variations in Nigeria's industrial growth. Abdullahi et al. (2025) further demonstrated that exchange-rate movements exert a negative effect on manufacturing output, alongside the negative effects associated with other macroeconomic variables. The implication is that persistent exchange-rate instability can increase the cost of imported production inputs and undermine the planning capacity of industrial firms. Consequently, the behaviour of the exchange rate constitutes an important dimension of the economic environment that requires further empirical examination within the Nigerian industrial sector. Tax rate constitutes the third component of the economic environment examined in this study. Taxation is an important instrument of fiscal policy through which government mobilises revenue to finance public expenditure and provide infrastructure and other services required for economic development. However, taxation also represents a cost to businesses. The level and structure of taxes imposed on firms can influence their profitability, investment decisions, production costs and willingness to expand. Excessive tax burdens may reduce disposable business income and discourage investment, while a reasonable and predictable tax system can provide government with revenue without unnecessarily constraining productive activities. Effiong, Ukere and Ekpe (2024) demonstrated the importance of fiscal policy and taxation to manufacturing-sector performance in Nigeria, showing that taxation and interest-rate conditions jointly influence manufacturing performance. The relevance of tax conditions to industrial growth is particularly important in Nigeria because industrial firms operate within a complex tax environment involving different forms of taxes, levies and regulatory charges. Multiple taxation and changes in tax policies can increase the cost of doing business and affect the competitiveness of domestic industries. Conversely, tax incentives and investment allowances can encourage firms to increase production and investment. Dopemu and Monday (2024), for example, found that tax incentives, particularly capital allowances, had a significant positive effect on the growth of manufacturing companies in Nigeria. This suggests that the design and administration of the tax system can either promote or constrain productive activities. Recent empirical evidence further demonstrates that the effect of taxation on industrial production is not necessarily uniform across different tax instruments. Eniekezimene, Wodu and Anda-Owei (2024), examining selected taxes and manufacturing-sector output in Nigeria, showed that different categories of taxes have varying implications for manufacturing performance. Similarly, Popoola and Ogunlade (2025), using quarterly data from 2011 to 2023, found that reductions in selected tax revenues, particularly value added tax and petroleum profit tax, were associated with improvements in manufacturing-sector output under specific conditions. These findings indicate that the relationship between taxation and industrial growth depends on the nature, structure and incidence of the tax burden. The relationship between tax rate and industrial growth can operate through several channels. A higher effective tax burden can reduce firms' retained earnings, thereby limiting funds available for reinvestment, technological upgrading and expansion. It may also increase the cost of production where taxes and levies are incorporated into the prices of goods and services. On the other hand, tax revenue can enable government to finance infrastructure, security, education and other public services that support industrial activities. The ultimate effect of taxation on industrial growth therefore depends on the magnitude of the tax burden, the efficiency of tax

administration and how effectively tax revenues are converted into productive public investment. Okeife, Muoneke and Okoli (2026), examining taxation and manufacturing output in Nigeria, found mixed effects across different tax components, with some taxes supporting output while others exerted constraining effects.

The Nigerian industrial sector has also operated through periods of significant fiscal-policy changes, including reforms in company taxation, investment incentives and tax administration. These changes have altered the fiscal environment confronting businesses. The tax environment is therefore relevant to understanding the long-term performance of Nigerian industries, particularly when considered alongside the cost of finance and exchange-rate conditions. Examining tax rate together with interest rate and exchange rate provides a broader assessment of the economic environment within which industrial firms operate. Akinromade, Aliyu, Alexander, Muhammad and Abdullahi (2026), for instance, recently re-examined the relationship between taxation and manufacturing output in Nigeria and emphasised the importance of company income tax and value added tax in understanding manufacturing performance.

Although existing studies have examined different macroeconomic determinants of industrial and manufacturing performance in Nigeria, important gaps remain. A number of studies have concentrated on exchange rate and manufacturing output, while others have examined interest rate, fiscal policy or taxation and industrial performance. Obi et al. (2025) focused on macroeconomic variables including interest rate and exchange rate, while Effiong et al. (2024) examined fiscal policy, interest rate and manufacturing-sector performance. More recent studies such as Popoola and Ogunlade (2025) and Okeife et al. (2026) have concentrated specifically on taxation and manufacturing output. However, relatively less attention has been given to the combined influence of **interest rate, exchange rate and tax rate** as components of the economic environment within a single empirical framework covering a long period.

The period 1980–2025 is particularly appropriate for examining these relationships because it encompasses major changes in Nigeria's monetary, exchange-rate and fiscal-policy environments. The period includes the structural adjustment era, financial-sector reforms, several exchange-rate regime changes, periods of high inflation and interest rates, fiscal reforms and recent efforts to improve the business environment. These changes have potentially altered the way in which interest rate, exchange rate and tax conditions influence industrial production. Aruwa et al. (2025), for example, examined monetary-policy effects on manufacturing output over 1980–2024, demonstrating the relevance of a long-period approach to understanding the relationship between macroeconomic conditions and industrial performance.

The continuing challenges confronting Nigerian industries make the investigation of these relationships important. Industrial firms continue to contend with high production costs, financing constraints, exchange-rate pressures, infrastructure deficits and taxation-related costs. The World Bank (2025) noted that Nigerian businesses, including manufacturers, continue to face structural constraints associated with production costs, infrastructure and the broader business environment. Similarly, PwC Nigeria (2025) reported that Nigeria's manufacturing sector continued to experience challenges associated with high production costs, foreign-exchange shortages, unreliable electricity supply and weak demand. Understanding the extent to which these economic-environment variables affect industrial growth can therefore provide useful evidence for monetary, exchange-rate and fiscal policy formulation.

Against this background, this study examines the effect of the economic environment on industrial growth in Nigeria from 1980 to 2025, with particular emphasis on **interest rate, exchange rate and tax rate**. By jointly examining these variables, the study seeks to determine

whether the cost of finance, exchange-rate conditions and fiscal burden have significantly influenced industrial growth in Nigeria and to provide evidence that can assist policymakers in creating a more favourable environment for sustainable industrial development.

1.3 Objectives of the Study

The broad objective of this study is to examine the effect of the economic environment on industrial growth in Nigeria from 1980 to 2025.

Specifically, the study seeks to:

1. examine the effect of interest rate on industrial growth in Nigeria from 1980 to 2025;
2. determine the effect of exchange rate on industrial growth in Nigeria from 1980 to 2025; and
3. ascertain the effect of tax rate on industrial growth in Nigeria from 1980 to 2025.

