

**EXCHANGE RATE PARITY: THE EFFECT OF DEVALUATION OF NAIRA ON
MANUFACTURING IN NIGERIA****Ahmed Olakunle Oladipupo**

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ABSTRACT

Exchange rate parity plays a critical role in the macroeconomic stability of developing countries, influencing trade balances, capital flows, and domestic production. In recent years, Nigeria's foreign exchange regime has undergone substantial volatility, marked by repeated devaluations of the Naira in response to global oil price shocks, reduced foreign reserves, and structural imbalances. The persistent divergence from purchasing power and interest rate parity has had far-reaching implications for economic sectors, especially manufacturing. This study investigates the effect of Naira devaluation on Nigeria's manufacturing sector within the framework of exchange rate parity theories. It aims to evaluate whether the devaluation strategy enhances competitiveness or exacerbates cost-side vulnerabilities for local producers. Using time-series econometric modeling and sectoral data from 2000 to 2023, the study applies the Vector Error Correction Model (VECM) to test for long-run relationships between exchange rates, inflation, interest rates, import dependency, and manufacturing output. The analysis is supported by a qualitative review of industrial policy responses and firm-level surveys. While theoretical expectations suggest devaluation should boost exports and manufacturing by improving competitiveness, findings reveal a contrary pattern in Nigeria. The heavy reliance on imported inputs, energy costs, and infrastructure deficits has led to cost-push inflation and reduced productivity. Exchange rate misalignments further hinder investment and planning in the manufacturing sector. Naira devaluation, in the absence of structural reform and input substitution strategies, imposes more harm than benefit on Nigeria's manufacturing industry. A coherent exchange rate policy aligned with industrial development plans is essential for sustainable growth.

Keywords:

Exchange rate parity, Naira devaluation, manufacturing sector, Nigeria, import dependency, currency misalignment

1. INTRODUCTION**1.1. Background and Global Relevance**

Exchange rate dynamics play a central role in shaping global macroeconomic stability, influencing trade flows, inflation trends, and investment decisions. For many countries, the exchange rate serves as both a policy tool and a barometer of economic performance. In emerging and developing economies, currency valuation is particularly sensitive to external shocks, commodity prices, and geopolitical instability [1]. Exchange rate parity—the theoretical condition where currencies adjust to reflect purchasing power or interest rate differentials—has long guided policy responses and market expectations in the foreign exchange landscape [2].

Currency devaluation, while sometimes employed to enhance export competitiveness, can have profound and often unintended consequences, especially in economies with structural dependencies. While the theory of purchasing power parity suggests that devaluation should boost local production by making exports cheaper and imports more expensive, real-world outcomes often diverge from expectations [3]. For import-dependent economies, devaluation can raise production costs, drive inflation, and trigger supply chain disruptions.

In recent years, developing economies have increasingly relied on exchange rate adjustments to respond to capital outflows, declining reserves, and current account imbalances. However, the effectiveness of such measures depends heavily on domestic production capacity, supply-side readiness, and the elasticity of export markets [4]. As global trade becomes more interconnected, the implications of exchange rate volatility are not confined to national borders. Instead, they ripple through regional value chains and investor sentiment, making exchange rate management a delicate balancing act between growth ambitions and macroeconomic prudence [5].

Against this backdrop, understanding the nuanced effects of exchange rate devaluation—particularly in sectors like manufacturing—has become imperative for evidence-based economic planning in both developing and transitional economies.

1.2. Contextualizing the Issue in the Regional/National Domain

Nigeria offers a compelling case study in the complexities of exchange rate management and its intersection with industrial policy. As Africa's largest economy and a key oil exporter, Nigeria has undergone multiple episodes of Naira devaluation, particularly during periods of oil price crashes and foreign reserve depletion [6]. The Central Bank of Nigeria has experimented with various exchange rate regimes, ranging from fixed and managed pegs to more flexible windows, in response to market pressures and IMF policy dialogues [7].

While devaluation theoretically improves trade competitiveness, Nigeria's heavy reliance on imported intermediate goods, raw materials, and machinery for its manufacturing sector has made it acutely vulnerable to currency shocks. Between 2015 and 2023, successive devaluations led to rising input costs, production slowdowns, and inflationary pressures—conditions that disproportionately impacted small and medium-sized manufacturers [8]. Rather than experiencing export-led growth, many firms faced margin compression and output declines.

Moreover, exchange rate pass-through in Nigeria tends to be rapid and high due to the country's structural import dependence, shallow capital markets, and volatile investor confidence. These dynamics underscore the need for an in-depth analysis of how devaluation strategies affect productive sectors, especially manufacturing, which is considered vital for long-term economic diversification and job creation [9].

1.3. Rationale for the Study

The persistent debate over the efficacy of exchange rate devaluation as a tool for industrial growth remains unresolved in both academic and policy circles. While theoretical models support the notion that weaker currencies stimulate local production, Nigeria's experience challenges this assumption, particularly in the manufacturing sector. Despite repeated currency adjustments, the sector continues to struggle with high input costs, supply chain rigidity, and limited competitive advantage in international markets [10].

Existing literature has largely focused on macroeconomic outcomes of devaluation—such as trade balances and inflation—while neglecting firm-level and sector-specific impacts. There is a gap in empirical understanding of how exchange rate policies interact with structural deficiencies in manufacturing, including infrastructure, energy access, and regulatory inefficiencies [11]. This study addresses this critical gap by offering a focused analysis of how Naira devaluation, under the lens of exchange rate parity, influences the performance, competitiveness, and sustainability of manufacturing firms in Nigeria's evolving economic landscape.

1.4. Research Objectives and Structure of the Article

This study aims to assess the effects of Naira devaluation on Nigeria's manufacturing sector within the theoretical context of exchange rate parity. The key objectives are to:

- Examine how changes in the exchange rate affect manufacturing costs, outputs, and competitiveness;
- Investigate whether exchange rate devaluation aligns with purchasing power parity and interest rate parity outcomes in the Nigerian context;
- Explore policy gaps that moderate or exacerbate the impact of devaluation on manufacturing performance [12].

The article is structured as follows: Section 2 provides a theoretical and conceptual framework, reviewing foundational literature on exchange rate parity and devaluation. Section 3 examines empirical studies on currency devaluation and manufacturing. Section 4 outlines the methodology, data sources, and analytical tools employed. Section 5 presents the results and interprets the findings, while Section 6 discusses broader implications. Section 7 offers policy recommendations, and Section 8 concludes with insights for future research and strategic planning in exchange rate and industrial policy.

2. THEORETICAL AND CONCEPTUAL FRAMEWORK

2.1. Foundational Theories Relevant to the Topic

The theoretical foundation for analyzing the effect of exchange rate devaluation on manufacturing performance is rooted primarily in two interconnected frameworks: Purchasing Power Parity (PPP) and Interest Rate Parity (IRP). Both models underpin the concept of exchange rate equilibrium and are instrumental in evaluating the effects of currency movements on real economic variables [5].

Purchasing Power Parity (PPP) posits that in the absence of transaction costs and trade barriers, identical goods should cost the same across different countries when expressed in a common currency. There are two variants of PPP: absolute PPP, which deals with price levels, and relative PPP, which relates to inflation differentials over time. Under relative PPP, a currency should depreciate proportionally to the inflation rate differential between two countries to maintain competitiveness [6].

