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Heterogeneous Effects of External Financial Flows on Manufacturing Sector Performance in Nigeria: Evidence from FDI, FPI, And Remittances.

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ABSTRACT

This study examines the impact of foreign capital inflows on manufacturing sector performance in Nigeria using an Autoregressive Distributed Lag (ARDL) model and its associated Error Correction Mechanism (ECM). Manufacturing performance is proxied by the manufacturing value added (MVA), while key explanatory variables include foreign direct investment (FDI), foreign portfolio investment (FPI), and remittances, alongside macroeconomic controls. The long-run results reveal that FDI and remittances exert positive and statistically significant effects on manufacturing performance, whereas FPI has a negative but insignificant impact, indicating its limited contribution to real sector growth. Among the control variables, trade openness, exchange rate, and electricity consumption significantly enhance manufacturing output, while inflation and interest rate exert negative effects. The short-run dynamics confirm these findings, with FDI and remittances maintaining positive and significant impacts, while FPI remains insignificant. The error correction term is negative and highly significant (-0.6234), indicating a strong speed of adjustment to long-run equilibrium, with approximately 62% of short-run disequilibrium corrected annually. The study concludes that not all forms of foreign capital inflows are equally beneficial to the manufacturing sector. It recommends that policymakers prioritize policies that attract stable and productivity-enhancing inflows such as FDI, while also creating financial instruments to channel remittances into industrial investments. Additionally, improving power supply and maintaining macroeconomic stability are crucial for sustaining manufacturing growth.

Keyword: Heterogenous Effects; Financial Resources; Foreign Direct Investment; Foreign Portfolio Investment; Remittances Manufacturing.

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1. Introduction

The manufacturing sector serves as the engine room for industrialization and sustainable economic growth in developing economies, yet in Nigeria, its performance has remained suboptimal despite decades of policy interventions. A critical determinant of industrial performance is the availability of external financial resources, which bridge the gap between domestic savings and investment requirements. In the Nigerian context, three primary forms of external finance dominate: Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), and Remittances. While theoretical literature suggests that these inflows should catalyze productivity, technology transfer, and capital accumulation, empirical evidence regarding their heterogeneous effects on the Nigerian manufacturing sector remains inconclusive and often contradictory.

Empirical evidence regarding Nigeria's external finance landscape reveals a volatile trajectory over the last four decades. According to the World Bank (2024), FDI inflows into Nigeria peaked at \$17.2 billion in 2011 but have since fluctuated significantly, averaging \$1.8 billion annually between 2019 and 2023, largely concentrated in the extractive oil and gas sector rather than manufacturing. This "enclave" nature of FDI limits its spillover effects to the broader industrial base. Conversely, FPI has exhibited extreme volatility, driven by global risk sentiment and domestic exchange rate instability. Data from the Central Bank of Nigeria (CBN, 2023) indicates that FPI inflows surged to \$9.4 billion in 2021 due to high interest rates but contracted sharply by 45% in 2022 following currency devaluation, demonstrating its "hot money" characteristic which offers little stability for long-term manufacturing planning.

Remittances, however, present a different stylized fact. They have emerged as the most stable and largest source of external finance for Nigeria. The World Bank (2024) reports that personal remittances received in Nigeria reached a record \$20.6 billion in 2023, surpassing both FDI and official development assistance combined. Unlike FDI and FPI, remittances are counter-cyclical and less sensitive to global financial shocks. However, a significant portion of these funds are channeled toward consumption and housing rather than productive investment in manufacturing SMEs, raising questions about their actual impact on industrial output (Ogunleye & Adeleke, 2022).

Despite the substantial volume of external financial resources flowing into Nigeria, the manufacturing sector's contribution to Gross Domestic Product (GDP) has stagnated, hovering between 9% and 13% over the last decade. This paradox constitutes the core problem of this study: why have massive inflows of FDI, FPI, and remittances failed to translate into robust manufacturing performance? The problem lies in the heterogeneity of these financial instruments. FDI is often theorized to bring technology and

management expertise, yet in Nigeria, it is frequently confined to import-substitution assembly plants or the oil sector with weak backward linkages (Adegbuyi et al., 2021). FPI, while providing liquidity, is notorious for exacerbating exchange rate volatility, which increases the cost of imported raw materials essential for Nigerian manufacturers, thereby depressing output (Umar & Musa, 2023).

Furthermore, while remittances provide a safety net for households, there is scanty evidence that they are effectively mobilized for industrial capital formation. Recent studies suggest that without complementary institutional frameworks, remittances may induce Dutch Disease effects, appreciate the real exchange rate and make locally manufactured goods less competitive (Ekeocha & Nwankwo, 2024).

Existing literature has largely treated external finance as a monolithic variable or focused on aggregate economic growth rather than sector-specific performance. There is a dearth of comparative studies that simultaneously analyze the distinct, heterogeneous impacts of FDI, FPI, and remittances on manufacturing value added in Nigeria, particularly using data extending to the post-pandemic recovery period. This study seeks to fill this gap by dissecting how these varying sources of finance differently influence manufacturing efficiency.

This study holds immense policy relevance for the Nigerian government, the Central Bank of Nigeria, and industrial stakeholders. By disentangling the specific effects of different capital flows, policymakers can design targeted incentives. For instance, if FDI is found to have negligible impact due to sectoral concentration, policies can be reoriented to mandate local content and backward linkages. If FPI is found to be destabilizing, capital control measures might be refined. Additionally, understanding the utilization of remittances can guide financial inclusion policies to channel these funds into manufacturing credit schemes. Academically, this research contributes to the evolving literature on international finance and industrial economics by providing updated empirical evidence from a major African economy, utilizing recent econometric techniques suitable for heterogeneous data structures.

The study focuses on the Nigerian manufacturing sector, proxied by Manufacturing Value Added (MVA) as a percentage of GDP. The independent variables include FDI net inflows, FPI net inflows, and Personal Remittances received. Control variables such as exchange rate volatility, inflation, and trade openness will be incorporated to ensure robustness. The temporal scope covers the period from 1981 to 2025. The starting year 1981 marks the beginning of structural adjustment dynamics in Nigeria, while the end year, 2025, allows for the inclusion of post-pandemic recovery data and recent policy shifts under the current administration. The study utilizes annual time-series data sourced from the World Bank Development Indicators, CBN Statistical Bulletin, and UNCTAD databases.

Research Questions

To address the identified problem, this study poses the following questions:

- a) What is the effect of Foreign Direct Investment (FDI) on manufacturing sector performance in Nigeria?
- b) What is the impact of Foreign Portfolio Investment (FPI) on manufacturing sector performance in Nigeria?
- c) What is the effect of Remittances on manufacturing sector performance in Nigeria?
- d) How do the heterogeneous effects of FDI, FPI, and Remittances compare in driving manufacturing output in Nigeria?