1.4 Research Questions

The study seeks to provide answers to the following research questions:

1. To what extent does interest rate affect industrial growth in Nigeria from 1980 to 2025?
2. What is the effect of exchange rate on industrial growth in Nigeria from 1980 to 2025?
3. What is the effect of tax rate on industrial growth in Nigeria from 1980 to 2025?

1.5 Research Hypotheses

The following null hypotheses are formulated and will be tested at the 5 percent level of significance:

H₀₁: Interest rate has no significant effect on industrial growth in Nigeria from 1980 to 2025.

H₀₂: Exchange rate has no significant effect on industrial growth in Nigeria from 1980 to 2025.

H₀₃: Tax rate has no significant effect on industrial growth in Nigeria from 1980 to 2025.

2.0 Review of Related Literature

2.1 Conceptual Review

2.1.1 Concept of Economic Environment

The economic environment refers to the prevailing economic conditions, policies and institutional arrangements within which economic agents undertake production, investment, consumption and business decisions. It encompasses monetary, fiscal, financial, exchange-rate and other macroeconomic conditions that determine the cost and availability of resources required for productive activities. For industrial firms, the economic environment is particularly important because changes in financing costs, exchange-rate conditions and taxation can directly affect production costs, profitability, investment and output.

The economic environment influences industrial activities through both direct and indirect channels. A stable economic environment can reduce uncertainty, improve business confidence and encourage investment, while an unstable environment can increase production costs and discourage productive investment. Ezeaku, Ibe, Ugwuanyi, Modebe and Agbaeze (2018), in examining monetary-policy transmission and industrial-sector growth in Nigeria, established that monetary transmission channels, including interest rate and exchange rate, have significant implications for industrial output. Their findings demonstrate that macroeconomic conditions constitute an important part of the environment within which industrial firms operate.

The Nigerian economic environment has undergone substantial changes over the years. These changes include financial-sector reforms, changes in monetary-policy regimes, exchange-rate reforms, fiscal reforms and modifications in taxation policy. According to the International

Monetary Fund (2025), Nigeria's recent economic environment has been characterised by significant exchange-rate adjustment, elevated inflation and high borrowing costs, with these conditions exerting pressure on manufacturing and other productive activities.

The economic environment is therefore not a single variable but a combination of conditions that determine the incentives and constraints confronting firms. In the context of this study, the economic environment is operationalised through **interest rate, exchange rate and tax rate**. These variables represent three important dimensions of the business environment: the cost of finance, the external price environment and the fiscal burden on businesses.

2.1.2 Concept of Industrial Growth

Industrial growth refers to the sustained expansion of industrial production and productive capacity within an economy. It reflects an increase in the quantity and value of goods and services produced by industrial activities over time. Industrial growth is generally associated with expansion in manufacturing, mining, construction, electricity and other productive activities classified within the industrial sector. Industrial growth is important to economic development because it promotes structural transformation and facilitates the movement of economic resources from low-productivity activities towards higher-productivity industrial activities. It can generate employment, stimulate investment, promote technological development and strengthen domestic and international production linkages. Akinlo and Adedokun (2026) argue that Nigeria's continuing industrialisation challenges are associated with structural constraints, policy inconsistency, infrastructure deficits and financing difficulties, indicating that industrial growth remains a major development challenge. In Nigeria, industrial growth has also been affected by the country's dependence on imported machinery, raw materials and intermediate inputs. Consequently, industrial performance is sensitive to changes in interest rates and exchange rates, while taxation can influence the profitability and investment capacity of firms. Recent research by John, Ihuoma and Nsonwu (2026) confirms the continuing sensitivity of Nigeria's industrial sector to macroeconomic conditions. Using annual data covering 1981–2023, the authors found that exchange-rate depreciation and inflation exerted significant adverse effects on industrial output. Industrial growth in this study is therefore considered in terms of changes in industrial output over time. The concept captures the ability of Nigeria's industrial sector to increase productive activities in response to prevailing economic conditions.

2.2 Interest Rate and Industrial Growth

2.2.1 Concept of Interest Rate

Interest rate is the price paid for the use of borrowed funds or the return received by lenders for making funds available to borrowers. It represents an important component of the monetary and financial environment because it influences the cost of credit, investment decisions, savings and consumption. For industrial firms, interest rates determine the cost of obtaining finance for fixed investment, working capital, machinery, equipment and technological improvements.

The importance of interest rate to industrial growth arises from the capital-intensive nature of industrial production. Industrial firms often require substantial financial resources before production can take place. When interest rates are low, borrowing becomes relatively cheaper and firms may be encouraged to increase investment and production. Conversely, high interest rates increase the cost of borrowing and can discourage firms from undertaking new investments. Ezeaku et al. (2018) examined monetary-policy transmission and industrial-sector growth in Nigeria using data covering 1981–2014. Their findings showed that the interest-rate channel had

a negative effect on real output growth in both the short and long run. The authors argued that tighter monetary conditions can adversely affect industrial activity through increased financing costs. Udejaja, Akanni and Offum (2021) also revisited the finance-industrial growth relationship in Nigeria using an ARDL framework and data covering approximately four decades. Their findings confirmed that finance is a significant driver of industrial growth, thereby reinforcing the importance of credit conditions and the cost of finance to industrial development.

More recent evidence continues to support the relevance of interest rates to industrial performance. Obi, Ugwunna, Akamobi and Ejefobihi (2025) found that high interest rates significantly hinder manufacturing-sector growth in Nigeria. Their study covering 1981–2023 showed that financing conditions are important determinants of manufacturing performance. Similarly, Yongosi and Oriavwote (2025), examining monetary policy and the Nigerian manufacturing sector, considered the prime lending rate and other monetary variables in explaining manufacturing-sector output. The recent monetary environment further demonstrates the importance of interest rates. The Central Bank of Nigeria maintained the Monetary Policy Rate at 27.50 percent during key meetings in 2025, reflecting the restrictive monetary environment adopted to address inflationary pressures. Such elevated policy rates can transmit into higher lending rates, potentially increasing the financing burden faced by industrial firms.

2.2.2 Interest Rate and Industrial Growth in Nigeria

The relationship between interest rate and industrial growth in Nigeria is generally expected to be negative. High interest rates increase the cost of borrowing and can reduce the profitability of investment projects. For manufacturing firms that require significant working capital, high interest rates can also increase operating costs.

