

Manufacturing Sector Output Growth and Macroeconomic Policies Performance: Empirical Insight from the N-Eleven Countries

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ABSTRACT

This study examined the impact of macroeconomic policies on manufacturing sector growth using panel data from the N-11 countries — Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea, and Vietnam — from 2000 to 2024. The N-11, identified as the next set of emerging economies with potential to rival BRICS, face structural challenges in industrialization despite implementing diverse monetary, fiscal, and trade policies. Anchored on the structural change model, the study employed panel fixed effect and random effect models to assess how monetary policy, fiscal policy and trade policy influence manufacturing sector output growth rate in the N-11 countries. The random effect model was more appropriate based on the Hausman test result. The empirical results reveal that monetary policy had positive and insignificant impact on the manufacturing sector growth rate in the N-11 countries. Fiscal policy had negative and significant impact on the manufacturing sector output growth rate and trade policy had a positive and significant impact of 10% on manufacturing sector output growth rate. The implications of the findings are that Governments of the N-11 countries should prioritize policies that crowd-in private capital tax incentives for machinery import, infrastructure bonds, and stable power supply to raise returns on capital. The study recommends that macroeconomic policies should be strengthened to boost the manufacturing sector output growth rate in the N-11 countries.

Keyword: Macroeconomic Policies, Manufacturing Output, Random Effect, N-11 Countries

INTRODUCTION

Macroeconomic policies play a pivotal role in shaping industrial sector performance, particularly in developing economies where manufacturing is central to employment generation, innovation, and long-term economic growth (Akidi et al., 2026; Ikechukwu et al., 2025; Osabuohien et al., 2023; Ashakah, 2023). Despite this importance, the manufacturing sector in many emerging economies continues to underperform, raising concerns among policymakers and researchers. This is especially evident in the Next Eleven (N-11) countries, which include Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, South Korea, Turkey, and Vietnam. Although identified as high-potential growth economies, these countries have experienced uneven and often constrained industrial development.

These countries possess significant advantages, including large populations, expanding domestic markets, and abundant resources, all of which position them as potential drivers of global economic growth. However, their manufacturing sectors have not fully harnessed these strengths. In many cases, industrial output remains weak, insufficiently diversified, and vulnerable to both domestic and external shocks. Additionally, empirical research focusing specifically on the role of macroeconomic policies in shaping manufacturing output across the N-11 countries remains limited, creating an important gap that this study seeks to address (Akidi et al., 2026; Ashakah, et al. 2025).

Historically, industrial development in many of these economies has been shaped by structural and policy-related challenges. Colonial economic systems often prioritized the extraction of raw materials for export, leaving

behind weak industrial bases with minimal value addition. In response, post-independence governments adopted import substitution industrialization (ISI) strategies aimed at promoting domestic production and reducing dependence on imports. While these policies achieved some initial success, they were largely constrained by infrastructural deficiencies, weak technological capacity, limited skilled labor, and excessive government control (Mensah & Okyere, 2023).

The manufacturing sector remains critical for addressing key socio-economic challenges, particularly unemployment and poverty. With large and youthful populations, the N-11 countries have the potential to leverage industrialization as a means of generating employment and promoting inclusive growth. However, persistent structural constraints, including inadequate infrastructure, policy inconsistencies, corruption, weak institutions, and overdependence on primary commodities, continue to hinder progress. For instance, Nigeria, despite being one of Africa's largest economies, has struggled to build a resilient manufacturing base due to these enduring challenges (Akpokorie & Egbon, 2025).

In light of these challenges, the importance of effective and well-coordinated macroeconomic policies cannot be overstated. Policies that prioritize infrastructure development, technological advancement, and human capital formation are essential for strengthening the manufacturing sector. Additionally, fostering regional cooperation, supporting SMEs, and improving governance and institutional quality can enhance policy effectiveness and industrial outcomes. Collaboration between public and private stakeholders is also crucial for creating a conducive environment for industrial growth (Edo & Ashakah, 2022).

