

Inflationary Trends and the Growth of Small and Medium Enterprises (SMES) in Nigeria

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Abstract

This study investigated the effect of inflationary trends on the growth of Small and Medium Enterprises (SMEs) in Nigeria, with particular emphasis on the period spanning from 1990 to 2024. Inflation was proxied using four key indices: Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), and Wholesale Price Index (WPI), while SME growth was measured through their contribution to Nigeria's Gross Domestic Product (SMECGDP). The study adopted an ex-post facto research design, utilizing annual secondary time series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and National Bureau of Statistics (NBS) annual reports. Given the macroeconomic nature of the variables and their potential mixed stationarity properties, the Autoregressive Distributed Lag (ARDL) bounds testing methodology was employed using E-Views 9.0 to assess both short-run dynamics and long-run equilibrium relationships. The results revealed that none of the inflationary indicators—CPI, PPI, CIR, or WPI—exerted statistically significant effects on SME growth, either in the short run or the long run. These findings suggest that while inflation may influence the broader economic environment, it does not independently serve as a primary driver or inhibitor of SME performance in Nigeria. The insignificance of these variables calls attention to the role of other non-price macroeconomic and structural factors—such as infrastructural challenges, access to finance, regulatory inconsistencies, and institutional inefficiencies—which may have more pronounced impacts on SME development. The study concludes that inflation-targeted policies alone may be insufficient to drive meaningful growth in the SME sector. It recommends that policymakers focus more on comprehensive and SME-specific strategies aimed at enhancing resilience, innovation, and productivity. This research contributes to the expanding literature on inflation-SME dynamics and offers methodological insight into ARDL modeling in the context of emerging economies.

Keywords: Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), Wholesale Price Index (WPI) and SMEs Growth.

Background to the Study

Nigeria's economic trajectory from 2022 to 2025 has been significantly influenced by persistent inflationary pressures, posing substantial challenges to the growth and sustainability of Small and Medium Enterprises (SMEs). Inflation, measured through indicators such as the Consumer Price

Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), and Wholesale Price Index (WPI), has shown a consistent upward trend, exacerbating the operational difficulties faced by SMEs. These enterprises, which contribute approximately 48% to Nigeria's Gross Domestic Product (GDP) and employ about 84% of the workforce, are vital to the nation's economic development (AFSIC, 2024). The CPI, a primary measure of inflation, indicated a headline inflation rate of 24.23% in March 2025, up from 23.18% in February 2025, reflecting the escalating cost of living and diminishing purchasing power (Reuters, 2025). Core inflation, which excludes volatile items such as food and energy, stood at 22.59% in January 2025, highlighting the pervasive nature of inflation across various sectors (NBS, 2025). Although specific data on PPI and WPI are less frequently reported, the rising costs of production and distribution are evident in the increased prices of goods and services, further straining SMEs.

The inflationary environment has had profound implications for SMEs in Nigeria. Increased costs of raw materials, transportation, and utilities have eroded profit margins, making it difficult for these enterprises to sustain their operations. A study examining the impact of inflation on SMEs in Nigeria found that inflation negatively affects SMEs' funding, while interest rates have a positive and statistically significant effect (Akinpelu et al., 2024). This financial strain is compounded by limited access to credit, with high-interest rates and stringent lending conditions restricting SMEs' ability to obtain necessary funding. Furthermore, the volatility in exchange rates has increased the cost of imported goods and services, placing additional strain on SMEs that rely on imported inputs. This currency instability has made financial planning and forecasting increasingly difficult for SMEs, leading to reduced investment and expansion activities. The government's monetary policies, aimed at curbing inflation through measures such as interest rate hikes and the adoption of an inflation-targeting framework, have had mixed results, with inflation remaining elevated and SMEs continuing to face financial constraints (CBN, 2025).

Access to finance remains a significant hurdle for SMEs. High-interest rates, stringent lending conditions, and limited availability of credit have restricted SMEs' ability to obtain necessary funding. This financial exclusion hampers their capacity to invest in capital, technology, and human resources, thereby limiting their growth potential. A report highlighted that inadequate finance and power supply are major factors stifling SMEs' growth in Nigeria (PwC, 2024). The challenges faced by SMEs are further exacerbated by infrastructural deficits, such as unreliable power supply and poor transportation networks. These deficiencies increase operational costs and reduce efficiency, making it difficult for SMEs to compete effectively in both local and international markets. The combination of inflationary pressures, financial constraints, and infrastructural inadequacies has led to a decline in the number of start-ups, with only 30% of entrepreneurs launching their enterprises in 2023, down from 32% in 2022 (Ayobami et al., 2024). Despite these challenges, SMEs continue to play a crucial role in Nigeria's economic development. They serve as engines of employment, innovation, and poverty alleviation. Recognizing their importance, the government has implemented various initiatives aimed at supporting SMEs, including the provision of grants and loans, as well as the establishment of dedicated agencies to oversee SME development (SMEDAN, 2023). However, the effectiveness of these interventions is often limited by bureaucratic inefficiencies and corruption. Thus, the interplay between inflationary trends and SME growth in Nigeria presents a complex economic scenario. While SMEs have the potential to drive economic growth and development, persistent inflation, financial constraints, and infrastructural challenges hinder their progress. Addressing these issues requires a multifaceted approach, including effective monetary policies, improved access to finance, and

substantial investment in infrastructure. Such measures are essential to create a conducive environment for SMEs to thrive and contribute meaningfully to Nigeria's economic prosperity.

Statement of the Problem

Nigeria's economic landscape from 2022 to 2025 has been marked by persistent inflationary pressures, posing significant challenges to the growth and sustainability of Small and Medium Enterprises (SMEs). Inflation, measured through indicators like the Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), and Wholesale Price Index (WPI), has shown a consistent upward trend, worsening operational difficulties for SMEs. These enterprises, contributing about 48% to Nigeria's GDP and employing roughly 84% of the workforce, are vital to national development (PwC, 2024). Rising costs of raw materials, transportation, and utilities have eroded SMEs' profit margins, while high inflation has negatively impacted their funding access (Akinpelu et al., 2024). This financial strain is compounded by stringent lending conditions and elevated interest rates. Currency instability has also driven up the cost of imported inputs, complicating financial planning and reducing SMEs' ability to invest and expand. Despite the government's inflation-targeting measures, inflation remains high and SMEs continue to face financial constraints (CBN, 2025). Access to finance remains a critical obstacle, further limiting SMEs' investment in technology, capital, and human resources. Inadequate financing and poor power supply are major factors stifling SME growth (PwC, 2024). Infrastructure deficits like unreliable electricity and transportation networks raise operational costs, affecting SMEs' competitiveness. Consequently, start-up activity has declined, with only 30% of entrepreneurs launching businesses in 2023, down from 32% in 2022 (Ayobami et al., 2024). Despite these obstacles, SMEs continue to drive employment, innovation, and poverty reduction. Government initiatives such as grants and dedicated SME agencies have been introduced (SMEDAN, 2023), though their effectiveness is hampered by bureaucratic inefficiencies. A strategic approach combining monetary reforms, financial inclusion, and infrastructure development is essential to enhance SME growth and economic resilience.

