

Inflation Persistence, Price Rigidity, and Monetary Policy Transmission in Selected Sub-Saharan African Countries

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Abstract

This study investigates the relationship among inflation persistence, price rigidity, and monetary policy transmission in 15 selected Sub-Saharan African (SSA) economies over the period 2008Q1–2024Q4 within a New Keynesian framework. Using the Panel Autoregressive Distributed Lag (PARDL) technique, the study examines both the short-run and long-run dynamics among inflation, price rigidity, monetary policy transmission, output gap, and fiscal balance. The findings reveal the existence of a stable long-run relationship among the variables. The results further show that price rigidity has a positive and significant effect on inflation, indicating that sticky price behaviour contributes to persistent inflationary pressures across SSA economies. Monetary policy transmission is found to exert a negative and significant influence on inflation, suggesting that stronger and more effective transmission mechanisms improve inflation control. In addition, the output gap positively affects inflation, while fiscal balance has a negative relationship with inflation. The study concludes that inflation persistence in SSA is largely driven by structural rigidities, weak monetary transmission channels, cyclical demand pressures, and fiscal imbalances. It therefore recommends strengthening monetary policy credibility, improving transmission mechanisms, reducing structural sources of price rigidity, and promoting fiscal discipline to achieve sustainable price stability in the region.

Keywords: Inflation Persistence, Price Rigidity, Monetary Policy Transmission, Output Gap, Fiscal Balance.

Introduction

In the last two decades, the global macroeconomic environment has progressively been marked by persistent inflationary pressures, structural shocks and uncertainty, which have transformed the nature and effectiveness of monetary policy around the world. The COVID-19 pandemic and ensuing inflationary pressures, compounded by supply chain disruptions, geopolitical conflicts, and energy market dynamics have reignited academic and policy debates on inflation persistence and the role of monetary policy in affecting real and nominal variables (International Monetary Fund, 2024; Bank for International Settlements, 2023). Inflation persistence, defined as the sluggish adjustment of inflation to shocks, presents a significant challenge to policy makers because it delays the timing of the effects of stabilising policies. This is also closely linked to price stickiness, a central element of New Keynesian theory, which highlights the influence of nominal frictions such as staggered price setting, contracts, and adjustment costs on price adjustments to macroeconomic

conditions (Galí, 2015; Ascari & Sbordone, 2014). Consequently, the combined dynamics of inflation persistence and price rigidity continue to be crucial for the propagation of monetary policy in both advanced and developing economies.

A salient feature of the contemporary global economy is the contrasting inflation dynamics and monetary policy effectiveness across advanced economies and developing areas. Developed economies, with well-credible monetary policy frameworks, high-end financial infrastructure and anchored expectations have shown the capacity to dampen persistent inflation through traditional and non-traditional policy measures. These economies enjoy transparent communication strategies, forward-looking policy settings and effective transmission channels that ensure swift policy transmission. By contrast, developing, especially Sub-Saharan African (SSA) economies suffer from structural and institutional weaknesses that exacerbate the persistence of inflation and bias policy transmission mechanisms (Alenoghena et al., 2025; Ha, Kose, Ohnsorge, & Yilmazkuday, 2023; Mishra, Montiel, & Spilimbergo, 2012). Shallow finance, high informality, and low monetary credibility, together with poorly developed capital markets, limit the responsiveness of inflation to policy adjustments and hence pose challenges for macroeconomic policy.

Sub-Saharan Africa operates in a macroeconomic environment of periodic inflationary pressures, weak institutional frameworks and significant structural rigidities. Inflationary pressures in the region are influenced by both demand and supply factors, exchange rate movements and fiscal policy. In this environment, price rigidity plays a crucial role, with firms under conditions of imperfect competition and information asymmetries setting prices at relatively long intervals, leading to persistent inflation dynamics (World Bank, 2023). Additionally, regulated prices, lack of competition, and inefficiencies in the economy also contribute to nominal rigidity, reducing the effectiveness of price adjustments to monetary policy. The literature suggests inflation persistence is greater in SSA countries than in developed economies, reflecting structural issues and weak expectations anchoring (Bleaney & Francisco, 2016; Kabundi & Schaling, 2013). As a result, the key monetary policy transmission channels interest rate, credit and exchange rate channels are less effective in the region.

Recent studies increasingly highlight the role of price stickiness and expectations in driving inflation dynamics and policy effects. The New Keynesian approach, and the hybrid New Keynesian Phillips Curve (NKPC) in particular, provides a strong theoretical underpinning for studying inflation persistence by considering both forward-looking and backward-looking components of inflation associated with inertia and indexation (Galí & Gertler, 1999; Ascari & Sbordone, 2024). But its use in SSA has been minimal, particularly in panel data analyses which account for cross-country and structural variation in SSA economies. While some studies have focused on the analysis of inflation dynamics in individual SSA countries, few have adopted a panel-based approach to incorporate inflation persistence, price rigidity and monetary policy transmission. This is compounded by the use of low-frequency data, which limits our ability to model short-run dynamics and structural shifts in inflation dynamics, especially in response to recent global shocks.

Statement of the Problem

While empirical research is increasing, there still remain significant gaps relating to the dynamics between inflation persistence, price stickiness, and the transmission of monetary policy in SSA. First, previous research typically considers these components separately, rather than within an integrated New Keynesian framework that accounts for their interactions. Second, there is limited cross-country panel analysis using recent and high-frequency data examining the changing dynamics of the inflation process in the region. Third, traditional empirical methods often use average-based estimators, which mask distributional and nonlinear adjustment effects that may arise during macroeconomic crises. Consequently, policymakers in SSA are left with limited evidence-based understanding of how inflation persistence and price rigidities interact to shape the monetary policy transmission mechanism.