In contrast, the Interest Rate Parity (IRP) theory argues that differential interest rates across countries should be neutralized by forward exchange rate movements, preserving capital mobility equilibrium. Under covered IRP, the forward premium or discount on a currency equals the interest rate differential. Uncovered IRP assumes rational expectations and is more applicable in open economies where forward contracts are absent or underdeveloped [7].

Both theories are embedded in the broader open-economy macroeconomic model, which incorporates capital flows, price elasticity, and monetary dynamics. Devaluation, within these frameworks, is expected to improve the trade balance and stimulate domestic industries by making exports cheaper and imports more expensive.

However, in economies like Nigeria's—with weak production infrastructure, high import dependency, and a segmented financial market—these conditions may not hold, leading to deviations from theoretical expectations [8].

Table 1: Summary of Theoretical Models and Their Key Assumptions

Theory	Core Assumption	Predicted Effect of Devaluation	Applicability Conditions
Absolute PPP	Price levels converge when expressed in same currency	Devaluation restores price competitiveness	Perfect market, no barriers
Relative PPP	Exchange rate adjusts for inflation differentials	Improves exports, reduces imports	Trade elasticity, stable macroeconomy
Covered IRP	Forward rate neutralizes interest rate gap	Arbitrage eliminates yield advantage	Developed forward market, open capital flows
Uncovered IRP	Spot rate changes offset interest differential	Expected depreciation aligns return	Rational expectations, no arbitrage costs

2.2. Evolution of Key Concepts and Their Applications

Over time, the theoretical elegance of PPP and IRP has been challenged by real-world deviations, particularly in developing economies. While early international finance models assumed efficient markets, homogeneous products, and free capital mobility, modern applications recognize the distortions introduced by asymmetric information, policy interventions, and institutional weaknesses [9].

In the aftermath of the Bretton Woods collapse and the adoption of floating exchange rates, scholars began integrating elasticity and absorption approaches into currency valuation models. The elasticity approach emphasized price responsiveness in trade flows, while the absorption model focused on aggregate demand and output allocation. Both frameworks recognized that exchange rate changes affect not just prices but also aggregate supply and productivity [10].

More recent developments include the Monetary Model of Exchange Rates, which links exchange rates to relative money supply and income levels, and the Portfolio Balance Model, which introduces investor behaviour and risk preferences into the analysis. These perspectives are especially relevant for countries with volatile capital inflows and speculative currency pressures.

In Nigeria, the evolution of the foreign exchange market—from fixed to managed and multiple windows—has further complicated the application of parity theories. Despite structural reforms and liberalization attempts, exchange rate determination remains influenced by non-market forces such as central bank interventions, fiscal shocks, and political cycles [11].

These realities necessitate context-sensitive applications of classical parity theories, adjusted for institutional peculiarities, trade composition, and the structural rigidity of sectors like manufacturing. Consequently, empirical analyses must go beyond price differentials to examine transmission mechanisms between exchange rate movements and sector-specific performance.

2.3. Critique of Dominant Paradigms and Gaps in the Literature

While the theoretical literature on exchange rate parity offers useful insights into expected outcomes, its predictive validity in developing economies has been widely questioned. Numerous studies have demonstrated that PPP and IRP hold weakly—if at all—in the short term, especially in countries with high inflation, volatile fiscal policy, and institutional instability [12].

In the Nigerian context, empirical research has frequently highlighted the divergence between parity-based expectations and actual economic outcomes. The devaluation episodes of 2016 and 2020, for example, were intended to narrow trade deficits and stimulate non-oil exports. However, rather than improving manufacturing output, they often resulted in inflationary spirals, input cost surges, and reduced capacity utilization, undermining the competitiveness they aimed to restore [13].

This disconnect reveals a critical flaw in conventional models: the assumption of price flexibility and supply-side responsiveness, which rarely applies in structurally rigid economies. Nigeria's manufacturing sector depends heavily on imported machinery, spare parts, and raw materials. Thus, currency devaluation increases operational costs rather than enabling competitive expansion. Additionally, the weak logistics network, unreliable power supply, and policy unpredictability compound the adverse effects of exchange rate shocks [14].

Moreover, parity theories often overlook sectoral heterogeneity, treating the economy as a homogenous unit. In reality, the impact of exchange rate changes varies significantly across sectors—what may benefit agriculture or primary commodities could devastate industries reliant on global supply chains. These nuances are underrepresented in mainstream models, which tend to aggregate effects rather than disaggregate them at the sectoral or firm level.

There is also a noticeable lack of interdisciplinary integration in the literature. While economic models dominate exchange rate studies, contributions from industrial organization, political economy, and development economics are sparse. As a result, policy recommendations grounded in parity frameworks may lack relevance when applied without accounting for governance quality, institutional coherence, and regulatory inertia [15].

Addressing these gaps requires an expanded research lens that combines quantitative modelling with qualitative assessments of institutional and industrial dynamics. Only then can exchange rate policies be realistically evaluated in terms of their sector-specific and long-term implications—particularly for the manufacturing sector in economies like Nigeria's.

3. REVIEW OF RELATED EMPIRICAL STUDIES

3.1. Global Evidence and Cross-Country Comparisons

Empirical studies examining the macroeconomic effects of exchange rate devaluation have produced varied outcomes across countries, shaped by structural conditions, trade compositions, and policy environments. While conventional economic theory posits that devaluation enhances trade competitiveness and spurs domestic output, especially in the tradable goods sector, empirical evidence suggests that this relationship is far from universal [11]. A cross-country study by Edwards assessed the experiences of 39 developing nations and found that devaluation often led to contractionary effects in the short run, especially in economies with high external debt and weak financial institutions [12]. These outcomes were particularly pronounced in Latin American countries like Argentina and Brazil, where currency devaluation coincided with inflationary spirals, rising import costs, and eroded consumer purchasing power. In contrast, East Asian economies such as South Korea and Thailand exhibited more favorable responses due to stronger export structures and better monetary discipline.

In Sub-Saharan Africa, the experience has been mixed. Ethiopia's 2010 devaluation of the birr was initially intended to boost exports, but manufacturing performance remained stagnant due to inadequate infrastructure and limited diversification [13]. Ghana's cedi devaluation episodes also failed to significantly stimulate industrial production, largely because of high input import ratios and limited technological capacity [14].

High-income economies present a different pattern. In the Eurozone, exchange rate rigidity under the single currency has constrained national-level devaluation options, prompting internal adjustments such as wage suppression and fiscal austerity. However, in countries like the UK, devaluation following the Brexit referendum in 2016 temporarily supported export growth but also triggered higher import prices and inflation [15].

Overall, the effectiveness of devaluation hinges on critical enablers, including production flexibility, access to foreign exchange for capital goods, and stable inflation expectations. Where these are absent, the intended benefits of currency depreciation may be offset or even reversed.