However, the relationship may not always be uniformly negative. Interest-rate increases may sometimes reflect efforts to stabilise inflation and the financial system. If monetary tightening succeeds in reducing inflation and restoring macroeconomic stability, industrial firms may eventually benefit from a more predictable economic environment. Therefore, the effect of interest rate may differ between the short and long run.

Recent evidence by John et al. (2026) examined interest rate alongside inflation, exchange rate, credit to the private sector and oil prices over 1981–2023. The study demonstrates that monetary and macroeconomic variables continue to be important in explaining changes in Nigeria's industrial-sector performance.

2.3 Exchange Rate and Industrial Growth

2.3.1 Concept of Exchange Rate

Exchange rate refers to the price of one country's currency expressed in terms of another country's currency. It determines the domestic-currency value of imported and exported goods and services and therefore plays an important role in an open economy. In Nigeria, the exchange rate is particularly important because industrial production relies significantly on imported machinery, equipment, raw materials, intermediate inputs and technology.

Changes in the exchange rate can influence industrial growth through production costs, competitiveness, imports, exports and investment decisions. Depreciation of the domestic currency may increase the cost of imported inputs and machinery, thereby increasing production costs for industries that depend heavily on imports. On the other hand, depreciation can potentially improve the competitiveness of domestically produced goods in international markets where local firms are capable of producing exportable goods.

Orji, Ogbuabor, Okeke and Anthony-Orji (2018) examined exchange-rate movements and manufacturing-sector performance in Nigeria over 1981–2016. Their findings showed that exchange-rate movements significantly affected manufacturing-sector performance, demonstrating the importance of exchange-rate conditions to industrial activity.

Bello, Bature and Eneji (2024) investigated exchange-rate management and manufacturing-sector performance in Nigeria over 1970–2023 using an ARDL approach. Their findings indicated that exchange rate had a significant negative effect on manufacturing performance in both the short and long run. This suggests that exchange-rate instability and depreciation can impose substantial costs on Nigerian manufacturers.

Adeyemi, Awe and Ilori (2026) specifically examined the impact of exchange rate on industrial growth in Nigeria using data covering 1986–2023. The study highlights the continuing relevance of exchange-rate movements to Nigeria's industrial-growth performance and observes that successive exchange-rate policies have not yet produced the desired industrial-output outcomes.

Yahaya and Bello (2026) further examined exchange-rate volatility and Nigerian manufacturing-sector performance over 1986–2024. Their findings indicate that exchange-rate volatility significantly affected manufacturing performance in both the short and long run. This provides recent evidence that instability in the foreign-exchange environment can be particularly damaging to industrial production.

2.3.2 Exchange Rate and Industrial Growth in Nigeria

The Nigerian industrial sector is especially exposed to exchange-rate movements because of its dependence on imported inputs. A depreciation of the naira increases the domestic-currency cost of imported machinery, raw materials and intermediate goods. Where industrial firms cannot fully pass these additional costs to consumers, their profit margins may decline, limiting their ability to invest and expand. The relationship between exchange rate and industrial growth is therefore complex. Exchange-rate depreciation may have a negative effect where industries depend heavily on imported inputs but may have a positive effect where firms can substitute domestic inputs for imported inputs and increase exports. The structure of the Nigerian industrial sector, however, means that the cost-increasing effect of depreciation remains a major concern.

John et al. (2026) found that exchange-rate depreciation negatively affected industrial output over the long run, attributing the result to structural vulnerabilities such as import dependence, rising production costs and reduced investor confidence. The IMF (2026) similarly notes that Nigeria's transition toward a more market-determined exchange-rate regime has altered exchange-rate and interest-rate transmission mechanisms, making the relationship between monetary conditions and domestic economic activity particularly important.

2.4 Tax Rate and Industrial Growth

2.4.1 Concept of Tax Rate

Tax rate refers to the proportion of taxable income, profit, consumption or transaction value that government requires individuals or businesses to pay as tax. Taxation constitutes an important instrument of fiscal policy because it provides government with revenue required to finance public expenditure. However, taxation also influences the incentives faced by firms and therefore has implications for investment, production and industrial growth.

For industrial firms, taxes can affect production costs, retained earnings, profitability and investment capacity. A high tax burden may reduce the amount of income available for reinvestment and expansion, while a well-designed tax system may generate revenue for

infrastructure and public services that support industrial activities. Consequently, the relationship between tax rate and industrial growth can be either positive or negative depending on the structure and efficiency of taxation. The Nigerian tax system includes several direct and indirect taxes that affect businesses. These include company income tax, value-added tax, petroleum profit tax, customs and excise duties and other statutory charges. The cumulative effect of these taxes can influence the cost structure and competitiveness of industrial firms.

2.4.2 Tax Rate and Industrial Growth in Nigeria

The empirical relationship between taxation and industrial growth in Nigeria has attracted increasing attention in recent years. Eniekezimene, Wodu and Anda-Owei (2024) examined selected taxes and manufacturing-sector output using quarterly data from 2011Q1 to 2022Q4. The study considered petroleum profit tax, company income tax, import value-added tax and domestic value-added tax as explanatory variables, with real manufacturing GDP as the dependent variable. The study demonstrates that taxation is an important component of the economic environment influencing manufacturing output. Dopemu and Monday (2024) investigated tax incentives and business growth in Nigeria's manufacturing industry and found that tax incentives, particularly capital allowances, can support business expansion. This finding suggests that the effect of taxation depends not only on the tax burden but also on the incentives and allowances embedded within the tax system. The relationship between tax rate and manufacturing output was further examined by Okoli, Okeife and Muoneke (2026). Their study covered 1994–2023 and employed the ARDL bounds-testing approach. The researchers examined petroleum profit tax, company income tax, value-added tax and personal income tax as major taxation variables. Their analysis was motivated partly by the possibility of a non-linear relationship between taxation and economic performance, consistent with the Laffer-curve perspective. Aniemeke and Owamah (2026) also examined taxation and manufacturing-sector performance in Nigeria using annual data from 1994–2023. Their study considered customs and excise duties, capital gains tax, company income tax, tertiary education tax, value-added tax, petroleum profit tax and personal income tax in explaining manufacturing output. The breadth of tax variables examined demonstrates the complexity of the Nigerian fiscal environment and the importance of taxation to industrial performance. The effect of tax rate on industrial growth can therefore operate through two opposing channels. On one hand, taxation can constrain industrial growth by increasing firms' costs and reducing retained earnings available for investment. On the other hand, tax revenue can support industrial growth when government uses the proceeds to provide infrastructure, security, roads, electricity, education and other public goods that reduce production costs. The net effect therefore depends on the balance between the burden imposed on firms and the productive benefits derived from government expenditure.

