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The Impact of Financial Development on Inflation: Empirical Evidence from Kenya using the ARDL Approach

Emilio Munene Gachoki

Abstract

This study delves into a comprehensive examination of the intricate relationship between financial development and inflation in Kenya, utilizing time series data spanning from 1973 to 2021. Within the empirical and theoretical realms, especially within country-specific contexts, the multifaceted dynamics of short-run and long-run impacts stemming from financial development on inflation have remained a significantly underexplored area. To address this research gap, we employ ARDL analysis, recognized for its sophistication and analytical rigor. The empirical findings from this study unveil a robust and enduring influence of financial development on inflation in Kenya over the long haul. Nonetheless, it's noteworthy that immediate evidence of financial development's impact on inflation appears relatively modest. Furthermore, the study unveils a complex interplay between interest rates and inflation, both in the short and long run, showcasing an negative relationship. These outcomes emphasize a substantial Granger and ARDL-driven causal link between inflation and financial development. Importantly, the policy implications arising from these empirical insights underscore the critical need for prudent financial sector oversight, focusing on fostering a climate conducive to stable and moderate inflation rates. This necessitates concerted efforts from both financial institutions and the government to fortify financial market infrastructures and bolster the uptake of financial services.

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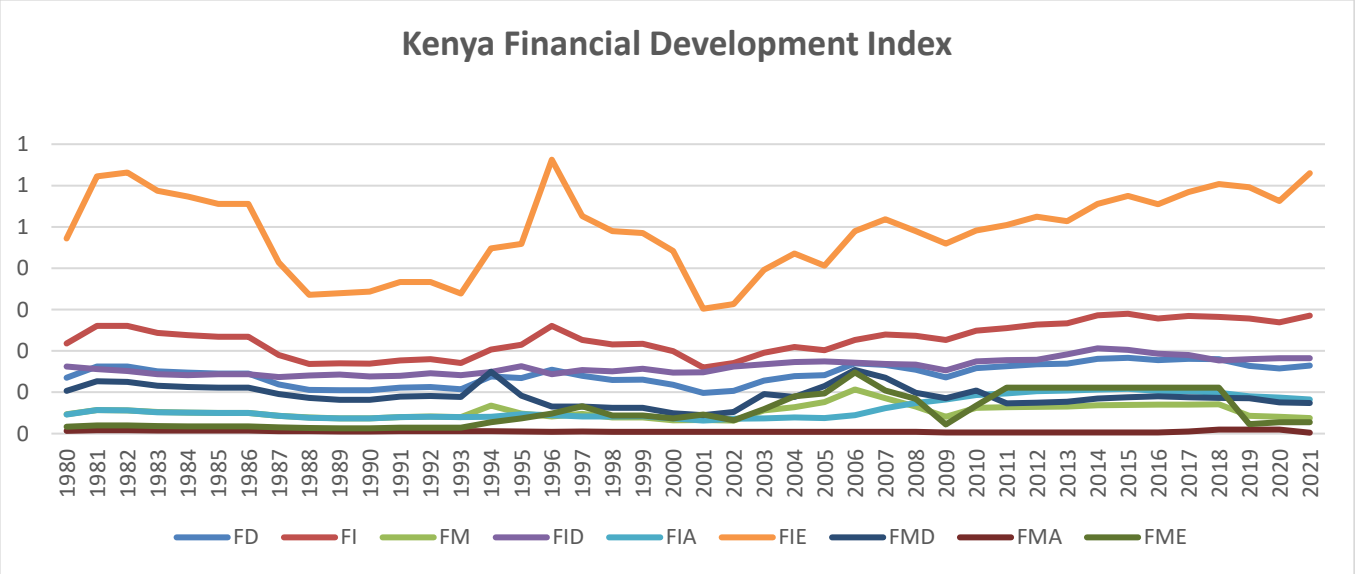
1.0 Introduction

Inflation always reduces the purchasing power of consumers and the real value of money is reduced and as a result it doesn't only harms the economy but also the financial sector as well. The banks respond by reducing the lending which in turn leads to financial instability. It can severely shake the confidence in the financial and economic system. Therefore, it is imperative to study the interaction between the two variables. The relationship between financial development and inflation has recently been the subject of much empirical investigation in both advanced and developing countries. The main point of contention in this argument has been whether financial development drives inflation or if inflation causes financial development. Despite an extensive body of research on how financial development affects inflation, salient questions remain unanswered. What effect does financial development at the national level have on inflation, for instance, and how much does the conditional effect of financial development—mediated through inflation and interest rates—influence the speed and course of financial growth? The figure 1 gives an overview of directional change in the characteristic of Kenya development index from 1980 to 2021.