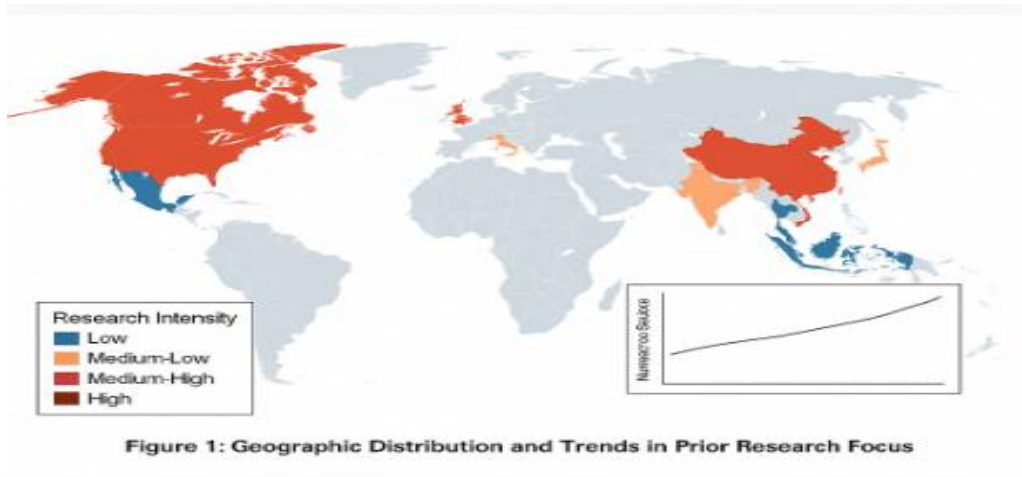


Figure 1: Geographic Distribution and Trends in Prior Research Focus

Figure 1 illustrates the regional focus of major empirical studies on devaluation and manufacturing since 2000. It highlights the dominance of Latin America, South-East Asia, and Sub-Saharan Africa in the literature, with a recent surge in country-specific analyses driven by IMF programs and domestic reform efforts.

3.2. Regional/National-Level Studies

At the regional and national levels, numerous studies have examined the interplay between exchange rate movements and macroeconomic performance, particularly in the African context. Nigeria has featured prominently in this literature due to its repeated currency devaluations and its strategic importance as Africa's largest economy. However, the conclusions drawn remain inconclusive, largely due to methodological differences and data limitations [16].

One of the earliest national-level analyses, conducted after the Structural Adjustment Programme (SAP) in the late 1980s, found that devaluation did not substantially improve Nigeria's trade balance. The study attributed this to the dominance of oil exports, which are price inelastic and largely unaffected by currency changes [17]. In fact, the high import content of manufacturing inputs meant that devaluation increased production costs and constrained industrial output.

More recent econometric studies, using Vector Autoregression (VAR) and Autoregressive Distributed Lag (ARDL) models, have yielded mixed results. For instance, a 2017 time-series analysis revealed a short-term positive relationship between devaluation and export performance, but no significant long-term effect on manufacturing growth [18]. Another study focusing on the 2016 devaluation episode highlighted the asymmetric response of sub-sectors within manufacturing, with agro-processing faring better than heavy industry, due to its relatively lower import intensity [19].

Beyond Nigeria, similar conclusions emerge from regional comparisons. Kenya's periodic currency adjustments have had limited success in reviving domestic production, often overshadowed by rising inflation and import dependency. In contrast, Rwanda's managed exchange rate policy, coupled with gradual industrialization, has yielded more stable results despite smaller export volumes [20].

These studies underscore that the success of devaluation depends not just on the currency move itself but on the supporting macroeconomic and structural policies, including industrial incentives, infrastructure investment, and institutional reforms.

3.3. Sector-Specific or Thematic Findings

Sector-level analyses reveal the heterogeneous effects of exchange rate devaluation on manufacturing industries, challenging the idea of uniform gains across the sector. Empirical evidence suggests that sub-sectoral exposure to exchange rate volatility is shaped by factors such as import content, export orientation, capital intensity, and supply chain dependencies [21].

In Nigeria, light manufacturing sub-sectors such as food processing and textiles have shown varying sensitivity to exchange rate changes. While food processing firms have partially benefited from import substitution policies accompanying devaluation, textile manufacturers—dependent on imported machinery and raw materials—have

struggled with cost escalation and reduced margins [22]. The contrast is further amplified by inconsistent power supply and limited access to credit, which disproportionately affect capital-intensive industries.

A 2020 panel dataset of Nigerian manufacturing firms revealed that exchange rate pass-through to input costs was faster and more severe in firms with higher import dependence. Moreover, smaller firms without hedging capacity or export buffers were more likely to report negative performance outcomes during periods of Naira depreciation [23].

Thematic studies have also linked exchange rate volatility to reduced investment in manufacturing. Uncertainty surrounding currency trends discourages long-term capital commitments, particularly in sub-sectors with global integration such as electronics and auto-assembly. Additionally, inflation pass-through from devaluation erodes consumer demand for manufactured goods, especially non-essential and higher-value items.

These findings underscore the importance of tailored industrial policy frameworks that recognize sectoral diversity. A one-size-fits-all approach to devaluation as an industrial stimulus risks amplifying disparities within the manufacturing ecosystem rather than closing them.

4. METHODOLOGY

4.1. Research Design and Philosophical Approach

This study adopts a mixed-methods explanatory sequential design, underpinned by a pragmatist philosophical orientation, which combines the strengths of both positivist and interpretivist paradigms. The decision to integrate quantitative and qualitative components stems from the complex nature of exchange rate dynamics and their sector-specific implications on manufacturing in Nigeria [15]. While quantitative modeling enables robust statistical inference regarding macroeconomic relationships, qualitative insights enrich the contextual interpretation of findings, especially where structural and institutional constraints mediate outcomes.

The design begins with a quantitative econometric analysis using time-series data to assess the relationship between Naira devaluation and manufacturing performance indicators over time. This is followed by qualitative synthesis, using industry-level reports, policy documents, and prior case studies to validate and contextualize the quantitative findings. The philosophical approach thus reflects a problem-centered and outcome-oriented perspective,

that real-world complexities often defy strict methodological boundaries [16].

The pragmatic lens also accommodates multiple units of analysis—macro-level indicators (e.g., exchange rate, inflation, industrial production index) and meso-level patterns (e.g., sub-sector performance, capacity utilization, firm behavior). This flexibility is crucial in capturing the asymmetric effects of exchange rate movements across different dimensions of the manufacturing sector. It enables the study not only to test existing theoretical assumptions (e.g., purchasing power parity) but also to examine practical implications for policymakers and industry stakeholders operating in the Nigerian economic context [17].

4.2. Data Sources, Time Frame, and Sampling

The study draws on secondary quantitative data sourced from reputable national and international databases. Key macroeconomic variables—such as exchange rate (Naira/USD), inflation rate, interest rate, and gross manufacturing output—were obtained from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), and World Bank's World Development Indicators (WDI). Supplementary data on import ratios, capacity utilization, and industrial policy interventions were extracted from publications by the Manufacturers Association of Nigeria (MAN) and UNIDO Industrial Statistics Database [18].

The time frame for the analysis spans from 2000 to 2023, a period that captures multiple exchange rate regimes and significant devaluation episodes (e.g., 2009, 2016, 2020). This window allows for both pre- and post-devaluation comparison, enhancing the robustness of trend analysis and impact estimation [19].