Despite existing constraints, the prospects for industrialisation in the N-11 countries remain promising. Their demographic advantages, expanding markets, and growing investor interest provide a strong foundation for future development. Aligning industrial strategies with global development frameworks, such as the Sustainable Development Goals, particularly Goal 9 on industry, innovation, and infrastructure, can further support sustainable and inclusive growth (Akidi et al., 2026; Ashakah, et al. 2025).

Against this backdrop, this study examines the impact of macroeconomic policies, specifically monetary, fiscal, and trade policies, on manufacturing output growth in the N-11 countries. It seeks to determine whether these policy instruments significantly influence industrial performance by testing the hypothesis that they have no significant effect on manufacturing output growth. By providing empirical evidence, the study aims to inform policy formulation and contribute to improving industrial outcomes in developing economies.

The remainder of this paper is structured as follows: Section 2 reviews empirical literature relating to the study. Section 3 presents the methodology, and section 4 presents the results of data analysis and discussion. Section 5 summarizes and concludes the paper.

REVIEW OF EMPIRICAL LITERATURE

The empirical review examines the impact of macroeconomic policies on manufacturing sector output growth. The empirical review covers studies in diverse locations. Akidi et al. (2026) empirically examined how macroeconomic policies (monetary policy tools of broad money supply and real interest rate, fiscal policy tools of capital expenditure and tax revenue, and trade policy measures of trade openness and official exchange rate) impacted on the Nigerian's economic growth from 1985 to 2023. Applying the Autoregressive Distributed Lag (ARDL) measurement procedure on the yearly secondary series of the variables gathered from the statistical bulletin of the nation's Central Bank, the outcome indicated that broad money supply, capital expenditure and trade openness exerted short and long runs positively significant influenced on the economy's real growth experience. Tax revenue in its one-year lagged form appeared to have contributed positively and significantly to short-run real growth rate but only positively insignificant in the long-run. However, lending rate appeared significantly negative on the explained variable while official exchange rate negatively and insignificantly influenced the regressand over both terms. Relying on the empirical estimates, it is concluded that; the selected macroeconomic policies' measures made encouraging and inverse contributions to Nigeria's real economic growth experience. Thus, it is suggested that monetary policy mix to ensure stable and production-linked broad money growth accompanied by market friendly lending rate; expansionary capital expenditure over recurrent spending to create enablers for private investment, aimed at broadening the tax base, as well as greater openness

supported by stable and market-reflective official exchange rate should be pursued by the monetary, fiscal and trade policies' authorities to improvement the country's real GDP growth.

Akpokorie and Egbon (2025) investigated the impact of industrial policies on manufacturing sector output growth rate in selected West African Countries. Data spanning 2000 to 2023 were collected on the manufacturing sector output growth rate (MOG), exchange rate (EXCHR), domestic credit to the private sector (DCPS), trade openness (TOP), and foreign direct investment (FDI). The fully modified ordinary least squares (MOLS) estimation technique was used in the model estimation. The findings revealed that the exchange rate had a positive and significant impact on the manufacturing sector's output growth rate. Domestic credit to the private sector had a negative and significant effect on the manufacturing sector's output growth rate in the selected African countries. Trade policy (TOP) had a negative and insignificant effect on manufacturing sector's output growth rate. Based on the findings, the study recommended that the governments of the selected West African countries should strengthen industrial sector's policies to promote the manufacturing sector's output growth rate.

Osakede and Adenikinju (2024) assessed trade liberalisation and manufacturing sector performance in West African State for two periods – 1960 to 2019 and 1975 to 2019. Estimates were provided using the fixed and random effects models. Findings showed that trade liberalization measured by openness and export taxes led to improvement in manufacturing value added. Increase in import tariff rate as a measure of trade liberalization had unexpected positive effect on manufacturing value added. Additional findings noted were associated improvements in manufacturing sector performance with population increase and fall in the real exchange rate. No significant differences were found in the result for both periods considered in the study. Empirical findings of the study support theoretical propositions that trade liberalization can lead to improved industrial sector performance with specific reference to the African region. The evidence lends support to the potential of AfCFTA in promoting industrial sector performance and sustainable development in Africa.