Figure 1. Financial Development index over Time



Source: IMF

FD, FI, and FM, respectively, stand for financial (development, institution, and market). With the letters E, D, and A standing for efficiency, depth, and access, respectively, and I and M standing for institutions and markets, respectively, we have FME, FID, FIA, FMA, FMD, and FIE.

According to Allen et al. (2012), Kenya has one of the most advanced financial systems in Africa and its degree of financial development is not too far off from the level projected. According to Popiel (1994), the nation has well-established banking, Insurance, Capital Markets, Pension Funds, Savings and Credit Cooperative Societies (SACCOs), Microfinance institutions (MFIs), Building Societies, Development Finance Institutions (DFIs) and informal financial services such as Rotating Savings and Credit Associations (ROSCAs). The central bank of Kenya (CBK), the Sacco Societies Regulatory Authority (SASRA), the capital market authority (CMA), the retirement benefits authority (RBA), and the insurance regulatory authority (IRA), in that order, are the five regulatory bodies that oversee the banking, Credit Cooperatives (Sacco) sectors, capital markets, pensions, and insurance. In Kenya banking sector dominates the financial market, according to bank supervision annual report (CBK 2022), as at December 31, 2022 the sector comprises of 38 banking institution, 37 were privately held, while 2 institutions were mainly controlled by the Kenyan government. Twenty of the 37 privately

held banks were locally owned, while 17 were owned by foreigners. The 20 locally owned banks included 19 commercial banks and 1 mortgage financing firm. The depth of the Kenyan banking sector puts it ahead of its counterparts in Sub-Saharan Africa (with domestic deposits making up 35.92% of GDP and private credit 30.13%). Despite having very well-developed branch networks, only 84 percent of the population in 2022 had a bank account. Similarly, some vulnerable populations and small- and medium-sized businesses (SMEs) have difficulty obtaining loans. Kenya has experienced a rise in inflation owing to various several macroeconomic forces which have been kept at bay by the various interventions of current monetary and the expansionary fiscal policies adopted by the Central Bank (CBK, 2022). The general worst-case effect of inflation would be the failure of a country to meet its financial requirements as and when they fall due, thus exposing the country to harsh financial position in the global economy. This would ultimately make a country less attractive to the desirable international market investments (Gharagozloo, Chen, & Pour, 2022).The effects of inflation on financial sector development has been put at the core of research, particularly after the global economic crises and market crash in 2007, as well as the Covid-19 pandemic (Dumitrescu, Kagitci, & Cepoi, 2022). Kenya's inflation pressures, however, appear to be increasing recently, indicating the necessity for policymakers to monitor inflation developments in order to maintain price stability. Drought or unpredictable weather patterns that negatively impacted agriculture, weak local currencies as a result of narrowing current account deficits, and unstable financial sector developments are a few of the factors that have contributed to the rise in inflation. Between 1973 and 2021, the yearly percentage measurement of consumer prices yielded an average inflation rate of about 12%. However, the average inflation rate from 2007 to 2021 was around 8.4%, with the highest inflation rate in 2008 at about 26.2% compared to 2.0% in 2002. There were many causes for this increase in inflation, both internal and external. As for the external factors: 1973 Arab oil embargo, 1979 Iranian revolution energy crisis, 2007–2008 global financial crisis, and Russia's conflict in Ukraine, which affected the price of crude oil and therefore raised the cost of other goods. As for the internal factors: the Kenyan Treasury printed billions of shillings in the early 1990s, just before the country held its first multiparty elections, and this led to an illusory explosion of wealth. Millions of rural residents became impoverished as a result of the inflation. Internal shocks (post-election upheavals, adverse weather, and high food and fuel costs) caused the years 2008 to 2011 to occur. According to the Central Bank of Kenya's annual reports for the years 2008 and 2011, the country's respective inflation rates were 26% and 14%. This is crucial in account of had a role in the decline of growth rates in the volume of credit to private sector. From 2014 to 2018, the credit's growth rate dropped from 25.8% to 2.8%. Therefore, without managing inflation rates, it would be difficult for moneylenders to price loans, which would limit credit and investments and as a result it would have a negative impact on the economy. Even though recent transformations and developments in the financial sector, achieving a balance between financial development and inflation rates is subject that need to be addressed without deviating to the theoretical standpoint of the quantity theory of money that financial development can lead to inflationary pressures (Rousseau & Tarazi, 2002) via the extension of credit and loans, among other causes, in the economy. Theoretically, Huybens and Smith (1999) contend that inflation and economic growth must be negatively correlated in a stable state with a modest capital stock and active stock and bank markets. At somewhat high inflation rates, this negative association will be easier to see. This research explores the influence of financial development on inflation in Kenya using the ARDL model for the period of 1973–2021 in order to enhance the literature on the link between financial development and inflation. Because of this, the goal of this study is to advance our understanding of how Kenya's financial development and inflation interact.