This research overcomes the aforementioned gaps and contributes in three ways. First, it proposes a New Keynesian panel model that simultaneously analyses inflation persistence, price rigidities and monetary policy transmission in SSA economies, thereby integrating both the theoretical and empirical viewpoints within a unified framework. Second, it uses sophisticated econometric tools (the panel autoregressive distributed lag (PARDL) models) that simultaneously capture long-run equilibrium and short-run dynamics and distributional differences. Third, the study uses recent quarterly data (2008Q1-2024Q4) allowing for a more nuanced examination of inflation dynamics during the global financial crisis, commodity price shocks and the COVID-19 Pandemic. SSA provides an interesting empirical setting for this study due to its structural weaknesses, inflation shocks, and policy changes, leading to significant variation in inflation persistence and policy transmission across countries and over time.

The purpose of this study is to analyze the link between the persistence, rigidity and transmission of inflation and monetary policy in Sub-Saharan Africa in a New Keynesian panel framework from 2008Q1 to 2024Q4, with the chosen period reflecting data availability and the desire to capture significant macroeconomic shifts. While SSA economies vary in terms of their structural features, they share common structural traits such as thin financial markets, weak institutions, and vulnerability to external shocks, which all play a role in persistent inflation and the poor transmission of monetary policy. Through the use of panel data, the study offers a holistic evaluation of the interplay between these structural and macroeconomic features on inflation dynamics and policy effectiveness in the region.

Research Objectives

The specific objectives of this study are to:

1. Examine the effect of price rigidity on inflation persistence in selected Sub-Saharan African countries.
2. Assess the impact of monetary policy transmission on inflation dynamics in the region.
3. Determine the influence of output gap on inflation.

4. Evaluate the relationship between fiscal balance and inflation.

Research Hypotheses

Based on the theoretical framework derived from the New Keynesian Phillips Curve and monetary policy transmission theory, the following directional hypotheses are tested:

H₁: Price rigidity has a positive and significant effect on inflation persistence in selected SSA economies.

H₂: Monetary policy transmission has a negative and significant effect on inflation.

H₃: Output gap has a positive and significant effect on inflation.

H₄: Fiscal balance has a negative and significant effect on inflation.

Following this introduction, the remainder of the paper is organized into four sections. Section 2 reviews the relevant theoretical and empirical literature. Section 3 presents the data and methodological framework. Section 4 discusses the empirical findings and their policy implications. The final section concludes by summarizing key insights and offering recommendations aimed at strengthening monetary policy effectiveness in Sub-Saharan Africa.

Literature Review

Review of Related Literature

An increasing volume of empirical and theoretical research has explored the dynamics of inflation persistence, price rigidity and monetary policy transmission in developed and developing countries using a variety of methods and data sources. Despite growing literature, results are mixed, with considerable variations in estimates of the magnitude, sources, and channels of inflation persistence. This inconsistency hampers the development of a coherent framework to understand the interplay between structural rigidities and policy transmission mechanisms on inflation dynamics, especially in emerging economies, such as Sub-Saharan Africa (SSA). Ha, Kose, Ohnsorge, and Yilmazkuday (2023) examine the global drivers of inflation across 55 countries from 1970 to 2021 using panel regressions. They find that oil price shocks are a significant contributor to inflation dynamics worldwide, with the impact being particularly pronounced in developing countries. Their findings highlight the importance of external commodity price shocks in shaping inflationary pressures across both advanced and emerging economies.

The recent empirical evidence contributes to our knowledge of inflation persistence by including expectations and structural rigidities. Ascari and Sbordone (2024) examine inflation dynamics in a New Keynesian model with sophisticated time-series models for high-income countries, where price stickiness and backward-looking indexation play a critical role in causing persistent inflation. They find that nominal frictions slow the response of inflation to policy shocks and reduce the effectiveness of monetary policy. Christiano, Eichenbaum, and Johannsen (2024) further demonstrate that measured inflation dynamics in New Keynesian models are sensitive to the treatment of price stickiness and indexation mechanisms, with implications for the estimated persistence of

inflation following monetary policy shocks. Similarly, Mishra, Montiel, and Spilimbergo (2012) investigate the transmission of monetary policy in low-income countries using cross-country panel regressions, finding that financial system inefficiencies, low credibility of the central bank, and thin markets weaken the effects of policy rates on inflation and output, contributing to inflation persistence.

A related group of studies emphasizes price rigidity as the key driver of inflation persistence. Nakamura and Steinsson (2018), employing micro price data and structural modelling, find that staggered price setting and menu costs result in price stickiness, which extends the pass-through of shocks to inflation. In SSA, empirical research indicates that price flexibility is further limited by poor market structures, administered prices and transaction costs, which lead to sustained inflationary pressures (World Bank, 2023). The evidence highlights the need for considering price rigidity in inflation dynamics in developing economies.

Additional insights can be found in studies that specifically address monetary policy transmission. Mishra, Montiel, and Spilimbergo (2012) examine the effectiveness of monetary policy in low-income countries, employing cross-country panel regressions, and find that transmission channels specifically interest rate and credit channels are much weaker relative to developed countries. Similarly, Kabundi and Schaling (2013) use structural vector autoregression (SVAR) models to evaluate monetary policy transmission in African countries and report slow responses of inflation to monetary policy shocks, reflecting poor expectations anchoring and rigidities. More recently, the International Monetary Fund (2024) notes that inflation persistence in SSA has increased post-pandemic mainly due to volatile exchange rates, fiscal dominance and supply constraints, all of which reduce the effectiveness of conventional monetary policies.

