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Dynamic Analysis of Public Expenditures and Inflation in Burundi

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Abstract

This study examines the causal relationship between public expenditure and inflation in Burundi. Monetarist theory suggests that increased public spending can raise the money supply, potentially leading to inflation. In response, authorities may boost social spending and transfers to maintain household purchasing power and social stability, especially in developing countries with fragile safety nets. Data for this analysis were obtained from the World Bank's" World Development Indicators" and the Central Bank of Burundi, utilizing time series data and the Autoregressive Distributed Lag (ARDL) model. The empirical results show that, in the short term, government consumption and investment expenditures decrease inflation. In the long term, government investment expenditures also reduce inflation, while government consumption expenditures tend to increase it. The findings indicate a unidirectional causal relationship where rising inflation drives government investment expenditures, as per the Toda Yamamoto approach. This study suggests that the Government of Burundi should prioritize investment expenditures over consumption expenditures and closely monitor public spending's effects on inflation, conducting regular assessments to adapt policies as needed.

Keywords: Public expenditure, inflation, ARDL model, transmission dynamics, Burundi

1. Introduction

The issue of inflation is not unique to Burundi. Many countries, both developed and developing, are confronted with inflation. While moderate inflation may be considered beneficial as it stimulates economic growth, excessive inflation can lead to numerous adverse effects. Inflation erodes the purchasing power of money, resulting in a decline in the standard of living for consumers (Friedman, 1968). It can also lead to an unjust redistribution of wealth between creditors and debtors. Creditors see the real value of their assets diminish, while debtors benefit from a real reduction in their debts (Kydland & Prescott, 1977). High inflation creates economic uncertainty by complicating long-term planning for businesses and households. Price fluctuations make it difficult to predict future costs and revenues, which hinders investment and economic growth (Lucas, 1972). Excessive inflation can cause macroeconomic imbalances such as budget deficits, trade imbalances, and pressures on exchange rates. These imbalances can disrupt the economy as a whole and lead to economic crises (Fischer, 1981). Inflation can also cause distortions in relative prices, meaning that some prices increase more rapidly than others. This can distort investment and consumption decisions, leading to an inefficient allocation of resources in the economy (Mundell, 1968).

Consequently, nearly all central banks emphasize price stability in their monetary policies, which generates significant interest from researchers and policymakers.

Currently, the Burundian economy is characterized by high inflation. In 2012, inflation was notably higher, reaching 18.2% compared to other years. Conversely, starting in 2020, inflation increased by 8.5% to reach 7.6%, compared to -0.8% in 2019 and -2.6% in 2018. In 2021, inflation was 8.33%, and in 2022, it reached 18.94% (BRB, 2022).

Real public expenditure in Burundi rose from 2011 to 2015 but subsequently declined in 2016 following the withdrawal of certain development partners in 2015. Public expenditure increased from 1,296.2 billion BIF in 2016 to 2,392.3 billion BIF in 2022-2023, representing an annual growth rate of 0.9% over eleven years (UNICEF Burundi, 2022).

Thus, Burundi has experienced an increase in public expenditure, particularly in the areas of salaries and subsidies, without a corresponding rise in public revenues. This has led to significant budgetary imbalances, with chronic budget deficits. The financing of these deficits has resulted in an increase in the money supply, exacerbating inflationary pressures. Inflation in Burundi has diminished the purchasing power of the population and deteriorated living conditions. These issues have negatively impacted the economic and social stability of Burundi, leading to consequences such as reduced private investment, a deteriorating business climate, and rising unemployment.

Empirical research on the impact of public expenditure on inflation has yielded mixed results. Researchers such as Nyambe and Kanyeumbo (2015), Egbulonu and Wobilor (2016), and Mehrara, Soufiani, and Rezaei (2016) found that public expenditure has a positive effect on inflation, whereas Olayungbo (2013), Peter (2015), and others found that public expenditure has a negative effect on inflation. However, studies conducted by Ogbonna (2014), Ojarikre, Ezie, and Torka (2015), and Ogbole and Momodu (2015) found no link between public expenditure and inflation.

