On Determination of the Relationship between Inflation and Real Savings in Kenya

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ABSTRACT

This study investigates the relationship between inflation and real savings in Kenya over the period 2013–2024. Using time series econometric methods, including the Augmented Dickey-Fuller (ADF) test for stationarity, Granger causality to determine direction of influence, and Ordinary Least Squares (OLS) regression for estimation, the study examines how inflation dynamics affect savings behavior. The results reveal that inflation inversely affects savings in the short run, with higher inflation rates being associated with lower levels of real savings. Specifically, inflation accounts for 28.1% of variations in real savings. These findings confirm a negative and statistically significant relationship between inflation and real savings, and thus highlights the importance of targeting low and stable inflation rate management strategies to attract increased incentives for investors to save, with respect to the Kenyan financial environment.

Keywords: Inflation, Real Savings, Time Series, Econometrics.

INTRODUCTION

Inflation, defined as a persistent increase in the general price level of goods and services, erodes the purchasing power of money and threatens the real value of saved income. For developing economies such as Kenya, where both household and national savings are crucial drivers of investment and growth, the impact of inflation on savings behavior is a critical policy concern.

Kenya has adopted inflation-targeting policies, yet inflation remains volatile. The effect of this volatility on real savings has not been conclusively established, despite savings being central to economic development. This study seeks to fill this gap by examining the relationship between inflation and real savings in Kenya from 2013 to 2024.

LITERATURE REVIEW

Theoretical Literature

The relationship between inflation and savings has been examined extensively in economic theory. Different schools of thought provide contrasting explanations for how inflation influences individual and national saving behavior.

Keynesian Economics emphasizes that saving is primarily determined by disposable income rather than interest rates. In Kenya, where many households operate on limited budgets, inflation reduces real incomes and forces greater spending on essentials such as food and fuel. This leaves less room for savings, particularly among low- and middle-income earners. Keynes's concepts of the marginal propensity to consume and liquidity preference are visible in Kenya through reduced formal deposits during inflationary periods Monetarist Views, advanced by Milton Friedman, frame inflation as a "tax" on money holdings. This is evident in Kenya when households

shift from bank deposits with low nominal returns toward real assets such as land, livestock, or equities. The growing popularity of informal investment groups (chamas) during inflationary periods reflects this behavior.

Life-Cycle and Permanent Income Hypotheses highlight how saving decisions depend on long-term income expectations. In Kenya's largely informal labor market, inflation heightens income uncertainty, sometimes encouraging precautionary savings through SACCOs or mobile wallets, but often discouraging formal saving when real returns are persistently negative.

Precautionary Savings Theory also resonates in the Kenyan context. Households use savings as a buffer against shocks, but sustained high inflation erodes the value of deposits and pushes many toward tangible assets instead of financial products.

Prospect Theory adds a behavioral dimension: Kenyan households perceive inflation as a loss of accumulated wealth. This loss aversion explains why savers abandon bank deposits in favor of land, durable goods, or chamas, even when these alternatives may not yield better returns.

Empirical studies

Recent empirical studies have emphasized the negative impact of inflation on savings, especially in developing economies like Kenya, where financial systems are still evolving and inflation expectations are less anchored.

Mwangi & Njuguna (2020): Using time-series data from 2005–2018, they found that inflation significantly erodes household savings by reducing purchasing power. The effect was most pronounced when nominal interest rates failed to match or exceed inflation. They also showed that inflation volatility discourages long-term savings in banks and SACCOs.

Chege et al. (2022): Conducted a Nairobi-based case study and found that urban households often reduced or stopped monthly savings contributions during inflationary shocks. A gendered pattern emerged, with women-led households more likely to withdraw from informal savings groups (chamas) to sustain consumption, underlining the dual role of women in balancing survival needs and financial planning.

Musimbi & Mose (2023): Using annual data for 1975–2020 and OLS estimation, they reported that inflation, income growth, and interest rates were positively associated with national savings, while consumption reduced savings. Their surprising finding of a positive inflation–savings relationship aligns with Deaton's inflation-induced saving hypothesis, suggesting some Kenyan households may respond to inflation by increasing savings as a precaution.

Kibichii et al. (2024): Combined quantitative indicators with qualitative surveys to analyze post-COVID-19 savings behavior. They observed that escalating costs reduced most households' saving capacity, but some demographic groups paradoxically increased savings due to heightened precautionary motives. This underscores inflation's dual role—both discouraging and stimulating saving depending on context.