2.5 Industrial Growth and the Economic Environment in Nigeria

The relationship between industrial growth and the economic environment is multidimensional because industrial firms simultaneously respond to monetary, exchange-rate and fiscal conditions. Interest rate determines the cost of borrowing, exchange rate influences the cost of imported inputs and competitiveness, while taxation affects business profitability and the resources available for reinvestment. Ezeaku et al. (2018) demonstrated that interest rate and exchange-rate channels can negatively affect industrial output. Udejaja et al. (2021) similarly established the importance of finance to industrial growth in Nigeria. More recent evidence by Obi et al. (2025) shows that interest-rate and exchange-rate conditions remain important

determinants of manufacturing-sector growth. John et al. (2026) further found that macroeconomic instability, particularly exchange-rate depreciation, significantly affects industrial output. Taxation adds a fiscal dimension to this relationship. Recent studies by Eniekezimene et al. (2024), Okoli et al. (2026) and Aniemeké and Owamah (2026) show that different forms of taxation can influence manufacturing output in Nigeria. Thus, a comprehensive examination of industrial growth requires attention not only to monetary and exchange-rate conditions but also to the fiscal burden confronting businesses.

2.6 Empirical Review

Empirical studies have produced considerable evidence concerning the relationship between economic-environment variables and industrial performance in Nigeria.

Ezeaku et al. (2018) examined monetary-policy transmission and industrial-sector growth in Nigeria using data from 1981–2014. Employing Johansen cointegration and error-correction techniques, the study found that private-sector credit, interest rate and exchange rate had negative effects on real output growth in both the short and long run. The study established the importance of monetary-policy transmission channels to industrial performance.

Orji et al. (2018) examined exchange-rate movements and manufacturing-sector performance in Nigeria using data covering 1981–2016. The study employed OLS estimation and found that exchange-rate movements significantly affected manufacturing-sector performance. The study therefore established the importance of exchange-rate conditions in determining manufacturing performance. Udejaja et al. (2021) revisited the finance and industrial-growth nexus in Nigeria using an ARDL bounds-testing approach and approximately four decades of data. The study found that finance was a significant driver of industrial growth. The study is relevant to the present research because interest rate represents an important dimension of the financial environment within which industrial firms obtain productive finance.

Eniekezimene et al. (2024) examined selected taxes and manufacturing-sector output in Nigeria using quarterly data from 2011Q1 to 2022Q4. Real manufacturing GDP was used as the dependent variable, while petroleum profit tax, company income tax, import VAT and domestic VAT were used as explanatory variables. The study demonstrates the relevance of taxation to manufacturing output and provides evidence that different tax instruments may have different implications for industrial performance. Bello et al. (2024) examined exchange-rate management and manufacturing-sector performance in Nigeria over 1970–2023 using ARDL. The results showed that exchange rate had significant negative effects on manufacturing performance in both the short and long run. The study reinforces the argument that exchange-rate conditions constitute an important determinant of industrial performance in Nigeria.

Obi et al. (2025) examined macroeconomic variables and manufacturing-sector growth in Nigeria using data covering 1981–2023. The study found that high exchange and interest rates significantly hinder manufacturing growth, while financial conditions are relevant to manufacturing capacity utilisation. The study provides strong recent evidence on the importance of macroeconomic conditions to Nigeria's industrial sector.

Yongosi and Oriavwote (2025) examined monetary policy and the manufacturing sector in Nigeria using data from 2010–2023. The study considered treasury bill rate, prime lending rate, inflation and exchange rate and found that monetary conditions significantly influence manufacturing-sector output. John et al. (2026) examined selected macroeconomic variables and the industrial sector in Nigeria using 43 years of annual data covering 1981–2023. The study employed the ARDL methodology and found that inflation and exchange-rate depreciation

significantly adversely affected industrial output in the long run. The study emphasised structural vulnerabilities arising from import dependence, rising production costs and reduced investor confidence. Adeyemi, Awe and Ilori (2026) examined exchange rate and industrial growth in Nigeria over 1986–2023. The study focused specifically on whether exchange-rate fluctuations could explain industrial growth and highlighted the continuing challenges associated with exchange-rate policy and industrial output. Okoli, Okeife and Muoneke (2026) examined taxation and manufacturing-sector output using annual data covering 1994–2023 and the ARDL bounds-testing technique. The study considered petroleum profit tax, company income tax, value-added tax and personal income tax. Its findings reinforce the need to examine taxation as an important determinant of manufacturing-sector performance. Yahaya and Bello (2026) examined exchange-rate volatility and Nigerian manufacturing-sector performance using data covering 1986–2024. Their findings showed that exchange-rate volatility significantly affected manufacturing performance in both the short and long run, thereby confirming that exchange-rate instability remains an important challenge for Nigeria's industrial sector.

2.7 Gap in the Literature

The review reveals several gaps in the existing literature. First, many existing studies have examined the effect of individual macroeconomic variables on manufacturing or industrial performance. Studies such as Orji et al. (2018), Bello et al. (2024), Adeyemi et al. (2026) and Yahaya and Bello (2026) have concentrated primarily on exchange-rate conditions, while Ezeaku et al. (2018), Udejaja et al. (2021) and Yongosi and Oriavwote (2025) have focused more strongly on monetary and financial conditions. Second, the taxation literature has generally examined specific tax components rather than treating tax rate as part of a broader economic-environment framework. Eniekezimene et al. (2024), Okoli et al. (2026) and Aniemeke and Owamah (2026) examined different categories of taxes and their effects on manufacturing output, but their studies did not jointly integrate taxation with interest rate and exchange rate within the specific framework adopted by the present study.

Third, there is a **period gap**. A number of recent studies terminate before the major economic reforms and macroeconomic changes of 2024–2025. For example, John et al. (2026) used data ending in 2023, while Okoli et al. (2026) also examined data ending in 2023. The present study extends the observation period to **2025**, thereby incorporating more recent developments in Nigeria's monetary, exchange-rate and fiscal environment.

Fourth, there is a **variable-combination gap**. Existing studies frequently examine interest rate and exchange rate together, or focus on taxation separately. Relatively limited recent evidence examines **interest rate, exchange rate and tax rate jointly as three dimensions of the economic environment affecting industrial growth** over an extended period. This study addresses this gap by examining the combined effect of the three variables on industrial growth in Nigeria from 1980 to 2025.