2.0 Literature review

Extensive literature exists on the relationship between financial development and economic growth, but scant empirical research has been conducted regarding the connection between inflation and financial development. Nevertheless, recent years have seen a growing interest in exploring the interplay between inflation and financial development, as evidenced by studies such as those conducted by Khatib et al. (2023), Utonga & Ndoweka (2023), Ismail & Masih (2019), Kagochi (2019), Zermeño et al. (2018), Ozturk & Karagoz (2012), Kim & Lin (2010), and Bittencourt (2011), all of which have delved into this relationship. It's worth noting that the applicability of each study and the choice of indicators can vary significantly due to the unique institutional, political, and legal frameworks of different countries (Lynch, 1996). Khatib et al. (2023) found it challenging to use the financial development index to predict inflation in Egypt, both in the short and long terms, due to the intricate interactions among inflation, economic growth, exchange rates, and trade openness. In Tanzania, Utonga & Ndoweka (2023) used the VECM analysis approach to examine the impact of financial development on inflation. Their study revealed that financial development had no short-run effect on inflation but a substantial long-run impact. Ismail and Masih (2019) explored the connection between inflation and financial development in Sudan using ARDL and nonlinear ARDL algorithms. Their empirical investigation demonstrated an asymmetrical short-run link but a symmetrical long-run equilibrium between inflation and financial development. Kagochi (2019) investigated the relationship between inflation and the performance of the banking sector in sub-Saharan African countries and found no significant influence of inflation on the financial industry's growth. Zermeño et al. (2018) employed panel quintile regressions to study the link between inflation and banking sector performance across 84 nations from 1980 to 2010. Their findings consistently indicated a negative and nonlinear impact of inflation on financial variables, with significance observed primarily in developing countries and minimal effects in developed ones. Ozturk and Karagoz (2012) examined the link between inflation and financial development in Turkey, revealing that rising inflation negatively affected financial development and had adverse consequences on economic growth. Bittencourt (2011) investigated the impact of inflation on the growth of the Brazilian economy using time series and panel time series data, concluding that inflation had a detrimental effect on the expansion of the financial sector. In a study by Kim and Lin (2010), the dynamic interplay between inflation and financial growth was explored using the ARDL model for 27 selected nations from 1970 to 2006. The results suggested a negative long-run effect of financial development on inflation, with inflation itself positively influencing financial development. Interestingly, the study indicated that inflation often preceded financial progress, and the relationship was also influenced by the economic and financial development of individual nations. Despite these valuable contributions, there is still a research gap regarding the precise analysis of inflation and financial development in the Kenyan economy using the ARDL technique. Therefore, an attempt will be made to address this gap. Most existing studies have primarily focused on the link between financial development and economic growth. For instance, Uddin et al. (2013) reexamined the relationship between financial development and economic growth in Kenya over the period of 1971–2011, demonstrating that a growing financial sector contributes positively to long-run economic growth. Chen et al. (2020) enhanced their model by considering inflation and government expenditure asymmetries and investigated the asymmetric impacts of financial development on economic growth from 1972 to 2017. They argued convincingly that a deepening financial system, coupled with limited government expenditure and stable, sustained inflation, can foster robust economic growth. Additionally, Odhiambo (2009) explored the causality between financial development and economic growth in Kenya, particularly examining the effects of inflation on the finance-growth nexus. The results consistently indicated that financial development Granger-caused economic growth in

Kenya, regardless of whether the causation was examined in a bivariate or trivariate context. Given the existing research gaps and sometimes conflicting findings, further studies are warranted to gain a comprehensive understanding of the relationship between financial development and inflation in the Kenyan context.

3.0 Research methodology

3. 1 Data source and description

The World Bank's yearly statistics (World development indicator) for the years 1973 through 2021 are used in this analysis. Based on the availability of the data, this timeframe was selected. The variables were chosen based on their theoretical and empirical applicability to measuring inflation and financial development in the context of the study. The consumer price index (annual%) (INFt), the financial development indicator (FDt), and the real interest rate (INTt), which serves as a control variable, are the variables employed in this study. To solve the heteroscedasticity issue, natural logarithms were applied to all of the study's variables. So, the following is how we may describe our long-linear model:

$\ln INF_t = \alpha 0 + \alpha 1 \ln FD_t + \alpha 2 \ln INT_t + \mu t$……(1)

Where:

LnINFt: Natural logarithm of inflation rate

lnFDt :Natural logarithm of financial development

lnINTt :Natural logarithm of real exchange rate

α0,α1 : Coefficients to be estimated

μt : White noise error term

3.2 Econometric Methodology

3.2.1 Test of Unit Root

According to economic analysis, means and variances are steady across time and have a long-run relationship with one another. This stationarity of variables is not always met in the case of time-series variables. Only the ADF test and PP test were applied in our study to assess if the series had a unit root or not. ADF and PP, developed by Dickey and Fuller (1989) and Phillips-Perron (1988), respectively, may be used to construct the following equation. The following is the ADF equation:

For ADF test: $\Delta y_t = \beta_o + \beta_1 y_{t-1} + \sum_{t-1}^{n} \beta y_i + \sigma + \varepsilon_t$ (2)

For PP test: $\Delta y_t = \beta_o + \beta_1 y_{t-1} + \varepsilon_t$ (3)

3.2.2 ARDL Modeling Specification

To examine the connection between inflation and financial development, Pesaran et al.'s (2001) autoregressive distributed lag (ARDL) bounds testing approach is utilized. The model is written as follows:

$\Delta INF_t = \beta_0 + \Sigma B_1 \Delta INF_{t-1} + \Sigma B_2 \Delta FD_{t-1} - \Sigma B_3 \Delta INT_{t-1} + \varphi_1 INF_{t-1} + \varphi_2 FD_{t-1} + \varphi_3 INT_{t-1} + \varepsilon_t$ (4)

In Equation 4 β0, β1, β2, and β3 indicate the short-run coefficients; divergent to, and represent the long-run coefficients and error term. In addition, the ECM equation is specified below for short-run relationships.

$\Delta INF_t = \beta_0 + \Sigma B_1 \Delta INF_{t-1} + \Sigma B_2 \Delta FD_{t-1} + \sum \omega_3 \Delta INT_{t-1} + \partial ECM_t + v_t$ (5)

The null hypothesis of nocointegration in the long run link is defined by $H_0: \phi_1 = \phi_2 = 0$, is tested against the alternative of $H_1: \phi_1 \neq \phi_2 \neq 0$ by means of F-test. However, the asymptotic distribution of this F-statistic is non-standard regardless of whether the variables are I (0) or I (1).

4.0 Empirical Results and discussion

4.1 Descriptive Statistics

This section shows the descriptive statistics of natural log of inflation (INF), financial development (FD) and interest rate (INT) from 1973 to 2021 as shown in table 1. The statistics describe the distribution of the variables over time. For inflation, the average inflation rate over the period was 2.28, with a standard deviation of 0.66. This advocates that inflation was highly spread over the period. For financial development the data followed the same trend as of inflation rate with a mean of 3.15 and a standard deviation of 0.21 suggesting this two variable can explain each other. In short descriptive statistics gives us an over view of the behaviour of the variables but it has a limited information about the impact and relationship among the variables.

Table 1: Descriptive statistics for different variables.

	lnINF	lnFD	**lnINT**
Mean	2.275443	3.149576	1.923736
Maximum	3.828182	3.602758	3.049099
Median	2.300586	3.130626	1.998779
Minimum	0.4410434	2.82299	-0.0591247
Std. Dev.	0.6581875	0.2098585	0.7001613
Skewness	-0.4369283	0.4188327	3.56648
Kurtosis	3.779875	2.216245	-0 .6998455
Sum	111.4967	154.3292	76.94945
Sum sq. dev	20.7941161	2.11394845	19.1188072
Jarque-Bera	0.2465	0.261	0.1496
Observations	49	49	40

Source: Authors' calculation using Stata 14

4.2 Correlation Analysis

The strength and direction of the linear link between INT, INF, and FD were assessed using the Pearson correlation coefficient (Pearson, 1896). For inflation and financial development which indicates -0.4732 that is they're negatively correlated. In other words, when INF increases, FD tended to decrease as well and vice versa. Inflation and interest rate are inversely correlated that confirms the theory between the two variables. For financial development and interest rate which indicates 0.3018 are positively correlated. The table 2 shows the correlation matrix computation.

Table 2: Correlation matrix

Variables	lnINF	lnFD	lnINT
lnINF	1.000		
lnFD	-0.4732	1.000	
lnINT	-0.4566	0.3018	1.000

Source: Authors' calculation using Stata 14

4.3 Unit root test

Before proceeding, it is essential to ensure the stationarity of each variable used in this study. To accomplish this, we conducted unit root tests to assess stationarity. The results of the augmented Dickey-Fuller (AD-F) and Phillips-Perron (PP) unit root tests are presented in Table 3. The findings reveal that inflation and financial development exhibit stationarity when differenced once (i.e., they are I(1)), whereas interest rate is stationary at its current level (i.e., I(0)). This implies that the variables in our analysis consist of a combination of integrated level (I(0)) and integrated of order one (I(1)) variables. Given this mixed integration order among the variables and the modest sample size, we opted to employ the Autoregressive Distributed Lag (ARDL) technique to investigate the existence of a long-run relationship among these variables. This choice is motivated by the fact that the data indicate none of the variables are

integrated with orders higher than one and are a combination of different orders. We intend to utilize the ARDL cointegration test to assess the potential long-run link between these variables.