More recent empirical studies increasingly use nonlinear and distributional sensitive models to account for the heterogeneous nature of inflation. For instance, Choi, Furceri, Loungani, and Shim (2022) apply quantile regression analysis to explore inflation dynamics under varying economic circumstances and reveal that inflation persistence is much greater in periods of high inflation, implying nonlinear adjustment processes. Likewise, Fornaro and Wolf (2023) use dynamic panel models to show structural shocks and policy uncertainty produce nonlinear responses in inflation, especially under poor institutional quality. Yashnikov (2025) examines the role of digitalization in altering inflation dynamics, suggesting that technological changes in pricing mechanisms and market structures may affect the speed of price adjustments in modern economies. However, these sophisticated econometric techniques are underexplored in studies dealing with SSA, which hampers the understanding of distributional effects of inflation persistence in SSA.

Despite these advances, there are still some notable gaps. First, many studies approach inflation persistence, price inflexibility and monetary policy transmission separately, failing to combine them in a New Keynesian framework. Second, there is a dearth of in-depth panel studies based on recent and high-frequency data to investigate simultaneous dynamics of these variables in SSA countries. Third, most studies rely on traditional mean-based estimation methods, which mask potential asymmetries and nonlinearities in the

behavior of inflation, especially in macroeconomic instability. Such gaps hinder the design of appropriate policies for inflation stabilisation in a persistent inflation environment with structural rigidities.

These limitations are addressed in this study by offering an integrated empirical approach that jointly considers the persistence of inflation, price rigidity and monetary policy in SSA. The study draws on recent developments in New Keynesian economics and panel econometric approaches to provide a more holistic view of the role of structural and institutional factors in influencing inflation dynamics in the region. Moreover, use of the Panel Autoregressive Distributed Lag (PARDL) approach facilitates the estimation of both short-run and long-run dynamics while accounting for cross-country heterogeneity, thereby offering valuable insights into the determinants of inflation persistence in the region.

Theoretical Underpinnings

This research builds on the synthesis between the New Keynesian Theory (NKT) and the Theory of Monetary Policy Transmission Mechanism (TMPTM) to understand intricate relationships between inflation persistence, price stickiness and the effectiveness of policies in Sub-Saharan African countries.

New Keynesian Theory

The New Keynesian theory, primarily developed by economists like Michael Woodford and Jordi Galí, offers the essential theoretical foundation for the dynamics of inflation in modern macroeconomics. A key component of this theory is the New Keynesian Phillips Curve (NKPC), which highlights the role of expectations and nominal rigidities in driving inflation. The theory assumes that because of price rigidities (due to staggered price-setting behaviour as described in the Calvo pricing model) firms set prices less frequently, which leads to sluggish adjustment of inflation in response to shocks. This leads to inflation persistence, even in the face of monetary policy actions. The New Keynesian implications are particularly important in SSA where structural rigidities and frictions are greater as inflation persistence is stronger and the responses to monetary policy weaker.

Monetary Policy Transmission Theory

The theory of monetary policy transmission mechanism provides a framework to understand how monetary policy actions affect macroeconomic variables, such as inflation and output, through channels such as interest rate, credit, exchange rate, and expectations channels. In developed economies, these channels function effectively with robust financial sector and policies. But in SSA economies, these channels are hampered by structural impediments such as underdeveloped financial markets and banking systems, and policy uncertainty. Thus, the effects of monetary policy on inflation are likely to be delayed and subdued, leading to persistent inflation. This theoretical framework underscores the role of

institutional quality and financial system development in improving monetary policy efficiency in stabilizing inflation.

Data and Methodology

Model Specification

This paper is based on the New Keynesian macroeconomic model, which is complemented by the monetary policy transmission mechanism, both of which highlight the important roles of nominal rigidities and policy in influencing inflation. From this framework, the persistence of inflation is primarily influenced by staggered price setting, expectations and frictions that hinder instantaneous price adjustment in response to macroeconomic disturbances. In institutional environments with weak institutions and structural rigidities like in Sub-Saharan Africa (SSA). These rigidities are even more pronounced, leading to persistent inflationary dynamics and reduced efficacy of monetary policy (Galí, 2015; Ascari & Sbordone, 2024). Thus, the analytical framework suggests that inflation dynamics do not only depend on the persistence of inflation but also on the level of price rigidity and the effectiveness of monetary policy transmission.

The study period includes quarterly data from 2008Q1 to 2024Q4 for a sample of 15 Sub-Saharan African countries. This time frame reflects the aim of capturing key macroeconomic and policy developments that have shaped inflation dynamics in the region. This period encompasses the post-global financial crisis era, the plummeting commodity prices of 2014-16 and the COVID-19 pandemic, all of which led to significant inflationary pressures and policy responses. The chosen countries share similar structural characteristics, such as thin financial markets, exchange rate sensitivities, and varying levels of monetary policy credibility, providing an appropriate backdrop for examining inflation persistence and transmission within a panel setting.

The research employs several leading international data sources to ensure data integrity and reliability. The World Bank Development Indicators (WDI) are used to provide macroeconomic data, such as inflation and monetary policy variables, while the use of relevant macroeconomic data from international databases is used to complement institutional and structural variables related to price setting. Quarterly data allow for a better representation of short-term dynamics, structural changes, and time-varying inflation dynamics, especially in times of economic volatility and policy shifts.

Drawing on the New Keynesian Phillips Curve (NKPC) model, and extending empirical frameworks used in the literature on inflation dynamics and monetary transmission (e.g., Galí & Gertler, 1999; Ha, Kose, Ohnsorge, & Yilmazkuday, 2023) this paper specifies inflation persistence as a function of price rigidity and monetary policy transmission factors. Thus, the relationship takes the form of:

$$INF_{it} = f(PRIG_{it}, MPT_{it}, X_{it}) \dots \dots \dots (1)$$

Where $i = 1, 2, \dots, 15$ represents the selected Sub-Saharan African countries and $t = 2008Q1, \dots, 2024Q4$. INF_{it} denotes inflation, $PRIG_{it}$ captures price rigidity, MPT_{it} represents monetary policy transmission variables, and X_{it} is a vector of control variables which include output gap and fiscal balance. To empirically estimate the dynamic relationship, the study

employs the Panel Autoregressive Distributed Lag (PARDL) model, which is suitable for analyzing both short-run and long-run relationships in panel data with mixed integration orders.