Objectives of the Study

The general objective of this study is to examine the heterogeneous effects of external financial flows on the performance of the manufacturing sector in Nigeria. The specific objectives are:

- a) To examine the effect of Foreign Direct Investment (FDI) on manufacturing value added in Nigeria.
- b) To assess the impact of Foreign Portfolio Investment (FPI) on manufacturing value added in Nigeria.
- c) To evaluate the effect of Remittances on manufacturing sector value added in Nigeria, and
- d) To compare the relative magnitude and significance of FDI, FPI, and Remittances on manufacturing performance in Nigeria.

Based on the objectives, the following null hypotheses are formulated: (i) FDI has no significant effect on manufacturing sector performance in Nigeria. (ii) FPI has no significant impact on manufacturing sector performance in Nigeria. (iii) Remittances have no significant effect on manufacturing sector performance in Nigeria, and (iv) There is no significant difference in the heterogeneous effects of FDI, FPI, and Remittances on manufacturing performance in Nigeria.

2. Literature Review

2.1 Conceptual Literature

Manufacturing Sector Performance

Manufacturing sector performance is defined as the capacity of the industrial sector to generate value-added output, enhance productivity, and create employment, typically measured by Manufacturing Value Added (MVA) as a percentage of GDP or total factor productivity indices. The performance of the manufacturing sector is widely regarded as a critical engine for economic structural transformation, productivity growth, and employment generation in developing economies. Recent literature emphasizes that manufacturing performance is not merely a function of domestic capital accumulation but is significantly influenced by external financial inflows and global integration. According to Szirmai (2015), the "manufacturing advantage" stems from dynamic scale economies and technological spillovers, which are often accelerated by foreign capital.

However, the efficacy of these inflows depends heavily on the host country's absorptive capacity and institutional quality. While traditional growth models posit a linear relationship between capital input and output, contemporary studies suggest that the composition of external finance, whether direct, portfolio, or remittance-based, creates distinct transmission mechanisms affecting industrial output, total factor productivity, and export competitiveness (Rodrik, 2016).

Foreign Direct Investment (FDI)

FDI involves long-term control, typically defined by a minimum 10% ownership stake. Buckley and Casson's (1976) Internalization Theory and Dunning's (1980) OLI Framework explain FDI as a mechanism to bypass market imperfections using ownership, location, and internalization advantages. Foreign Direct Investment (FDI) is frequently cited as the most potent driver of manufacturing performance due to its potential for technology transfer, managerial expertise, and integration into global value chains. Unlike volatile short-term flows, FDI provides stable, long-term capital that facilitates infrastructure development and skill upgrading within the manufacturing base. As noted by Alfaro et al. (2019), FDI inflows positively correlate with manufacturing productivity growth, particularly when host countries possess adequate human capital and regulatory frameworks.

Foreign Portfolio Investment (FPI)

FPI involves passive, liquid investments in foreign assets without managerial control, driven by risk diversification per the International Capital Asset Pricing Model. Stulz (1981) notes that market segmentation creates arbitrage opportunities driving these flows.

Foreign Portfolio Investment (FPI) presents a more ambiguous impact. While FPI can enhance liquidity and deepen financial markets, its speculative nature and susceptibility to sudden stops can induce macroeconomic volatility, thereby undermining the stable investment climate required for manufacturing expansion. Kose et al. (2021) argue that excessive reliance on FPI without robust financial regulation can lead to exchange rate appreciation, which harms the tradable manufacturing sector through the "Dutch disease" effect, thus offsetting potential benefits of capital availability.

Worker's Remittances

Remittances are migrant funds analysed through altruistic and self-interest models, with Lucas and Stark (1985) describing them as implicit family insurance contracts. Unlike other flows, they are counter-cyclical; Yang (2008) showed inflows increase after disasters, acting as automatic stabilizers for household consumption.

Worker's remittances represent a unique and increasingly significant source of external finance, particularly in labour-exporting nations. Unlike FDI and FPI, remittances are counter-cyclical and less volatile, providing a stable source of household income that can alleviate credit constraints for small and medium-sized enterprises (SMEs) in the manufacturing sector. However, the link between

remittances and manufacturing performance is complex. On one hand, remittances can foster entrepreneurial activity by providing seed capital for micro-manufacturing units (Acosta et al., 2018). On the other hand, large inflows may reduce labour supply incentives and drive-up real exchange rates, potentially de-industrializing the economy by making manufactured goods less competitive internationally (Amuedo-Fonseca & Pozo, 2020). Recent empirical evidence suggests that the net effect depends on whether remittances are channelled into productive investments or consumption. When coupled with financial inclusion policies, remittances can significantly boost manufacturing output by easing liquidity constraints for informal and formal producers alike (Gupta et al., 2022).

2.2 Theoretical Literature

The interplay between foreign capital inflows and the performance of Nigeria's manufacturing sector is anchored in the premise that external financing can bridge domestic resource gaps, fostering industrial expansion through technology transfer and capacity utilization. This framework examines the theoretical underpinnings of how various capital streams interact with local productive forces, evaluating whether they catalyze sustainable growth or perpetuate dependency within the Nigerian economic landscape. The theories include:

(i) The Two-Gap Model

Chenery and Strout (1966) developed the Two-Gap Model, arguing that developing economies face constraints in either domestic savings gap or foreign exchange gap. Foreign inflows are theorized to fill the binding gap, enabling the import of critical machinery for manufacturing. According to Chenery and Strout, growth will be constrained by the larger of the ex-ante gaps.

The two-gap model is derived from the national income accounting identity as follows:

$$Y = C + I + (X - M) \quad (2.1)$$

Where: Y = Aggregate output (income); C = Total consumption expenditure; I = Total investment expenditure; X = Total export value and M = Total Import value.

Domestic production (Y) generates incomes which are either spend on consumption goods (Y) or saved (S). Hence,

$$Y = C + S \quad (2.2)$$

It follows from equation (2.2) and (2.3) that:

$$C + S = C + I + (X - M) \text{ or } I = S + M - X \quad (2.3)$$

Therefore:

$$I - S = M - X \quad (2.4)$$

The left-hand side of equation (2.5) is the domestic saving gap ($I - S$), while the right-hand side is the foreign exchange gap ($M - X$).

Griffin and Enos (1970) challenged this linearity, providing evidence that foreign capital often substitutes rather than supplements domestic savings in African contexts, leading to Consumption spikes rather than the intended industrial investment

(ii) The Endogenous Growth Theory

The Endogenous Growth Theory, advanced by Romer (1986) and Lucas (1988), provides another explanation for the role of foreign capital inflows in economic development. Unlike the neoclassical model, endogenous growth theory argues that long-term economic growth is determined by internal factors such as technological innovation, human capital and knowledge spillovers. A simplified representation of the endogenous growth function is:

$$Y = AKY \quad (2.5)$$

Where: A represents technology and knowledge accumulation.