Table 3: Results of Unit Root Tests

Variables	ADF test				PP test				
	Level		Difference		Level		Difference		Stationary order
	Constant	Constant & trend	Constant	Constant & trend	Constant	Constant & trend	Constant	Constant & trend	
lnINF	-3.988	-4.686	-5.025 **	-5.662 **	-3.145	-3.672	-6.126**	-6.251 **	I(1)
lnFD	-1.157	-2.921	-6.596 **	-6.515**	-2.248	-3.461	-8.556**	-8.451 **	I(1)
lnINT	-3.988**	-4.686**	-	-	-5.005 **	-5.662 **	-	-	I(0)

Source: Authors' calculation using Stata 14.
Notes: *, ** & *** indicate 10%, 5%, and 1% significance levels, respectively.

4.4 Optimum lag Selection Criteria

In the estimate of an econometric model, choosing the best lag duration for the relevant variables is essential. To prevent erroneous rejection or acceptance of estimated findings, this is essential. Hannan Quinn Information Criteria (HQIC), The Likelihood Ratio (LR), Akaike Information Criteria (AIC), and Schwartz Bayesian Information Criteria (SBIC), Forecast Prediction Error (FPE) Criteria are a few examples of several sorts of selection criteria. In the case of conflicting results, CEPR (2001) suggested the SBIC for small sample size for the quarter and annual data (Ivanov & Kilian, 2001). The minimal value of SBIC served as the basis for the delays order selection in the ARDL model. Here is a table of criteria for lag length: As a result, the Schwarz Information Criterion is the best criterion for this study and lag length criteria indicate that lag 1 is the optimal lag length for this analysis. Following the selection of the lag duration, comes the ARDL bound test for co-integration:

Table 4: Results of Optimal lags

Lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-44.4306				.006737	3.51338	3.55619	3.65736
1	-2.25566	84.35	9	0.000	.000581	1.05597	1.22723*	1.6319*
2	8.04222	20.596*	9	0.015	.000544*	.959836*	1.25953	1.96771
3	15.4532	14.822	9	0.096	.000659	1.07754	1.50567	2.51736
4	19.0519	7.1973	9	0.617	.001141	1.47764	2.03421	3.3494

Source: Authors' calculation using Stata 14

4.5 The Bounds Test Results

The outcomes of the cointegration bound testing are presented in Table 5. Following the guidance of Pesaran et al. (2001), we compare the calculated F-Statistic with the critical values at the chosen significance level. In this analysis, the empirically derived F-Statistic is 10.859, surpassing the upper threshold value of 6.36 at the 1% significance level. As a result, we reject the null hypothesis, which suggests the absence of cointegration. The study's results provide evidence that the variables under examination exhibit a long-run relationship.

Table 5: Results of bound test

Test Statistic	Value	K
F-statistic	10.859	2
Critical Value Bounds	I(0) Bound	I(1) Bound
Significance		
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Source: Authors' calculation using Stata 14

Note: The variables' lag length (1 0 0). H0 (no cointegration) is accepted if F < critical value for I (0) regressors (Lower band); and rejected if F > critical value for I(1) regressors (Upper band)

4.6 ARDL Long-Run Results

Equation (6) displays the results of the long-run connection between the variables. The results show a strong and long-run inverse link between inflation and financial progress. On average, ceteris paribus, at a 5% level, a shift in financial development is associated with a 1.22% drop in inflation. The research also reveals a strong long-run inverse association between interest rates and inflation. On average, ceteris paribus, at 5% level, a percentage shift in interest rates is associated with a 0.38% drop in inflation. Most empirical research have found a long-run association between inflation and financial development (Gao et al., 2012; Kim and Lin, 2010; Akinkoye et al., 2015; Lee and Wong, 2005).In Kenya, there is a negative correlation between the interest rate and inflation, which is consistent with the mainstream economic theory. That is the higher the interest rate the lower the inflation. In the table 6 R square value indicated that 47.5% in inflation is due to all predictors used in the study and 52.5% is explained outside the model.

lnINF= 5.94 -1.22lnFD - 0.38lnINT (6)

Table 6: Results of Long- run analysis

Regressor	Coefficient	St. Error	t Value	Prob
Error Correction Term (ECT)	-0.8725792	0.167206	-5.22	0.000
InFD	-1.215354	0.5476702	-2.22	0.033
InINT	-0.3848768	0.1738819	-2.21	0.033
Constant	5.935698	1.856666	3.20	0.003
R squared= 0.4750 Adj squared= 0.4313				