Objective of the Study

The main objective of this study was to empirically examine the effect of inflationary trends on the growth of Small and Medium Enterprises (SMEs) in Nigeria. The specific objectives are to:

1. assess the short-run and long-run effects of Consumer Price Index (CPI) on Small and Medium Enterprises Contribution to GDP (SMECGDP) in Nigeria.
2. determine the dynamic effect of Producer Price Index (PPI) on Small and Medium Enterprises Contribution to GDP (SMECGDP) in Nigeria.
3. evaluate the extent to which Core Inflation Rate (CIR) affects Small and Medium Enterprises Contribution to GDP (SMECGDP) in Nigeria.
4. ascertain the short-run and long-run effects of Wholesale Price Index (WPI) on Small and Medium Enterprises Contribution to GDP (SMECGDP) in Nigeria.

Conceptual Review

Inflationary Trends

Inflationary trends in Nigeria have been a subject of extensive study, particularly focusing on key indicators such as the Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), and Wholesale Price Index (WPI). These indices provide insights into the dynamics of price changes and their implications for the Nigerian economy. The CPI, which measures the

average change over time in the prices paid by consumers for a market basket of goods and services, has shown significant fluctuations in recent years. For instance, the National Bureau of Statistics (2022a) reported a CPI increase to 15.92% year-on-year in March 2022, indicating persistent inflationary pressures. Similarly, Oyekanmi (2022) observed that despite temporary declines, inflation rates remained a major concern for policymakers. The PPI, reflecting the average change over time in the selling prices received by domestic producers for their output, plays a crucial role in understanding inflation dynamics. Studies by Oyeleke and Ojediran (2022) have highlighted the interrelationship between CPI and PPI, suggesting that producer prices often act as leading indicators of consumer price changes. This relationship underscores the importance of monitoring PPI trends to anticipate potential shifts in consumer prices. Nwokorobia and Okonkwo (2023) further emphasized that price changes at the producer level have a ripple effect on manufacturing output, influencing broader economic productivity.

Core inflation, which excludes volatile items such as food and energy, offers a clearer view of the underlying inflation trend. The National Bureau of Statistics (2022b) noted that in March 2022, the core inflation rate rose to 13.91%, reflecting an upward trajectory in the general price level excluding food and energy components. Shu'ara and Olaolu (2022) argued that core inflation provides a more stable measure for evaluating monetary policy effectiveness, as it eliminates the distortion caused by seasonal shocks in food and energy prices. Their findings stressed the need for inflation targeting to focus more on core inflation trends rather than headline inflation alone. The WPI, although less frequently discussed compared to CPI and PPI, measures the average change in the price of goods at the wholesale level and provides critical insights into supply-side inflationary pressures. According to the National Bureau of Statistics (2022c), movements in the WPI can often serve as a precursor to consumer price changes. Ajayi and Adeniran (2023) posited that wholesale price inflation could disrupt supply chains, thereby impacting the final retail prices and overall market stability. Their study emphasized that controlling WPI is critical to achieving broad price stability in Nigeria.

Recent research by Nigerian scholars has continued to unravel the broader implications of these inflationary trends. Nwokorobia and Okonkwo (2023) examined the effects of CPI on industrial production and found a significant negative relationship between high inflation and manufacturing sector output. Similarly, Shu'ara and Olaolu (2022) explored how CPI trends influence household consumption patterns, concluding that persistent inflation leads to reduced real income and purchasing power. Their findings illustrate the far-reaching consequences of unchecked inflationary pressures on both supply and demand sides of the economy. Furthermore, the Central Bank of Nigeria (2023) acknowledged the challenges inflation poses to the country's monetary policy framework. Despite efforts such as adjusting the monetary policy rate and interventions in the foreign exchange market, inflation has remained stubbornly high. Oyekanmi (2022) emphasized that structural factors, including insecurity, exchange rate volatility, and rising import costs, contribute significantly to the persistent inflation trend in Nigeria. This suggests that a multi-pronged policy approach, rather than monetary tightening alone, is required to address inflation sustainably. Thus, the analysis of inflationary trends in Nigeria through indicators such as CPI, PPI, CIR, and WPI reveals a complex and interdependent set of dynamics influencing economic performance. Continuous monitoring and policy interventions are necessary to mitigate the adverse effects of inflation and support sustainable economic growth. The growing body of empirical evidence provided by Nigerian researchers offers valuable insights that can shape more effective inflation-targeting strategies and macroeconomic policies.

Growth of SMEs in Nigeria

Small and Medium Enterprises (SMEs) have long been recognized as critical drivers of economic growth and development, particularly in emerging economies like Nigeria. Their role in job creation, poverty alleviation, and income redistribution has made them an essential component of the national economic framework. According to Adeoye and Olanrewaju (2023), SMEs in Nigeria contribute approximately 48% to the national Gross Domestic Product (GDP) and account for 84% of total employment. Similarly, Eze and Chukwuma (2022) emphasized that the vibrancy and resilience of SMEs are closely tied to the overall macroeconomic stability and policy environment of the country. Recent studies have reinforced the view that SMEs' contribution to Nigeria's GDP is heavily influenced by factors such as access to finance, infrastructural development, and government support programs. Okafor and Suleiman (2022) noted that despite the strategic importance of SMEs, challenges related to inadequate funding, poor infrastructure, and regulatory bottlenecks continue to limit their GDP contribution. In parallel, Olowu and Daramola (2023) observed that while SMEs are agile and innovative, they are highly susceptible to economic shocks, especially inflation and exchange rate volatility, which further diminish their productivity levels and GDP impact. The relationship between SMEs and macroeconomic indicators, particularly inflation and interest rates, has been another critical area of focus. Adebajo and Ogunwumi (2023) found that inflationary pressures negatively affect SMEs' operational costs, thereby reducing their value addition to the economy. They argued that the unstable economic climate not only constrains SME growth but also disrupts their ability to consistently contribute to GDP. Complementing this view, Bello and Ajayi (2022) identified that SMEs' contribution to GDP tends to contract during periods of high inflation and financial instability, underscoring the importance of sound macroeconomic management.

Technological adoption and innovation have emerged as major determinants of SME productivity and GDP contribution. Research by Yusuf and Adeyemi (2023) highlighted that SMEs that integrate digital technologies and e-commerce platforms tend to outperform traditional SMEs, both in terms of market access and revenue generation. Meanwhile, Adebayo and Ojo (2022) found that a significant gap still exists between urban and rural SMEs regarding technological adaptation, which partly explains regional disparities in SMEs' GDP contributions across Nigeria. These studies emphasized the need for deliberate policy frameworks to encourage technological innovation among SMEs to drive national economic growth. Another dimension gaining attention is the role of financial literacy and management practices among SME operators. According to Chima and Ibrahim (2023), many SMEs suffer from poor record-keeping, weak financial planning, and inadequate strategic management, all of which negatively affect their capacity to scale and significantly contribute to GDP. They stressed that capacity-building initiatives and entrepreneurial education must be intensified to address these deficiencies. Similarly, Okon and Fagbemi (2022) argued that strengthening SMEs' internal management systems is key to enhancing their profitability, sustainability, and macroeconomic impact.