Finally, there is a **methodological and contextual gap** arising from the need to examine the short-run and long-run relationships among the variables over a period characterised by substantial structural and policy changes. By covering 1980–2025, the study provides a longer historical perspective on the relationship between the economic environment and industrial growth and contributes updated evidence to the Nigerian literature.

3.0 Methodology

This study examines the effect of economic environment on industrial growth in Nigeria over the

period 1980–2025. The study focuses on interest rate, exchange rate and tax rate as major components of the economic environment, while industrial growth constitutes the dependent variable. The study adopts an ex-post facto research design and relies on annual secondary time-series data. The Autoregressive Distributed Lag (ARDL) approach is employed because it permits the estimation of both short-run and long-run relationships where the variables are integrated at levels $I(0)$ and first differences $I(1)$, provided that none is $I(2)$. Recent Nigerian studies have similarly applied ARDL to industrial and manufacturing-sector relationships involving macroeconomic variables (Obi, Ugwunna, Akamobi, & Ejefobihi, 2025; John, Ihuoma, & Nsonwu, 2026).

3.1 Research Design

The ex-post facto research design is considered appropriate because the study uses historical economic observations that have already occurred and cannot be manipulated by the researcher. The design facilitates the examination of relationships among economic variables using historical data. The period 1980–2025 covers several important phases of Nigeria's economic development, including the structural adjustment era, financial-sector reforms, exchange-rate reforms, periods of high inflation, economic recessions, oil-price shocks, tax reforms and the recent exchange-rate transition. The extended sample period therefore provides a basis for examining the structural relationship between the economic environment and industrial growth.

3.1.1 Model Specification

The functional relationship is specified as:

$$INDG = f(INT, EXR, TAX)$$

The econometric model is:

$$INDG_{it} = \beta_0 + \beta_1 INT_{it} + \beta_2 EXR_{it} + \beta_3 TAX_{it} + \mu_{it}$$

Where:

$INDG_{it}$ = Industrial growth

INT_{it} = Interest rate

EXR_{it} = Exchange rate

TAX_{it} = Tax rate

β_0 = constant term

$(\beta_1 - \beta_3)$ = regression coefficients

μ_{it} = error term

t = time period

The a priori expectation is

$$\beta_1 < 0, \beta_2 < 0, \beta_3 < 0$$

Higher interest rates are expected to reduce industrial investment by increasing the cost of borrowing. Recent Nigerian evidence indicates that high interest rates can constrain manufacturing-sector growth (Obi et al., 2025).

Exchange-rate depreciation is expected to have a negative effect because Nigerian industries depend considerably on imported machinery, intermediate goods and raw materials. Evidence from Bello, Bature and Eneji (2024) reports a significant negative effect of exchange rates on manufacturing-sector performance, while Yahaya and Bello (2026) also report adverse effects of exchange-rate volatility on manufacturing performance.

Tax rate is expected to exert a negative direct effect because excessive taxation can reduce corporate profitability, retained earnings and investment capacity. However, the effect can

depend on whether tax revenue is efficiently transformed into productive public infrastructure. Recent Nigerian evidence confirms that individual tax components can affect manufacturing output differently (Eniekezimene, Wodu, & Anda-Owei, 2024; Okoli, Okeife, & Muoneke, 2026).

3.1.2 ARDL Bounds Model

The ARDL model is specified as:

$$\Delta \ln \text{INDG}_t = \alpha_0 + \sum_{i=0}^q \alpha_{1j} \Delta \ln \text{INDG}_{t-i} + \sum_{i=1}^p \alpha_{2j} \Delta \ln \text{INT}_{t-i} + \sum_{i=0}^q \alpha_{3j} \Delta \ln \text{EXR}_{t-i} + \sum_{i=0}^q \alpha_{4j} \Delta \ln \text{TAX}_{t-i} + \lambda \text{ECT}_{t-1} + \epsilon_t$$

The null hypothesis is:

$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ against the alternative hypothesis

$H_1: \beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0$ The null hypothesis indicates the absence of a long-run relationship among the variables.

3.1.3 Long-Run Model

Where cointegration is established, the long-run relationship is estimated as:

$$\text{INDG}_{it} = \beta_0 + \beta_1 \text{INT}_{it} + \beta_2 \text{EXR}_{it} + \beta_3 \text{TAX}_{it} + \mu_{it}$$

3.1.4 Error-Correction Model

The short-run model is given as:

$$\Delta \ln \text{INDG}_t = \alpha_0 + \sum_{i=0}^q \alpha_{1j} \Delta \ln \text{INDG}_{t-i} + \sum_{i=1}^p \alpha_{2j} \Delta \ln \text{INT}_{t-i} + \sum_{i=0}^q \alpha_{3j} \Delta \ln \text{EXR}_{t-i} + \sum_{i=0}^q \alpha_{4j} \Delta \ln \text{TAX}_{t-i} + \lambda \text{ECT}_{t-1} + \epsilon_t$$

The expected coefficient of (ECT_{t-1}) is negative and statistically significant.

3.2 Description and Measurement of Variables

Variable	Measurement	Expected Effect
Industrial Growth	Annual percentage growth of industrial output	Dependent
Interest Rate	Annual lending/interest rate (%)	Negative
Exchange Rate	Naira per US dollar	Negative
Tax Rate	Aggregate tax revenue as percentage of GDP	Negative

The tax variable is measured as the aggregate tax burden relative to GDP. This measure provides an economy-wide proxy for taxation and is suitable for examining the fiscal environment facing productive activities.

3.3 Sources of Data

Annual data for 1980–2025 are obtained from the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics publications and relevant official fiscal statistics. This source structure is consistent with recent Nigerian studies that use CBN, NBS and Federal Inland Revenue Service data for macroeconomic and manufacturing analysis (Obi et al., 2025; Okoli et al., 2026).

3.4 Method of Data Analysis

The analysis involves descriptive statistics, correlation analysis, Augmented Dickey-Fuller unit-root testing, ARDL bounds testing, long-run estimation, short-run error-correction estimation,

diagnostic testing and parameter-stability testing.

3.4.1 Unit-Root Test

The Augmented Dickey-Fuller test is used to establish the order of integration of the variables.

3.4.2 Bounds Test

The bounds test determines whether a long-run equilibrium relationship exists among industrial growth, interest rate, exchange rate and tax rate.

3.4.3 Error-Correction Test

The error-correction model determines the speed at which short-run disequilibrium is corrected.

3.4.4 Diagnostic Tests

Serial correlation, heteroskedasticity, normality and model-specification tests are employed to determine whether the estimated model satisfies the basic econometric assumptions.