Source: Authors' calculation using Stata 14

The coefficient of Error correction term gives the speed of the short-run adjustment. Its negative and significant, implying model convergence in the long run between dependent and independent variables. This negative coefficient implies that the dependent and independent variables will gradually converge in the long-run model. Furthermore, the presence of cointegration or long-run relationships among all the variables is supported by the error correction term's value (-0.8726). This finding aligns with similar results from other empirical studies in the literature, as reported by Hassan and Bashir (2003), Al-Awad and Harb (2005), Chuah and Thai (2004), and Gao et al. (2012). To provide a quantitative perspective, an adjustment speed of 87.26% indicates that corrections to deviations from the long-run equilibrium will occur at this rate. In essence, this parameter signifies the pace at which the variables will return to their long-run relationship when disturbed in the short run.

4.7 ARDL Short-Run Results

The outcomes from the short-run ARDL model reveal several key findings. Firstly, there exists a negative correlation between interest rates and inflation in the short run. Specifically, a 1% change in interest rates is associated with a 33.6% change in inflation, and vice versa. Secondly, the results indicate that there is no significant relationship between financial development and inflation in the short run. Lastly, when considering all the predictors employed in the model, approximately 34.28% of the variations in inflation can be explained, while the remaining 65.72% of the variations lie outside the scope of the model. These relationships and findings are summarized in Table 7.

Table 7: Results of short- run analysis

Variables	Coefficient	St. Error	t Value	Prob
LnINF(-1)	0.1274208	0.167206	0.76	0.451
LnFD	-1.060492	0.5323704	-1.99	0.054
LnINT	-0.335835	0.1390083	-2.42	0.021
Constant	5.935698	1.856666	3.20	0.003
F(3, 36)= 6.26 Prob > F= 0.0016 R squared=0.3428 Adj R-squared=0.2880				

Source: Authors' calculation using Stata 14

4.8 Granger causality test

The Granger causality test results, as presented in Table 8, reveal specific causal relationships among the variables. Firstly, there is evidence of a unidirectional causal relationship, running in one direction, from interest rates to inflation. In other words, changes in interest rates Granger-cause changes in inflation. Secondly, a one-way causal relationship is observed from interest rates to financial development, indicating that fluctuations in interest rates Granger-cause variations in financial progress. These findings suggest the direction of influence among these variables, providing valuable insights into their interplay.

Table 8. Granger causality test results.

Valiables	Null Hypothesis	Chi-Sq	Prob	Decision
lnINF	lnFD does not Granger Cause lnINF	2.3186	0.128	No causality
	lnINT does not Granger Cause lnINF	8.4631	0.004	lnINT Granger Cause lnINF
lnFD	lnINF does not Granger Cause lnFD	1.1693	0.280	No causality
	lnINT does not Granger Cause lnFD	13.024	0.000	lnINT Granger Cause lnFD
lnINT	lnINF does not Granger Cause lnINT	2.7226	0.099	No causality
	lnFD does not Granger Cause lnINT	1.2583	0.262	No causality

Source: Authors' calculation using Stata 14.
Note: The rejection of null hypothesis is at 5 percent level of significance

4.9 ARDL Causality

Table 9: t-statistics test results for short-run and long-run causality analysis

Variable	Short-run	P-value	Long-run	p-value
lnFD	-1.06	0.054	-1.22	0.033
lnINT	-0.34	0.021	-0.38	0.033

Source: Authors' calculation using Stata 14
Note: The rejection of null hypothesis is at 5 percent level of significance

The error correction term, as displayed in Table 6, holds a negative value of -0.8726 and is statistically significant at the 1% level (p = 0.000). This implies the existence of a substantial long-run causal relationship linking inflation and financial progress. Additionally, the results indicate the presence of a long-run causal relationship between interest rates and inflation. Table 9 shows that there is a short-run causal relationship between interest rates and inflation, but not one between financial development and inflation. Thus, the 5% p-value indicates that there was only short term causality between interest rate and inflation but no short-run causality between financial development and inflation.

4.10 Diagnostic test

Table 10. Diagnostic statistics tests.