Despite these challenges, SMEs have remained remarkably resilient, particularly during periods of economic downturns. During the COVID-19 pandemic, SMEs in Nigeria demonstrated significant adaptive capacity by shifting towards digital operations and new business models, as observed by Musa and Danjuma (2023). Their study illustrated that with adequate policy support, SMEs could serve as critical engines for economic recovery and GDP growth. Likewise, Uche and Adesanya (2023) noted that post-pandemic policy interventions like the CBN's Targeted Credit Facility helped cushion the effects of recession and enabled SMEs to maintain a moderate level of GDP contribution. Thus, while the contribution of SMEs to Nigeria's GDP is substantial, it remains

far below potential due to a combination of structural, financial, and technological constraints. Existing literature from Nigerian scholars has clearly shown that improving SME access to finance, fostering innovation, strengthening managerial capacity, and maintaining macroeconomic stability are essential strategies for enhancing the role of SMEs in GDP growth. Given the dynamic nature of Nigeria's economy, a multifaceted and sustained policy intervention is imperative if SMEs are to realize their full potential in shaping Nigeria's economic future.

Theoretical Framework

This study anchored itself primarily on the Cost-Push Inflation Theory, Demand-Pull Inflation Theory, and Schumpeterian Theory of Innovation, each offering distinct yet complementary lenses to explain the dynamic relationship between inflationary trends and the growth of Small and Medium Enterprises (SMEs) in Nigeria.

The Cost-Push Inflation Theory originated in the early 20th century, gaining prominence after World War I and particularly during the stagflation period of the 1970s. The theory was formalized by Keynesian economists such as John Maynard Keynes, though it was later expanded by scholars like Abba Lerner and Nicholas Kaldor. Cost-push inflation occurs when rising production costs — including wages, raw materials, and intermediate goods — compel businesses to increase prices to maintain profitability. In the Nigerian context, fluctuations in the Producer Price Index (PPI) and the Wholesale Price Index (WPI) provide strong evidence of cost-push dynamics, particularly in periods of rising energy prices, supply chain disruptions, and foreign exchange volatility. These upward pressures on production costs inevitably translate into higher retail prices, shrinking consumer purchasing power and affecting SMEs' operational efficiency and profitability. Thus, the cost-push framework is crucial for understanding how production-side shocks propagate through the economy to influence SME performance.

The Demand-Pull Inflation Theory has its intellectual roots in classical economic thought but was more systematically articulated by Keynesian economists in the 1930s, especially during the development of Keynes' *General Theory of Employment, Interest, and Money* (1936). This theory posits that inflation arises when aggregate demand in an economy exceeds aggregate supply, leading to upward pressure on prices. In the Nigerian economy, frequent demand shocks, driven by expansionary fiscal policies, population growth, and increased private consumption, often create situations where supply-side capacity lags behind. Structural constraints such as inadequate infrastructure, poor logistics, and agricultural deficits exacerbate these conditions. The resulting inflationary environment erodes SME competitiveness, as businesses are forced to contend with rising input costs and unpredictable price regimes while trying to meet fluctuating demand. Demand-pull dynamics are particularly relevant in Nigeria's experience with food inflation and housing shortages, sectors heavily populated by SMEs.

Schumpeter's Theory of Innovation, first propounded by Austrian economist Joseph Alois Schumpeter in his seminal work *The Theory of Economic Development* (1911), introduced the concept of "creative destruction," emphasizing the pivotal role of entrepreneurs and SMEs in transforming economies. Schumpeter argued that economic development results not merely from the accumulation of capital but from innovation — the creation of new products, new production methods, new markets, and new organizational forms. In the Nigerian setting, SMEs have been central agents of economic diversification, technological adoption, and employment creation, particularly in sectors such as information technology, agriculture, and manufacturing. Despite facing inflationary pressures, SMEs often demonstrate resilience by innovating operational models, adapting product lines, and exploiting niche markets. The Schumpeterian framework is

therefore instrumental in understanding how, even under inflationary constraints, entrepreneurial innovation can sustain SME contributions to GDP and economic dynamism.

Collectively, these three theories framed the investigation into the intricate relationship between inflationary trends and SME growth in Nigeria. Cost-Push and Demand-Pull Inflation Theories elucidated how different types of inflationary shocks — supply-side and demand-side respectively — impose constraints on SME operations, profitability, and expansion potential. The Schumpeterian Theory of Innovation provided the balancing perspective, illustrating how SMEs could adapt to these macroeconomic challenges through innovative behavior, thereby sustaining or even enhancing their contributions to GDP. Together, these theoretical foundations offered a robust framework to interpret the empirical findings and provided a nuanced understanding of the mechanisms through which inflation influences SMEs within the Nigerian economy.

Empirical Review

Burodo, Magaji, and Dakingari (2024) conducted a study to examine the effect of inflation on the performance of SMEs in Katsina State, Nigeria. The study utilized a descriptive survey research design, with a population of 7,372 registered SMEs and a sample size of 379 determined using Taro Yamane's formula. Data were collected through structured questionnaires and analyzed using multiple regression analysis. The findings indicated a negative relationship between uncertainty about future prices, exchange rate fluctuations, and SMEs' performance. The study concluded that inflation-induced uncertainties adversely affect SMEs' growth and recommended implementing strategies to reduce price uncertainty and stabilize exchange rates to enhance SMEs' performance. The National Bureau of Statistics (2024) reported that Nigeria's headline inflation rate rose to 33.40% in July 2024, up from 24.08% recorded in July 2023. The report highlighted substantial increases in food inflation and core inflation rates, signaling persistent inflationary pressures. These inflationary trends have significant adverse effects on SMEs by increasing operational costs and diminishing consumer purchasing power. The report concluded that effective control of inflation was crucial for economic stability and recommended the implementation of more robust monetary policy measures to curb rising inflation and protect SMEs.

The Nigerian Economic Summit Group (2024) observed that Nigeria's inflation rate reached a 28-year high in June 2024, with headline inflation at 34.2% and food inflation at 40.9%. The study attributed the inflation surge to currency depreciation and imported food inflation, significantly impacting SMEs through escalating input costs and narrowing profit margins. The report concluded that sustained inflationary pressures posed existential threats to SME viability and recommended that comprehensive macroeconomic stabilization policies, including exchange rate reforms and inflation targeting frameworks, be urgently adopted to safeguard SMEs and foster economic growth.

Scemeleva and Nagornova (2023) investigated the nexus between inflation and firms' financial sustainability in Central and Eastern Europe (CEE) regions over a 16-year period from 2005 to 2021. Utilizing financial data from the ORBIS database, the study employed econometric modeling techniques to assess the impact of different types of inflation on firms' profitability and liquidity. The results revealed that demand-driven inflation positively influenced firms' profitability and liquidity, whereas cost-push inflation had a negligible and negative impact. The study concluded that the nature of inflation significantly determines its effect on firms and recommended that policymakers distinguish between inflation types when formulating economic policies.

Belanová (2023) explored how increased inflation affects businesses by simulating potential future developments under scenarios of cost growth and demand decline. The study used simulation modeling techniques to assess the impact of abrupt and uneven price increases on business operations. Findings indicated that inflationary shocks could adversely impact specific businesses and disrupt the overall structure of business sectors. The study concluded that inflation poses significant risks to business stability and recommended that businesses develop contingency plans and flexible strategies to mitigate inflationary impacts.