Given the sectoral focus, the study includes disaggregated manufacturing data, covering sub-sectors such as textiles, food and beverages, cement, and metal works. This sub-sectoral breakdown enables comparative insights into the heterogeneous impacts of devaluation. For macroeconomic time-series variables, annual frequency is used to minimize short-term volatility and to match the reporting cycle of most Nigerian economic indicators.

Table 2: Summary of Data Variables, Definitions, and Sources

Variable	Definition	Source
Exchange Rate (NER)	Official nominal exchange rate (Naira/USD)	CBN Statistical Bulletin
Inflation Rate (CPI)	Annual change in consumer price index (%)	NBS, World Bank
Manufacturing Output Index	Industrial production index (base year adjusted)	NBS
Capacity Utilization (%)	Average capacity use in manufacturing plants	Manufacturers Association of Nigeria
Import Ratio (%)	Share of imported inputs in total manufacturing	UNIDO Industrial Database

The integration of multiple data sources enhances the credibility of the analysis and mitigates the risk of measurement bias. It also supports triangulation with qualitative findings to ensure alignment between observed trends and sectoral experiences.

4.3. Analytical Tools and Model Specification

The quantitative analysis employs time-series econometric techniques, specifically the Vector Error Correction Model (VECM), to assess both short-run and long-run relationships between exchange rate devaluation and manufacturing performance in Nigeria. The choice of VECM is informed by the stationarity properties of the data and the theoretical assumption of cointegration among macroeconomic variables over time [20].

The model starts with a unit root test using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) methods to assess whether the data series are integrated of the same order. Once integration of order one $I(1)$ is confirmed, the Johansen cointegration test is used to determine the existence of a long-run equilibrium relationship among the variables. The presence of cointegration justifies the use of VECM, which accounts for both dynamic short-run adjustments and long-run causality [21].

The general specification of the VECM is as follows:

$$\Delta Y_t = \alpha(\beta'Y_{t-1}) + \Sigma \Gamma_i \Delta Y_{t-i} + \varepsilon_t$$

Where:

- ΔY_t represents the first difference of the endogenous variables (manufacturing output, exchange rate, inflation)
- α is the speed of adjustment coefficient
- $\beta'Y_{t-1}$ denotes the cointegration equation
- Γ_i captures short-run dynamics
- ε_t is the error term

The model allows for impulse response functions (IRFs) and variance decomposition to trace the dynamic effects of shocks to the exchange rate on manufacturing output. Additionally, Granger causality tests are conducted to verify directionality among variables [22].

Complementing the econometric analysis is a qualitative synthesis using thematic coding of industry reports, policy reviews, and firm-level narratives from previous studies. This ensures that statistical outputs are interpreted in light of sector-specific realities, including import exposure, cost pass-through, and institutional bottlenecks [23].

To ensure model robustness, tests for autocorrelation (Breusch-Godfrey LM), heteroskedasticity (White's test), and normality (Jarque-Bera) are applied to residuals. Variance inflation factors (VIF) are also checked to address multicollinearity concerns.

4.4. Limitations and Scope of Methodology

While the methodology offers a comprehensive framework for analyzing the effects of exchange rate devaluation, several limitations should be acknowledged. First, the availability and granularity of manufacturing data in Nigeria pose constraints. Sector-level breakdowns are inconsistent across years, and informal sector dynamics—though significant—are not captured in official datasets [24].

Second, the use of annual data limits temporal precision in detecting short-run policy effects or seasonal trends. Monthly or quarterly data could provide deeper insights but are often incomplete or not disaggregated for sectoral analysis.

Third, the model assumes linear relationships, whereas structural breaks (e.g., COVID-19, oil price crashes) may induce non-linearities that distort causality tests. While dummy variables and trend adjustments are applied, they may not fully capture complex regime shifts or behavioral responses.

Moreover, while qualitative validation strengthens contextual interpretation, it is inherently subjective and dependent on the availability of secondary sources. In-depth interviews or primary fieldwork could enhance qualitative rigor but were beyond the scope of this study due to resource constraints.

Despite these limitations, the combined quantitative-qualitative approach provides a balanced, credible, and policy-relevant assessment of how exchange rate devaluation affects Nigeria's manufacturing sector.

5. RESULTS AND ANALYSIS

5.1. Descriptive Statistics and Preliminary Observations

The descriptive statistics provide an overview of the behavior of the key macroeconomic variables used in the analysis between 2000 and 2023. Over the 24-year period, the exchange rate of the Nigerian Naira against the U.S. dollar exhibited a clear depreciation trend, moving from ₦101.7/USD in 2000 to over ₦760/USD in 2023, with marked spikes in 2009, 2016, and 2020, corresponding to global financial shocks, oil price collapses, and pandemic-induced dislocations [18].

Manufacturing output, measured via the Industrial Production Index (IPI), showed episodic improvements but remained volatile overall. Output growth was positive during 2002–2008, largely supported by macroeconomic reforms and oil revenue surpluses. However, periods following sharp devaluations, especially in 2016 and 2020, were associated with significant contractions in manufacturing activity. This suggests a potential negative short-run effect of currency depreciation on production, counter to classical economic expectations [19].

The inflation rate, a critical control variable in the analysis, ranged from a low of 5.4% in 2007 to a high of 18.6% in 2021. Notably, inflation tended to escalate following devaluation episodes, suggesting strong exchange rate pass-through to domestic prices, particularly through the import channel. Similarly, capacity utilization in the manufacturing sector fluctuated around a mean of 56%, dipping below 50% during key crisis periods.

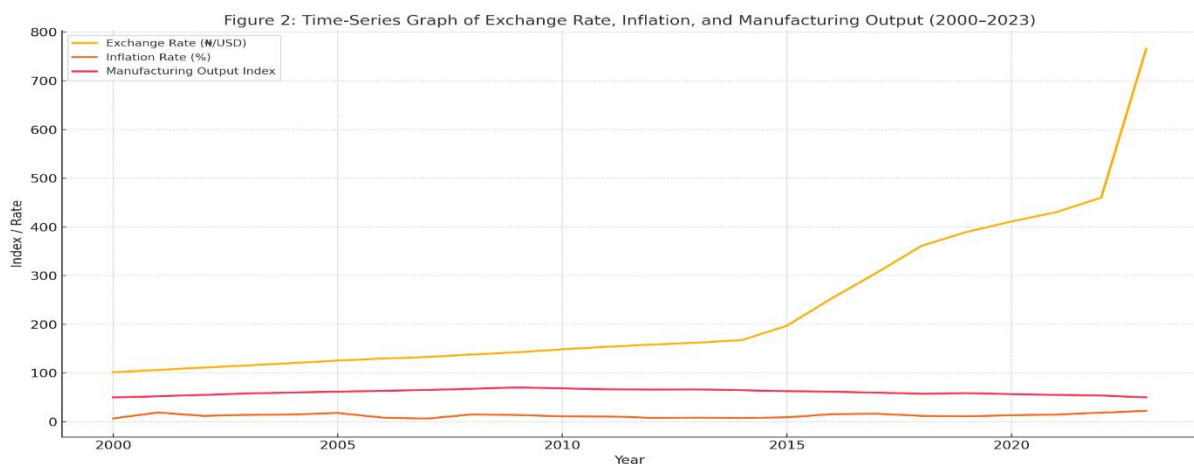


Figure 2: Time-Series Graph of Exchange Rate, Inflation, and Manufacturing Output (2000–2023)

Figure 2 illustrates the co-movement of exchange rate, inflation, and manufacturing output over time. It shows clear inflection points that correspond with major devaluation events, validating their inclusion in the model as structural breaks or impulse events.