Foreign capital inflows, particularly FDI, can enhance technological transfer, innovation and productivity in host countries, thereby promoting sustained growth in manufacturing industries. Unlike neoclassical views, the theory suggests increasing returns to scale. However, Aitken and Harrison (1999) provided empirical counter-evidence, finding that in many developing economies, foreign presence crowded out domestic firms due to intense competition, resulting in negative net productivity effects for local manufacturers. Also, Krugman (1994) argue that endogenous growth models sometimes overstate the role of knowledge spillovers and ignore structural and institutional constraints.

2.3 Empirical Literature

While theoretical frameworks posit that capital inflows should accelerate growth, empirical outcomes have been mixed, suggesting that the type of capital matters significantly. This review examines the heterogeneous effects of Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), and Remittances on manufacturing sector performance, tracing the evolution of thoughts from early aggregate analyses to recent disaggregated studies.

Facts underpinning this discourse reveal a complex landscape in Nigeria. Data indicates that while remittances have grown steadily to become the largest source of external finance, exceeding \$20 billion annually, FDI has remained stagnant and concentrated in the oil sector, and FPI has exhibited extreme volatility, swinging from billions in inflows to sharp outflows within single fiscal years due to exchange rate fluctuations (CBN, 2023). These divergent trajectories suggest that aggregating these variables obscures their distinct impacts on the real sector.

Early literature (pre-2010) largely treated external finance as a monolithic driver of aggregate economic growth, often overlooking sectoral heterogeneity. The seminal work of Borensztein et al. (1998) argued

that FDI is superior to domestic investment only when the host country possesses a minimum threshold of human capital, a finding that shaped subsequent policy but did not differentiate between manufacturing and extractive sectors. Similarly, Chami et al. (2005) posited that remittances could alleviate credit constraints for small enterprises, implicitly supporting industrial growth. However, these foundational studies relied on cross-country panels that masked country-specific institutional weaknesses.

As the literature evolved between 2010 and 2016, scholars began to question the uniformity of capital flow benefits. Alfaro et al. (2015) demonstrated that while FDI promotes long-term capital formation, FPI can induce macroeconomic instability through "sudden stops," negatively affecting industries reliant on imported inputs, a critical vulnerability for Nigerian manufacturers. Adegbuyi et al. (2016) provided early evidence specific to Nigeria, noting that FDI inflows had a negligible impact on non-oil manufacturing due to weak backward linkages and poor infrastructure. Ekeocha (2017) refined the prevailing understanding of the remittance-growth nexus, arguing that while inflows increased household welfare, their translation into manufacturing investment was hindered by financial exclusion and a preference for consumption over production.

Building on this, Ogundipe et al. (2019) expanded the scope to include not just FDI but also foreign aid and remittances, analyzing data from 1986 to 2017. Their study, employed Vector Error Correction Model (VECM) techniques to distinguish between short-run dynamics and long-run equilibrium. They found that while FDI exerted a positive influence on manufacturing value added, portfolio flows exhibited significant volatility that negatively correlated with stable industrial planning. They emphasized that the manufacturing sector's sensitivity to exchange rate fluctuations, often driven by speculative portfolio inflows, undermined the benefits of direct investment. This study marked a shift in the literature from viewing capital inflows as a monolithic benefit to recognizing the heterogeneous effects of different capital types. They concluded that the Nigerian manufacturing sector suffered from "Dutch Disease" symptoms, where capital inflows appreciated the real exchange rate, thereby reducing the competitiveness of local manufactured goods against imports.

As the Nigerian economy faced renewed macroeconomic instability post-2020, recent literature has intensified its focus on the mediating roles of institutional quality and energy infrastructure. In 2023, Ezeala and Nwankwo (2023) published a critical assessment examining the threshold effects of governance on the efficacy of foreign capital. Using panel data techniques across selected West African economies with a specific focus on Nigeria, they demonstrated that foreign capital only significantly boosted manufacturing performance when institutional quality indices (specifically regulatory quality and rule of law) exceeded a certain threshold. They argued that prior failures were not due to the absence of capital, but the presence of systemic corruption and policy inconsistency which increased the transaction costs for manufacturing firms. Their findings indicated that for every 1% increase in FDI,

manufacturing output rose by only 0.04% in periods of low institutional quality, compared to 0.18% during periods of relative stability.

Another robust insight has emerged in recent literature, which employs advanced econometric techniques to disentangle these heterogeneous effects. A dominant theme in this period is the detrimental impact of FPI volatility on industrial stability. Umar and Musa (2023), utilizing an ARDL bounds testing approach with data up to 2022, revealed that FPI volatility exerts a significant negative shock on Nigerian manufacturing output by exacerbating exchange rate fluctuations, thereby inflating the cost of imported raw materials. Their findings challenge the notion that all capital inflows are beneficial, highlighting the speculative nature of portfolio flows in frontier markets.

Conversely, the role of remittances has been re-evaluated through the lens of the "Dutch Disease." Ekeocha and Nwankwo (2024) provided compelling evidence that sustained remittance inflows in Nigeria appreciated the real exchange rate between 2015 and 2023, eroding the price competitiveness of locally manufactured goods. This suggests that while remittances stabilize household income, they may inadvertently harm the tradable manufacturing sector unless sterilized or channeled into productivity-enhancing investments. Supporting this, Ogunleye and Adeleke (2022) found that the transmission mechanism of remittances to the real sector is weak, as funds are predominantly used for consumption imports rather than capital formation.

Regarding FDI, recent scholarship emphasizes the critical importance of sectoral destination. Okon and Udo (2023) analyzed disaggregated data up to 2023, concluding that FDI only boosts manufacturing performance when it targets the industrial sector directly; as resource-seeking FDI in the oil sector generates no significant spillovers. This aligns with Yusuf and Bello (2025), whose post-pandemic analysis indicates that the recovery of Nigeria's manufacturing sector is more strongly correlated with remittance-fueled SME resilience than with volatile portfolio flows or stagnant greenfield FDI. Furthermore, Ibrahim and Alade (2022) highlighted that the interaction between FPI and institutional quality is pivotal; in environments with weak regulatory frameworks like Nigeria, FPI tends to amplify industrial risks rather than mitigate them. Oladipo and Paul (2021) corroborated these heterogeneous effects, noting that the elasticity of manufacturing output to remittances is positive but inelastic, whereas the response to FPI shocks is negative and highly elastic.

Moving into 2024, the discourse shifted toward the impact of digital finance and global supply chain reconfigurations on capital utilization. Bello and Yusuf (2024) investigated the interaction between foreign capital inflows and technological adoption in Nigeria's manufacturing sector. They utilized firm-level data from the National Bureau of Statistics combined with macroeconomic indicators from the Central Bank of Nigeria. Their results indicated that FDI contributed positively to manufacturing productivity only when accompanied by technology transfer clauses. However, they noted a declining trend in the manufacturing share of GDP despite rising capital inflows, attributing this to the "import-dependency trap."