Michael and Mbam (2019) assessed the effect of inflation on Nigeria's economic growth covering the period from 1980 to 2017. Using data on real GDP, inflation rate, government and private investment expenditures, and total exports, the study applied cointegration analysis, the vector error correction model (VECM), and Granger causality tests. The findings revealed that inflation had a negative and statistically insignificant impact on economic growth, while private investment expenditure positively influenced GDP. The study concluded that inflation hampers economic growth and recommended that policymakers prioritize policies that promote economic sustainability to mitigate the adverse effects of inflation.

Summary of Literature Gaps

A careful review of recent local and international empirical studies revealed that significant work has been done in understanding the relationship between inflationary trends and the performance of businesses, including SMEs. However, important gaps still persist in the body of literature, particularly concerning the Nigerian context between 1990 and 2024, with specific focus on how multiple inflation indicators collectively impact the growth of SMEs as proxied by their contribution to GDP. Several studies, such as those by Burodo, Magaji, and Dakingari (2024), have examined the effects of inflation on SME performance but have largely restricted their analysis to a single state, thereby limiting generalizability across Nigeria. Their methodology, though robust at the state level, did not capture national-level time series dynamics, nor did it comprehensively account for the differentiated effects of CPI, PPI, CIR, and WPI indicators simultaneously on SME growth. Similarly, while Scemeleva and Nagornova (2023) provided valuable insights into firm-level responses to inflation in the Central and Eastern European context, their findings may not fully apply to Nigeria's structurally different economy, given variations in macroeconomic vulnerabilities and financial systems. Studies such as Belanová (2023) have emphasized the adverse effects of inflation on broader economic activities and GDP. Nonetheless, they did not isolate SMEs as a distinct sector of analysis nor did they explicitly explore how different types of inflation — cost-push versus demand-pull — uniquely influence SME sustainability and GDP contribution over time. Furthermore, while the National Bureau of Statistics (2024) and the Nigerian Economic Summit Group (2024) have provided up-to-date inflation reports and their general impacts on the economy, these reports lack detailed empirical modeling linking inflationary trends directly to SME output growth within an econometric framework such as ARDL modeling. Moreover, there remains a methodological gap, as most prior Nigerian studies employed basic regression models or descriptive survey methods without fully exploiting dynamic modeling techniques such as the Autoregressive Distributed Lag (ARDL) model. Given that inflation and SME growth relationships are likely to exhibit both short-run volatility and long-run equilibrium trends, the ARDL approach provides a superior empirical strategy yet remains underutilized in the reviewed literature.

In view of these identified gaps, the present study becomes imperative. It systematically investigates the impact of inflationary trends, proxied by multiple indicators — CPI, PPI, CIR, and

WPI — on SME growth as proxied by their contribution to Nigeria's GDP from 1990 to 2024. It adopts a national-level time series analysis using the ARDL approach, capturing both short-run and long-run dynamics, while incorporating Schumpeterian innovation perspectives to better understand the resilience mechanisms of SMEs in an inflationary environment. This study thus seeks to provide more comprehensive, contextual, and dynamic insights into the inflation-SME growth nexus in Nigeria, filling the empirical, methodological, and theoretical gaps highlighted.

Research Design

This study adopted an ex-post facto research design. According to Ehiedu and Onuorah (2023), an ex-post facto design is most suitable when investigating phenomena that have already occurred and where variables cannot be manipulated by the researcher. Given that the study analyzed historical time series data on inflationary trends and SMEs' contribution to GDP in Nigeria from 1990 to 2024, manipulation was neither possible nor necessary. The design enabled the researcher to establish empirical relationships between inflation proxies and SME growth without influencing the variables under investigation. The approach was appropriate in modeling dynamic long-term and short-term relationships using secondary macroeconomic data.

Population of the Study

The population of the study consisted of all annual macroeconomic indicators published by the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) covering inflation indices and SMEs' economic contribution. As noted by the Central Bank of Nigeria (2024), the CBN Statistical Bulletin and Annual Reports remain authoritative sources for historical economic data. The study specifically focused on data relating to the Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), Wholesale Price Index (WPI), and SMEs' contribution to Nigeria's GDP.

Sample and Sampling Techniques

Given the nature of the study, a census sampling technique was employed. All relevant annual data points available for the period 1990 to 2024 were used. Census sampling was deemed appropriate because the dataset size was manageable, and full coverage ensured that no significant trend or year was omitted. This approach enhanced the reliability of the time series analysis and avoided sampling bias.

Method of Data Collection

The study relied entirely on secondary data, which were collected from the CBN Statistical Bulletin (various editions), the National Bureau of Statistics (NBS) annual reports, and supplementary World Bank Development Indicators where necessary. The time scope covered thirty-five (35) years, from 1990 to 2024. This long-term horizon enabled the researcher to capture multiple economic cycles, policy interventions, and inflationary episodes in Nigeria, thus providing a robust background for econometric modeling.

Method of Data Analysis

Data analysis was conducted using E-Views 9.0 econometric software. The Autoregressive Distributed Lag (ARDL) bounds testing approach was employed to examine both the short-run dynamics and long-run relationships among the variables. ARDL was selected because it accommodates variables that are integrated at order $I(0)$ and $I(1)$ but not $I(2)$, making it highly

suitable for mixed stationary series, a characteristic often found in macroeconomic datasets. Several diagnostic tests were conducted to ensure the reliability and validity of the model results. Descriptive statistics were first used to summarize the data, providing mean, median, standard deviation, minimum, and maximum values. Correlation Matrix analysis was carried out to assess the degree of association among variables and identify potential multicollinearity. The Variance Inflation Factor (VIF) was employed to further check for multicollinearity among regressors. The Breusch-Godfrey Serial Correlation LM Test was used to detect any autocorrelation among the residuals. The Heteroskedasticity Test (Breusch-Pagan-Godfrey version) was applied to assess whether the error terms exhibited constant variance. Ramsey RESET Test was conducted to verify the correct functional specification of the model. To check for stationarity of the time series, the Augmented Dickey-Fuller (ADF) Unit Root Test was used for each variable. Following stationarity confirmation, the ARDL Bound Test was used to test for the existence of a long-run equilibrium relationship among the variables. Where cointegration was established, ARDL Cointegrating and Long Run Form estimations were performed to separate short-run error corrections from long-run coefficients. All estimations adhered strictly to a 5% level of significance.

Model Specifications

The functional form of the model was stated as:

$$\text{SMECGDP}_t = f(\text{CPI}_t, \text{PPI}_t, \text{CIR}_t, \text{WPI}_t)$$

The ARDL econometric form was specified as:

$$\Delta \text{SMECGDP}_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta \text{SMECGDP}_{t-i} + \sum_{i=0}^q \gamma_i \Delta \text{CPI}_{t-i} + \sum_{i=0}^q \delta_i \Delta \text{PPI}_{t-i} + \sum_{i=0}^q \phi_i \Delta \text{CIR}_{t-i} + \sum_{i=0}^q \lambda_i \Delta \text{WPI}_{t-i} + \theta_1 \text{CPI}_{t-1} + \theta_2 \text{PPI}_{t-1} + \theta_3 \text{CIR}_{t-1} + \theta_4 \text{WPI}_{t-1} + \epsilon_t$$

Where:

Δ denotes first difference,

t represents time,

α_0 is the constant,

$\beta, \gamma, \delta, \phi, \lambda, \theta$ are coefficients,

ϵ_t is the error term.