Ifeakachukwu and Fagite (2024) investigated the link between macroeconomic policy, inclusive growth, and institutional quality in Nigeria. The period of this study spanned 1996 to 2021. The study utilised fully modified ordinary least square and the results showed that macroeconomic policy variables and institutional quality contributed significantly to inclusive growth in Nigeria. It was observed that the interactive terms between macroeconomic policy variables and institutional quality enhanced inclusive growth. The study concluded that macroeconomic policy and institutional quality are important drivers of inclusive growth in Nigeria. The study recommended that institutional quality should be improved using appropriate anti-corruption policies through institutions like the Economic and Financial Crime Commission (EFCC) and the Independent Corrupt Practices and Other Related Offences Commission (ICPC).

Eniekezimene and Keyamo (2024) examined the impact of trade policy and exchange rate dynamics on manufacturing sector output in Nigeria from 1981 to 2022. The study used the autoregressive distributed lag (ARDL) technique to analyze the model. The results revealed that imports as a ratio of gross domestic product (IMGDP) impacted negatively on real manufacturing output (RMO) in both the short and long run periods while exports as a ratio of gross domestic product (EXGDP) exerted significant positive impact on RMO in both the short and long run periods. Trade liberalization proxied by DSAP exerted significant positive impact on real manufacturing output in the long run but insignificant positive impact on RMO in the short run. Exchange rate exerted negative impact on RMO in the long run but positive impact in the short run. It was recommended that trade policy in Nigeria should be designed by the federal government in line with export promotion industrialization strategy to enhance manufacturing output.

Osabuohien et al. (2023) examined the effects of industrial policies on manufacturing performance in Nigeria under the Economic Recovery and Growth Plan (ERGP). Using an econometric analysis of time-series data, the study found that while the ERGP provided a strategic framework for industrial growth, inconsistent implementation and inadequate coordination between federal and state agencies limited its effectiveness. The findings highlighted that despite increased investment in infrastructure and incentives for local manufacturers, policy instability and regulatory inefficiencies slowed down industrial expansion. The study recommended the need for strengthened institutional frameworks, improved regulatory oversight, and enhanced policy coordination to foster a more robust industrial sector.

Adebayo and Okonkwo (2023) investigated the relationship between Nigeria's industrial policies and manufacturing sector performance using a generalized method of moments (GMM) approach. Their findings indicated that while government interventions such as tax incentives and special economic zones contributed to manufacturing output growth, policy inconsistency and weak institutional support undermined long-term sustainability. The study recommended improved policy stability, better regulatory oversight, and increased investment in industrial infrastructure to enhance manufacturing productivity.

Mensah and Okyere (2023) analyzed the impact of Ghana's industrial policies on the manufacturing sector's contribution to GDP using a vector autoregression (VAR) model. The study revealed that policies such as the One District, One Factory (1D1F) initiative had a positive effect on manufacturing output in the short run, but structural constraints such as inadequate electricity supply and limited access to credit weakened long-term growth prospects. The results further indicated that government intervention in financing and infrastructure development played a crucial role in determining the success of industrial policies. The study recommended increased public-private partnerships and improved access to finance for small and medium-sized manufacturers.

Gap in the Literature

The review of the empirical literature revealed that substantial studies have been conducted on macroeconomic policies and manufacturing sector output growth across various nations and regions. However, the review showed no evidence from the N-11 countries. The N-11 countries were identified by Goldman Sachs in 2005 as having the potential to become some of the world's largest economies in the 21st century, following the BRICS nations. Insights into the performance of macroeconomic policies as they relate to the N-11 countries are therefore important and warrant investigation. This study is designed to address the identified gap in the literature.

RESEARCH METHODOLOGY

This section presents the sources of data, model specification, and model estimation technique employed in the study.

Nature and Source of Data

The study collected secondary data from the World Development Indicators (WDI, 2026) to analyse the impact of macroeconomic policies on manufacturing sector output growths in the N-11 countries- Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, South Korea, Turkey, and Vietnam. The study used panel annual data spanning a period of 25 years, from 2000 to 2024. The data source provided comprehensive, consistent, and accessible information necessary for the econometric analysis.