Diagnostic Test	p-Value	Result
Breusch Godfrey LM Test	0.9800	No evidence of serial correlation
Breusch-Pagan-Godfrey Test	0.3079	No evidence of heteroscedasticity
Heterogeneity Test	0.7446	No evidence of heterogeneity
Ramsey RESET test	0.8255	Functional form is correctly formulated

Source: Authors' calculation using Stata 14

In order to determine the validity and correctness of the inflation model findings, a variety of diagnostic tests were carried out. The model was homoscedastic (0.3079>0.05), according to the heteroskedasticity test conducted by Breusch and Pagan in 1979. Based on automated lag selection using the Schwartz Bayesian Information Criteria (SBIC), the best lags were chosen as 1, 0, and 0. The error terms were not serially correlated, according to the results of the Breusch and Godfrey (1978) LM autocorrelation test (0.9800>0.05).The Ramsey RESET (Regression Equation Specification Error Test) test was also used to ensure that the model was specified correctly. We accept alternative hypothesis H_1 if the probability value of the F statistic is less than 5% (0.05), suggesting that the model is not the most adequate; we accept the null hypothesis H_0 if the prob-value of the F statistic is greater than 5% (>0.05), indicating that the model used in the study is the most adequate. The results indicate 0.8255>0.05 therefore functional form is correctly formulated.

We used the CUSUM in Figure 1 and the CUSUM of squares graphs in Figure 2 to determine whether the coefficients are stable. The graphs below indicates that coefficients are stable at the 5% level of significance.

Figure 1

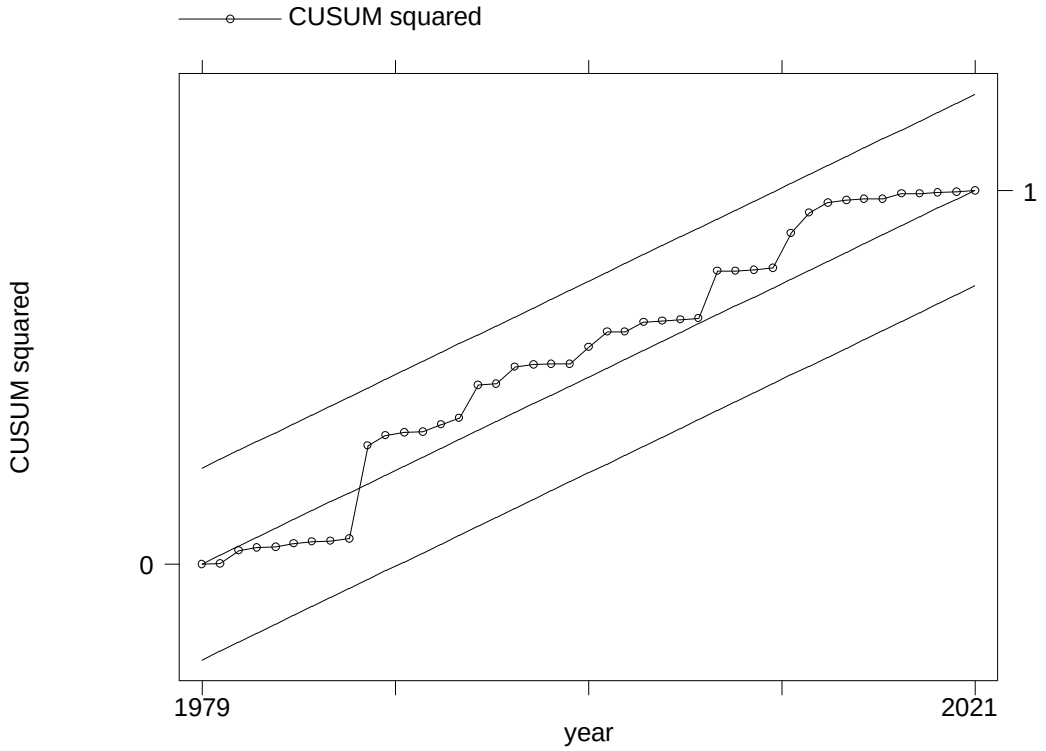
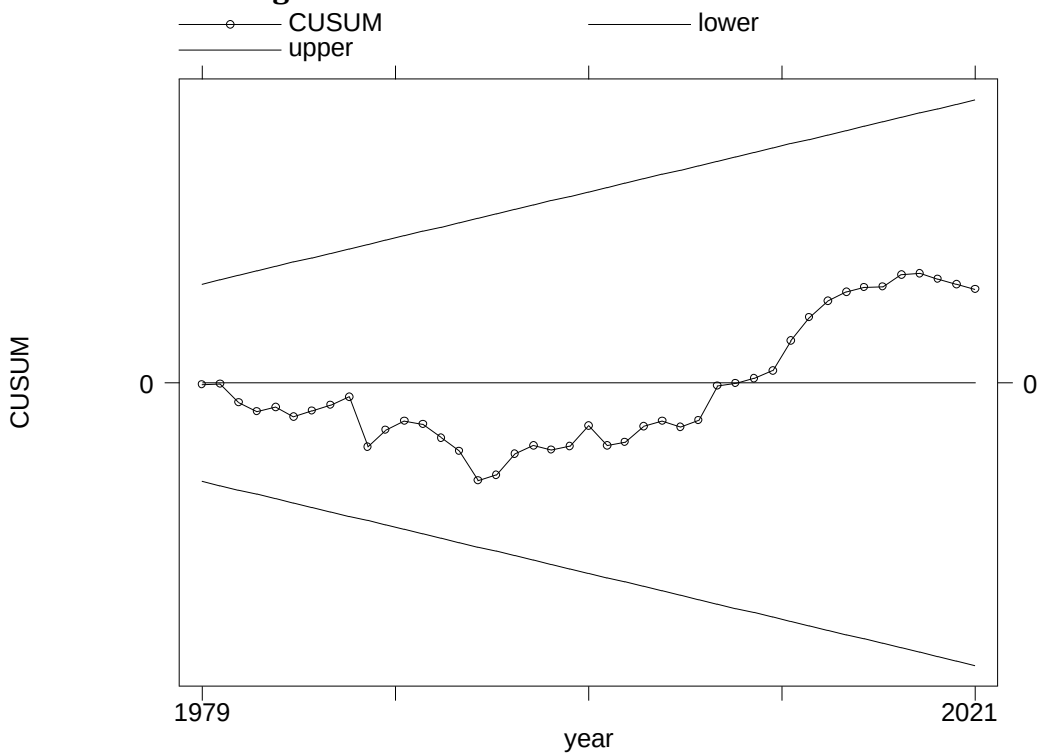