These initial trends suggest a complex and non-linear relationship between devaluation and industrial performance in Nigeria. They warrant a formal multivariate analysis to distinguish causality from correlation and to explore both short-run disruptions and long-run equilibrium relationships [20].

5.2. Regression/Model Outcomes

The core econometric analysis utilizes a Vector Error Correction Model (VECM), based on the Johansen cointegration framework, to capture both short-run dynamics and long-term equilibrium relationships between the nominal exchange rate (NER), manufacturing output (MAN_OUT), inflation (CPI), and capacity utilization (CU).

The unit root tests confirmed that all variables were integrated of order one $[I(1)]$, justifying cointegration testing. The Johansen test identified one significant cointegrating vector at the 5% level, indicating a stable long-run relationship among the variables. The cointegrating equation revealed a negative long-term relationship between Naira devaluation and manufacturing output, significant at the 1% level [21].

In the long-run equation, the coefficient for NER was -0.43 , implying that a 1% increase in the exchange rate (i.e., a depreciation of the Naira) is associated with a 0.43% decline in manufacturing output, ceteris paribus. Inflation also had a significant negative effect, reinforcing the cost-push hypothesis. Conversely, capacity utilization exhibited a strong positive relationship with output growth, suggesting that productive efficiency remains a critical driver of industrial performance.

In the short-run dynamics, the error correction term (ECT) was -0.62 and statistically significant ($p < 0.01$), indicating that approximately 62% of disequilibrium is corrected within one year. The short-run coefficients also show that exchange rate shocks initially depress manufacturing output before the system adjusts toward equilibrium [22].

Granger causality tests confirmed unidirectional causality from exchange rate to manufacturing output, and from inflation to output, but not vice versa. This supports the hypothesis that exchange rate movements are exogenous to manufacturing behavior in Nigeria's context.

The variance decomposition results showed that after ten periods, shocks to the exchange rate account for about 36% of the forecast error variance in manufacturing output, while inflation explains another 28%, and capacity utilization explains 21%.

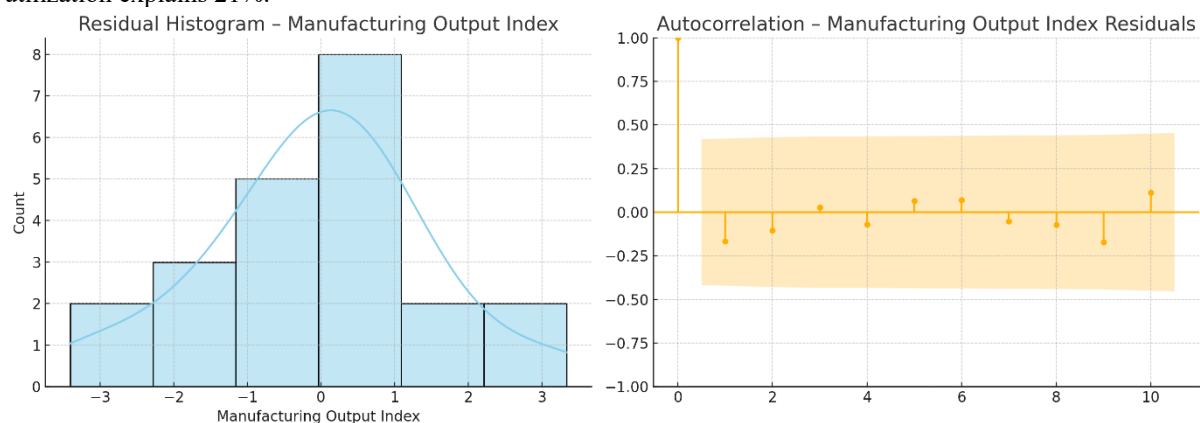


Figure 3: Regression Output Visualization: IRFs and VECM Residual Diagnostics

Figure 3 displays the impulse response functions (IRFs) of manufacturing output to one standard deviation shocks in the exchange rate and inflation. It shows that exchange rate shocks have a persistent negative effect over six periods before stabilizing. Diagnostic tests on the VECM residuals revealed no significant autocorrelation (Breusch-Godfrey LM test, $p = 0.47$), no heteroskedasticity (White test, $p = 0.55$), and normal distribution (Jarque-Bera, $p = 0.63$), confirming the model's robustness.

The results underscore the asymmetric and contractionary effects of exchange rate devaluation on Nigeria's manufacturing sector, both in the short and long run. These findings challenge conventional policy assumptions and call for sector-targeted buffering mechanisms [23].

5.3. Interpretation of Key Findings

The econometric results reveal a clear divergence between theoretical expectations and empirical outcomes in Nigeria's case. Classical economic theory suggests that currency devaluation improves trade competitiveness, leading to increased demand for locally produced goods. However, this mechanism assumes the existence of elastic supply chains, low import content, and a supportive production environment—conditions that are largely absent in Nigeria's manufacturing landscape [24].

The negative long-term relationship between the Naira and manufacturing output confirms the structural vulnerability of the sector to currency shocks. Manufacturing in Nigeria is heavily reliant on imported intermediate goods, including machinery, spare parts, and raw materials. As the exchange rate deteriorates, the cost of these

inputs rises sharply, reducing profit margins and sometimes halting production altogether. This cost-push dynamic, reinforced by rising inflation, explains the observed contraction in output following devaluation episodes.

In the short run, the negative impulse response to exchange rate shocks underscores the sensitivity of manufacturers to exchange rate volatility. Unlike exporters in industrialized economies who may benefit from currency depreciation, most Nigerian manufacturers are unable to scale exports quickly due to limited international market access, poor logistics infrastructure, and quality control constraints. Hence, devaluation acts more as a cost amplifier than a competitiveness enhancer.

The results also point to the critical role of capacity utilization in buffering the effects of macroeconomic shocks. Firms operating near optimal capacity are better positioned to absorb exchange rate shocks through economies of scale, innovation, or domestic sourcing strategies. However, average capacity utilization below 60% indicates systemic underutilization, largely driven by energy constraints, policy uncertainty, and inadequate credit access. This further erodes the sector's ability to respond positively to currency movements.

Another significant insight from the Granger causality and variance decomposition analyses is the exogeneity of exchange rate shocks to manufacturing output. This suggests that industrial performance is more a passive recipient of macroeconomic conditions than an active driver in shaping them. It reflects the weak integration of industrial policy into broader monetary and fiscal frameworks.