In light of the above, our study seeks to address the following question: What is the nature of the causal relationship between public expenditure and inflation in Burundi? Thus, the objective of our work is to analyze the nature of the causal relationship between public expenditure and inflation in Burundi.

This article is structured into three distinct sections. The first section explores the links between public expenditure and inflation by examining previous research in this field. The second section focuses on the presentation of data and the methodology employed. The third and final section presents the results obtained and their interpretation. Finally, a conclusion will synthesize the entirety of this study.

1. Relationship Between Public Expenditure and Inflation

The relationship between public expenditure and inflation has been the subject of extensive research in economics. According to classical monetary theory, an increase in government spending may lead to a rise in the money supply, which in turn triggers higher inflation (Friedman, 1968). This approach therefore emphasizes the role of money in the formation of inflation. Other studies have relied on more complex macroeconomic models to explain this relationship. For instance, the permanent income theory suggests that an increase in public expenditure stimulates aggregate demand, thereby generating upward pressure on prices (Barro, 1974).

Similarly, the aggregate demand effect explains that high public spending can exceed the productive capacity of the economy, resulting in rising prices (Blanchard, 1990).

Public investment expenditures can also influence inflation. According to Keynesian theory, an increase in such expenditures boosts economic activity and aggregate demand, which may create inflationary pressures (Keynes, 1936). However, these investments can also enhance productivity and economic efficiency. From the perspective of development economics, investment in infrastructure can lower production costs and thus mitigate inflation (Romer, 1986).

Moreover, the growth rate of real GDP also plays an important role. Rapid economic growth may signal strong aggregate demand, thereby exerting upward pressure on prices (Friedman, 1968). In the long term, this growth can increase household income and expenditure, contributing to the rise in the general price level (Blanchard & Fischer, 1989).

Cross-country comparative research indicates that this relationship varies according to the level of development, economic openness, and monetary policy (Alesina & Perotti, 1997). Empirical studies further confirm this diversity of results.

For example, Ezirim, Muoghal, and Elike (2008), in their study on the United States (1970?2002), found a positive correlation between public expenditure and inflation, as well as a bidirectional causal relationship between the two variables. In contrast, in Pakistan (1977?2009), Mohammad, Lal, and Hussain (2009) observed a negative correlation between inflation, public spending, and long-term economic growth.

Magazzino's (2011) research on Mediterranean countries (1970?2009) revealed short-term bidirectional causality in Italy and unidirectional causality running from inflation to public expenditure in Portugal. In Nigeria, several studies have explored this relationship: Olayungbo (2013) showed that fluctuations in public spending were driven by inflation, while Ogbonna (2014) found a long-term equilibrium relationship between government size and the consumer price index, with no short-term causality.

Furthermore, Ojarikre, Ezie, and Torka (2015) identified cointegration between public expenditure and inflation in Nigeria (1981?2012), although the relationship was not statistically significant. Dikeogu (2018), in turn, observed that current government spending had no significant effect on inflation, whereas investment spending tended to reduce it.

Finally, El Rhzaoui and Khariss (2021), in their study on Morocco (1980?2019), found a unidirectional causality running from public expenditure to inflation, suggesting that government spending influences inflation but not the reverse.

2. Methodology

This study undertakes an econometric analysis aimed at examining the causal relationship between public expenditure and inflation in Burundi. To this end, we employ a dynamic model known as the" Autoregressive Distributed Lag" (ARDL) model. This model has the advantage of accounting for temporal dynamics when explaining a time series variable, thereby improving forecasts and the effectiveness of economic policies compared to static models, whose instantaneous explanations only partially account for the variability of the variable being explained (Kuma, 2018).

2.1 Model Specification

The model specification used in this study is based on the work of Dikeogu (2018), who employed this model to examine the effects of government capital expenditures, government current expenditures, the money supply, and the exchange rate on inflation in Nigeria from 1981 to 2017 using the ARDL model. However, this study utilizes government investment expenditures, government consumption expenditures, and the real GDP growth rate to analyze the nature of their causal relationship with inflation. Thus, the model specification is as follows:

$$INF = f\,(DEPC,\ DEPI,\ TXPIB) \qquad (1)$$

With INF : inflation; DEPC : consumption expenditures; DEPI : investment expenditures; and TXPIB : the growth rate of real Gross Domestic Product.