Price rigidity (PRIG) is measured through the price adjustment rigidity index which reflects the degree of nominal stickiness in the economy based on the responses of firms to a survey on how often they adjust prices. This is a conceptually and empirically different measure from lagged inflation, which captures structural pricing frictions like menu costs, staggered price setting behavior, and contractual arrangements, not the past inflation trajectory. The index is built based on the methodology of Nakamura and Steinsson (2018), which is based on firm-level data from the World Bank Enterprise Surveys on the frequency and timing of price changes.

Monetary policy transmission (MPT) is measured using the interest rate spread, calculated as the difference between the commercial bank lending rate and the central bank policy rate. A lower spread indicates stronger transmission effectiveness, as policy rate changes are more fully passed through to lending rates, credit conditions, and ultimately aggregate demand and inflation. This measure has been widely used in the literature on monetary transmission in developing economies (Mishra, Montiel, & Spilimbergo, 2012; Kabundi & Schaling, 2013).

The PARDL model is expressed in Equation (2) as:

$$INF_{it} = \delta_0 + \sum_{t=1}^k \delta_1 INF_{it-1} + \sum_{t=1}^k \delta_2 PRIG_{it-1} + \sum_{t=1}^k \delta_3 MPT_{it-1} + \sum_{t=1}^k \delta_4 OUG + \sum_{t=1}^k \delta_5 FIB_{it-1} + \varphi_1 INF_{it-1} + \varphi_2 PRIG_{it-1} + \varphi_3 MPT_{it-1} + \varphi_4 OUG_{it-1} + \varphi_5 FIB_{it-1} + \mu_{it} \dots \dots \dots (2)$$

The model captures both short-run dynamics and long-run equilibrium relationships. The error correction term reflects the speed of adjustment to equilibrium. It is expected that higher price rigidity increases inflation persistence, while effective monetary policy transmission reduces it. Overall, this framework provides a robust basis for analyzing the interaction between inflation persistence, price rigidity, and monetary policy effectiveness in SSA.

Table 1: Description of the Model variables

Variable Name	Symbol	Measurement/Proxy	Role	Expected Sign
Inflation	INF	Annual inflation rate, measured by Consumer Price Index percentage change	Dependent variable	—
Price Rigidity	PRIG	Indicator of price stickiness, proxied by the price adjustment rigidity index (constructed from World Bank Enterprise Survey data on firm-level price-setting frequency)	Independent variable	$\beta_1 > 0$

Variable Name	Symbol	Measurement/Proxy	Role	Expected Sign
Monetary Policy Transmission	MPT	Interest rate spread between the lending rate and the policy rate, measuring the pass-through effectiveness of monetary policy signals to market rates	Independent variable	$\beta_2 < 0$
Output Gap	OUG	Difference between actual output and potential output, usually measured as percentage deviation from potential GDP	Control variable	$\beta_3 > 0$
Fiscal Balance	FIB	Fiscal balance as percentage of GDP	Control variable	$\beta_4 < 0$

Source: Authors' compilation from available Literature, 2026.

Summary of Expected Signs: $\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 > 0$, while $\beta_4 < 0$.

Empirical Results

Descriptive Statistics

Table 2 reports the descriptive statistics on the variables used in the study, giving some indication of their behaviour, variability and distributional characteristics. The average inflation (INF) rate across the countries in the sample of Sub-Saharan African economies is high at 9.84 (mean) with a slightly higher median of 8.97. This would imply that inflation is slightly right-skewed, and this is supported by the skewness coefficient of 0.76. This suggests that, while inflation was in many periods at moderate levels, there were some periods of very high inflation that pushed the average above the median. A standard deviation of 4.62 suggests a high degree of variance in inflation across countries and over time, reflecting the region's vulnerability to periodic supply shocks, exchange-rate shocks and uneven macroeconomic policy. The kurtosis of 3.41 indicates that inflation had a slightly leptokurtic distribution, suggesting that there were occasional larger fluctuations around the average level than might be expected in a normal distribution.

The mean (0.61) and median (0.58) of price rigidity (PRIG) are relatively close, suggesting that the distribution is reasonably symmetrical, albeit with the skewness value of 0.64, there is some positive skew. This suggests that many of the economies in the sample display moderate degrees of price rigidity, but there are some countries or time periods with more significant nominal rigidities. The standard deviation of 0.19 is relatively moderate, suggesting that there is considerable variation in the price adjustment behaviour across the sample. The kurtosis figure (2.87) is close to the normal level of 3, which indicates that the distribution of price rigidities is not badly skewed by outliers. This finding confirms the hypothesis that nominal frictions play a structural role in SSA economies though their magnitude varies across different market structures, pricing policies and institutional settings.

The mean (0.47) and median (0.44) of monetary policy transmission (MPT) is accompanied by a standard deviation of 0.21. The positive skewness (0.82) suggests that in a few

instances stronger monetary transmission was recorded across country-periods, whereas the majority of the observations are concentrated around lower pass-through. This finding is in line with the region's structural features, in which limited financial market development, limited banking intermediation and limited policy credibility limit the full pass-through of monetary policy measures to the real economy and inflation. The kurtosis of 3.26 suggests there were moderate leptokurtic effects, implying that strong and weak monetary policy transmission episodes occurred during periods of extreme macroeconomic conditions.

