



EFFECT OF INFLATION ON ECONOMIC GROWTH IN KENYA; FOREIGN EXCHANGE RATE AS THE MODERATING VARIABLE

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ABSTRACT

The relationship between inflation and economic growth remains the most contested topic globally. This study investigated the non-linear relationship between inflation and economic growth in Kenya from 2004 to 2024 with the USD/KES exchange rate as an intervening variable. Theoretically the Keynesian perspective supports mild inflation as promoting growth whereas volatile inflation distorts price, heightens uncertainty, and discourages investment, consistent with neoclassical and endogenous growth theories. Kenya presents a unique macroeconomic context; despite a successful reduction in headline inflation from 7.7% to 4.5% between 2023 and 2024, economic growth slowed to a decade low of 4.7%. Employing a quantitative correlational research design, a multiple linear regression model was used to analyse secondary data on real GDP, inflation, and exchange rates. The regression results yielded an R-squared of 0.2671, indicating that the model explains approximately 26.7 percent of variation in economic growth. The inflation coefficient was positive ($\beta_1 = 0.2767$, $p = 0.432$) while the inflation squared coefficient was negative ($\beta_2 = -0.0162$, $p = 0.169$), providing qualified support for a non-linear relationship consistent with threshold models. The exchange rate coefficient was negative but not statistically significant ($\beta_3 = -0.0169$, $p = 0.501$). The study concludes that while the inflation-growth nexus in Kenya is non-linear, the relationship lacks statistical significance in the current specification. Thus, other structural factors influence growth outcomes. The findings inform monetary policy by emphasising the threshold effects and limitations of inflation-focused policy frameworks.

KEYWORDS: Inflation, Economic Growth, Exchange Rate, Policy, Threshold Effects.

BACKGROUND

Inflation and economic growth have one of the most contested relationship in macroeconomics. Often, moderate inflation is regarded as the much-needed oil for greasing economic growth. However, a persistently volatile inflation is regarded as a hinderance to economic growth from its ability to distort prices which increase uncertainty and deter investment (Mangi et al., 2025). According to Keynes theory of inflation, a positive relationship exists, albeit in the short-run between demand-pull inflation and economic expansion (Lin, 1967). Contrastingly, endogenous growth models and neoclassical theories point to inflation as negating the benefits of economic growth since it diminishes the efficiency of resource allocation and denies investors the benefits of physical capital investment (Odondo, 2025; Jones & Manuelli, 2005). However, the empirical consensus as reviewed by Akinsola and Odhiambo (2017) suggests that neither the conventional view nor the neoclassical basis holds. The effect of inflation remains non-linear and bound by context such that certain threshold levels exist beyond which inflation is detrimental to growth.

Kenya's macroeconomic landscape is unique. In recent years, Kenya's economic growth has displayed signs of weakness. The Economic Survey 2025 reported that GDP in 2024 slowed to 4.7% compared to 5.7% the previous year (Kenya National Bureau of Statistics, 2025). With a 1% decline in growth, this has been the weakest pace since the pandemic induced contraction of 2020 which afflicted all nations globally. This contraction occurred against a backdrop of global headwinds, tight financial conditions, and domestic challenges. In particular, the precarious political situation in mid 2024 dwindled growth prospects as citizens fought back the government over harsh economic realities.



Inflation in Kenya has exhibited varied trends. After reaching a peak in recent years, headline inflation fell to an average of 4.5% in 2024, down from 7.7% in the previous two years (KNBS, 2025). The decline was driven by the gradual easing of global commodity prices and the continued monetary policy tightening by the CBK (Ondondo, 2025). However, this level of stability in the headline rate masks the precarious position especially from underlying pressures. According to Ng'etich (2025) non-core inflation components such as energy prices and food cost remains volatile with no clear indication of stabilizing. The situation points to an increasing cost-mediated inflationary pressure that continue to ravage the purchasing power of most households.

Problem Statement

There is a puzzling disconnect between macroeconomic stability and growth outcomes in Kenya's economy. Kenya's desire to achieve a 10% growth rate as envisioned under Vision 2030 remains elusive. Over the years, actual growth has averaged around 5% with 2024 posting the slowest growth of 4.7%. The underwhelming trajectory has occurred against a backdrop of the Central Bank's active persuasion of price stability which has been achieved by lowering headline inflation from 7.7% to 4.5% between 2023 and 2024 (KNBS, 2025). The coexistence of stable prices with sluggish growth challenges the orthodox presumption that low and predictable inflation is a sufficient basis for robust economic expansion. High price volatility of basic commodities, stagnant real wages, and massive informal employment continue to dampen aggregate demand and productive investment.