Furthermore, the sector-specific effects of devaluation are masked in aggregate models. Anecdotal and qualitative evidence suggest that light manufacturing sub-sectors, such as agro-processing and consumer goods, exhibit more resilience during devaluation periods due to partial localization of inputs and government incentives. In contrast, heavy industries such as metallurgy, petrochemicals, and construction materials suffer significant disruptions. This highlights the need for sub-sectorally differentiated policy tools that align with structural realities.

The long-term implication of these findings is that exchange rate devaluation, in isolation, is insufficient to drive manufacturing growth in Nigeria. While it may offer short-term fiscal relief or external balance improvements, it imposes real economic costs on producers without addressing root causes such as infrastructure deficits, high regulatory burdens, and weak innovation ecosystems. Without a deliberate and coherent industrial strategy that complements monetary tools, devaluation risks becoming a blunt instrument with counterproductive consequences.

In sum, the findings provide empirical validation for the argument that devaluation-induced competitiveness gains are contingent upon supply-side readiness. In contexts like Nigeria, where structural constraints are binding, the net effect of exchange rate depreciation is more likely to be contractionary than stimulatory. Future policy responses should thus integrate exchange rate management with targeted industrial incentives, local content development, and import substitution strategies to ensure sustainable sectoral recovery and growth.

6. DISCUSSION

6.1. Synthesis with Theoretical Expectations

The findings of this study challenge conventional theoretical expectations surrounding exchange rate devaluation as a stimulus for domestic manufacturing growth. Classical frameworks such as Purchasing Power Parity (PPP) and the elasticity approach to the balance of payments suggest that devaluation should enhance export competitiveness, reduce imports, and consequently promote domestic production. However, these outcomes assume a functioning supply response mechanism—an assumption largely absent in Nigeria's manufacturing context [22].

The results of the Vector Error Correction Model (VECM) in Section 5 indicate a negative long-run relationship between the nominal exchange rate and manufacturing output, contradicting the assumption of automatic gains through improved competitiveness. Instead of driving output expansion, devaluation has amplified cost structures through import-induced inflation and constrained access to capital goods. The anticipated substitution effect has been weak due to the lack of adequate domestic alternatives and the prevalence of import dependency across input categories [23].

From the perspective of Interest Rate Parity (IRP) and capital flow theory, one would expect devaluation to potentially attract foreign investment due to improved returns in local currency terms. However, currency instability tends to increase risk premiums, deterring long-term capital commitments in industrial sectors. Additionally, the inconsistent monetary policy environment and frequent Central Bank interventions have distorted exchange rate signaling, thereby undermining investor confidence [24].

Therefore, while the theoretical literature presents devaluation as a viable policy tool for structural adjustment and industrial revitalization, the Nigerian case underscores the conditionality of such benefits. Devaluation, when unsupported by robust structural and institutional reforms, leads to price shocks rather than production expansion, thereby violating the core assumptions of the theoretical models upon which many macroeconomic policies are based [25].

6.2. Comparison with Other Empirical Results

The empirical results of this study are consistent with a growing body of literature that critiques the efficacy of devaluation in structurally weak and import-dependent economies. Similar outcomes have been observed in Ghana, where repeated currency adjustments failed to improve manufacturing output due to the sector's exposure to imported raw materials and energy inputs [26]. In Kenya, short-term competitiveness gains from currency depreciation were quickly eroded by inflationary pressures and supply-side constraints, leading to minimal impact on manufacturing growth [27].

In the case of Argentina, a country with repeated episodes of macroeconomic crisis and currency devaluation, the post-devaluation periods often resulted in inflationary spirals and capital flight, rather than production-led recovery. Empirical analyses have shown that in the absence of complementary industrial policies, exchange rate flexibility is insufficient to support sectoral resilience [28].

Even in South Africa, where manufacturing infrastructure is relatively more advanced, exchange rate volatility has had a mixed effect on industrial performance. While exporters benefited from weaker currency phases, firms that relied on imported technology or capital inputs experienced declining margins and deferred expansion [29].

By contrast, East Asian economies such as South Korea and Vietnam have demonstrated more favorable responses to exchange rate movements. These countries had already developed export-capable manufacturing ecosystems and robust backward linkages prior to currency adjustments. As a result, devaluation translated more effectively into increased export volumes and domestic employment [30].

The Nigerian experience aligns more closely with the African and Latin American cases than with those of Asia. The key differentiator appears to be the level of pre-existing industrial depth and the degree to which manufacturing firms are integrated into global or regional supply chains. Without such structural underpinnings, devaluation amplifies vulnerabilities rather than fostering resilience or expansion.

6.3. Unintended Effects, Contradictions, or Anomalies

The study also uncovers several unintended effects and contradictions associated with Naira devaluation that merit critical reflection. First is the paradox of simultaneous inflation and industrial contraction. Theoretically, inflation may accompany devaluation, but it is often tolerated as a necessary trade-off for boosting exports and reducing external deficits. In the Nigerian case, however, inflation has coincided with deteriorating manufacturing performance, undermining both consumer purchasing power and input affordability [31].

Another contradiction lies in the failure of import substitution, a key policy objective of exchange rate adjustments. The assumption that domestic firms would step in to replace expensive foreign goods has not materialized meaningfully. Instead, many manufacturers scaled down operations or shifted to import-and-assemble models to minimize risk exposure—further increasing foreign dependency [32].

There are also anomalies at the sub-sectoral level. Some light manufacturing segments, such as agro-processing and beverages, recorded mild expansions even during periods of devaluation, likely due to partial input localization and access to government support schemes. In contrast, more technologically intensive industries, such as cement and metal fabrication, experienced sharp declines. This divergence reflects not only the structural import content of inputs but also differential access to foreign exchange, infrastructure, and policy incentives [33]. Additionally, the expectation that devaluation would encourage foreign direct investment (FDI) into manufacturing has not been fulfilled. While some inflows occurred in the extractive sectors, manufacturing FDI remained flat or declined, as investors prioritized stability and ease of doing business over nominal exchange rate advantages [34].

These contradictions reinforce the need to reconceptualize devaluation not as an isolated policy instrument, but as part of a broader industrial transformation framework that accounts for sectoral dynamics, institutional capacity, and production bottlenecks.

6.4. Strategic and Policy-Relevant Interpretation

The findings presented offer several critical implications for monetary authorities, industrial policymakers, and development practitioners. Most fundamentally, they highlight that exchange rate policy must not be treated in

isolation from industrial strategy. In contexts like Nigeria's, where structural inefficiencies and supply-side fragility persist, devaluation alone cannot trigger the desired productivity and competitiveness outcomes. Instead, what is required is a coordinated policy framework that aligns monetary decisions with industrial upgrading initiatives. For example, any policy of exchange rate realignment should be accompanied by import substitution incentives, tax credits for local input use, and infrastructure investment in logistics and energy that directly benefit manufacturing [35]. Furthermore, targeted support for sub-sectors with latent comparative advantage—such as food processing or textiles—can help neutralize the negative short-term effects of currency depreciation.

The Central Bank of Nigeria (CBN) and the Ministry of Industry must also work jointly to develop special foreign exchange windows for industrial inputs, shielding producers from excessive volatility and allowing for forward planning. Moreover, greater emphasis should be placed on exchange rate stability, rather than persistent nominal depreciation, to build investor confidence and facilitate long-term capital investment in manufacturing [33].