Kiptoo & Rotich (2023): Examined the period after 2013 under the inflation-targeting framework. They found a statistically significant negative correlation between inflation and gross national savings, suggesting that while inflation targeting improved policy transparency, it did not fully protect savings—especially for households in the informal sector.

IMF (2020): In its Sub-Saharan Africa outlook, the IMF noted that Kenya's inflation-targeting regime anchored expectations and supported higher deposit and SACCO participation in the 2010s. However, credibility gaps, particularly when responses to shocks were delayed, undermined savers' confidence.

World Bank (2023): Reported that real household savings growth in Kenya has stagnated in recent years due to persistent inflation and low deposit interest rates. It emphasized the need for inflation-indexed savings products and stronger financial education to preserve wealth in real terms.

METHODOLOGY

Research Design: Quantitative, longitudinal design examining annual data for 2013–2024.

Model Specification:

$R_t = \alpha + \beta_t * I_t + \epsilon_t$

R_t = Real savings (% of GDP) year t

I_t = Inflation rate (%in year t)

α = Intercept term

β_t = Effect of inflation on real savings

ϵ_t = Error term

Econometric Techniques:

Augmented Dickey-Fuller (ADF) test for testing stationarity.

Granger causality test for determining the direction of influence.

OLS regression to estimate magnitude and sign of the relationship.

DATA ANALYSIS AND RESULTS

Data

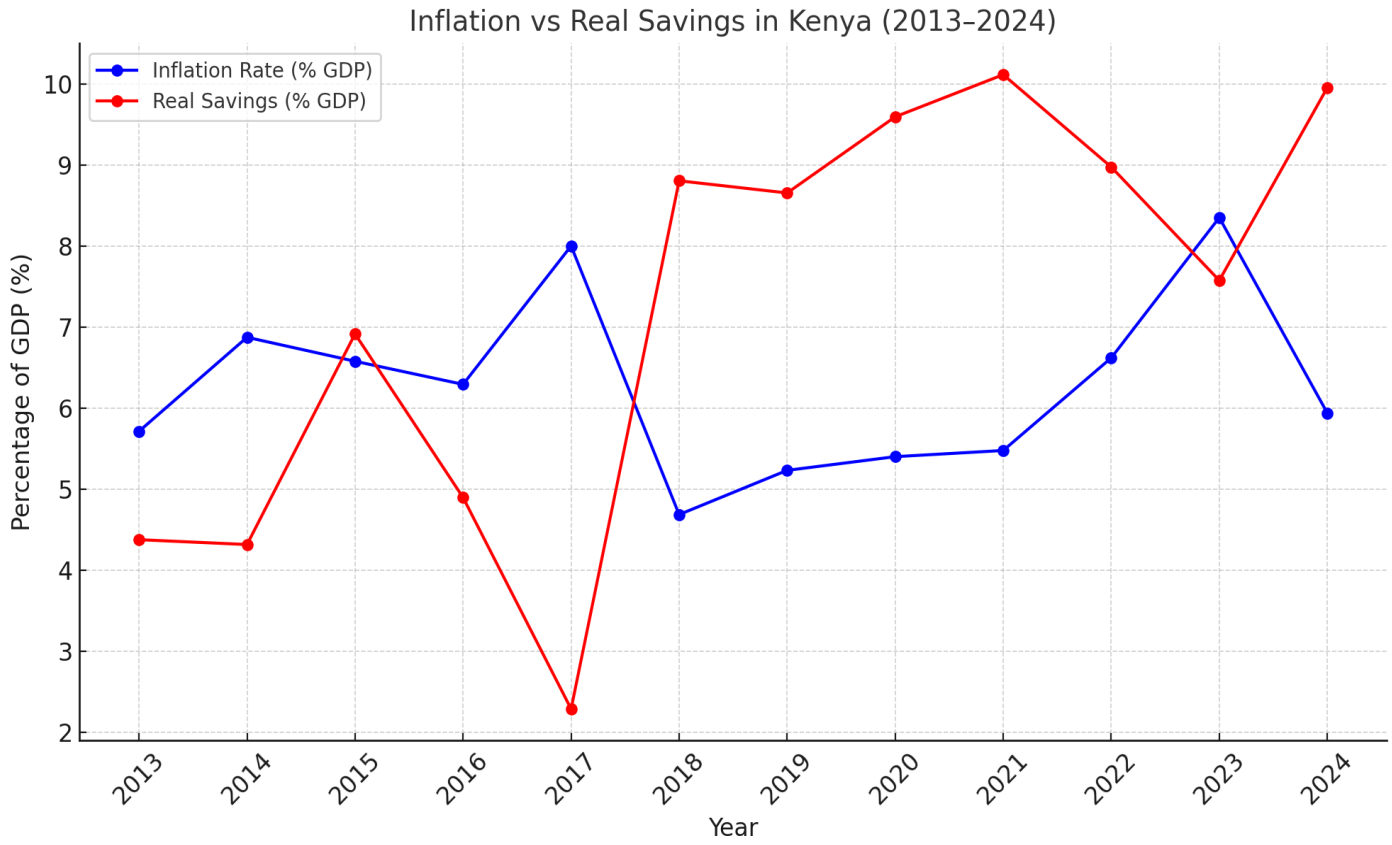
Table 4.1 gives the data for the study. This is secondary that has been sourced from the following: Inflation rate data from CBK & KNBS ; Nominal savings from World Bank & CEIC via KNBS; Real savings computed using nominal savings adjusted for inflation.