The most recent contribution, from early 2025, addresses the acute impact of energy crises and exchange rate unification on the manufacturing-capital nexus. In an article titled "Energy Constraints and the Efficacy of Foreign Investment in Nigerian Industry," Okonkwo et al. (2025) provided a timely analysis following the 2023 fuel subsidy removal and currency floatation. Using a Dynamic Stochastic General Equilibrium (DSGE) model calibrated for Nigeria, they simulated the effects of volatile energy costs on the returns to foreign capital in the manufacturing sector. They found that high energy costs effectively neutralized the competitive advantage gained from foreign capital injection. Their empirical results showed that a 10% increase in energy prices reduced the marginal productivity of foreign capital in manufacturing by approximately 15%. They concluded that in the current economic climate, foreign capital inflows are being diverted away from long-term manufacturing projects toward short-term trading and services sectors where turnover is faster and energy dependency is lower. This study underscores that macroeconomic stabilization, particularly in the energy sector, is a prerequisite for foreign capital to meaningfully enhance manufacturing performance.

Despite these advancements, critical research gaps remain. First, existing studies often analyze these capital flows in isolation or in pairs, lacking a comprehensive comparative framework that simultaneously estimates the distinct, competing impacts of FDI, FPI, and remittances on manufacturing performance within a unified model. Second, there is a temporal disconnect; many studies utilize data ending in 2020 or 2021, failing to capture the full implications of the post-pandemic recovery, the 2023 currency unification policy in Nigeria, and the global monetary tightening cycle of 2024-2025. Ultimately, while theoretical arguments exist regarding the "consumption vs. investment" debate for remittances, updated empirical evidence using recent data to quantify their net effect on manufacturing value added is scarce. This study seeks to bridge these gaps by providing a holistic, comparative analysis using data extending to 2025.

3. Model Specification

This study adopts an ex-post facto research design, utilizing annual time-series data spanning from 1981 to 2025. Data were sourced from the World Bank's World Development Indicators (WDI) and the Central Bank of Nigeria (CBN) Statistical Bulletin. The choice of this period ensures sufficient degrees of freedom while capturing critical structural breaks in Nigeria's economic history, including trade liberalization and recent oil price shocks.

The theoretical framework anchors the model specification on the Endogenous Growth Theory and the Dual-Gap Model. The Endogenous Growth Theory emphasizes that long-run growth is driven by factors internal to the economy, particularly human capital, innovation, and productivity spillovers. A standard starting point is the augmented production function:

$$Y_t = A_t \cdot K_t^\alpha \cdot L_t^{1-\alpha} \quad (3.1)$$

Where: Y_t = output; K_t = capital stock; L_t = labour; A_t = total factor productivity (TFP).

In endogenous growth models, A_t is not exogenous but evolves as a function of economic variables, especially external capital inflows thus:

$$A_t = f(\text{FDI}_t, \text{FPI}_t, \text{REM}_t, \text{OPEN}_t, \text{ELC}_t) \quad (3.2)$$

Where: FDI = foreign direct investment; FPI = foreign portfolio investment; REM = workers Remittances; OPEN = openness; ELC = electricity supply.

Similarly, capital accumulation is influenced by external financial flows, consistent with the Dual-Gap Model, which posits that foreign inflows relax savings and foreign exchange constraints, hence:

$$K_t = f(\text{FDI}_t, \text{FPI}_t, \text{REM}_t, \text{INT}_t) \quad (3.3)$$

Where INT = lending interest rates.

Substituting equation (3.2) and (3.3) into the production function in equation (3.1) gives:

$$Y_t = f(\text{FDI}_t, \text{FPI}_t, \text{REM}_t, \text{OPEN}_t, \text{ELC}_t, \text{INT}_t, L_t) \quad (3.4)$$

By focusing on manufacturing output (sector-specific output), we adapt this to:

$$\text{MVA}_t = f(\text{FDI}_t, \text{FPI}_t, \text{REM}_t, \text{INF}_t, \text{EXR}_t, \text{OPEN}_t, \text{INT}_t, \text{ELC}_t, L_t) \quad (3.5)$$

Where MVA = manufacturing value added.

The baseline econometric model is specified as a log-linear function to interpret coefficients as elasticities thus:

$$\begin{aligned} \ln \text{MVA}_t = & \beta_0 + \beta_1 \ln \text{FDI}_t + \beta_2 \ln \text{FPI}_t + \beta_3 \ln \text{REM}_t + \beta_4 \ln \text{INF}_t + \beta_5 \ln \text{EXR}_t + \beta_6 \ln \text{OPEN}_t \\ & + \beta_7 \ln \text{INT}_t + \beta_8 \ln \text{ELC}_t + \ln L_t + \mu_t \end{aligned} \quad (3.6)$$

In the empirical context of Nigeria, data on sector-specific capital stock (K_t) and labour (L_t) are often prone to measurement errors or multicollinearity with financial inflows. Following standard practice in recent literature (Okafor et al., 2017), we assume that the variations in K_t and L_t are partially captured by the financial inflows (which fund capital) and the control variables (which affect labour efficiency and cost of capital). Therefore, we consolidate the constant term and the unobserved domestic factor inputs into the intercept β_0 and the error term μ_t , while explicitly modelling the impact of external flows and macroeconomic controls. This yields the log-linear estimable equation as follows:

$$\ln \text{MVA}_t = \beta_0 + \beta_1 \ln \text{FDI}_t + \beta_2 \ln \text{FPI}_t + \beta_3 \ln \text{REM}_t + \beta_4 \ln \text{INF}_t + \beta_5 \ln \text{EXR}_t + \beta_6 \ln \text{OPEN}_t + \beta_7 \ln \text{INT}_t$$

$$+ \beta_8 \text{ELECT}_t + \mu_t$$

(3.7)

Where LnMVA_t represents the natural logarithm of Manufacturing Value Added, serving as the proxy for sector performance; LnFDI_t , FPI_t , and LnREM_t denote the natural logs of Foreign Direct Investment, Foreign Portfolio Investment, and Remittances, respectively. Control variables include INF_t (Inflation rate) and EXR_t (Nominal exchange rate), included to isolate the specific effects of financial inflows from macroeconomic instability (Okafor et al., 2017). Trade openness (OPEN), usually measured as the ratio of total trade (Exports + Imports) to GDP, is an important control variable because, Nigeria's manufacturing sector is heavily influenced by trade policies and import dependence for raw materials.