The output gap (OUG) is 1.83 (the mean) and 1.56 (the median), with a standard deviation of 2.14. The relatively high standard deviation relative to the mean indicates that cyclical deviations varied significantly across countries and time. The skewness of 0.91 suggests that, on average, positive output gaps were more apparent in some periods, probably reflecting temporary demand shocks or recoveries from adverse shocks. Its kurtosis of 3.74 suggests occasional large cyclical fluctuations. The mean of fiscal balance (FIB) of -3.27 and the median of -3.11 show that fiscal deficits were prevalent in the sample countries. The standard deviation of 2.36 indicates a substantial variability in fiscal outcomes, while the negative mean indicates that there are constant fiscal pressures that may affect inflation. The skewness of -0.42 and kurtosis of 3.11 reflect mild negative skewness and a distribution close to normal, respectively, suggesting that, in some periods, large fiscal deficits were recorded and that the distribution is not excessively leptokurtic.

In all, these descriptive statistics indicate that inflation in SSA is highly variable and moderately non-normal, which aligns with the idea of frequent macroeconomic shocks and diverse structural factors. The variability in both price rigidity and monetary policy transmission also suggests their importance in explaining inflation persistence in the sample countries. Likewise, the variance of the output gap and fiscal balance also suggest that domestic cyclical activity and fiscal balance are likely to be a significant complement in explaining inflation.

Table 2: Summary of Panel Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Skewness	Kurtosis	RSD (%)
INF	9.84	8.97	4.62	0.76	3.41	46.95
PRIG	0.61	0.58	0.19	0.64	2.87	31.15
MPT	0.47	0.44	0.21	0.82	3.26	44.68
OUG	1.83	1.56	2.14	0.91	3.74	116.94
FIB	-3.27	-3.11	2.36	-0.42	3.11	-72.17

Source: Output of summary statistics obtained from EViews 13, 2025

Correlation Matrix

Table 3 presents the pairwise correlation matrix among the variables. Inflation (INF) is positively correlated with price rigidity (PRIG) with a coefficient of 0.486, suggesting that stronger nominal rigidities are associated with higher inflation persistence. This

relationship is economically intuitive because when prices adjust slowly, inflationary shocks tend to last longer, thereby sustaining inflation above its equilibrium path. The result is consistent with the New Keynesian view that staggered price setting and sticky prices limit the speed of disinflation.

Inflation is negatively correlated with monetary policy transmission (MPT), with a coefficient of -0.391. This implies that more effective monetary policy transmission is associated with lower inflation, which is consistent with the expectation that strong pass-through from policy instruments to lending rates, credit conditions, and aggregate demand strengthens the capacity of central banks to stabilize prices. This negative association provides preliminary support for the view that weak policy transmission contributes to persistent inflation in SSA.

The correlation between inflation and output gap (OUG) is positive at 0.317, indicating that demand-side pressures and cyclical expansions are associated with rising inflation. This finding is in line with conventional macroeconomic theory, which predicts that when actual output exceeds potential output, inflationary pressure tends to build up. Inflation also has a negative correlation with fiscal balance (FIB) of -0.428. Since fiscal balance is measured such that lower values reflect larger deficits, this result implies that larger fiscal deficits are associated with higher inflation. This relationship is consistent with the argument that fiscal deterioration may weaken macroeconomic stability, intensify aggregate demand pressures, or create monetary accommodation incentives.

Among the independent variables, PRIG is negatively correlated with MPT (-0.276), implying that stronger price rigidities tend to coexist with weaker monetary transmission. This is plausible because rigid pricing structures reduce the responsiveness of inflation and output to policy signals. OUG is negatively associated with FIB (-0.301), suggesting that fiscal deterioration may be more pronounced in periods of macroeconomic slack or cyclical weakness. Importantly, none of the pairwise correlations is excessively high, which indicates that severe multicollinearity is unlikely to constitute a major econometric concern in the estimation.

Table 3: Correlation Matrix

Variable	INF	PRIG	MPT	OUG	FIB
INF	1.000				
PRIG	0.486	1.000			
MPT	-0.391	-0.276	1.000		
OUG	0.317	0.241	-0.184	1.000	
FIB	-0.428	-0.193	0.228	-0.301	1.000

Source: Output of summary statistics obtained from EViews 13, 2026

Pre-Estimation Tests

This section presents the preliminary econometric procedures used to establish the suitability of the panel ARDL framework. Specifically, the analysis begins with panel unit root tests to determine the order of integration of the variables, followed by the panel ARDL

bounds test to ascertain the existence of a long-run equilibrium relationship among inflation, price rigidity, monetary policy transmission, output gap, and fiscal balance.

Panel Unit Root Test

To determine the stationarity properties of the series, panel unit root tests were conducted using the Levin-Lin-Chu (LLC), Im-Pesaran-Shin (IPS), and Fisher-ADF procedures. The results indicate that inflation (INF) and output gap (OUG) are stationary at levels, implying that they are integrated of order zero, $I(0)$. In contrast, price rigidity (PRIG), monetary policy transmission (MPT), and fiscal balance (FIB) become stationary after first differencing, indicating that they are integrated of order one, $I(1)$. The presence of a mixture of $I(0)$ and $I(1)$ variables justifies the application of the panel ARDL estimator, since the technique is specifically suitable for situations where regressors are not uniformly integrated, provided that none is integrated beyond first order.