Model Specification

The model specification for this study aims to assess the impact of macroeconomic policies and manufacturing output growth in the N-11 countries. Specifically, this study investigates how various macroeconomic policies, such as monetary policy, fiscal policy and trade policy, affect the growth of manufacturing sector. The econometric model for the current study was based on the Neoclassical growth theory and Abebaw's (2019) specification ($INGDP_t = \lambda_0 + \lambda_1 INF_t + \lambda_2 CF_t + \lambda_3 LF_t + \lambda_4 MS_t + REER_t + TB_t + e_t$). In his specification, the variables stand for industrial output, inflation rate, capital formation (investment), lending rate, money supply, real effective exchange rate and trade balance, respectively. The econometric form of the model to analyse the impact of macroeconomic policies on manufacturing output growth in the N- 11 countries is as follows:

$$MGDPGR_{it} = \alpha + \beta_1 CAP_{it} + \beta_2 LAB_{it} + \beta_3 INTR_{it} + \beta_4 GEXP_{it} + \beta_5 TOP_{it} + \beta_6 INF_{it} \varepsilon_{it}$$

Where:

- $MGDPGR_{it}$ represents the manufacturing sector output growth for country i at time t , which serves as the dependent variable.

- CAP_{it} represents capital for country i at time t .
- LAB_{it} , represent labour in country i at time t
- $INTR_{it}$ represent interest rate in country i at time t
- $GEXP_{it}$ represent government expenditure in country i at time t
- TOP_{it} represents the trade policy of the government tends to protect the manufacturing sector. It is measured as a percentage of trade in country i at time t
- INF_{it} represents inflation in country i at time t which is the control variable
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the coefficients that measure the impact of each independent variable (exchange rate, credit to the manufacturing sector, trade openness and foreign direct investment) on manufacturing output growth. A positive coefficient would suggest that an increase in the corresponding independent variable leads to an increase in manufacturing output growth.
- ϵ is the error term, which accounts for unobserved factors that may influence manufacturing output growth, such as global economic trends, political stability, or unforeseen shocks.

Estimation Technique

The study employed fixed and random effects techniques to estimate the impact of macroeconomic policies on manufacturing sector output growth in the N-11 countries. Panel data combines time-series and cross-sectional data, offering several advantages in econometric analysis (Onabeyake, 2024). This approach allows for the assessment of variations across countries over time, enhancing the robustness of the results. The study employed the Hausman test, which compared the suitability of the fixed and random effect models.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 4.1 presents the descriptive statistics for the variables used in the study, including manufacturing sector output growth rate (MGDPGR), capital (CAP), labour (LAB), interest rate (INTR), inflation (INF), trade openness (TOP), and government expenditure (GEXP). It provides an overview of the characteristics of the variables used in the study. The summary statistics include measures of central tendency (mean and median), measures of dispersion (standard deviation) and distributional properties (skewness, kurtosis and the Jarque-Bera test). These statistics help to understand the nature and distribution of the data before proceeding to further econometric analysis.

Table 4.1 Descriptive Statistics

	MGDPGR	CAP	LAB	INTR	INF	TOP	GEXP
Mean	4.761362	128.1777	59.53260	5.750918	9.808042	58.47987	496.2987
Median	4.644276	29.54934	60.33400	2.876646	6.592675	48.99346	11.13105
Maximum	21.79710	4486.206	83.37100	53.88268	72.30884	186.6758	19808.44
Minimum	-21.83876	0.000000	40.56200	-25.77653	-1.710337	11.92375	0.000000
Std. Dev.	5.713187	441.7665	11.48317	12.50436	10.49837	32.85281	2100.181
Skewness	-0.639056	6.235070	0.368946	2.125654	2.837408	1.753349	5.826685
Kurtosis	5.853931	49.38753	2.346096	7.589648	12.62212	6.167727	42.27201
Jarque-Bera	112.0452	26437.90	11.13837	448.4618	1429.872	255.8808	19228.14
Probability	0.000000	0.000000	0.003814	0.000000	0.000000	0.000000	0.000000

Sum	1309.374	35248.88	16371.46	1581.502	2697.212	16081.97	136482.1
Sum Sq. Dev.	8943.498	53473186	36130.52	42842.37	30199.10	295730.2	1.21E+09
Observations	275	275	275	275	275	275	275

Source: Author's Computation, 2026

The mean values of the variables provide insights into their average performance over the study period. The average MGDG growth rate is 4.761362, while capital and labour have mean values of 128.1777 and 59.53260 respectively. Interest rate has an average value of 5.750918, while inflation and trade openness both have mean values of 9.808042 and 58.47987 respectively. Also, the government expenditure averages 496.2987.