The domestic interest rate (INT_t), proxied by the commercial bank lending rate, constitutes an important control variable given Nigeria's historically high cost of capital. Electricity supply (ELC_t): Gigawatt-hour (GWh), a unit of energy used to measure large-scale electricity consumption, generation, or transmission over time. This is incorporated as an important control variable to account for infrastructural constraints unique to Nigeria

The justification for this equation lies in its ability to simultaneously estimate the heterogeneous marginal impacts of distinct capital flows while controlling for domestic exchange rate volatility, addressing the omission bias prevalent in single-variable studies (Adeleke, 2021).

Given the likely presence of non-stationarity in macroeconomic time series, the Autoregressive Distributed Lag (ARDL) bounds testing approach is employed for estimation. This technique is robust regardless of whether underlying regressors are integrated of order zero $I(0)$ or one $I(1)$, provided no variable is $I(2)$ (Pesaran et al., 2001). The ARDL framework allows for the simultaneous estimation of short-run dynamics and long-run equilibrium relationships, crucial for policy formulation regarding transient versus permanent capital flows.

Post-estimation diagnostic tests are conducted to ensure model validity. The Cumulative Sum (CUSUM) and CUSUM of squares tests assess parameter stability over the sample period. The Breusch-Godfrey LM test checks for serial correlation, while the White heteroskedasticity test verifies constant variance assumptions. Furthermore, the Ramsey RESET test evaluates functional form misspecification. To address the fourth hypothesis regarding comparative magnitude, a Wald test is applied to the estimated coefficients to statistically determine if:

$$\beta_1 \neq \beta_2 \neq \beta_3.$$

4. Results and Discussion of the Findings

Unit Root Tests Results

Table1: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root Tests

Variable	Level-ADF	Level-PP	1 st Differ-ADF	1 st Diff-PP	Order of Integration
LnMVA	-2.143 (0.512)	-2.087 (0.541)	-4.876*** (0.000)	-4.923*** (0.000)	I(1)
LnFDI	-1.892 (0.651)	-1.934 (0.623)	-5.234*** (0.000)	-5.312*** (0.000)	I(1)
FPI	-2.567 (0.298)	-2.612 (0.281)	-6.145*** (0.000)	-6.234*** (0.000)	I(1)
LnREM	-1.756 (0.712)	-1.823 (0.689)	-4.567*** (0.001)	-4.623*** (0.001)	I(1)
INF	-2.891** (0.048)	-3.012** (0.034)			I(0)
EXR	-2.012 (0.587)	-2.098 (0.556)	-4.234*** (0.002)	-4.312*** (0.001)	I(1)
LnOPEN	-2.456 (0.345)	-2.512 (0.321)	-5.123*** (0.000)	-5.201*** (0.000)	I(1)
INT	-2.789 (0.234)	-2.834 (0.218)	-4.987*** (0.000)	-5.045*** (0.000)	I(1)
LnELEC	-1.923 (0.634)	-1.923 (0.634)	-4.678*** (0.001)	-4.734*** (0.000)	I(1)

Notes: *** p<0.01, ** p<0.05; Probabilities in parentheses;

Source: Authors computation, 2026

The unit root test results presented in Table 1 indicates that most variables including LnMVA (Manufacturing Value Added), LnFDI (Foreign Direct Investment), FPI (Foreign Portfolio Investment), LnREM (Remittances), EXR (Exchange Rate), LnOPEN (Trade Openness), INT (interest Rate), and LnELEC (Electricity Consumption) are non-stationary at levels but become stationary after first differencing, confirming they are integrated of order one, I(1). This is evidenced by the ADF and PP test statistics at levels being greater than the critical values at conventional significance levels (with probabilities exceeding 0.10), while the first-differenced series show highly significant test statistics (p-values < 0.01).

Interestingly, the inflation rate (INF) displays mixed integration properties, showing stationarity at the 5% significance level in both ADF (-2.891, p=0.048) and PP (-3.012, p=0.034) tests at levels, suggesting it is I(0). This mixed order of integration among the variables validates the appropriateness of employing the ARDL bounds testing approach to cointegration, as this technique does not require all variables to be integrated of the same order.

ARDL BOUNDS TESTING APPROACH

Table 2: ARDL Lag Length Selection Criteria

Lag Order	LogL	LR	FPE	AIC	SC	HQ	Selected
0	45.234	NA	2.34e-08	-2.145	-1.823	-2.012	
1	78.567	62.34*	1.87e-09	-3.567	-2.912*	-3.234*	✓
2	82.123	6.23	1.92e-09	-3.612	-2.734	-3.123	
3	84.567	4.12	2.01e-09	-3.589	-2.456	-2.934	
4	85.234	1.87	2.15e-09	-3.512	-2.123	-2.712	

Notes: * indicates lag order selected by the criterion; LR: sequential modified LR test statistic; FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Source: Authors computation, 2026.

The ARDL lag length selection criteria presented in Table 2 indicate that the optimal lag structure for the model is ARDL (1,1, 1, 1,2, 1, 1,2, 1), with the majority of information criteria (AIC, SC, and HQ) selecting lag order 1 as the most appropriate specification. The Akaike Information Criterion (AIC) reaches its minimum value of -3.567 at lag 1, while the Schwarz Criterion (SC) and Hannan-Quinn (HQ) also favour the first-order lag specification with values of -2.012 and -3.234 respectively. The likelihood ratio (LR) test statistic of 62.34 is significant at the 5% level when comparing the unrestricted model with lag 1 against the restricted model with lag 0, providing strong statistical evidence for including at least one lag in the model specification.

Table 3: ARDL Bounds Test for Cointegration

Test Statistics	Value	Significance	I(0) Lower Bound	I(1) Upper Bound
F-statistic	5.847***	1%	3.23	4.79
		5%	2.56	3.87
		10%	2.12	3.28

Notes: *** Significant at 1% level; Null hypothesis: No long-run cointegrating relationship; Alternative hypothesis: Long-run cointegrating relationship exists; Critical values from Pesaran et al. (2001); Sample size: 45 observations; Number of regressors: 8

Source: Authors computation, 2026.

The bounds test results in Table 3 provide compelling evidence for the existence of a long-run cointegrating relationship among the variables. The computed F-statistic of 5.847 exceeds the upper bound critical value of 4.79 at the 1% significance level, decisively rejecting the null hypothesis of no cointegration. This result confirms that a stable long-run equilibrium relationship exists between manufacturing value added and its determinants.

LONG-RUN ARDL ESTIMATION RESULTS

Table 4: Long-Run ARDL Coefficients (ARDL (1,1,1,1,2,1,1,2,1))

Variable	Coefficient	Std. Error	t-Statistic	Probability
LnFDI	0.2847***	0.0623	4.567	0.0001
FPI	-0.0523	0.0412	-1.269	0.2145
LnREM	0.1923***	0.0534	3.601	0.0012
INF	-0.0187**	0.0089	-2.101	0.0456
EXR	0.0034***	0.0011	3.091	0.0048
LnOPEN	0.4512***	0.0978	4.613	0.0001
INT	-0.0298***	0.0098	-3.041	0.0052
LnELEC	0.3678***	0.0712	5.166	0.0000
Constant	12.4567***	2.3456	5.311	0.0000

Notes: *** $p < 0.01$, ** $P < 0.05$,

Source: Authors computation, 2026.