Table 4.1: Annual Inflation Rates and Savings in Kenya (2013–2024). This table shows the year-on-year inflation rates used to analyze the impact on national savings.

Year	Inflation rates(% GDP)	Gross savings (% GDP)	Real savings (%GDP)
2013	5.71749357	10.1	4.38
2014	6.878154993	11.2	4.32
2015	6.582174403	13.5	6.92
2016	6.297157525	11.2	4.90
2017	8.005722791	10.3	2.29
2018	4.689819761	13.5	8.81
2019	5.235859994	13.9	8.66
2020	5.404814672	15.0	9.60
2021	5.480833	15.6	10.12
2022	6.624167	15.6	8.98
2023	8.35576767	15.9	7.58
2024	5.943246798	15.9	9.96

Figure 4.1 below shows that Inflation rate fluctuated moderately between 4.7% and 8.4%, peaking in 2017and 2023. Real savings were lowest in 2017 (2.29%) when inflation was high, and highest in 2021 (10.12%) when inflation was moderate. There's a visible inverse trend: in many years, higher inflation is associated with lower real savings.

Figure 4.1 Graph of inflation vs real savings. The figure shows the relationship between annual inflation rates and real savings over the period 2013–2024.



Augmented Dickey Fuller(ADF) results

The test results in table 4.2 indicate that both Inflation and Real Savings are non-stationary in levels since the p-values are greater than 0.05. This implies the data cannot be used directly in time series analysis without transformation. This leads to first differencing in table 4.3 and both series became stationary, as evidenced by their p-values being less than 0.05. This indicates that the time series are integrated of order one, I(1), and are now suitable for short-run time series analysis.

Table 4.2: ADF Test Results for Stationarity. This table summarizes the results of the ADF test applied to the time series, indicating whether the variables are stationary at their levels or require differencing.

variable	ADF statistic	P value	conclusion
Inflation	-2.05	0.266	Non-stationary
Real Savings	-1.81	0.373	Non-stationary

Since the p-value is less than 0.05 the data is non-stationary

The ADF test was then conducted on the first-differenced series:

Table 4.3: ADF Test Results After First Differencing. This table presents the ADF test outcomes for the variables after first differencing.

Variable	ADF Statistic	p-value	Conclusion
Δ Inflation	-3.70	0.0042	Stationary
Δ Real Savings	-3.53	0.0073	Stationary

The p-value is less than 0.005 hence stationary has been achieved.

Granger causality test

To investigate the direction of influence between inflation and real savings in the short run, we conducted the Granger Causality Test using the first-differenced (stationary) time series for both variables. Granger causality does not imply true causality, but rather whether past values of one variable contain statistically significant information to predict another.

Table 4.4: Granger Causality Test Results. This table reports the Granger causality test results using 1–2 lag periods.

Lag	Null Hypothesis	F-Statistic	p-value	Conclusion
1	ΔInflation does not Granger-cause ΔReal Savings	1.12	0.330	Fail to reject H_0
2	ΔInflation does not Granger-cause ΔReal Savings	**17.17**	**0.023**	Reject H_0: Significant
1	ΔReal Savings does not Granger-cause ΔInflation	1.04	0.434	Fail to reject H_0

At lag 2 there is statistical significance

Ordinary Least Squares Regression

To quantify the relationship between inflation and real savings in Kenya, an Ordinary Least Squares (OLS) regression was conducted using first-differenced time series data from 2013 to 2024. This approach helps capture short-run effects after confirming stationarity through the Augmented Dickey-Fuller (ADF) test. The following Table gives the results on the OLS modeling.