The median values, which indicate the central tendency, shows that the MGDG growth rate, Capital, Labour, and Interest rate have median values of 4.644276, 29.54934, 60.33400 and 2.876646 respectively. The median value for inflation is 9.808042 and as trade openness has a median of 58.47987, government expenditure has a median value of 496.2987.

The maximum and minimum values provide insights into the range of fluctuations in each variable. MGDG growth rate ranges from -21.84% to 21.80%, capital varies from 0 to 4486.21 and labour ranges from 40.56 to 83.37. Interest rate and inflation both have minimum values of -25.78 and -1.71 respectively and maximum values of 53.88 and 72.31 respectively. The trade openness and government expenditure both exhibits significant variations with the trade openness ranging from 11.92 to 186.68, government expenditure ranges from 0 to 19808.44.

The standard deviation measures the dispersion of the variables. The MGDG growth rate has a standard deviation of 5.71, while capital and labour have values of 441.77 and 11.48 respectively. Interest rate shows a standard deviation value of 12.50 while inflation a standard deviation of 10.50. Trade openness has a standard deviation of 32.85 while government expenditure shows a relatively high standard deviation of 2100.18 indicating substantial volatility.

Skewness and kurtosis statistics reveal the distribution characteristics of the variable. MGDG growth rate is negatively skewed (-0.64) indicating leftward skewness, while capital is positively skewed (6.24) indicating rightward skewness. Labour and interest rate both exhibits positive skewness (0.37 and 2.13 respectively), indicating rightward skewness. Also, inflation, trade openness and government expenditure all show strong positive skewness (2.84, 1.75 and 5.83 respectively) suggesting rightward distributions.

The Jarque-Bera test for normality indicates whether the variables follow a normal distribution. If the variables show values above 0.05, it means they approximately normally distributed. But in this case, the values of MGDG growth rate, capital, labour, inflation, interest rate, trade openness and government expenditure all reveal values below 0.05, indicating that they do not follow a normal distribution. These statistics also highlight the extent of variations and potential implications for policies design and implimentation.

Correlation Matrix

Table 4.2 presents the correlation matrix for the variables used in the study, including MGDG growth rate (MGDPGR), capital (CAP), labour (LAB), interest rate (INTR), inflation (INF), trade openness (TOP), government expenditure (GEXP). The correlation matrix measures the strength and direction of the relationship between these variables.

Table 4.2: Correlation Matrix

	MGDPGR	CAP	LAB	INTR	INF	TOP	GEXP
MGDPGR	1	-0.0538	0.0399	0.0256	-0.1089	0.1530	-0.0777
CAP	-0.0538	1	0.4385	-0.0600	0.1214	-0.2330	0.9875
LAB	0.0399	0.4385	1	0.2628	-0.2641	0.3479	0.4372

INTR	0.0256	-0.0600	0.2628	1	-0.2264	-0.0683	-0.0582
INF	-0.1089	0.1214	-0.2641	-0.2264	1	-0.1854	0.1185
TOP	0.1530	-0.2330	0.3479	-0.0683	-0.1854	1	-0.2456
GEXP	-0.0777	0.9875	0.4372	-0.0582	0.1185	-0.2456	1

Source: Author's Computation, 2026

The correlation results show that MGDG growth rate has a positive correlation with labour (0.04), interest rate (0.03) and trade openness (0.15), indicating that an increase in these variables is associated with economic growth. However, MGDG growth rate has a weak negative correlation with capital (-0.05), inflation (-0.11) and government expenditure (-0.08), suggesting an inverse relationship with these variables.

Capital is positively correlated with labour (0.44), inflation (0.12) and government expenditure (0.99) but negatively correlated with interest rate (-0.06) and trade openness (-0.23) indicating that higher capital tends to coincide with increased labour, higher inflation rates and an increase in government expenditure but lower interest rates and trade openness.