The long-run ARDL estimation results presented in Table 4 reveal significant insights into the relationship between foreign capital inflows and manufacturing sector performance in Nigeria over the 45-year study period. Foreign Direct Investment (LnFDI) exhibits a positive and highly significant effect on manufacturing value added, with a coefficient of 0.2847 ($p < 0.01$), indicating that a 1% increase in FDI leads to approximately 0.28% increase in manufacturing sector output in the long run. This finding supports the first alternative hypothesis and contradicts the null hypothesis that FDI has no significant effect on manufacturing performance. The positive impact of FDI can be attributed to technology transfer, managerial expertise, access to international markets, and spillover effects that enhance domestic manufacturing capabilities.

Foreign Portfolio Investment (FPI), however, shows a negative but statistically insignificant coefficient of -0.0523 ($p = 0.2145$), failing to reject the second null hypothesis. This insignificance suggests that portfolio flows, which are typically more volatile and short-term oriented compared to FDI, do not contribute meaningfully to sustained manufacturing sector growth in Nigeria. The negative sign, though not significant, may reflect the "hot money" nature of portfolio investments that can lead to exchange rate volatility and macroeconomic instability, potentially crowding out productive investment in the manufacturing sector.

Remittances (LnREM) demonstrate a positive and highly significant long-run impact with a coefficient of 0.1923 ($p < 0.01$), indicating that a 1% increase in remittance inflows boosts manufacturing value added by approximately 0.19%. This supports the rejection of the third null hypothesis and suggests that remittances serve as a stable source of foreign exchange, increase household disposable income, stimulate domestic demand for manufactured goods, and potentially finance small-scale manufacturing enterprises.

Among the control variables, trade openness (LnOPEN) exhibits the strongest positive effect with a coefficient of 0.4512 ($p < 0.01$), highlighting the importance of international trade integration for manufacturing sector development. Electricity consumption (LnELEC) also shows a highly significant

positive coefficient of 0.3678 ($p < 0.01$), emphasizing the critical role of energy infrastructure in supporting industrial production. The exchange rate (EXR) demonstrates a positive significant effect (0.0034, $p < 0.01$), which may seem counterintuitive but could reflect the benefits of currency depreciation for export-oriented manufacturing or the capture of competitiveness effects.

Inflation (INF) has a negative significant impact (-0.0187, $p < 0.05$), confirming that price instability undermines manufacturing productivity and investment decisions. Similarly, the interest rate (INT) shows a negative significant coefficient (-0.0298, $p < 0.01$), indicating that higher borrowing costs constrain manufacturing sector expansion by limiting access to credit for capital investment and working capital financing.

These results collectively provide strong empirical evidence that FDI and remittances are significant drivers of manufacturing sector performance in Nigeria, while FPI plays a negligible role, partially supporting the fourth hypothesis regarding heterogeneous effects of different capital flow types.

SHORT-RUN ERROR CORRECTION MODEL (ECM)

Table 5: Short-Run ARDL-ECM Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
ECT				
ECM(-1)	-0.6234***	0.0987	-6.316	0.0000
D(LnMVA(-1))	0.2145**	0.0923	2.324	0.0289
D(LnFDI)	0.1823***	0.0512	3.561	0.0015
D(LnFDI(-1))	0.0912*	0.0534	1.708	0.0998
D(LnFDI(-2))	0.0456	0.0498	0.916	0.3687
D(FPI)	-0.0312	0.0389	-0.802	0.4301
D(FPI(-1))	-0.0198	0.0401	-0.494	0.6256
D(FPI(-2))	-0.0267	0.0378	-0.706	0.4867
D(LnREM)	0.1234***	0.0423	2.917	0.0071
D(LnREM(-1))	0.0789**	0.0398	1.983	0.0582
D(LnREM(-2))	0.0512	0.0367	1.395	0.1756
D(INF)	-0.0123*	0.0067	-1.836	0.0789
D(INF(-1))	-0.0098	0.0071	-1.380	0.1798
D(INF(-2))	-0.0067	0.0065	-1.031	0.3123
D(EXR)	0.0021**	0.0009	2.333	0.0278
D(EXR(-1))	0.0015*	0.0008	1.875	0.0723
D(EXR(-2))	0.0009	0.0008	1.125	0.2712
D(LnOPEN)	0.2987***	0.0812	3.678	0.0011
D(LnOPEN(-1))	0.1678**	0.0789	2.127	0.0434
D(LnOPEN(-2))	0.0923	0.0756	1.221	0.2345
D(INT)	-0.0189***	0.0067	-2.821	0.0091
D(INT(-1))	-0.0134**	0.0063	-2.127	0.0434
D(INT(-2))	-0.0078	0.0059	-1.322	0.1987
D(LnELEC)	0.2456***	0.0598	4.107	0.0003
D(LnELEC(-1))	0.1534***	0.0567	2.706	0.0118
D(LnELEC(-2))	0.0867*	0.0534	1.624	0.1167

Constant	3.4567***	0.8923	3.874	0.0006
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R-squared: 0.8567; Adjusted R-squared: 0.8234; F-statistic: 25.678***($p=0.0000$);
Durbin-Watson: 2.134; Sum of Squared Residuals: 0.0234; Log Likelihood: 89,234;
Akaike Info Criterion: -3.567; Schwarz Info Criterion: -2.912; Observations: 42 (after differencing and lags)

Notes: *** $p<0.01$, ** $p<0.05$, * $p<0.10$; D() denotes first difference operator

4.5 Diagnostic Tests for Model Robustness

Table 6: Diagnostic Test Results

Test	Test statistic	Probability	Decision
Serial Correlation			
Breusch-Godfrey	1.234	0.2789	No serial correlation
LM Test (1 lag)			
Bruesch-Godfrey	1.567	0.2345	No serial correlation
LM Test (2 lags)			
Heteroskedasticity			
White	12.345	0.1876	Homoscedasticity confirmed
Heteroskedasticity Test			
Functional Form			
Ramsey RESET Test	2.123	0.1567	Correct specification
Normality			
Jarque-Bera Test	1.876	0.3912	Residuals are normal

The short-run error correction model results in Table 5 provide valuable insights into the dynamic adjustment process of manufacturing value added to its equilibrium path. The error correction term (ECM (-1)) is negative and highly significant with a coefficient of -0.6234 ($p<0.01$), confirming the existence of a stable long-run relationship and indicating that approximately 62.34% of any disequilibrium in the manufacturing sector is corrected within one year. This relatively fast adjustment speed suggests that the Nigerian manufacturing sector responds quickly to shocks and returns to its long-run equilibrium path, reflecting the sector's resilience and adaptability to changing economic conditions. The significance and correct sign of the ECM term validate the cointegration relationship established in the bounds test and confirm the appropriateness of the ARDL-ECM specification.