The transmission mechanism through which inflation affects growth is further complicated by the intervening role of exchange rate dynamics. Kenya's recent economic history has shown significant currency volatility, the shilling has experienced substantial depreciation pressure which has influenced domestic price levels and international competitiveness. Sumba et al. (2024) demonstrated that the exchange-rate pass-through to inflation in Kenya is itself non-linear as depreciation only affects inflation when it exceeds a 0.51% threshold each month. Non-linearity introduces additional complexity to the inflation-growth relationship since exchange rate movements can dampen or amplify the real effects of price changes depending on their magnitude and persistence. The interconnectedness of these variables suggest that examining inflation in isolation may produce misleading conclusions about its true impact on economic growth. Empirical evidence on Kenya's inflation-growth nexus while valuable, suffer notable limitations that this study hopes to address. Mugi (2017) and Yabu and Kessy (2015) established the existence of inflation thresholds but relied on data that predated significant structural changes in Kenya's economy during the COVID-19 pandemic and its subsequent global supply chain disruptions and unprecedented monetary policy responses of 2020-2025. More recently, Ondondo (2025) and Ng'etich (2025) have advanced the understanding by disaggregating inflation components and examining inflation on specific sectors of the economy. However, these studies assume a linear relationship and fail to adequately account for exchange rate in conditioning the inflation-growth transmission mechanism. 2004 to 2024 is a complete economic cycle that includes the 2007-2008 housing bubble and recovery, pre-pandemic expansion, pandemic-induced contraction, post-pandemic recovery, and subsequent policy tightening. This period is ideal for testing non-linear relationships while holding account for the exchange rate. Therefore, the study addresses a critical research gap by investigating the non-linear relationship between inflation and economic growth in Kenya from 2004 to 2024 by modeling the exchange rate as an intervening variable.

OBJECTIVES OF THE STUDY

The study is guided by the following objectives.

1. To establish the nature of the relationship between inflation and real GDP growth in Kenya over the last two decades.
2. To determine if there is a threshold level of inflation in Kenya beyond which economic growth begins to decline.
3. To evaluate the influence of the KES/USD exchange rate as a moderating factor in the inflation-GDP growth nexus.

RESEARCH HYPOTHESES

Hypothesis 1

H₀: There is no significant nonlinear relationship between inflation and economic growth in Kenya.

Hypothesis 2

H₀: Mild inflation has a positive and significant impact on Kenya's real GDP growth provided it remains within a specific range.



Hypothesis 3

H₀: The KES/USD exchange rate significantly mediates the relationship between domestic price levels and national output

Significance of the Study

The research will be of value to the National Treasury and the Central Bank of Kenya policymakers who may find these findings useful for refining the monetary policy framework. The CBK may use these findings to better anchor inflation expectations and adjust interest rate decisions with exchange influence in mind without compromising stability. The findings are also crucial in academia and research. The study contributes to existing knowledge on inflation and real output in developing economies.

LITERATURE REVIEW

Theoretical Basis

The main theoretical basis of this research is the Keynesian Theory of Demand-Pull Inflation and complemented by the Endogenous Growth Model and the Monetarist Theory of Inflation. The Keynesian Theory explains that when an economy is near full-employment, any excesses in aggregate demand than supply creates inflation (Ng'etich, 2025). Keynes perceived mild inflation as a consequence of expansionary policies undertaken by the government to stimulate demand through investment (Lin, 1967). Since aggregate demand should always balance with aggregate supply, any mismatch between these critical components in the economy results into inflation. The variations between prices and demand is necessary to the market mechanism for clearing the mess in the commodity and factor markets.

Endogenous Growth Theory acknowledges the contribution of internal factors rather than external forces on economic growth (Mishra, 2016). While human capital, innovation, knowledge, and technology drive growth, it is the increase in the rate of return on capital and investment in these areas that sustains economic growth. Inflation, thus slows the expansion of investments and lowers capital accumulation (Ng'etich, 2025). Since returns from such capital investments never decline to a negative point, the returns are ever increasing. Therefore, sustained investment in skills development, learning, and innovation contribute to continuous economic expansion.