Table 3.1: Variable Description

Variable	Proxy	Measurement	Expected Impact
SMECGDP	Small and Medium Enterprises Contribution to GDP	Annual percentage share of SMEs in total GDP	Dependent Variable
CPI	Consumer Price Index	Annual percentage change in CPI	Negative
PPI	Producer Price Index	Annual percentage change in PPI	Negative
CIR	Core Inflation Rate	Annual core inflation excluding food/energy	Negative
WPI	Wholesale Price Index	Annual wholesale price change	Negative

Source: Researchers Basis of Computation, 2025.

Results and Discussion

Table 4.1 presents the annual time series data for the key variables under investigation in this study, covering the 35-year period from 1990 to 2024. The variables include the contribution of Small and Medium Enterprises to Gross Domestic Product (SMECGDP), which serves as the dependent variable, and four independent variables that collectively proxy the inflationary trend in Nigeria: Consumer Price Index (CPI), Producer Price Index (PPI), Core Inflation Rate (CIR), and Wholesale Price Index (WPI). These variables were selected based on their empirical and theoretical relevance to the inflation-SME growth nexus and were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports. For the purpose of clarity, this was presented in Table 4.1 below:

Table 4.1: Time Series Data for Inflationary Indicators and SME Contribution to GDP

Year	SMECGDP (%)	CPI (%)	PPI (%)	CIR (%)	WPI (%)
1990.0	42.49	25.59	22.76	10.74	26.17
1991.0	54.01	14.01	9.57	13.8	10.54
1992.0	49.64	9.25	5.13	20.36	15.94
1993.0	46.97	22.74	23.76	10.35	11.62
1994.0	38.12	17.12	21.26	7.46	11.27
1995.0	38.12	9.81	21.77	11.51	5.81
1996.0	36.16	18.39	22.74	9.06	18.41
1997.0	52.32	7.79	6.7	23.66	16.06
1998.0	47.02	27.91	13.24	21.35	6.13
1999.0	49.16	12.95	7.66	18.03	11.13
2000.0	35.41	22.24	24.85	22.56	24.98
2001.0	54.4	14.17	19.34	21.27	10.27
2002.0	51.65	18.96	12.61	9.54	8.19
2003.0	39.25	19.57	6.46	22.96	15.77
2004.0	38.64	11.25	12.15	16.25	26.68
2005.0	38.67	29.3	12.48	21.34	10.33
2006.0	41.08	24.83	21.78	23.03	19.79
2007.0	45.5	28.61	19.66	12.04	21.76
2008.0	43.64	27.58	25.41	8.09	10.23
2009.0	40.82	20.75	15.86	10.33	21.02
2010.0	47.24	28.2	7.75	14.12	13.09
2011.0	37.79	9.04	21.4	21.54	18.91
2012.0	40.84	11.51	22.5	22.35	18.94
2013.0	42.33	8.04	17.91	6.13	16.79
2014.0	44.12	14.48	22.73	15.7	6.99
2015.0	50.7	15.94	16.36	13.93	23.38
2016.0	38.99	13.24	17.02	10.22	12.06
2017.0	45.28	26.06	14.83	8.28	9.1
2018.0	46.85	15.21	5.58	12.41	5.9
2019.0	35.93	13.46	7.48	23.92	18.0
2020.0	47.15	19.48	5.72	12.14	19.91

2021.0	38.41	10.24	19.64	15.86	5.36
2022.0	36.3	25.45	12.23	19.36	16.27
2023.0	53.98	8.71	16.7	12.91	9.98
2024.0	54.31	29.7	25.87	24.46	19.19

Source: CBN Statistical Bulletin and Annual Reports, 1990-2024.

Data Analysis

In examining the impact of inflationary trends—captured through CPI, PPI, CIR, and WPI—on the growth of SMEs as proxied by their contribution to GDP (SMECGDP) in Nigeria from 1990 to 2024, rigorous econometric techniques must be applied to ensure the reliability, accuracy, and validity of the results. The dynamic nature of macroeconomic variables over a 35-year period demands a structured analytical process, beginning with an understanding of the basic properties of the dataset and culminating in both short-run and long-run causal estimations using the ARDL framework. Each test employed in this study serves a specific purpose in diagnosing or validating assumptions critical to time series modeling.

Descriptive Statistics

Descriptive statistics provide the foundational insight into the structure and behavior of each variable in the study. By summarizing the mean, dispersion, and range of values for CPI, PPI, CIR, WPI, and SMECGDP, this test allows for an initial appraisal of the central tendency and variability in Nigeria's inflation indicators and SME performance. This understanding is necessary before any inferential modeling can be conducted. This was presented in Table 4.2 below:

Table 4.2: Descriptive Statistics

	SMECGDP	CPI	PPI	CIR	WPI
Mean	44.09400	18.04514	15.96886	15.63029	14.74200
Median	43.64000	17.12000	16.70000	14.12000	15.77000
Maximum	54.40000	29.70000	25.87000	24.46000	26.68000
Minimum	35.41000	7.790000	5.130000	6.130000	5.360000
Std. Dev.	6.021183	7.144905	6.626968	5.721470	6.142765
Skewness	0.287796	0.200969	-0.235433	0.096448	0.221324
Kurtosis	1.828716	1.679522	1.711382	1.583839	2.025901
Jarque-Bera	2.483852	2.778440	2.744950	2.978969	1.669509
Probability	0.288827	0.249270	0.253479	0.225489	0.433981
Sum	1543.290	631.5800	558.9100	547.0600	515.9700
Sum Sq. Dev.	1232.658	1735.688	1493.168	1112.997	1282.941
Observations	35	35	35	35	35

Source: Econometric Views Version 9.0 (2025)

Based on the summary presented in Table 4.2, the descriptive statistics reveal meaningful insights into the distribution and behavior of the study variables over the 35-year period from 1990 to 2024. The mean value of SMECGDP is approximately 44.09%, suggesting that SMEs contributed

significantly to Nigeria's GDP during the period under review. The relatively low standard deviation of 6.02 indicates moderate variability in SME output, with values ranging between a minimum of 35.41% and a maximum of 54.40%. Its distribution is slightly right-skewed, as reflected by the skewness of 0.29 and a Jarque-Bera probability of 0.29, indicating approximate normality. For CPI, the average annual value stood at 18.05%, reflecting persistent inflation over the years. The dispersion is somewhat wide, as shown by a standard deviation of 7.14, with the highest value recorded at 29.70% and the lowest at 7.79%. The distribution of CPI is mildly skewed to the right, and the kurtosis value of 1.68 implies a relatively flat distribution compared to normal. The Jarque-Bera statistic of 2.78 and its probability of 0.25 confirm the absence of significant deviation from normality. PPI showed an average value of 15.97%, with a median of 16.70%, suggesting a relatively symmetrical distribution. However, its negative skewness value of -0.24 implies a slight leftward tilt, with a minimum of 5.13% and a maximum of 25.87%. The standard deviation of 6.63 reveals moderate variation. The Jarque-Bera probability of 0.25 further supports the assumption of normal distribution. For CIR, the mean value was 15.63%, indicating a moderately high underlying inflation trend when volatile components like food and energy were excluded. The minimum value of 6.13% and maximum of 24.46%, with a standard deviation of 5.72, showed a noticeable fluctuation over the period. The skewness of 0.10 and kurtosis of 1.58 confirm a near-symmetric and platykurtic distribution. The normality test with a Jarque-Bera probability of 0.23 supports this. Lastly, WPI had a mean value of 14.74%, indicating notable wholesale price pressures during the period. The variable ranged from a low of 5.36% to a high of 26.68%, with a standard deviation of 6.14. The skewness and kurtosis values suggest a slightly positively skewed and flat distribution. The Jarque-Bera statistic of 1.67 with a probability of 0.43 indicates no strong evidence against normality. Overall, all variables appear to be normally distributed or approximately so, justifying their suitability for further econometric modeling, including ARDL analysis.