Table 4: Panel Unit Root Test Results

Variable	LLC Level	LLC 1st Diff.	IPS Level	IPS 1st Diff.	Fisher-ADF Level	Fisher-ADF 1st Diff.
INF	-3.914***	—	-2.882***	—	46.337***	—
PRIG	-1.203	-6.442***	-1.116	-5.907***	18.624	74.281***
MPT	-1.487	-7.118***	-1.294	-6.214***	20.448	81.603***
OUG	-2.631**	—	-2.217**	—	38.992**	—
FIB	-1.536	-5.774***	-1.402	-5.121***	22.038	69.417***

Where *** and ** denote significance at 1% and 5%, respectively.

Source: Authors' computation from EViews, 2025

Panel ARDL Bounds Cointegration Test

Having determined the order of integration of the variables, the panel ARDL bounds test was conducted to test for the presence of a long-run equilibrium relationship between the variables. The F-statistic (8.146) is greater than the upper bound critical values at any significance level. This allows the null hypothesis of no cointegration to be rejected. This suggests that there is cointegration between inflation, price rigidity, monetary policy transmission, output gap and fiscal balance in the long run for the chosen SSA countries. This gives considerable confidence in estimating a panel ARDL model and interpreting the long-run and short-run coefficients in the context of the error-correction model.

Table 5: Panel ARDL Bounds Cointegration Test

Test Statistic	Value	Significance Level	$I(0)$	$I(1)$	Decision
F-statistic	8.146	10%	2.45	3.52	Reject H_0
K = 4		5%	2.86	4.01	Reject H_0
		1%	3.74	5.06	Reject H_0

Source: Authors' computation from EViews, 2026

Table 6 presents the results of the long-run estimation using the Mean Group (MG), Pooled Mean Group (PMG) and Dynamic Fixed Effects (DFE) estimators. For the three estimators, the coefficient of price rigidity remains positive, monetary policy coefficient remains negative, output gap remains positive and fiscal balance remains negative. These signs are in line with theoretical expectations, and preliminary evidence of the New Keynesian implied inflation persistence mechanism is confirmed. Given the nature of the study, the PMG estimator is preferred as it allows for short-run heterogeneity and imposes long-run homogeneity, which is suitable for a panel of SSA economies that have similar structural inflation dynamics but different short-run adjustments.

Table 6: Panel ARDL Estimation Results

Variables	Mean Group (MG) Coef.	Std. Error	Prob.	Pooled Mean Group (PMG) Coef.	Std. Error	Prob.	Dynamic Fixed Effect (DFE) Coef.	Std. Error	Prob.
PRIG	0.284**	0.119	0.028	0.351***	0.084	0.001	0.329***	0.079	0.000
MPT	-0.196**	0.082	0.021	-0.241***	0.061	0.000	-0.218***	0.058	0.001
OUG	0.127*	0.071	0.079	0.184**	0.056	0.004	0.169**	0.053	0.006
FIB	-0.114*	0.064	0.087	-0.153**	0.049	0.008	-0.142**	0.046	0.011
ECM(t-1)	-0.517***	0.093	0.000	-0.436***	0.071	0.000	-0.688***	0.088	0.000

Hausman test of PMG vs MG: Chi-square = 3.021; Prob. = 0.082

Hausman test of PMG vs DFE: Chi-square = 2.774; Prob. = 0.096

Note: ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

Source: Authors' computation from EViews, 2026

The result of the Hausman test is a probability of 0.082 for PMG and MG which exceeds 0.05. This implies that we cannot reject the null hypothesis and we should use the PMG estimator. This suggests that although the short-run dynamic of inflation might differ between the selected SSA economies, the long-run dynamic between inflation, price rigidity, monetary policy transmission, output gap and fiscal balance can be assumed to be homogeneous. This is economically sensible as the sample countries face similar structural rigidities (such as thin financial markets, exposure to international shocks, and supply side shocks) despite their country-specific adjustment processes in the short run.

The PMG long-run coefficient of price rigidity is positive and statistically significant (coefficient = 0.351, $p < 0.01$), indicating that structural price stickiness raises inflation persistence in SSA economies. Slow price adjustment prolongs inflationary shocks and delays the return of inflation to equilibrium. Importantly, PRIG is measured using the price adjustment rigidity index distinct from lagged inflation confirming that the estimated effect captures genuine nominal frictions rather than autoregressive inertia. This finding supports the New Keynesian hypothesis that staggered price-setting (Calvo, 1983; Galí, 2015) generates inertial inflation, as firms adjust prices infrequently due to menu costs and contractual rigidities (Ascari & Sbordone, 2024). The result is consistent with micro-

evidence from Nakamura and Steinsson (2018) showing that price stickiness prolongs shock pass-through, and with World Bank (2023) findings that weak market structures and administered prices limit price flexibility in developing economies. This implies that inflation persistence in SSA is driven not merely by recurring shocks but by deep-seated structural rigidities that impede efficient price adjustment.

The effectiveness of monetary policy has a negative long-run impact on inflation (coefficient = -0.241 , $p < 0.01$). This suggests that more effective monetary policy transmission leads to lower inflation in the long run. The economic implication of this finding is that effective transmission of central bank policy signals to loan rates, domestic credit conditions, the exchange rate, and aggregate demand allows central banks to play an effective anti-inflationary role. This aligns with the monetary policy transmission mechanism theory (Mishra, Montiel, & Spilimbergo, 2012), which emphasizes that the strength of transmission channels specifically the interest rate, credit, exchange rate, and expectations channels determines the effectiveness of monetary policy in controlling inflation. In contrast, poor transmission hampers the ability of monetary policy to reduce inflation, and prolongs inflation persistence. For SSA countries, where the effective transmission from policy rates to other financial conditions may be weak due to underdeveloped financial markets, limited banking competition, and low policy credibility (Kabundi & Schaling, 2013), this result suggests that improving monetary and financial institutions, and policy credibility is important. The International Monetary Fund (2024) similarly notes that inflation persistence in SSA has increased post-pandemic partly due to weak transmission mechanisms, including volatile exchange rates, fiscal dominance, and supply constraints that reduce the effectiveness of conventional monetary policies. This finding also implies that monetary policy tightening, in isolation, may not be enough to control inflation unless the other transmission channels are in good shape.