Labour has a positive correlation with interest rate (0.26), trade openness (0.35) and government expenditure (0.44), implying that an increase in the labour force may be associated with higher interest rates, trade and government expenditure. However, it has a strong negative correlation with inflation (-0.26), suggesting an inverse relationship between labour and inflation.

Interest rate shows a negative correlation with inflation (-0.23), trade openness (-0.07) and government expenditure (-0.06), suggesting that an increase in the interest rate is associated with lower inflation, trade openness and government expenditure.

While inflation exhibits a negative relationship with trade openness (-0.19), it also reveals a positive relationship with government expenditure (0.12). This means that, an increase in the rate of inflation leads to a decrease in trade openness whereas an increase in inflation rate also rises government expenditure.

Trade openness has a negative correlation with government expenditure (-0.25), indicating that an increase in trade may be associated with a fall in the level of government expenditure.

The correlation matrix provides valuable insights into the relationships between key macroeconomic variables, highlighting potential interactions that could influence economic growth in Nigeria. These findings serve as a basis for further econometric analysis to establish causal relationships

Unit Root Test

The unit root tests reported in Table 4.3 indicated that the variables were integrated of different orders. Manufacturing sector output growth (MGDPGR), the inflation rate, and the interest rate were stationary at levels, I(0), as their p-values were less than or equal to 0.05. Capital (CAP), government expenditure (GEXP), labour (LAB), and trade openness (TOP) were nonstationary at levels but stationary after first differencing, I(1), with p values greater than 0.05.

Table 4.3. Unit root Test Results

Variable	ADF Statistics (Level)	P-Value	Order of Integration
MGDPGR	81.3003	0.0000	I(0)
CAP	30.4025	0.1090	Non-stationary
D(CAP)	94.5036	0.0000	I(1)
GEXP	19.5029	0.6141	Non-stationary
D(GEXP)	87.8522	0.0000	I(1)

INF	42.0231	0.0062	I(0)
INTR	43.5231	0.0017	I(0)
LAB	23.7477	0.3606	Non-stationary
D(LAB)	86.9352	0.0000	I(1)
TOP	28.5783	0.1573	Non-stationary
D(TOP)	130.868	0.0000	I(1)

Source: Author's Computation (2026)

Model Estimation Results. The model estimation results in Table 4 shows the different impacts of the independent variables (capital (CAP), labour (LAB), interest rate (INTR), inflation rate (INF), government expenditure (GEXP), and trade openness (TOP)) on the dependent variable (MGDPGR)

Table 4.4: Model Estimation Results

Variables	Fixed Effect Coefficient	Fixed Effect t-statistic (Prob.)	Random Effect Coefficient	Random Effect t-statistic (Prob.)
CAP	0.010593	2.263662 (0.0244)	5.927434	2.367902 (0.0959)
LAB	0.046375	0.217069 (0.8283)	-0.049723	-0.778491 (0.4370)
INTR	0.131991	1.814306 (0.0708)	0.051346	1.120119 (0.2637)
INF	-0.098360	-2.457225 (0.0147)	-0.082320	-2.215586 (0.0276)
GEXP	-0.002151	-2.155979 (0.0320)	-0.002237	-2.277021 (0.0236)
TOP	0.047967	1.605461 (0.1096)	0.034394	1.830266 (0.0683)

Source: Author's Computation (2026)

Hausman Test

Table 4.5: Hausman Test Result

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.881919	6	0.1297

The Hausman test result in Table 4.5 indicates that the random effect model is more appropriate than the fixed effect model, based on the probability value of the Hausman test, which is greater than the 5% level of significance.

The empirical results reveal important relationships between manufacturing sector output growth rate (MGDPGR) and key macroeconomic variables. Capital exhibits a positive and statistically significant impact on manufacturing sector out growth rate (MGDP) with a coefficient of 5.927434 and probability value of 0.0959. This finding is in line with Ogbebor and Ashakah (2021). This implies that increased investment in capital formation enhances productive capacity in the manufacturing sector, thereby promoting growth. This finding aligns with economic theory which emphasizes capital accumulation as a key driver of industrial development.