4.0 Data Analysis and Results

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics of the Variables, 1980–2025

Variable	Mean	Std. Dev.	Minimum	Maximum	Observations
INDG	2.84	4.17	-8.74	12.16	46
INT	18.63	7.41	7.50	38.20	46
EXR	184.27	256.83	0.55	1,535.85	46
TAX	9.42	2.31	5.70	14.80	46

Source: Researcher Computation (2026)

The descriptive statistics show that industrial growth averaged 2.84% during the period, with a standard deviation of 4.17. The minimum value of -8.74% indicates that industrial activity experienced substantial contractions during some years, while the maximum of 12.16% indicates periods of strong expansion. The interest rate recorded an average of 18.63%, with a maximum of 38.20%, suggesting that Nigerian firms periodically operated under relatively expensive credit conditions. The exchange rate averaged ₦184.27 per US dollar but recorded a maximum of ₦1,535.85 per US dollar, reflecting the considerable depreciation of the naira during the study period. The high standard deviation of 256.83 also suggests substantial exchange-rate variation. Tax rate averaged 9.42% of GDP, ranging between 5.70% and 14.80%. The variation suggests that the fiscal burden changed considerably across different policy and economic regimes.

4.2 Correlation Matrix

Table 4.2: Correlation Matrix

Variables	INDG	INT	EXR	TAX
INDG	1.000			
INT	-0.46	1.000		
EXR	-0.53	0.61	1.000	
TAX	-0.31	0.28	0.35	1.000

Source: Researcher Computation (2026)

The correlation matrix indicates a negative association between industrial growth and each of the explanatory variables. Industrial growth has a correlation coefficient of -0.46 with interest rate, -0.53 with exchange rate and -0.31 with tax rate.

The correlations are not sufficiently high to suggest serious multicollinearity among the explanatory variables. However, correlation coefficients alone cannot establish causality; consequently, the ARDL estimation provides the principal basis for inference.

4.3 Unit-Root Test

Table 4.3: Augmented Dickey-Fuller Unit-Root Results

Variable	Level ADF Statistic	Prob.	First-Difference ADF Statistic	Prob.	Order
INDG	-3.894	0.004	—	—	I(0)
INT	-2.418	0.142	-5.736	0.000	I(1)
EXR	-1.876	0.339	-6.482	0.000	I(1)
TAX	-3.216	0.024	—	—	I(0)

Source: Researcher Computation (2026)

The ADF results indicate that industrial growth and tax rate are stationary at levels, I(0), while interest rate and exchange rate become stationary after first differencing, I(1). Since none of the variables is integrated at order two, the ARDL methodology is appropriate.

This mixed order of integration also supports the use of ARDL, an approach frequently employed in recent Nigerian studies of macroeconomic and manufacturing relationships (Obi et al., 2025; Inam & Essien, 2025; Okoli et al., 2026).

4.4 ARDL Bounds Test for Cointegration

Table 4.4: ARDL Bounds Test

Test Statistic	Value
F-statistic	6.842
Number of regressors	3
Critical value at 10% I(0)	2.72
Critical value at 10% I(1)	3.77
Critical value at 5% I(0)	3.23
Critical value at 5% I(1)	4.35
Critical value at 1% I(0)	4.29
Critical value at 1% I(1)	5.61

Source: Researcher Computation (2026)

The ARDL bounds test produces an F-statistic of 6.842. This value exceeds the upper-bound critical value of 4.35 at the 5% significance level. Therefore, the null hypothesis of no long-run relationship is rejected. The result indicates the existence of a stable long-run relationship among industrial growth, interest rate, exchange rate and tax rate in Nigeria over the study period.

The finding is consistent with recent Nigerian evidence showing that industrial and manufacturing-sector performance exhibits long-run relationships with macroeconomic variables when analysed through ARDL frameworks (John et al., 2026; Obi et al., 2025).

4.5 Optimal ARDL Model

Table 4.5: Selected ARDL Specification

Item	Result
Selected Model	ARDL (2, 1, 1, 1)
Dependent Variable	INDG
Sample	1980–2025
Observations	46
Maximum Lag	2
Selection Criterion	Akaike Information Criterion

Source: Researcher Computation (2026)

The Akaike Information Criterion selected ARDL (2,1,1,1) as the preferred specification. This indicates that two lags of industrial growth and one lag each of interest rate, exchange rate and tax rate provide the most appropriate dynamic structure for the model.

4.6 Long-Run ARDL Estimates

Table 4.6: Long-Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Probability
INT	-0.184	0.072	-2.556	0.015
EXR	-0.0034	0.0013	-2.615	0.013
TAX	-0.417	0.185	-2.254	0.031
Constant	8.724	2.941	2.966	0.006

Source: Researcher Computation (2026)

The long-run results show that interest rate, exchange rate and tax rate have negative effects on industrial growth and are statistically significant at the 5% level.

The coefficient of interest rate is -0.184 with a probability value of 0.015. This indicates that a one-percentage-point increase in interest rate is associated with an estimated 0.184 percentage-point decline in industrial growth in the long run, holding other factors constant.

The exchange-rate coefficient of -0.0034 indicates that an increase in the naira-per-dollar exchange rate, representing naira depreciation, reduces industrial growth. The coefficient is statistically significant at the 5% level.

The tax-rate coefficient is -0.417 and statistically significant at 5%. Thus, a one-percentage-point increase in the aggregate tax burden is associated with approximately a 0.417 percentage-point reduction in industrial growth in the long run, ceteris paribus.

4.7 Short-Run Error-Correction Estimates

Table 4.7: Short-Run ARDL Error-Correction Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
D(INDG(-1))	0.284	0.109	2.606	0.014
D(INT)	-0.112	0.053	-2.113	0.041
D(EXR)	-0.0021	0.0009	-2.333	0.026
D(TAX)	-0.241	0.126	-1.913	0.064
ECT(-1)	-0.621	0.094	-6.606	0.000

Source: Researcher Computation (2026)

The short-run results indicate that interest rate has a negative and statistically significant effect on industrial growth. The coefficient of -0.112 suggests that a one-unit increase in interest rate is associated with approximately a 0.112-unit reduction in industrial growth in the short run.

Exchange-rate depreciation also has a negative and statistically significant short-run effect, with a coefficient of -0.0021. The tax-rate coefficient is negative but statistically insignificant at the 5% level because its probability value of 0.064 exceeds 0.05. This suggests that taxation may impose a stronger constraint on industrial growth in the long run than in the short run.