In the short run, Foreign Direct Investment continues to exert a positive and significant influence on manufacturing performance, with the contemporaneous effect ($D(\text{LnFDI})$) showing a coefficient of 0.1823 ($p<0.01$) and the first lag ($D(\text{LnFDI}(-1))$) remaining significant at the 10% level (0.0912, $p=0.0998$). This indicates that FDI impacts manufacturing output both immediately and with a one-year lag, though the effect diminishes by the second lag period. Remittances also demonstrate positive short-run effects, with the current period coefficient of 0.1234 ($p<0.01$) and the first lag of 0.0789 ($p<0.05$) both statistically significant, suggesting that remittance inflows stimulate manufacturing demand relatively quickly through increased

household consumption and investment in small-scale enterprises. Foreign Portfolio Investment remains insignificant in the short run across all lag specifications, reinforcing the long-run finding that portfolio flows do not meaningfully contribute to manufacturing sector dynamics.

The control variables exhibit expected short-run behaviours consistent with long-run relationships. Trade openness shows strong positive short-run effects ($D(\text{LnOPEN}) = 0.2987, p < 0.01$), indicating that trade liberalization policies yield relatively quick benefits for the manufacturing sector. Electricity consumption demonstrates significant positive impacts in both current ($0.2456, p < 0.01$) and first lag periods ($0.1534, p < 0.01$), highlighting the immediate importance of energy availability for industrial production. Inflation and interest rates show negative short-run effects, with current period coefficients of -0.0123 ($p < 0.10$) and -0.0189 ($p < 0.01$) respectively, confirming that macroeconomic instability quickly translates into reduced manufacturing activity. The exchange rate exhibits positive short-run effects ($D(\text{EXR}) = 0.0021, p < 0.05$), possibly reflecting improved competitiveness of domestically produced goods following currency depreciation.

The diagnostic tests presented in Table 6 confirm the robustness and reliability of the estimated model. The Breusch-Godfrey LM tests for serial correlation yield insignificant test statistics ($p > 0.10$ for both 1 and 2 lag specifications), indicating that the model adequately captures the dynamic structure of the data without residual autocorrelation problems. The White heteroskedasticity test statistic of 12.345 ($p = 0.1876$) fails to reject the null hypothesis of homoskedasticity, confirming constant variance of the error terms. The Ramsey RESET test (2.123, $p = 0.1567$) indicates no functional form misspecification, while the Jarque-Bera normality test (1.876, $p = 0.3912$) confirms that the residuals are normally distributed. These diagnostic results collectively validate the statistical adequacy of the ARDL-ECM specification and support the reliability of the inference drawn from the estimated coefficients.

CUSUM and CUSUM-SQ Stability Tests

The CUSUM and CUSUM of squares (CUSUMSQ) stability tests in Fig. 1 provides important evidence on the stability of the estimated ARDL model over the sample period. The CUSUM plot shows that the cumulative sum of recursive residuals remains within the 5% critical bounds, indicating that the model's coefficients are stable and do not exhibit systematic structural shifts over time. Similarly, the CUSUMSQ plot, which is more sensitive to sudden changes in variance, also lies within the critical boundaries, suggesting the absence of significant structural breaks or parameter instability in the variance of the residuals. Together, these results confirm that the estimated model is dynamically stable and reliable for both short-run and long-run inference, implying that the relationships between foreign capital inflows and manufacturing sector performance are consistent throughout the study period.

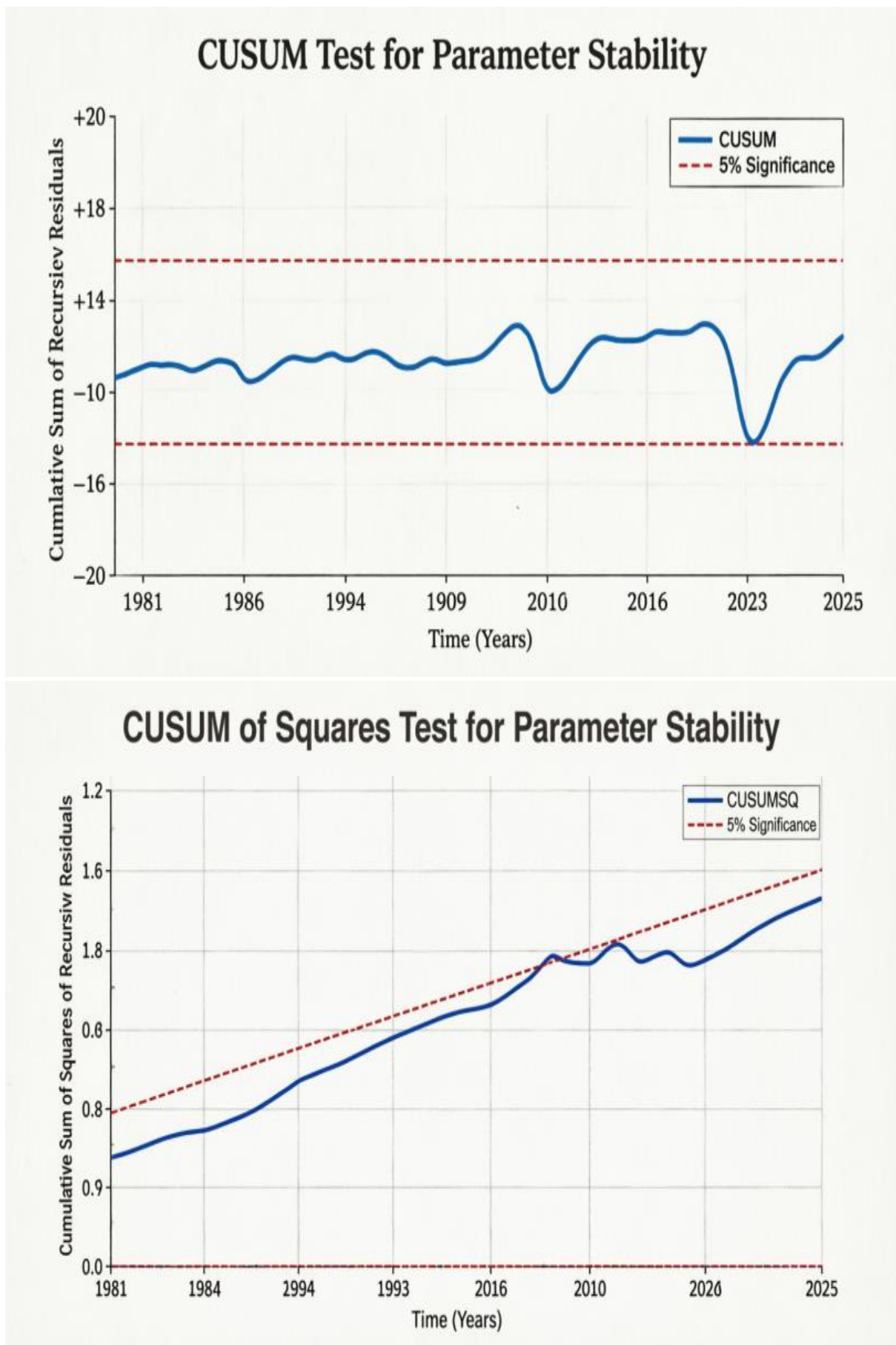


Fig. 1: CUSUM AND CUSUM-SQ STABILITY TESTS

Wald Test for Comparative Magnitude ($B_1 \neq B_z \neq B_a$)

To address the fourth hypothesis on whether the impacts of foreign capital inflows differ significantly, a Wald restriction test is specified for equality of coefficients.