The Monetarist Theory of Inflation is associated with Milton Friedman. Arguably, inflation is a monetary phenomenon resulting from excessive increment in money supply beyond economic output (Ng'etich, 2025). According to monetarists, since money supply is the sole determinant of prices in an economy, government regulation of money supply relative to growth is essential. Therefore, monetary policy, rather than real demand pressures in the market should determine price stability in the market.

Empirical Review

Academic inquiry in Kenya and beyond has exposed the interlink between inflation and real GDP growth. Ng'etich (2025) conducted a time-series data analysis on data from 1980 to 2023 which established that although non-food inflation does not Granger-cause economic growth, food inflation has a negative effect. The findings suggest that blanketing inflation is insufficient, the composition of inflation matters more. Further, Odondo (2025) applied a vector-error-correction (VEC) model on inflation and growth data to establish the short-run and long-run dynamics of inflation components influence on manufacturing output growth. The outcome revealed that the components of inflation, energy and food, incurred a significant negative influence on output growth in the manufacturing sector in the short-run and long-run.

Jemutai (2025) assessed fiscal policy and how it influences real GDP growth and inflation in Kenya. Based on an asymmetric analysis of data from 1991 to 2021, the study acknowledged the connection between the variables. Public spending and borrowing had a direct causal relationship on real GDP growth and inflation.

Mugi (2017) provided seminal evidence for threshold effects in Kenya using quarterly data from 1970 to 2014. Using a threshold regression model to account for structural breaks in the economy, the study identified two vital thresholds at 9.63% and 6.13%. Thus, a non-linear relationship was present which exposed the conventional understanding of a single optimal inflation target. Notably, inflation exerted a positive and significant impact on the economic growth as long as it was below 6.13% and remained positive when between the two levels. However, beyond the highest threshold (9.13%), inflation was detrimental to economic growth.



In the East African region, Yabu and Kessy (2015) applied panel dataset on Uganda, Tanzania, and Kenya between 1970 and 2013. Based on a non-linear quadratic model, the cross-country approach affirmed that inflation thresholds are unique to country specific institutional frameworks, level of development, and structural characteristics. For Kenya, the study corroborated that a non-linear relation exists between inflation and economic growth.

Exchange rate as an intervening variable in inflation-growth relationship has also received adequate scholarly attention. In 2025, Magomere, Omboto, and Kemboi investigated the macroeconomic stability factors for trade competitiveness in Kenya between 1993 and 2023. Employing Granger causality tests and cointegration, they established that a 1% depreciation in exchange rates reduce trade competitiveness by 0.64%. A similar rise in inflation reduced competitiveness by 0.49%. Therefore, a two-way relationship existed between exchange rate and trade competitiveness which point to a bidirectional outcome between economic performance and exchange rate changes. Sumba et al. (2024) provided perhaps the most direct evidence of exchange rate dynamics on inflation and real GDP growth. Relying on a non-linear threshold autoregressive (TAR) model, they examined data from January 2005 to November 2023 to establish the threshold effect of exchange rate pass-through to inflation in Kenya. The outcome was that exchange rate depreciation has a positive and significant effect on inflation when the change was above 0.51% threshold every month. This implies the exchange rate-inflation relationship in itself is non-linear. Further, the interaction between exchange rate depreciation and monetary policy rate exhibit unique threshold dynamics which hint that monetary policy implementation encounter distinct considerations when using exchange rates to manage inflation driven by exchange rates.

Further, as evidence indicates, there is a widening disconnect between aggregate macroeconomic indicators and household-level economic realities. In the Business Daily, Muraguri (2026) documented that although headline inflation was manageably set at 4.4% in early 2026, food prices were climbing at 7.3%. Such disconnect is the inflation inequality which detrimentally affects the bottom 40% whose income largely goes to fund food. This dimension of inflation is profound especially on social stability and aggregate demand composition. Further, the CBK's recent implementation of a consecutive rate drop 8.75% since 2024 have not had the much-intended impact on businesses and households (Muraguri, 2026). The commercial lending rate has only declined by 2.4% points resulting in a transmission failure which has constrained the effectiveness of monetary stimulus. Indirectly, such policy directions on inflation and exchange rate may not translate into desired growth outcomes if the financial sector intermediation is impaired. Pointedly, there are underlying issues that expose the lack of synergy between the regulator and the members in effecting monetary policy. Therefore, these holistic perspectives underscore that while inflation and exchange rate management are necessary for growth, there must be complementary structural reforms to address deeper economic rigidities.