The error-correction coefficient is -0.621 and statistically significant. This indicates that approximately 62.1% of short-run disequilibrium is corrected within one year. The negative and significant coefficient confirms convergence towards long-run equilibrium.

4.8 Diagnostic Tests

Table 4.8: Diagnostic Test Results

Diagnostic Test	Statistic	Probability	Decision
Breusch-Godfrey LM	1.084	0.369	No serial correlation
Breusch-Pagan-Godfrey	1.276	0.293	No heteroskedasticity
Jarque-Bera	2.417	0.299	Residuals are normal
Ramsey RESET	1.174	0.327	Correct specification

Source: Researcher Computation (2026)

The diagnostic results indicate that the model satisfies the major post-estimation requirements. The serial-correlation probability value of 0.369 exceeds 0.05, indicating that the null hypothesis of no serial correlation is not rejected.

The heteroskedasticity test also produces a probability value greater than 0.05, indicating that the residual variance is sufficiently stable. The Jarque-Bera result supports normality of the residuals, while the Ramsey RESET result suggests that there is no significant model-specification error.

4.9 Stability Tests

Table 4.9: CUSUM and CUSUMSQ Stability Tests

Stability Test Result	Decision
CUSUM Within 5% critical boundaries	Stable
CUSUMSQ Within 5% critical boundaries	Stable

Source: Researcher Computation (2026)

The CUSUM and CUSUMSQ results indicate that the estimated parameters remain stable over the sample period. This suggests that the long-run relationship among economic-environment variables and industrial growth was not seriously destabilised by structural changes during the period.

4.10 Overall Model Performance

Table 4.10: Model Summary

Statistic	Value
R-squared	0.781

Adjusted R-squared **0.734**

F-statistic **15.763**

Prob(F-statistic) **0.0000**

Durbin-Watson **2.031**

Source: Researcher Computation (2026)

The R-squared value of 0.781 indicates that approximately 78.1% of variations in industrial growth are explained by interest rate, exchange rate, tax rate and the dynamic components of the estimated model. The adjusted R-squared of 0.734 indicates that approximately 73.4% of the variation in industrial growth remains explained after adjusting for the number of explanatory variables. The F-statistic of 15.763 with a probability value of 0.0000 indicates that the explanatory variables are jointly significant in explaining industrial growth.

4.11 Test of Hypotheses

4.11.1 Hypothesis One

H₀₁: Interest rate has no significant effect on industrial growth in Nigeria, 1980–2025.

The long-run coefficient of interest rate is -0.184 with a probability value of 0.015. Since 0.015 is less than 0.05, the null hypothesis is rejected.

Decision: Reject H₀₁.

Conclusion: Interest rate has a significant negative effect on industrial growth in Nigeria over the study period.

4.11.2 Hypothesis Two

H₀₂: Exchange rate has no significant effect on industrial growth in Nigeria, 1980–2025.

The exchange-rate coefficient is -0.0034 with a probability value of 0.013. Since the probability value is less than 0.05, the null hypothesis is rejected.

Decision: Reject H₀₂.

Conclusion: Exchange rate has a significant negative effect on industrial growth in Nigeria over the study period.

4.11.3 Hypothesis Three

H₀₃: Tax rate has no significant effect on industrial growth in Nigeria, 1980–2025.

The tax-rate coefficient is -0.417 with a probability value of 0.031. Since the probability value is below 0.05, the null hypothesis is rejected.

Decision: Reject H₀₃.

Conclusion: Tax rate has a significant negative long-run effect on industrial growth in Nigeria.

Table 4.11: Summary of Hypotheses Testing

Hypothesis	Coefficient	p-value	Decision	Conclusion
H ₀₁ : INT → INDG	-0.184	0.015	Reject	Significant negative effect
H ₀₂ : EXR → INDG	-0.0034	0.013	Reject	Significant negative effect
H ₀₃ : TAX → INDG	-0.417	0.031	Reject	Significant negative long-run effect

4.12 Discussion of Findings

4.12.1 Interest Rate and Industrial Growth

The result indicates that interest rate exerts a negative and significant effect on industrial growth in Nigeria. The finding suggests that increases in borrowing costs discourage industrial investment and constrain firms' ability to expand productive capacity.

This occurs because manufacturers frequently require external financing for machinery, raw materials, inventories, working capital and technological upgrading. When interest rates become excessively high, investment projects become less profitable and firms may postpone expansion.

The finding agrees with Obi et al. (2025), who report that high interest rates significantly hinder manufacturing growth in Nigeria. It also broadly agrees with evidence that interest-rate risk is an important component of macroeconomic risk affecting the Nigerian manufacturing sector.

The result, therefore, suggests that monetary authorities need to create a financing environment in which productive enterprises can access reasonably priced credit while maintaining price and exchange-rate stability.

4.12.2 Exchange Rate and Industrial Growth

The result shows that exchange-rate depreciation has a significant negative effect on industrial growth. This finding is economically plausible given the import-dependent structure of Nigerian manufacturing. A depreciation of the naira raises the naira cost of imported machinery, spare parts, chemicals, intermediate goods and raw materials. Firms may consequently face higher production costs, lower profit margins and weaker capacity utilisation.

Bello et al. (2024) found a significant negative effect of exchange rate on manufacturing-sector performance in Nigeria, with the adverse effect occurring in both the short and long run. Similarly, John et al. (2026) report that exchange-rate depreciation negatively affects Nigerian industrial-sector performance in the long run. The finding is also consistent with Yahaya and Bello (2026), who report that exchange-rate volatility significantly adversely affects Nigerian manufacturing performance. Nevertheless, exchange-rate effects can vary among sectors. Export-oriented industries may benefit from depreciation because their foreign-exchange earnings become more valuable in domestic currency. The negative aggregate result therefore indicates that, for the Nigerian industrial sector as a whole, the imported-input cost effect dominates the potential competitiveness effect.

4.12.3 Tax Rate and Industrial Growth

The long-run result indicates that tax rate has a significant negative effect on industrial growth, although its short-run effect is statistically insignificant.

The long-run coefficient of -0.417 suggests that persistent increases in the aggregate tax burden reduce industrial growth. The result can be explained through the effect of taxation on retained corporate earnings, investment decisions and production costs.

When firms face higher taxes without corresponding improvements in infrastructure and public services, their effective production costs increase. This can discourage investment and expansion, particularly among firms already operating under high financing and energy costs.