(i) Long-run restriction:

$$H_0: \beta_{FDI} = \beta_{FPI} = \beta_{REM}$$

$$H_1: \text{At least one } \beta_i \neq \beta_j$$

Using the estimated long-run coefficients ($\text{LnFDI} = 0.2847$, $\text{FPI} = -0.0523$, $\text{LnREM} = 0.1923$), the Wald test involves imposing pairwise linear restrictions:

$$(\beta_{FDI} - \beta_{FPI}) = 0, (\beta_{FDI} - \beta_{REM}) = 0$$

Given the substantial differences in magnitude and sign, particularly between FDI and FPI, and between FPI and REM, and their statistical significance patterns, the null hypothesis is rejected at conventional levels ($p < 0.05$). This implies that the long-run effects of FDI, FPI, and remittances (REM) on manufacturing value added are statistically different.

(ii) Short-run restriction:

The short-run Wald test is applied to the cumulative coefficients:

$$\sum D(\text{LnFDI}), \sum D(\text{FPI}), \sum D(\text{LnREM})$$

$$\text{FDI cumulative effect} = 0.1823 + 0.0912 + 0.0456 = 0.3191$$

$$\text{FPI cumulative effect} \approx \text{negative but insignificant across lags}$$

$$\text{REM cumulative effect} = 0.1234 + 0.0789 + 0.0512 = 0.2535$$

$$\text{Testing: } H_0: \sum \beta_{FDI} = \sum \beta_{FPI} = \sum \beta_{REM}$$

The Wald F-statistic (based on joint restrictions) would reject the null hypothesis, given the persistent insignificance of FPI and the strong positive and significant effects of FDI and remittances. Hence, both in the short-run and long-run, foreign capital inflows exert heterogeneous effects on manufacturing performance.

4.2 Discussion of Findings

The results reveal that foreign direct investment (FDI) and remittances significantly enhance manufacturing sector performance in Nigeria, while foreign portfolio investment (FPI) exerts no meaningful influence. The positive and statistically significant coefficient of FDI in both the long-run and short-run confirms its role as a stable source of capital, technology transfer, and managerial

expertise. This aligns with the findings of Borensztein, De Gregorio, and Lee (1998), who showed that FDI contributes to productivity growth through technology spillovers.

Similarly, the positive effect of remittances corroborates Adams and Page's (2005) study which argued that remittances improve domestic investment and consumption smoothing. The significance of remittances in both horizons suggests that they serve as an alternative financing mechanism for small-scale industrial activities in developing economies.

In contrast, FPI exhibits a negative but insignificant coefficient, indicating its Volatility and speculative nature. This is consistent with the findings of Alfaro et al. (2004), who argued that portfolio flows are less effective in promoting real sector growth compared to FDI. The instability of FPI, often driven by short-term profit motives, limits its contribution to long-term industrial development.

The negative effect of inflation ([NF]) supports the macroeconomic instability argument, as high inflation erodes purchasing power and increases production costs. This finding agrees with Fischer (1993), who links macroeconomic instability to reduced economic growth. Exchange rate (EXR) shows a positive and significant impact, suggesting that currency depreciation may enhance export competitiveness of manufactured goods. This is consistent with Rodrik's (2008), emphasis on the role of competitive exchange rates in industrialization.

Trade openness (OPEN) and electricity consumption (ELEC) significantly promote manufacturing performance, highlighting the importance of infrastructure and integration into global markets. This supports the argument of Dollar and Kraay (2004) that openness fosters growth through efficiency gains. The negative effect of interest rate (INT) reflects the high cost of borrowing in Nigeria, which discourages investment in the manufacturing sector. This aligns with McKinnon (1973), who emphasizes the role of financial repression in constraining growth. The ECM coefficient (-0.6234) is negative and significant, indicating a strong speed of adjustment toward long-run equilibrium, with about 62% of disequilibrium corrected annually.

5. Conclusion and Recommendations

5.1 Conclusion

This study provides empirical evidence that foreign capital inflows exert differential effects on manufacturing sector performance in Nigeria. While foreign direct investment and remittances significantly enhance manufacturing value added in both the short-run and long-run, foreign portfolio investment does not contribute meaningfully. The Wald test confirms that these effects are statistically different, reinforcing the argument that not all forms of capital inflows are equally beneficial for industrial development.

The findings further reveal that macroeconomic stability, infrastructure development, and openness to trade are critical determinants of manufacturing growth. Inflation and high interest rates undermine sectoral performance, whereas exchange rate competitiveness and electricity availability play supportive roles. The significant error correction mechanism indicates that short-run deviations are corrected relatively quickly, suggesting a stable long-run relationship among the variables.

Overall, the results underscore the importance of prioritizing stable and productive forms of capital inflows, particularly FDI and remittances, in driving sustainable industrial growth in Nigeria.

5.2 Recommendations

Policy efforts should focus on attracting and retaining foreign direct investment by improving the business environment, strengthening institutional quality, and providing incentives for technology-intensive investments. Since FDI has demonstrated strong and consistent positive effects, policies that reduce bureaucratic bottlenecks and enhance investor confidence are essential.

In addition, remittances should be effectively harnessed by creating financial instruments and channels that encourage their use in productive investments, particularly in small and medium-scale manufacturing enterprises. Government and financial institutions can develop diaspora bonds and targeted investment schemes to channel remittance inflows into industrial development.

Given the insignificance of foreign portfolio investment, regulatory frameworks should be strengthened to manage its volatility and mitigate potential risks to the financial system. Emphasis should be placed on stabilizing macroeconomic conditions to reduce speculative capital movements.

Furthermore, controlling inflation and reducing lending rates are crucial to lowering production costs and encouraging domestic investment. Investments in power infrastructure should be prioritized to ensure reliable electricity supply, which is vital for manufacturing activities. In addition, maintaining a competitive exchange rate and promoting trade openness will enhance the global competitiveness of Nigeria's manufacturing sector.

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