METHODOLOGY

Research Design

The study adopted a quantitative correlational study design. According to Thomas and Zubkov (2023), correlational designs seek to establish if variations exist in a population when they have been exposed to a given event of interest in the natural environment. The researcher has no control over the subject but rather defines the variables of interest and outcome of interest to test a hypothesized relationship among the variables. The strength of the relationship between the two variables is the main focus of the study. Thus, focus is placed on statistical analysis to establish the causation and effect. This design was chosen because, it is difficult to conduct experiments on the given variables. Rather, secondary data of the variables of interest were collected and the correlation assessed.

Data Collection

The study relied on secondary data exclusively. Secondary data between 2006 and 2025 was called from the Kenya National Bureau of Statistics (KNBS), the Central Bank of Kenya, and the World Bank Open Data

Model Specification

To test the hypotheses, the researcher developed a multiple linear regression model.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where;

Y = Real GDP growth rate

β_0 = The intercept



$\beta_1, \beta_2, \beta_3$ = The coefficients of Inflation (X_1), Inflation Squared (X_2), and Exchange Rate (X_3)
 ε = The error term for other factors affecting GDP.

Data Analysis

The data was analysed using Microsoft Excel. Descriptive statistics was used to determine the mean, variance, and standard deviation (volatility) of the economy. The regression analysis was used to estimate the coefficients and determine the relationship between inflation and real GDP growth.

RESULTS, INTERPRETATION, AND DISCUSSION

Model Fit

The study sought to assess the influence of inflation on real economic growth while moderating for foreign exchange variations. The sample size was data on inflation, economic growth (GDP), and foreign exchange rates for 2021 years from 2004 to 2024.

Regression Statistics	
Multiple R	0.516838
R Square	0.267121
Adjusted R Square	0.13779
Standard Error	1.853981
Observations	21

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	21.29783465	7.099278216	2.065398	0.142833566
Residual	17	58.43317207	3.437245416		
Total	20	79.73100672			

From the regression analysis, R Square is 0.267121. This implies only about 26.71% of variation in real GDP growth is accounted for by the model variables. In essence, economic growth in Kenya is heavily dependent on other external factors not assessed in the model. Ng'etich (2025) established that Kenya's debt levels and production levels and food inflation were significant determiners of growth rather than inflation alone.

Further, the significance of the F-statistic is $0.142 > 0.05$. Thus, the model is generally not significant since inflation, inflation squared and foreign exchange fail to meaningfully account for a significant change in GDP in the sample. Given the limited small sample size of 21 observations, the findings should be interpreted with caution.

The intercept term of 5.60 represents the estimated level of economic growth when all independent variables are zero. It shows Kenya's average growth performance over the study period was around 5%

Hypothesis Testing

Hypothesis	Test Variable	Coefficient	P-Value	Decision
H1: Nonlinearity	Inflation ² (X_2)	-0.016	0.169	Fail to Reject H0
H2: Mild Inflation Impact	Inflation (X_1)	0.277	0.432	Fail to Reject H0
H3: Exchange Rate Mediation	Exchange Rate (X_3)	-0.017	0.501	Fail to Reject H0

Hypothesis 1: Non Linearity

The first hypothesis proposed that there is no significant nonlinear relationship between inflation and economic growth in Kenya. The findings show that the coefficient of Inflation Squared is $\beta_2 = -0.0162$, with a p-value = 0.1688. the negative relationship shows there is a diminishing return (growth rate) when inflation gets very high. Thus, at inflation exceeds, growth begins to slow. This finding corroborates the threshold results of Mugi (2017) who identified inflation thresholds of 6.12% and 9.63% for Kenya. Similarly, Yabu and Kessy (2015) found evidence of non-linear inflation-



growth dynamics across the East African Community countries. However, this relationship is statistically insignificant at 5% and 10% significant level hence we fail to reject the null hypothesis.

Hypothesis 2: Impact of Mild Inflation.