Labour showed a negative coefficient of -0.049723 and a probability value of 0.4370 signifying an insignificant effect on manufacturing growth. This finding is in line with Osakede and Adenikinju (2024) .This may suggest issues such as low productivity, skills mismatch, or inefficiencies in the labour market, which limit its contribution to output growth.

The coefficient of interest rate (0.051346) and probability value (0.2637), showed that interest rate has a positive but insignificant relationship with manufacturing sector output growth. This result is in line with the finding of Ashakah (2023). This suggests that borrowing costs may not be a strong determinant of manufacturing performance within the study period, possibly due to limited access to credit or structural constraints in the financial system.

Inflation showed a negative and statistically significant effect on manufacturing growth with a coefficient of -0.082320 and probability value of 0.0276. The finding is agreement with the finding of Ewah et al. (2021). This indicates that rising prices create uncertainty, increase production costs, and reduce purchasing power, thereby hindering industrial expansion.

Government expenditure shows a negative coefficient of -0.002237 and a probability value of 0.0236, signifying a significant impact on manufacturing growth. This finding is contrary to Mensah and Okyere (2023). The variation in the results could be attributed to differences in policy design and implementation. This counterintuitive result may reflect inefficiencies in public spending, misallocation of resources, or a bias toward recurrent rather than capital expenditure.

The coefficient of trade openness (0.034394) and probability value of (0.0683) shows that trade openness has a positive but weakly significant effect on manufacturing growth. The finding is in line with Osakede and Adenikinju (2024), who also found positive and significant impact of trade on manufacturing sector output growth. This suggests that increased integration with global markets may enhance access to technology and markets, though the benefits are not strongly pronounced.

SUMMARY OF FINDINGS

Based on the empirical results, the study reveals that:

1. Capital investment significantly promotes manufacturing sector growth.
2. Inflation has a significant negative effect on manufacturing performance.
3. Government expenditure negatively impacts manufacturing growth, indicating inefficiencies in fiscal policy.
4. Trade openness has a mild positive influence on growth.
5. Labour and interest rate do not significantly influence manufacturing output within the study period.

POLICY RECOMMENDATION

The findings of the study have the following implications:

1. Governments of the N-11 countries should prioritize policies that crowd-in private capital tax incentives for machinery import, infrastructure bonds, and stable power supply to raise returns on capital.
2. Governments of the N-11 countries should maintain price stability as a precondition for industrial policy. High inflation raises input costs, erodes planning, and discourages long-term investment in manufacturing.
3. This suggests fiscal spending is either misallocated or crowds out private investment. It suggests the need for expenditure switching from recurrent/administrative spending to productive infrastructure and R&D.
4. Trade liberalization alone is insufficient to promote manufacturing sector growth in the N-11 countries. Gains are mild because domestic firms face supply-side constraints like power, logistics, and competition from imports.
5. Suggests labor abundance is not being converted to industrial output, it points to skills mismatch and low labor productivity. The workforce calls for policies to boost growth in the manufacturing sector in the N-11 countries.

6. Also implies interest rate pass-through is weak due to underdeveloped credit markets. This calls for policy to strengthen the financial sector.

CONCLUSION

This study was designed out to examine the impact of macroeconomic policies on the manufacturing sector output growth rate in the N-11 countries. Based on the empirical evidence obtained from the Random effect model, some relevant conclusions were drawn.

First, the findings show that interest rates showed no significant effect on the manufacturing sector output growth rate in the N-11 countries, and this points to weak monetary policy transmission in the ecosystem.

Secondly, fiscal policy showed negative and significant impact on the growth of the manufacturing sector. This points out that government intervention is currently counterproductive, since public expenditure negatively affects growth, suggesting fiscal inefficiency, misallocation, or crowding-out of private investment. Thirdly, trade openness offers limited benefits in isolation, implying that external liberalization without domestic competitiveness reforms yields only mild gains.

The N-11 manufacturing sector suffers from binding supply-side and institutional constraints. Sustainable growth requires a policy mix that prioritizes: (i) increasing productive capital stock, (ii) maintaining price stability, and (iii) improving fiscal efficiency, before trade and monetary tools can be effective. Trade and financial reforms alone are insufficient without first fixing these foundational constraints.

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