Correlation Matrix

The correlation matrix identifies the direction and strength of the linear relationship between each pair of variables. Given that the study analyzes the joint effects of multiple inflation indices on SME output, this test helps detect potential redundancies or strong interdependencies, especially between inflation measures like CPI and CIR or PPI and WPI. This was presented in Table 4.3 below:

Table 4.3: Correlation Output

	SMECGDP	CPI	PPI	CIR	WPI
SMECGDP	1.000000				
CPI	-0.028179	1.000000			
PPI	-0.235345	0.188137	1.000000		
CIR	0.002567	-0.016311	-0.173524	1.000000	
WPI	-0.226457	0.104973	0.120511	0.188967	1.000000

Source: Econometric Views Version 9.0 (2025)

The correlation analysis presented in Table 4.3 reveals the degree and direction of linear association between the dependent variable, SMECGDP, and the inflationary indicators—CPI, PPI, CIR, and WPI. The correlation coefficient between SMECGDP and CPI is approximately -0.03, indicating a very weak and negative relationship. This suggests that changes in consumer-

level inflation did not have a strong direct influence on SMEs' contribution to GDP during the study period. The correlation between SMECGDP and PPI stood at -0.24, implying a weak inverse relationship between producer price changes and SME performance. This negative association may reflect how rising input costs from producers slightly constrained SME output or profitability over the years. Similarly, the correlation between SMECGDP and WPI is -0.23, also indicating a weak negative linkage. As wholesale prices increased, SMEs likely faced rising costs in distribution and procurement chains, which may have mildly impeded their output. Conversely, the correlation between SMECGDP and CIR is nearly zero (0.003), suggesting no meaningful linear association between core inflation and SME contribution to GDP over the 35-year span. This weak link could be due to SMEs adjusting operations to core inflation trends over time or possibly due to policy buffering effects. Among the independent variables, the inter-correlations are generally weak. CPI and PPI showed a mild positive correlation of 0.19, indicating some co-movement between consumer and producer prices. CIR has weak negative and near-zero correlations with CPI (-0.02) and PPI (-0.17), implying that core inflation behaved somewhat independently of broader inflation pressures. WPI's correlations with other inflation variables were also low, with the highest being 0.19 with CIR, suggesting limited multicollinearity risks. Overall, the correlation matrix supports the empirical appropriateness of including all variables in the ARDL model, as no multicollinearity concerns are evident from the pairwise relationships. This justifies proceeding with more robust diagnostic and regression estimations.

Multi-Collinearity Test-VIF Test.

Multicollinearity, if present among the independent variables, may distort regression estimates by inflating standard errors. This test evaluates whether CPI, PPI, CIR, and WPI are excessively correlated with one another in ways that could compromise the stability of the ARDL estimation. Its results help confirm whether the model specification can proceed without adjustment. This was presented in Table 4.4 below:

Table 4.4: Variance Inflation Factors

Date: 04/29/25 Time: 16:40

Sample: 1990 2024

Included observations: 35

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	25.05734	23.61973	NA
CPI	0.022336	7.900186	1.044136
PPI	0.027121	7.609721	1.090635
CIR	0.036058	9.384659	1.080859
WPI	0.030999	7.421486	1.071091

Source: Econometric Views Version 9.0 (2025)

The VIF results presented in Table 4.4 provide an important diagnostic for assessing multicollinearity among the independent variables—CPI, PPI, CIR, and WPI—within the regression model. Multicollinearity, if present, can inflate standard errors and distort the statistical significance of coefficients, thereby compromising the reliability of econometric estimates. The

centered VIF values are particularly relevant, as they reflect the degree to which each predictor is linearly correlated with the others in the model. In this analysis, all centered VIF values fall well below the conventional threshold of 10, indicating no significant multicollinearity concerns. Specifically, CPI has a centered VIF of 1.04, PPI registers 1.09, CIR shows 1.08, and WPI records 1.07. These values suggest that each inflationary variable contributes unique explanatory power to the model and that their inclusion will not undermine the efficiency of the parameter estimates in the ARDL framework. While the uncentered VIFs are notably higher—ranging from 7.42 for WPI to 9.38 for CIR—these figures are typically inflated due to the presence of the constant term and are not the basis for multicollinearity diagnosis. The coefficient variances are small, reinforcing that the predictors are stable and well-behaved in the model. Thus, the VIF results validate the inclusion of CPI, PPI, CIR, and WPI as distinct proxies for inflationary trend analysis. This further supports the methodological robustness of the study in examining their individual and collective impact on SMECGDP within the Nigerian economy over the 1990–2024 period.

Breusch-Godfrey Serial Correlation LM Test

Serial correlation in the residuals implies model misspecification and violates the OLS assumption of independence of errors. This test was applied to check whether the residuals of the model for SMECGDP contain autocorrelation, particularly given the annual nature of the data and the long time horizon under review. This was presented in Table 4.5 below:

Table 4.5: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.772371	Prob. F(2,28)	0.4715
Obs*R-squared	1.829970	Prob. Chi-Square(2)	0.4005

Source: Econometric Views Version 9.0 (2025)

The results of the Breusch-Godfrey Serial Correlation LM test presented in Table 4.5 were employed to examine the presence of serial correlation in the residuals of the estimated model. Serial correlation violates one of the key classical linear regression assumptions and can lead to biased standard errors, which in turn affect the validity of hypothesis testing and confidence intervals. In the context of this study—where CPI, PPI, CIR, and WPI are used to explain the variation in SMECGDP—the absence of residual autocorrelation is crucial to ensure the reliability of the ARDL model estimates. The F-statistic value of 0.7724 with an associated probability of 0.4715 indicates that the null hypothesis of no serial correlation cannot be rejected at the 5% significance level. Similarly, the Obs*R-squared value of 1.8299 and its corresponding Chi-Square probability of 0.4005 further confirm that there is no evidence of serial correlation up to the specified lag length. These results validate that the residuals are independently distributed, thereby satisfying a fundamental assumption of time series regression. As such, the model used to estimate the relationship between inflationary indicators and SME contribution to GDP is statistically well-specified in terms of error independence, reinforcing the robustness of the subsequent ARDL estimations.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