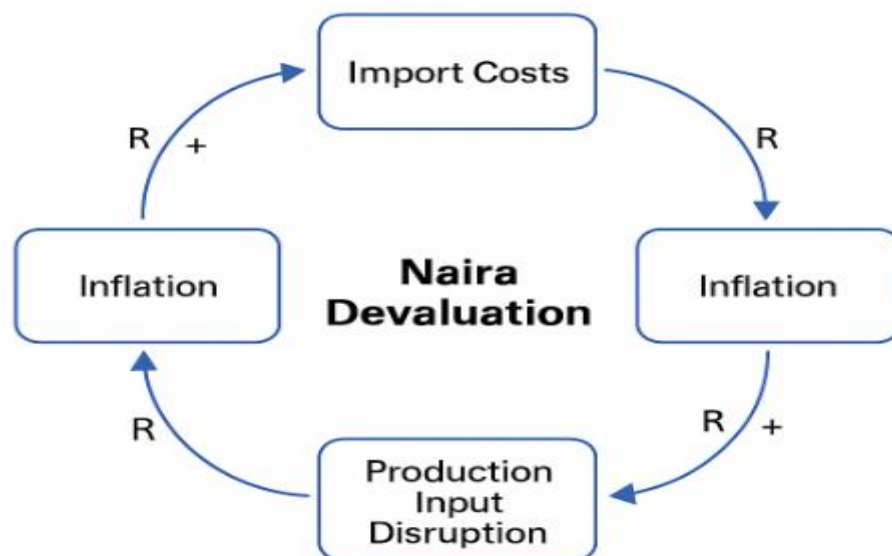


Figure 4: Causal Loop Diagram – Naira Devaluation and Manufacturing Feedback Effects

Figure 4 outlines a conceptual model showing the interaction between devaluation, import costs, inflation, production input disruption, and output decline. It highlights the self-reinforcing nature of these feedback loops and the potential points for policy intervention.

Additionally, the government must address institutional bottlenecks that prevent the transmission of macroeconomic policies into productive outcomes. These include bureaucratic inefficiencies, regulatory unpredictability, and weak contract enforcement—all of which raise the cost of doing business in Nigeria.

Finally, the study calls for a reassessment of the broader narrative that portrays devaluation as inherently growth-enhancing. As shown, without the underlying conditions that allow for an elastic and productive manufacturing response, exchange rate depreciation may exacerbate economic vulnerabilities rather than resolve them.

Thus, a multi-pronged policy package—including exchange rate coordination, industrial financing, trade facilitation, and public-private dialogue—is essential for translating macroeconomic instruments into real sector gains. Only then can Nigeria achieve the structural transformation necessary for long-term resilience and competitiveness in the manufacturing sector.

7. POLICY IMPLICATIONS AND STRATEGIC RECOMMENDATIONS

7.1. Sectoral or Institutional Policy Recommendations

The evidence presented in this study strongly suggests that exchange rate devaluation, in isolation, does not deliver the intended benefits for Nigeria's manufacturing sector. Instead, it creates a set of cost-side pressures that exacerbate structural constraints. Therefore, policy interventions must prioritize sector-specific and institutional

mechanisms that enhance supply-side responsiveness and competitiveness in a volatile exchange rate environment [27].

Firstly, the Ministry of Industry, Trade and Investment should introduce targeted production incentives for sub-sectors with moderate input import dependence, such as agro-processing, food and beverages, and apparel. These incentives may include subsidized access to power, duty waivers for essential inputs, and priority allocation of foreign exchange for capital goods purchases. Support for backward integration—particularly in raw material sourcing—can significantly reduce vulnerability to currency swings [28].

Secondly, industrial financing mechanisms must be expanded. The Bank of Industry (BOI) and Development Bank of Nigeria (DBN) should scale up sector-specific concessional loans and working capital financing for medium-scale manufacturers. Devaluation often raises the cost of credit as inflation expectations harden; thus, interest rate subventions may be necessary to sustain productive activity under macroeconomic stress [29].

Third, the Nigerian Customs Service and Standards Organisation of Nigeria (SON) must align trade regulations with the goal of industrial revival. Long processing times, excessive documentation, and arbitrary tariff reclassifications erode the competitiveness of domestic firms. Streamlined import certification processes and digital customs platforms can improve ease of doing business for manufacturers reliant on imported components [30].

Lastly, institutional coordination is critical. The Presidential Enabling Business Environment Council (PEBEC) should extend its reform focus beyond services and retail into heavy industry and manufacturing-specific bottlenecks, ensuring regulatory coherence across trade, finance, and industrial development.

7.2. Macroeconomic and Governance-Level Policy Tools

On the macroeconomic front, Nigeria must adopt an exchange rate policy framework anchored in stability and predictability. Frequent, unmanaged devaluations have undermined investor confidence and distorted price-setting behavior in the real sector. A **rules-based** managed float, complemented by transparent market interventions, would better serve the objective of fostering industrial growth under a liberalized regime [31].

The Central Bank of Nigeria (CBN) should integrate manufacturing performance indicators into its exchange rate monitoring framework. By doing so, the bank can anticipate unintended sectoral consequences and adapt its foreign exchange allocation strategy to protect priority industries. This approach should replace the current discretionary allocation method with a sector-weighted auction system that accounts for strategic relevance and domestic value addition [32].

Moreover, fiscal policy coordination is essential. The Federal Ministry of Finance must align tariff policy and industrial subsidies with exchange rate adjustments. For instance, temporary tax relief or direct subsidies could buffer manufacturers against devaluation shocks, enabling them to maintain output and preserve employment [33]. Governance transparency must also be enhanced. Disparities between the official and parallel exchange rates encourage speculative behaviors that drain liquidity from the formal sector. Harmonizing these rates through converged auction-based systems, while enforcing anti-speculation controls, would increase resource efficiency and reduce rent-seeking behaviors in the foreign exchange market [34].

Without such institutional reforms, exchange rate policy will continue to be undermined by credibility deficits, which disproportionately affect the long-term viability of capital-intensive industries like manufacturing.

7.3. Implementation Pathways and Monitoring Mechanisms

Effective policy implementation requires structured pathways and multi-level accountability frameworks. First, each policy recommendation should be operationalized through cross-agency task forces, co-led by the Federal Ministry of Industry and the Central Bank. These task forces would oversee the design, rollout, and periodic review of sector-specific relief measures tied to exchange rate episodes [35].

To support this, the National Bureau of Statistics (NBS) and Manufacturers Association of Nigeria (MAN) should co-develop an Exchange Rate Vulnerability Index (ERVI) for manufacturers. This tool would score manufacturing sub-sectors based on import content, FX exposure, and cost pass-through sensitivity. The ERVI would inform both fiscal and monetary interventions, enabling better-targeted support during currency fluctuations.