Table 4.5: OLS Regression Results. This table presents the estimated coefficients from the OLS regression model.

Statistic	Value
Coefficient (Inflation)	**−1.20**
Intercept	14.51
R-squared	**0.281**
p-value (Inflation)	**0.094**
Number of observations (n)	**11**

Thus, the prediction model becomes,

Real Savings=14.51−1.20* Inflation

DISCUSSIONS , CONCLUSIONS AND RECOMMENDATIONS

There are several macroeconomic variables that savings may depend on, namely inflation, interest rates, income distribution in a given economy and the existing financial market development. The discussions, conclusions and recommendations that follow, are based on the interactions between these variables and savings. There may be moderating . intervening or direct interactions between savings and the given variable.

Discussion

Inflation has a direct and indirect effect on savings as noted below.

1. **Direct effect:** High inflation erodes the real value of money, discouraging savings in nominal terms. Households may prefer to spend now rather than save, since money loses purchasing power over time
2. **Indirect effect:** Inflation may also push people to shift savings into inflation-hedged assets (real estate, foreign currency, stocks, gold) instead of bank deposits.

Interest Rates may be nominal or real with varying interaction with inflation .

1. **Nominal versus real interest rates:** Savings decisions depend on the real interest rate (nominal interest rate – inflation).If real interest rates are positive, saving becomes attractive because the value of money grows.If real interest rates are negative (inflation exceeds interest), savers lose, and many withdraw from formal savings.
2. **Interaction with inflation:** Central banks often raise interest rates to curb inflation. This can temporarily boost savings (as deposits earn more) but may reduce investment and income growth in the long run.

Income Distribution lead to partitioning of the population by the level of households incomes, each sub population have distinct saving behaviour as explained below.

- **Inequality and savings capacity:**
  - Higher-income groups typically have a higher savings rate since their marginal propensity to consume (MPC) is lower.
  - Lower-income households often consume most of their income, leaving little room for saving.
- **Interaction with inflation:** Inflation hurts the poor more (since food and necessities dominate their budget). This reduces their ability to save and may widen the savings gap between rich and poor.
  - In unequal societies, aggregate savings may still be high if the wealthy save a large share, but the distribution of savings becomes concentrated.

Financial Market Development also affect savings.

- Access and instruments: Developed financial markets offer a wide range of savings and investment options (bank deposits, bonds, pensions, mutual funds). This encourages savings by offering safety, returns, and liquidity.
- Interaction with inflation & interest rates:
  - If inflation is high but financial markets are developed, savers can protect their wealth by shifting to inflation-protected assets.
  - In underdeveloped markets, savers may withdraw to informal or non-financial assets, reducing formal savings rates.

Conclusions

The statistical tests in Section 4 shows that there is an inverse trend, where higher inflation is often associated with lower real savings. However, this relationship is not statistically significant for the Kenyan economy for the period studied at 5% level of significance, inflation does not influence real savings. Further inflation explains only 28.1% of the variation in the real savings.

The remaining 72% variation in the savings may be explained by the remaining three sources discussed in Section 5.1 namely, Interest Rates, Income Distribution and Financial Market Development. Further investigation is necessary to confirm and determine the quantitative contribution of these macroeconomic factors to real savings in Kenya.

Recommendations

Based on the CBK and World Bank guidance, and the interactions of inflation and savings, the recommended policy directions (some already being implemented, others potential enhancements) to strengthen savings in Kenya are given in Table 5.1.

Table 5.1: Recommendations given Effect of Inflation on savings.

Policy area	Recommendation	Effect on Savings
Maintain low and stable inflation	Continue prudent monetary policy to keep inflation within target range; ensure inflation expectations are well-anchored	Positive real interest rates encourage saving; people less likely to consume immediately due to fear of inflation.
Develop savings-friendly instruments	Introduce or expand inflation-indexed savings bonds; offer government-sponsored savings schemes with favorable rates / liquidity; encourage pension saving.	Provides savers protection against inflation; gives options other than informal or low return savings.

It is further recommended that more research is required to empirically determine the effect of other macroeconomic variables on savings in Kenya.

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