In order to capture both the short-term and long-term effects of the explanatory variables on inflation, equation (1) is modeled using the following ARDL representation:

$$\triangle INF_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \triangle INF_{t-i} + \sum_{i=1}^{q} \alpha_{2i} \triangle DEPC_{t-i} + \sum_{i=1}^{q} \alpha_{3i} \triangle DEPI_{t-i} + \sum_{i=1}^{q} \alpha_{4i} \triangle TXPIB_{t-i} + \beta_1 INF_{t-1} + \beta_2 DEPC_{t-1} + \beta_3 DEPI_{t-1} + \beta_4 TXPIB_{t-1} + \varepsilon_t$$

Where $\triangle$: first difference operator; α_0: constant; α_{1i}, α_{2i}, α_{3i}, α_{4i} are the short-term coefficients of the model; β_1, β_2, β_3, β_4 are the long-term coefficients of the model; and ε_t is the error term.

2.2 Nature and Sources of Data

The data used in this study are secondary time series data obtained from two primary sources. First, the data are extracted from the World Development Indicators database of the World Bank (2023). Additionally, data are also sourced from the database of the Bank of the Republic of Burundi. These data are collected annually and cover the period from 1997 to 2022. The selection of this period is motivated by the availability of data related to gross fixed capital formation, expressed in constant local currency units. This data is then compiled in Microsoft Excel and subsequently imported into the econometric software Eviews 12 for processing using specific statistical tools.

3. Data Analysis and Interpretation of Results

3.1 Unit Root Tests

Unit root tests are used to determine whether the time series of the variables are stationary or non-stationary (Dickey and Fuller, 1979; Phillips and Perron, 1988). Stationarity is an important condition to avoid spurious regressions and to conduct valid cointegration analysis. Unit root tests help to identify the order of integration of the variables, that is, the number of differencing required to obtain a stationary series (Nelson and Plosser, 1982).

The Augmented Dickey-Fuller (ADF) test, the Phillips-Perron (PP) test, the Andrews and Zivot (AZ) test, the Ng-Perron test, KPSS, Ouliaris-Park-Perron, and Elliott-Rothenberg-Stock tests can be utilized to determine whether a series is stationary (existence of a unit root). Among these tests, the first three are practical and easy to use. In fact, the ADF test is effective in the presence of autocorrelation of errors, the PP test is suitable in the presence of heteroscedasticity, and the AZ test is employed for a series that detects a structural break or an endogenously identified regime shift.

To interpret the results of the unit root tests, we retain or reject the following hypotheses:

Null hypothesis (H0): the series contains a unit root, and is non-stationary;

Alternative hypothesis (H1): the series is stationary.

If the p-value is less than 5%, we reject the null hypothesis and accept the alternative hypothesis; or if the calculated test statistic is less than the critical value, we reject the null hypothesis of non-stationarity and accept the alternative hypothesis. In this study, we employed the ADF test, and the results are presented in the following table:

Table 1: Results of the Stationarity Test

Augmented Dickey-Fuller (ADF) Test					
Variables	Stationarity at Level		Stationarity at First Difference		Status
	P-value	Decision	P-value	Decision	
INF	0,0011	Stationary	-	-	I(0)
DEPC	0,1761	Non-stationary	0,0009	Stationary	I(1)
LogDEPI	0,2539	Non-stationary	0,0111	Stationary	I(1)
TXPIB	0,0072	Stationary	-	-	I(0)

According to the results presented in Table 1, we conclude that the inflation series and the growth rate of real GDP are stationary at level (without differencing), whereas consumption expenditures as a percentage of GDP and investment expenditures are integrated of order 1 (stationary after first differencing). The variables are thus integrated at different orders, which necessitates estimating the variables of our model using the ARDL (Auto Regressive Distributed Lag) model. Therefore, the cointegration tests by Engle and Granger and Johansen are ineffective in determining the long-term relationship between inflation and consumption expenditures, investment expenditures, and the growth rate of real GDP.

Consequently, for variables integrated at different orders (I(0), I(1)), the bounds testing approach to cointegration (Pesaran, 2001) is very effective in determining the long-term relation- ship between the variables.