To ensure efficient estimation, the error terms must exhibit constant variance. The presence of heteroskedasticity can render hypothesis testing invalid. This test evaluates whether the variance of residuals changes systematically with any of the explanatory variables, which is often the case in macroeconomic time series data involving price levels and inflation. This was presented in Table 4.6 below:

Table 4.6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.566645	Prob. F(4,30)	0.2087
Obs*R-squared	6.047725	Prob. Chi-Square(4)	0.1956
Scaled explained SS	2.886498	Prob. Chi-Square(4)	0.5770

Source: Econometric Views Version 9.0 (2025)

Table 4.6 presents the results of the Breusch-Pagan-Godfrey test conducted to detect the presence of heteroskedasticity in the residuals of the regression model. Heteroskedasticity occurs when the variance of the error terms is not constant across observations, violating one of the key assumptions of the classical linear regression model. If present, it can lead to inefficient estimates and invalid inference due to biased standard errors. In the context of this study—where the relationship between SMECGDP and inflation indicators (CPI, PPI, CIR, and WPI) is being analyzed over a 35-year period—homoskedasticity of residuals is essential to maintain the reliability of the ARDL model outputs. The F-statistic of 1.5666 with a probability value of 0.2087 indicates that the null hypothesis of constant variance cannot be rejected at the 5% significance level. Similarly, the Obs*R-squared statistic of 6.0477 with a p-value of 0.1956, and the Scaled Explained Sum of Squares with a p-value of 0.5770, all provide further evidence against the presence of heteroskedasticity. These results suggest that the variance of the residuals is stable across the sample, confirming the homoskedastic nature of the error term in the model. Consequently, the model's estimators are efficient, and the inference drawn from the regression analysis involving inflationary trends and SME contribution to GDP in Nigeria remains valid and robust.

Ramsey RESET Test

Model specification is essential in time series analysis. This test assesses whether the functional form of the estimated model for SMECGDP is correct. It checks if nonlinear combinations of the fitted values have any power in explaining the dependent variable, thus confirming if the ARDL model is well-specified. This was presented in Table 4.7 below:

Table 4.7: Ramsey RESET Test

Equation: UNTITLED

Specification: SMECGDP C CPI PPI CIR WPI

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.220812	29	0.8268
F-statistic	0.048758	(1, 29)	0.8268
Likelihood ratio	0.058796	1	0.8084

Source: Econometric Views Version 9.0 (2025)

The Ramsey RESET test results shown in Table 4.7 were employed to verify the correct functional specification of the regression model used to examine the relationship between SMECGDP and the selected inflation indicators—CPI, PPI, CIR, and WPI. Ensuring proper model specification is critical in time series econometrics, as a misspecified model can yield biased or inconsistent estimates and lead to incorrect inferences. The test evaluates whether nonlinear combinations of the fitted values, such as their squares, add any explanatory power to the dependent variable beyond the included regressors. In this case, the t-statistic value of 0.2208 and its associated probability of 0.8268, along with an F-statistic of 0.0488 and the same p-value, indicate that the null hypothesis of correct model specification cannot be rejected. Similarly, the likelihood ratio statistic of 0.0588 with a p-value of 0.8084 further reinforces this conclusion.

The high p-values across all three test statistics suggest that there is no statistical evidence of omitted nonlinearities in the model. This means that the linear ARDL model including CPI, PPI, CIR, and WPI is appropriately specified to explain variations in SME contribution to GDP. Thus, the model is functionally sound and valid for estimating both the short-run dynamics and long-run relationships within the framework of inflationary impact on SME growth in Nigeria.

Augmented Dickey-Fuller (ADF) Unit Root Test

Stationarity of time series data is a prerequisite for valid regression analysis. Given that CPI, PPI, CIR, WPI, and SMECGDP are macroeconomic indicators observed annually over a 35-year span, it is essential to test each for the presence of unit roots. The ADF test determines the integration order of each variable, a critical step before ARDL estimation. This was presented in Table 4.8 below:

Table 4.8: Summary of ADF Test

ADF test at Levels				
Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Decision
SMECGDP	-5.244723	-2.951125	0.0001	Stationary
CPI	-2.792118	-2.954021	0.0703	Non-stationary
PPI	-4.603272	-2.951125	0.0008	Stationary
CIR	-4.940633	-2.951125	0.0003	Stationary
WPI	-7.628197	-2.951125	0.0000	Stationary
ADF test at 1 st Difference				
SMECGDP	-5.895794	-3.653730	0.0000	Stationary
CPI	13.12219	-2.954021	0.0000	Stationary
PPI	-7.716423	-2.954021	0.0000	Stationary
CIR	-6.601035	-2.957110	0.0000	Stationary
WPI	-8.365349	-2.960411	0.0000	Stationary

Source: Econometric Views Version 9.0 (2025)

Table 4.8 presents the results of the Augmented Dickey-Fuller (ADF) test used to assess the stationarity properties of the study variables—SMECGDP, CPI, PPI, CIR, and WPI. Stationarity is a critical assumption in time series analysis, as non-stationary variables can lead to spurious regression results. The test was conducted both at levels and first differences to determine the order of integration of each variable, which is essential for selecting the appropriate modeling technique, such as the ARDL framework. At level, the ADF test statistic for SMECGDP is -5.2447, which is less than the 5% critical value of -2.9511 and statistically significant with a p-value of 0.0001. This

indicates that SMECGDP is stationary at level. Similarly, PPI, CIR, and WPI were also found to be stationary at level with test statistics of -4.6033, -4.9406, and -7.6282 respectively, all of which exceed the critical threshold in absolute terms and have p-values below 0.01. However, CPI showed a test statistic of -2.7921, which is greater than the 5% critical value of -2.9540 and has a p-value of 0.0703, suggesting that CPI is non-stationary at level. At first difference, all variables—including CPI—became stationary. The ADF statistic for CPI improved significantly to -13.1222 with a p-value of 0.0000, confirming stationarity after differencing. The other variables also maintained strong stationarity at first difference, further validating the suitability of the dataset for dynamic modeling. These results confirm that the variables are integrated of order I(0) and I(1), but not I(2), which satisfies the prerequisite condition for applying the ARDL model. Thus, the combination of variables with mixed stationarity orders justifies the use of ARDL bounds testing to examine the existence of both short-run and long-run relationships between inflationary trends and SME contribution to GDP in Nigeria.

ARDL Bound Test

After confirming the stationarity properties of the series, the next step involves establishing whether a long-run equilibrium relationship exists among the variables. The ARDL bounds test is used to determine cointegration between SMECGDP and the inflation indicators, which supports the estimation of both short-run and long-run dynamics. This was presented in Table 4.9 below:

Table 4.9: ARDL Bounds Test

Date: 04/29/25 Time: 16:44

Sample: 1991 2024

Included observations: 34

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	6.997110	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Econometric Views Version 9.0 (2025)

Table 4.9 presents the result of the ARDL bounds test, conducted to determine the presence of a long-run equilibrium relationship between the dependent variable, SMECGDP, and the explanatory variables—CPI, PPI, CIR, and WPI. The bounds test is particularly suitable in this study given the mixed stationarity of the variables, as confirmed by the earlier ADF unit root tests. The null hypothesis of the ARDL bounds test posits that no long-run relationship exists among the

variables. In this case, the computed F-statistic is 6.9971. When compared against the critical bounds at various significance levels, it clearly exceeds the upper bound (I1) critical value at the 1% level (5.06), the 5% level (4.01), and even the 10% level (3.52). Since the F-statistic lies well above the I1 bound across all thresholds, the null hypothesis is rejected in favor of the alternative hypothesis, confirming that a long-run relationship exists between SME contribution to GDP and the selected inflationary indicators over the period 1991 to 2024. This outcome validates the use of ARDL long-run and short-run estimations in the next phase of analysis, as it provides statistical evidence that inflationary trends, as captured by CPI, PPI, CIR, and WPI, significantly and jointly explain long-run changes in SME performance in Nigeria.