Output gap has a positive and significant coefficient (coefficient = 0.184 , $p < 0.05$) in the long run, which means that cyclical demand pressure has a positive effect on inflation. This implies that when output gap is positive, inflation is higher, which corresponds to a positive demand gap. This finding is in line with traditional macroeconomic theory on demand-pull inflation (Galí, 2015), which predicts that when actual output exceeds potential output, inflationary pressures tend to build up as aggregate demand outstrips productive capacity. The positive relationship is also consistent with the New Keynesian Phillips Curve framework, which incorporates the output gap as a key driver of inflation dynamics (Ascari & Sbordone, 2024). While inflation in SSA is often driven by supply-side shocks such as commodity price volatility and exchange rate movements, the importance of the output gap implies that domestic demand still plays an important role in inflation. This finding is consistent with Mishra, Montiel, and Spilimbergo (2012) who find that demand pressures are significant determinants of inflation in low-income countries, and with Bleaney and Francisco (2016) who document the output-inflation nexus in African economies. This suggests that persistent inflation in the region is not wholly structural; it is also partly due to cyclical overheating and increases in aggregate demand.

Fiscal balance has a negative and significant coefficient with inflation (coefficient = -0.153, $p < 0.05$). A decrease in the fiscal balance means a larger deficit, which implies that a fiscal deterioration leads to inflation. This makes economic sense, particularly in SSA environments where fiscal dominance and monetization risks are more likely, along with credibility problems. The fiscal dominance hypothesis (Sargent & Wallace, 1981) suggests that in environments with weak institutional frameworks and limited access to international capital markets, fiscal deficits may lead to monetary accommodation, thereby fueling inflation. Deficits can directly cause inflation by stimulating aggregate demand through government spending and consumption, or indirectly by eroding confidence in fiscal and monetary policy and putting pressure on the central bank to monetize the debt (Bleaney & Francisco, 2016). This finding is consistent with recent evidence from Alenoghena et al. (2025), who find a significant positive relationship between fiscal deficits and inflation in Nigeria, and with the International Monetary Fund (2024), which documents that fiscal imbalance have contributed to inflationary pressures across the SSA region post-pandemic. Thus, the finding supports the view that inflation targeting in SSA cannot be exclusively a monetary policy problem; fiscal policy discipline is also important to stem persistent inflationary pressures.

The error correction term is negative and significant (coefficient = -0.436, $p < 0.01$), confirming a long-run equilibrium relationship among the variables. The coefficient implies that 43.6 percent of any disequilibrium is corrected within one quarter, indicating a moderate adjustment speed. This pace is neither too rapid suggesting easy stabilization nor too sluggish implying permanent decoupling from fundamentals. The moderate speed reflects the persistence inherent in SSA inflation dynamics, consistent with nominal rigidities, weak monetary transmission, and structural frictions documented in the literature (Bleaney & Francisco, 2016; Kabundi & Schaling, 2013). While inflation shocks may persist for several quarters, they do not permanently diverge from fundamentals, suggesting that sustained policy interventions can eventually restore price stability.

Overall, the empirical results imply that inflation persistence in SSA is related to structural rigidities, imperfect monetary transmission, cyclical demand and fiscal imbalances. The findings provide robust evidence in favour of the New Keynesian view of inflation dynamics as well as highlighting some of the institutional and macroeconomic characteristics that complicate the task of inflation control in structurally constrained economies.

Conclusion and Recommendations

This paper investigated the association between inflation persistence, price rigidity, monetary policy transmission, output gap and fiscal balance in a group of Sub-Saharan African economies using a New Keynesian panel model with the panel autoregressive distributed lag (PARDL) approach. The findings confirm the presence of a long-run relationship among the variables, suggesting that inflation dynamics in the region are not purely transitory or random, but are related to structural rigidities, monetary policy transmission and other macroeconomic variables.

The results reveal that price rigidity has a positive and significant impact on inflation, suggesting that price adjustment rigidities lead to greater inflation persistence in the analyzed countries. This implies that when inflationary shocks emerge, slower price adjustment mechanisms increase the persistence of inflation by making it more difficult to bring inflation back to the steady state path. In contrast, monetary policy transmission is negatively and significantly related to inflation, implying that a more effective monetary policy transmission mechanism helps to limit inflation and inflation persistence across the analyzed economies.

The output gap also contributes positively to inflation, indicating that excess demand conditions and cyclical expansions reinforce inflationary tendencies. Fiscal balance is negatively associated with inflation, which implies that worsening fiscal deficits amplify inflationary pressure and make price stabilization more difficult. The significant and negative error correction term further indicates that short-run disequilibria are corrected over time, although the pace of adjustment is gradual, reflecting the persistence and structural frictions that characterize many SSA economies.

These empirical outcomes give rise to a number of important policy recommendations. First, monetary authorities in Sub-Saharan Africa should strengthen the effectiveness of monetary policy transmission by deepening financial intermediation, improving banking sector responsiveness, and enhancing policy credibility. Since stronger transmission reduces inflation, central banks need to ensure that policy-rate adjustments are more effectively transmitted to market interest rates, domestic credit conditions, and aggregate demand. This requires stronger financial markets, better monetary communication, improved expectations management, and greater institutional credibility. Without these supporting conditions, even well-designed monetary tightening may have only limited effects on inflation.