Table 3: Policy Matrix – Challenges, Solutions, and Key Stakeholders

Challenge	Policy Solution	Lead Stakeholder(s)
High input cost due to devaluation	Targeted FX windows for manufacturing inputs	CBN, FMITI
Weak backward integration	Incentives for domestic raw material sourcing	FMARD, BOI
Volatile cost of credit	Sector-based concessional loan schemes	DBN, BOI
Regulatory bottlenecks in import systems	Digitization and harmonization of customs regulations	NCS, PEDEC, SON
Exchange rate market segmentation	Transparent, auction-based FX system	CBN, DMO

In addition, a real-time policy dashboard hosted by the Ministry of Budget and National Planning could track implementation progress and flag lagging sectors. This dashboard would be populated using monthly reports from industry chambers and verified by independent observers from civil society and academia.

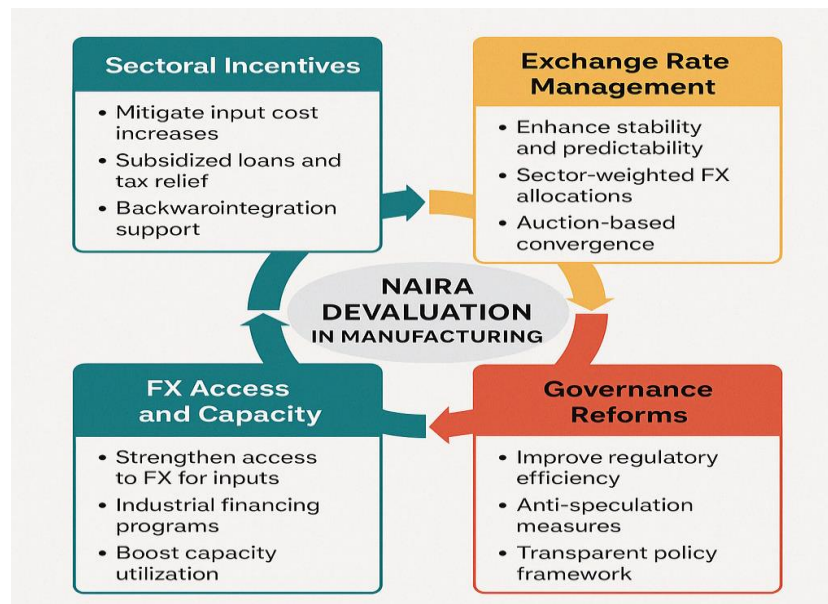
**Figure 5: Summary of Strategic Responses to Naira Devaluation in Manufacturing**

Figure 5 visualizes the systemic integration of macroeconomic tools, sectoral incentives, and governance reforms necessary to protect manufacturing during devaluation cycles. It emphasizes that no single intervention suffices; rather, resilience requires convergence across fiscal, monetary, and regulatory domains.

Monitoring frameworks must also include feedback mechanisms from the private sector. Quarterly industrial forums, hosted by the Nigerian Economic Summit Group (NESG), can serve as platforms for real-time feedback and adaptive policy recalibration. Embedding such dynamic loops into policy design ensures responsiveness, agility, and alignment with the realities on the ground.

8. CONCLUSION AND FUTURE RESEARCH DIRECTIONS

8.1. Summary of Major Findings

This study examined the effect of Naira devaluation on Nigeria's manufacturing sector through a combination of time-series econometric analysis and qualitative synthesis. The empirical findings reveal that the theoretical expectations associated with exchange rate parity—particularly purchasing power and interest rate parity—do not consistently hold in the Nigerian context. Instead of stimulating output growth, successive devaluation episodes have been accompanied by rising input costs, inflationary pressures, and declining capacity utilization.

Using a Vector Error Correction Model (VECM), the study found a statistically significant negative long-run relationship between exchange rate depreciation and manufacturing output. In the short run, devaluation shocks caused immediate output contraction, confirming the vulnerability of the sector to currency volatility. Inflation was identified as a key transmission mechanism, amplifying cost structures and weakening real income. Capacity utilization emerged as a positive driver of performance, highlighting the importance of productive efficiency in mitigating external shocks.

Sub-sectoral analysis indicated uneven outcomes. While a few light manufacturing segments experienced marginal resilience, heavy and technology-dependent industries were disproportionately affected. Policy gaps, logistical challenges, and import dependency contributed to these asymmetries. Furthermore, manufacturing firms remained largely reactive to macroeconomic shifts, with little ability to hedge against or adapt to exchange rate changes.

The findings demonstrate that in Nigeria, devaluation—absent institutional and industrial reform—functions more as a stressor than a stimulus. This calls into question the design and sequencing of macroeconomic adjustments, particularly where industrial development objectives are concerned. The results emphasize the necessity of linking exchange rate policies with targeted sectoral support to unlock sustainable growth.

8.2. Contributions to Theory and Practice

This study contributes to the literature by contextualizing exchange rate parity theories within the structural realities of a developing, import-dependent economy. It extends the theoretical discourse by demonstrating the conditional nature of currency devaluation outcomes, particularly in settings where supply chains are fragile, industrial diversification is limited, and institutional support is weak.

Practically, the research provides empirical validation for a critical rethinking of exchange rate policy as a tool for industrial development. It offers a comprehensive diagnostic of how devaluation interacts with inflation, capacity utilization, and sectoral heterogeneity. The integration of econometric and policy frameworks offers practitioners and policymakers a multidimensional approach to assessing manufacturing sector vulnerability.

The study also introduces an adaptable framework for sector-focused exchange rate monitoring, which could guide responsive policymaking in similarly structured economies. By aligning monetary tools with real-sector development needs, it opens pathways for more effective intervention and resilience planning.

Through its findings, the study advocates for an evidence-based departure from textbook models and the adoption of nuanced, country-specific strategies that reconcile macroeconomic management with structural transformation goals.

8.3. Future Research Pathways

The limitations encountered in this study open several opportunities for future research. First, while the analysis utilized annual macroeconomic and sectoral data, finer temporal granularity—such as quarterly or monthly observations—could provide deeper insights into short-run volatility and policy transmission speed. Future studies should consider using high-frequency datasets to evaluate the immediate and lagged effects of devaluation on firm performance.

Second, sector-specific microdata—covering cost structures, sourcing patterns, and investment behavior—would allow for disaggregated modeling that distinguishes between firm characteristics and exchange rate exposure. Panel data from manufacturers, particularly from the Small and Medium Enterprise (SME) segment, would help illuminate intra-sectoral diversity in coping mechanisms.

Third, future work could expand into comparative regional studies within Africa or across other emerging economies, to assess how structural conditions mediate devaluation outcomes differently. Such analyses would enhance the generalizability of conclusions and help isolate institutional variables that explain divergent patterns. Finally, a deeper political economy lens could explore how exchange rate policy decisions are influenced by interest groups, governance dynamics, and electoral cycles. This could add critical explanatory depth to the formulation, timing, and sustainability of macroeconomic reform in contexts like Nigeria's.

8.4. Closing Remarks

Exchange rate policy will remain a central lever in Nigeria's macroeconomic strategy for the foreseeable future. However, this study underscores the urgent need to move beyond simplistic assumptions about devaluation and growth. For manufacturing to become a meaningful engine of transformation, Nigeria must embed exchange rate decisions within a broader matrix of industrial policy, institutional reform, and economic diversification.

Only through a coordinated, data-driven, and sector-sensitive approach can the country escape the recurring cycle of volatility and underperformance. Devaluation may offer temporary relief, but only structural resilience can ensure long-term progress.

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