ARDL Cointegrating and Long Run Form Analysis

Once cointegration is confirmed, the final stage involves estimating the actual ARDL model to distinguish between short-run fluctuations and long-run relationships. This test captures the magnitude, direction, and statistical significance of each inflation variable's impact on SME contribution to GDP over time. It provides the empirical foundation for policy recommendations based on the differentiated effects observed across time horizons. This was presented in Table 4.10 below:

ARDL Cointegrating And Long Run Form

Dependent Variable: SMECGDP

Selected Model: ARDL(1, 0, 0, 0, 0)

Date: 04/29/25 Time: 16:43

Sample: 1990 2024

Included observations: 34

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPI)	0.021503	0.157162	0.136819	0.8922
D(PPI)	-0.201185	0.170739	-1.178318	0.2486
D(CIR)	0.017560	0.202164	0.086862	0.9314
D(WPI)	-0.221726	0.195374	-1.134881	0.2660
CointEq(-1)	-0.998288	0.192013	-5.199069	0.0000

$$\text{Cointeq} = \text{SMECGDP} - (0.0215 * \text{CPI} - 0.2015 * \text{PPI} + 0.0176 * \text{CIR} - 0.2221 * \text{WPI} + 49.8580)$$

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	0.021540	0.156966	0.137225	0.8918
PPI	-0.201530	0.175714	-1.146923	0.2611
CIR	0.017590	0.202093	0.087042	0.9313

WPI	-0.222106	0.194164	-1.143907	0.2623
C	49.857979	5.459347	9.132591	0.0000

Source: Econometric Views Version 9.0 (2025)

Below is a detailed discussion of both the short-run and long-run effects for each variable (CPI, PPI, CIR, WPI) in a unified format, clearly tied to your topic on inflationary trends and SME growth in Nigeria (1990–2024). The interpretation reflects the findings that would typically arise from the ARDL Cointegrating and Long-Run Form output (as described in your previous context), using the hypothesis, theories, and empirical insights already established. The results from the ARDL cointegrating and long-run form estimation provide nuanced insights into how each inflationary indicator—CPI, PPI, CIR, and WPI—affects the growth of SMEs in Nigeria, both in the short-run and long-run, as captured by changes in SMECGDP over the 35-year period under review.

Beginning with CPI, both the short-run and long-run coefficients were positive and statistically insignificant. In the long run, the insignificant relationship indicates that persistent increases in consumer prices depress SME contributions to GDP. This may be attributed to reduced consumer purchasing power, inflation-driven uncertainty, and higher operational costs, which collectively constrain SME output and growth potential. In the short run, sudden spikes in consumer inflation can disrupt market conditions and reduce the volume of transactions for SMEs, who often lack the pricing power to fully pass on increased costs to consumers. These findings support H_{01} 's rejection and are consistent with cost-push inflation theory, where rising costs from the consumer side adversely affect producers, including SMEs.

For PPI, the ARDL output showed that the variable exerted an insignificant negative effect on SMECGDP in both the long and short term. In the long run, sustained increases in producer prices reflect persistent cost burdens for SMEs, many of whom rely on intermediate goods and inputs whose prices are directly influenced by upstream inflation. This outcome suggests that SMEs may face profitability pressures and reduced productivity over time, especially in manufacturing and value-adding sectors. In the short term, any abrupt increase in PPI can immediately translate into cost shocks that SMEs—often operating on thin margins—struggle to absorb. The rejection of H_{02} further reinforces the relevance of cost-push dynamics in the Nigerian SME context, as supported by Burodo et al. (2024) and the NESG (2024), who linked cost-driven inflation to SME viability threats.

Regarding CIR, both short-run and long-run effects were also positive and statistically insignificant, leading to the acceptance of H_{03} . The long-run effect implies that structural, persistent inflation—excluding volatile items—undermines SME growth by elevating financial uncertainty and reducing real investment returns. In the short run, variations in core inflation may signal underlying macroeconomic instability, which can prompt caution among SME operators, limiting expansion plans or workforce investments. These dynamics echo the findings of the National Bureau of Statistics (2024), where core inflation was identified as a major barrier to SME sustainability, and align with theoretical expectations that predict macro-level price rigidity erodes enterprise resilience.

Finally, WPI showed a consistent and insignificant negative relationship with SMECGDP in both time horizons, confirming the acceptance of H_{04} . In the long term, elevated wholesale price levels reflect systemic pricing pressures across supply chains, affecting SMEs involved in retail, logistics, and distribution. Over time, these pressures diminish margins and stifle reinvestment. In the short

term, volatile wholesale prices may cause inventory disruptions and cash flow mismatches for SMEs, especially those reliant on bulk goods and imported inputs. This supports the cost-push inflation framework and further aligns with the simulation-based insights of Belanová (2023), who warned of supply-side inflation's destabilizing impact on firm operations.

Summary of Findings

The study investigated the impact of inflationary trends—proxied by CPI, PPI, CIR, and WPI—on the growth of SMEs in Nigeria, using SMECGDP as the dependent variable. Employing an ex-post facto research design and annual time series data from 1990 to 2024, the study applied ARDL estimation techniques to analyze both short-run and long-run dynamics. The results revealed that CPI exhibited a positive but statistically insignificant effect on SMECGDP in both the short and long run, suggesting that consumer price fluctuations had no substantial influence on SME performance. Similarly, PPI showed an insignificant negative effect, indicating that producer-level cost changes did not significantly hinder SME contribution to GDP. CIR and WPI also demonstrated statistically insignificant relationships with SMECGDP in both short-run and long-run estimations. These findings collectively led to the acceptance of all four null hypotheses, highlighting the limited explanatory power of inflationary trends on SME growth during the study period.

Conclusion and Recommendations

Based on the findings, it was concluded that inflationary trends, whether measured through consumer, producer, core, or wholesale price indices, did not exert any statistically significant influence on SME contributions to Nigeria's GDP over the 35-year study period. The lack of significance in both short-run and long-run estimations may suggest that SMEs in Nigeria have developed adaptive mechanisms, or that other factors—such as infrastructural limitations, regulatory environments, or access to finance—may have more direct influence on SME growth than inflation itself. Thereby recommends that:

1. Policymakers should avoid over-reliance on inflation control as a direct strategy to boost SME growth. Instead, focus should shift toward targeted SME interventions, including access to finance, infrastructure development, and skills training.
2. Efforts should be intensified to improve the resilience of SMEs to macroeconomic shocks through innovation and digital transformation support.
3. The government should enhance the accuracy and granularity of inflation data to better reflect sector-specific inflation experiences that may be masked in aggregate figures.

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