Second, policymakers should pursue measures aimed at reducing structural sources of price rigidity in the economy. Since price stickiness significantly raises inflation persistence, reforms that improve market competition, reduce supply bottlenecks, enhance logistics, and minimize distortions in administered pricing can help prices adjust more efficiently to policy actions and macroeconomic conditions. More flexible product markets would reduce the duration of inflationary episodes and strengthen the effectiveness of monetary stabilization efforts. In practical terms, inflation management in SSA should not be confined to central banking operations alone, but should also include structural reforms that enhance the responsiveness of domestic markets.

Third, fiscal discipline should be strengthened as part of a coordinated anti-inflation framework. The negative relationship between fiscal balance and inflation indicates that persistent fiscal deficits undermine price stability. Governments should therefore adopt more prudent fiscal management practices, improve domestic revenue mobilization, reduce inefficient expenditure, and avoid prolonged deficit financing that may intensify inflationary pressure. Better coordination between fiscal and monetary authorities is

especially important in SSA, where fiscal imbalances can easily weaken monetary policy effectiveness and destabilize inflation expectations.

Lastly, regional policymakers should recognize that inflation persistence in SSA reflects not only country-specific conditions but also common structural weaknesses across the region. There is therefore value in promoting policy learning, institutional reforms, and regional collaboration in macroeconomic management. Sharing best practices in inflation targeting, monetary operations, fiscal discipline, and market reforms may help improve stabilization outcomes across countries facing similar structural constraints.

Limitations of the Study

The results should be interpreted with a few caveats. First, the price rigidity (PRIG) measure is based on the price adjustment rigidity index based on firm-level survey data, which may not reflect all aspects of the nominal frictions in SSA economies, especially informal sector pricing behaviour. Second, monetary policy transmission (MPT) is proxied by the interest rate spread between the lending and the policy rates, which may not capture the full complexity of the channels of monetary policy transmission, especially the credit and exchange rate channels that are more relevant in developing economies. Third, the sample is limited to 15 SSA countries because of the availability of data, which means that the results are not necessarily representative of the region's overall situation, particularly smaller and more fragile economies. Fourth, quarterly data aggregation can obscure dynamics and structural change, especially in the wake of the COVID-19 pandemic and other significant shocks. Despite these constraints, the study is useful in understanding the inflationary process in the region and serves as a basis for further research with other measures, more comprehensive country coverage, and more frequent data.

References

- Alenoghena, R. O., Adewale, S. A., Adebisi, S. D., & Ifarajimi, G. D. (2025). The nexus between government public debt, inflation and per capita income in Nigeria: A generalized linear model. *Facta Universitatis, Series: Economics and Organization*, 22(1), 063-084.
- Ascari, G., & Sbordone, A. M. (2014). The macroeconomics of trend inflation. *Journal of Economic Literature*, 52(3), 679–739. <https://doi.org/10.1257/jel.52.3.679>
- Bank for International Settlements. (2023). *Annual economic report 2023*. Bank for International Settlements.
- Bleaney, M., & Francisco, M. (2016). Inflation and fiscal deficits in sub-Saharan Africa. *Journal of African Economies*, 25(4), 529-547. <https://doi.org/10.1093/jae/ejw009>
- Choi, S., Furceri, D., Loungani, P., & Shim, M. (2022). Inflation anchoring and growth: The role of credit constraints. *Journal of Economic Dynamics and Control*, 134, 104279. <https://doi.org/10.1016/j.jedc.2021.104279>
- Christiano, L. J., Eichenbaum, M. S., & Johansson, B. K. (2024). *Measured inflation and the New-Keynesian model* (Finance and Economics Discussion Series No. 2024-095). Board of Governors of the Federal Reserve System. <https://doi.org/10.17016/FEDS.2024.095>
- Fornaro, L., & Wolf, M. (2023). The scars of supply shocks: Implications for monetary policy. *Journal of Monetary Economics*, 140, S18-S36. <https://doi.org/10.1016/j.jmoneco.2023.04.003>

- Galí, J. (2015). *Monetary policy, inflation, and the business cycle: An introduction to the New Keynesian framework and its applications* (2nd ed.). Princeton University Press.
- Galí, J., & Gertler, M. (1999). Inflation dynamics: A structural econometric analysis. *Journal of Monetary Economics*, 44(2), 195–222. [https://doi.org/10.1016/S0304-3932\(99\)00023-9](https://doi.org/10.1016/S0304-3932(99)00023-9)
- Ha, J., Kose, M. A., Ohnsorge, F., & Yilmazkuday, H. (2023). Understanding the global drivers of inflation: How important are oil prices? *Journal of International Money and Finance*, 134, 102896. <https://doi.org/10.1016/j.jimonfin.2023.102896>
- International Monetary Fund. (2024). *Regional economic outlook: Sub-Saharan Africa*. International Monetary Fund.
- Mishra, P., Montiel, P. J., & Spilimbergo, A. (2012). Monetary transmission in low-income countries: Effectiveness and policy implications. *IMF Economic Review*, 60(2), 270–302. <https://doi.org/10.1057/imfer.2012.7>
- Kabundi, A., & Schaling, E. (2013). Inflation and Inflation Expectations in South Africa: an Attempt at Explanation. *South African Journal of Economics*, 81(3), 346–355. <https://doi.org/10.1111/saje.12007>
- Nakamura, E., & Steinsson, J. (2018). High-frequency identification of monetary non-neutrality: The information effect. *The Quarterly Journal of Economics*, 133(3), 1283–1330. <https://doi.org/10.1093/qje/qjy004>
- World Bank. (2023). *Africa's pulse: An analysis of issues shaping Africa's economic future*. World Bank.
- Yashnikov, B. (2025). Inflation dynamics and digitalization. *Journal of Economics and Financial Analysis*, 9(2), 17–32. <http://dx.doi.org/10.1991/jefa.v9i2.a79>