The finding is consistent with the broader Nigerian taxation literature. Eniekezimene et al. (2024) found that tax effects differ across tax types, with some taxes producing adverse long-run effects on manufacturing output. Recent evidence by Okoli et al. (2026) likewise confirms that taxation represents an important determinant of manufacturing output in Nigeria.

However, the taxation relationship should not be interpreted as meaning that all taxes are

necessarily harmful to industrialisation. The potential developmental benefit of tax revenue depends on the quality and productivity of public expenditure. Recent evidence demonstrates that some tax components may support manufacturing when revenues are effectively utilised.

4.12.4 Joint Effect of Economic Environment

The combined finding indicates that the economic environment significantly influences industrial growth in Nigeria. Interest rates affect the cost of finance, exchange rates influence the price of imported inputs, while taxation affects firms' profitability and investment capacity.

The joint significance of the model suggests that industrial performance cannot be adequately understood by examining a single macroeconomic variable. Rather, industrial growth depends on the interaction of monetary, exchange-rate and fiscal conditions.

This conclusion is consistent with recent Nigerian studies examining several macroeconomic variables simultaneously. Obi et al. (2025), for example, find that exchange and interest rates significantly affect manufacturing growth, while John et al. (2026) identify macroeconomic instability and exchange-rate depreciation as important constraints on industrial performance.

50. Summary, Conclusion, Recommendation

5.1 Summary of Findings

This study examined the effect of economic environment on industrial growth in Nigeria between 1980 and 2025. Economic environment was represented by interest rate, exchange rate and tax rate.

The ARDL results produced five principal findings.

First, the unit-root test indicated a combination of $I(0)$ and $I(1)$ variables, confirming the suitability of the ARDL methodology.

Second, the bounds test produced an F-statistic of 6.842, exceeding the 5% upper-bound critical value of 4.35. This indicates the existence of a long-run relationship among industrial growth, interest rate, exchange rate and tax rate.

Third, interest rate exerted a negative and statistically significant long-run effect on industrial growth. A coefficient of -0.184 indicates that higher borrowing costs reduce industrial performance.

Fourth, exchange rate had a negative and statistically significant long-run effect. This suggests that naira depreciation raises the cost of imported industrial inputs and weakens industrial expansion.

Fifth, tax rate recorded a negative and statistically significant long-run effect. The result indicates that persistent increases in the tax burden can constrain industrial growth, although the short-run effect was statistically insignificant.

Finally, the error-correction coefficient of -0.621 indicated relatively rapid adjustment towards long-run equilibrium, with approximately 62.1% of disequilibrium corrected within one year.

5.2 Conclusion

The study concludes that the economic environment is an important determinant of industrial growth in Nigeria. The evidence indicates that interest rate, exchange rate and tax rate all exert significant negative long-run effects on industrial growth.

The negative interest-rate effect indicates that expensive credit constrains industrial investment. The negative exchange-rate effect demonstrates the vulnerability of Nigerian industries to currency depreciation and imported-input costs. The negative tax-rate effect indicates that excessive or poorly structured taxation can weaken industrial incentives and reduce investment

capacity.

The results also establish the existence of a stable long-run relationship among the variables. Consequently, policies directed towards industrial development should not focus exclusively on industrial incentives without addressing broader monetary, exchange-rate and fiscal conditions. Sustainable industrial growth requires a policy environment that promotes reasonably priced productive finance, exchange-rate predictability, efficient taxation and productive government expenditure.

5.3 Contribution to The Study

The study contributes to the literature in four major ways.

First, it jointly examines interest rate, exchange rate and tax rate as dimensions of Nigeria's economic environment. This provides a broader framework than studies focusing on individual macroeconomic variables.

Second, the study covers 1980–2025, thereby extending the period considered in many recent Nigerian studies, several of which terminate in 2023 or 2024. Recent evidence has continued to demonstrate the importance of macroeconomic conditions for industrial and manufacturing performance.

Third, taxation is explicitly incorporated into the same model with monetary and exchange-rate variables. This is important because taxation can influence industrial investment independently of monetary and external-sector conditions.

Fourth, the ARDL framework permits simultaneous examination of short-run dynamics and long-run equilibrium. The study therefore provides a more comprehensive framework for evaluating the persistence of economic-environment effects on industrial growth.

5.4 Recommendations

Based on the findings, the following recommendations are made.

1. Interest-rate policy should be supportive of productive investment.

Monetary authorities should promote mechanisms that allow manufacturing and other productive industries to access medium- and long-term finance at affordable rates. Development-finance institutions should strengthen targeted industrial credit facilities while ensuring adequate credit-risk management.

2. Exchange-rate management should prioritise stability and predictability.

Government and monetary authorities should pursue transparent foreign-exchange policies that reduce excessive volatility. Manufacturers should have more predictable access to foreign exchange for imported machinery, technology and essential industrial inputs. The negative effects of exchange-rate instability identified in recent Nigerian studies reinforce the importance of this recommendation.

3. The tax burden on productive enterprises should be rationalised.

Government should eliminate unnecessary overlapping taxes and simplify tax compliance. Tax reliefs should be targeted towards productive investment, technological upgrading and employment creation rather than being distributed without clear developmental objectives.

4. Tax revenue should be channelled into productive infrastructure.

The negative tax-growth relationship can be reduced if businesses perceive that taxes generate tangible benefits through electricity, roads, security, transport infrastructure and industrial support services.

5. Monetary and fiscal policies should be coordinated.

The CBN, Ministry of Finance and relevant economic agencies should adopt coordinated policy frameworks. Interest-rate decisions, exchange-rate reforms and tax changes should be assessed for their combined effects on industrial production.

6. Domestic industrial input production should be encouraged.

Government should promote local production of intermediate goods, machinery components and industrial raw materials. Reducing dependence on imported inputs would make Nigerian industries less vulnerable to exchange-rate depreciation.

7. Industrial policy should focus on structural constraints.

Macroeconomic stabilisation should be complemented with improvements in electricity supply, transportation, access to technology, security and industrial infrastructure. Evidence from recent studies suggests that macroeconomic variables interact with structural vulnerabilities in determining industrial performance.

5.5 Suggestions for Further Studies

Future studies should examine whether the effects of the economic environment differ across manufacturing, mining, construction and utilities. Researchers may also disaggregate taxation into company income tax, VAT, customs duties and other major tax components.

Further studies could investigate nonlinear relationships, threshold effects and asymmetric responses of industrial growth to exchange-rate depreciation and interest-rate changes. A future study could also extend the sample as new 2026 data become available.

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