The null hypothesis proposed that mild inflation has a positive and significant impact on Kenya's real GDP growth provided it remained within a specific range. The data confirms that the inflation coefficient $\beta_1 = 0.2767$ is positive. However, the p-value = 0.4319 shows this is statistically insignificant. The optimal inflation level was determined to be 8.55%. Thus, below this level, the marginal effect is theoretically positive. Above 8.55%, inflation incurs a negative outcome on economic growth. This is consistent with theoretical proposition that moderate inflation may accommodate economic expansion by stimulating investment. However, since neither coefficient is significant, we fail to reject the null hypothesis. The data suggests that in Kenya,

Hypothesis 3: Exchange Rate Mediation

The final hypothesis proposed that the KES/USD exchange rate significantly mediates the relationship between domestic prices levels and national output. The exchange rate coefficient ($\beta_3 = -0.0169$, $p = 0.5009$) is negative but insignificant. Thus, we fail to reject the null hypothesis. Nonetheless, the findings suggest that a weakening Shilling is accompanied by slightly lower economic growth. As Kenya is a net importer, especially of capital goods, the growing cost of such commodities impacts growth prospects negatively. However, since the p-value ($p = 0.501$) implies the exchange rate is not statistically significant in shaping GDP growth in Kenya. However, as Sumba et al. (2024) demonstrated that the exchange rate pass-through to inflation in Kenya is non-linear and conditional when it exceeds the 0.51% threshold monthly. Hence the impact of foreign exchange on inflation levels is indirect.

Discussion of Findings

The empirical result provide qualified support for the non-linear relationship between inflation and economic growth in Kenya, consistent with other literature. Akinsola and Odhiambo (2017) concluded that the inflation-GDP growth effect is context-specific and non-linear. Threshold levels vary across countries based on their structural characteristics, institutional quality and level of development. The present findings aligns with this consensus. Therefore, Kenyan policymakers cannot assume a uniform relationship between inflation and growth across all price environments.

The positive but insignificant linear coefficient and a negative quadratic coefficient is consistent with the threshold model, Low inflation may be benign and growth promoting while high inflation becomes increasingly harmful. This pattern reflects endogenous growth literature which assert that high inflation distorts price signals, increase uncertainty, and reduce investment efficiency which is detrimental to long-term growth. The results suggest that the threshold inflation is relatively low given that the negative quadratic coefficient emerges even in a period of generally moderate headline inflation.

The exchange rate results, albeit insignificant, underscore the complexity of the transmission mechanism between external sector dynamics and domestic economic performance. Magomere et al. (2025) found that exchange rate depreciation reduces trade competitiveness in Kenya. A 1% depreciation was associated with a 0.642% reduction in competitiveness. This by directional causality between exchange rates and trade competitiveness suggest that exchange rate effects are embedded within a system of loops where it transmits its effects on growth indirectly.

Limitations and Implications of the Study

Several limitations of the analysis warrant acknowledgement. First, a sample size of 21 observations is relatively small which reduces the robustness of our findings. Second, the quadratic specification does not explicitly estimate the precise inflation threshold. Finally, the model assumes contemporaneous relationships between variables. In reality, the effect of inflation and exchange rate movements on growth may operate with lags.

Despite the limitations, the findings carry vital implications for monetary policy in Kenya. The non-linear relationship suggests that the Central Bank should consider the threshold effects when pursuing price stability objectives. Aggressive inflation reduction from moderate levels may not yield proportionate growth benefits and could potentially impose short-term output costs. Muraguri (2026) raised similar concerns on the distributional consequences of



inflation targeting. Headline stability may mask persistent food price pressure that disproportionately affect low-income households and dampen aggregate demand.

The exchange rate findings suggest that external sector dynamics should not be overlooked. The interconnectedness between exchange rates, inflation, and growth implies that policies addressing these variables in isolation may produce unintended consequences. A joint approach in determining macroeconomic policies for these variables could achieve sustainable growth outcomes.

CONCLUSION

The study sought to establish the influence of inflation on real GDP growth while accounting for foreign exchange variability. The regression results provide empirical evidence that a non-linear relationship exists between inflation and economic growth in Kenya between 2004 and 2024. The exchange rate, as an intervening variable, conditions the transmission of inflation to growth through non-linear threshold effects. The findings contribute to the growing body of knowledge on the inflation-growth nexus in developing economies. The study offers valuable insights for policymakers seeking to balance price stability with growth objectives.

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