Figure 2



Source: Authors' calculation using Stata 14.

5.0 Conclusion

This empirical study uses a novel applied approach to investigate how Kenya's financial growth has affected inflation. Further it went ahead to examine the causality of the variable under the study. Thus, helps in improving the existing strategies. Discover how the policy makers can curd inflation & improve the financial sector development for the economy. Several previous theoretical studies examined the role of the financial development and its impact on economic growth in Kenya. Some studies elsewhere have found that the impact of financial development on inflation is negative when inflation rates reach certain levels. Some studies also were consistent with this finding of impact of financial development on inflation but they utilized a different approach. Time-series yearly data from 1973 to 2021 were used in the study. In developing nations, where the majority of financial growth takes place within the confines of the banking system, the financial development was employed as a proxy for domestic lending to the private sector (%GDP). Consumer price inflation (annual%) was proxied by the inflation rate. Real interest rate (%) was approximated by the interest rate. The World Development Indicator served as the data's primary source. The Granger causality test and ADRL model analysis techniques were used in the study to examine the direction of causality among the variables. The findings of this study shed light on the dynamics between various economic variables in Kenya: Long-run Inflation Control: The study reveals that, in the long run, inflation in Kenya is significantly influenced by the country's financial progress. This suggests that achieving effective long-run inflation control may be attainable through measures aimed at enhancing financial development. Causal Relationship between Inflation and Financial Growth: The analysis establishes a one-way causal relationship between inflation and financial growth. In other words, changes in financial development have a causal impact on inflation, but not the other way around, at least in the short run.

Lack of Short-run Causal Link between Financial Development and Inflation: In the short run, the study does not find evidence of a causal relationship between financial development

and inflation. This implies that short-run fluctuations in financial development may not directly impact inflation in Kenya.

Negative Relationship between Interest Rates and Inflation: There is a significant negative association between interest rates and inflation, both in the long and short run. An increase in interest rates corresponds to a decrease in inflation and vice versa.

Unidirectional Causal Relationship between Interest Rates and Inflation: The analysis reveals a one-way causal relationship from interest rates to inflation, indicating that changes in interest rates can lead to changes in inflation over both the long and short run.

These findings contribute valuable insights into the economic dynamics of Kenya and can inform policymakers and stakeholders in making informed decisions regarding inflation control and financial development strategies. The major recommendation from these findings is that supervision of financial sector must be directed in a way that would stimulate a stable and a moderate inflation rate. It is imperative that the government implement suitable regulatory policies and exercise oversight over financial institutions and proficiently administering interest rates that are suitable for the country. The study concludes that both financial institution and government should enhance the infrastructure of the financial market and promote the utilization of financial services. Enhancing the scope of financial institutions and augmenting credit accessibility can result in strengthened financial inclusion, higher investment, and economic growth and this will hinder against inflationary forces and unwarranted credit expansion.

Applications & limitations of the study

The major application of this research is the government regulation of financial institutions and the implementation of appropriate regulatory policies that are essential for ensuring financial sector and price stability. Despite its limitations, the research used domestic lending to the private sector as a percentage of GDP to gauge financial progress. To measure the total depth, accessibility, and effectiveness of the financial development, additional research may include other metrics.

Recommendations for Future Research Directions

It is necessary to improve financial knowledge and capacity since simply building the financial industry is not enough. The possible impact of financial literacy and capacity on the performance of financial sector growth should be examined in future research initiatives.

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