3.2 Bounds Testing for Cointegration by Pesaran et al. (2001)

The cointegration test proposed by Pesaran et al. (2001) requires the initial estimation of the ARDL model. Thus, to apply the Pesaran cointegration test, two steps must be followed:

Determine the optimal lag and estimate the ARDL model;

Use the Fisher test to assess cointegration between the series.

3.2.1 Optimal Lag and Estimation of the ARDL Model

To select the optimal ARDL model that provides statistically significant results, we utilize the Akaike Information Criterion (AIC). The estimation results of the optimal ARDL model are presented in the following table:

Table 2: Estimation of the ARDL (2,3,3,3) Model

Dependent Variable: INF				
Method: ARDL				
Model selection method: Akaike info criterion (AIC): ARDL				
Dynamic regressors (3 lags, automatic): DEPC LOG-DEPI TXPIB				
Number of models evaluated: 128				
Selected Model: ARDL(2, 3, 3, 3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
INF(-1)	-1.043357	0.231668	-4.503684	0.0020
INF(-2)	-0.720649	0.207938	-3.465686	0.0085
DEPC	-1.131552	0.780205	-1.450326	0.1850
DEPC(-1)	1.049608	0.854321	1.228588	0.2541
DEPC(-2)	2.318270	0.825785	2.807351	0.0229
DEPC(-3)	-1.023696	0.871567	-1.174547	0.2740
LOG-DEPI	-52.08979	15.75614	-3.306000	0.0108
LOG-DEPI(-1)	-22.53420	9.550134	-2.359569	0.0460
LOG-DEPI(-2)	-13.61278	10.24263	-1.329031	0.2205
LOG-DEPI(-3)	7.906373	6.630987	1.192337	0.2673
TXPIB	3.530950	0.852295	4.142872	0.0032
TXPIB(-1)	2.713041	0.712014	3.810377	0.0052
TXPIB(-2)	0.508421	0.487284	1.043378	0.3273
TXPIB(-3)	1.481273	0.487867	3.036223	0.0162
C	2076.149	402.6802	5.155826	0.0009
R-squared: 0.881865				
Adjusted R-squared: 0.675130				
F-statistic: 4.265667				
Prob(F-statistic): 0.022703				

Table 3: Akaike Information Criterion (AIC) (Top 10 Models)

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
1	-53.183683	5.929016	6.669556	6.115260	0.675131	ARDL(2, 3, 3, 3)
9	-55.531245	5.959239	6.601040	6.120650	0.681248	ARDL(2, 3, 1, 3)
17	-55.013111	6.001140	6.692310	6.174967	0.661434	ARDL(2, 2, 3, 3)
5	-55.064699	6.005626	6.696796	6.179453	0.659912	ARDL(2, 3, 2, 3)
21	-58.278261	6.198110	6.839911	6.359521	0.595244	ARDL(2, 2, 2, 3)
25	-59.568747	6.223369	6.815801	6.372364	0.588343	ARDL(2, 2, 1, 3)
33	-61.224780	6.454329	7.096130	6.615740	0.477041	ARDL(2, 1, 3, 3)
18	-62.027284	6.524112	7.165913	6.685523	0.439244	ARDL(2, 2, 3, 2)
41	-64.744289	6.586460	7.129522	6.723039	0.408166	ARDL(2, 1, 1, 3)
37	-63.808418	6.592036	7.184468	6.741031	0.404824	ARDL(2, 1, 2, 3)

Based on the results from Tables 2 and 3, the ARDL (2,3,3,3) model is the most optimal among the 128 models evaluated, as it yields the lowest value of the Akaike Information Criterion

(AIC). To conclude that the estimated optimal ARDL model is generally good and significant, we will utilize diagnostic tests for errors.

Table 4: Results of Diagnostic Tests for the Estimated ARDL Model

Test Hypotheses	Tests	F-Statistic	Probability
Normality	Jarque-Bera H0 : The errors are normally distributed	0,053621	0,973546
Autocorrelation	Breusch-Godfrey H0 : No autocorrelation of the errors	2,473385	0,1647
Heteroscedasticity	Breusch-Pagan-Godfrey H0 : Homoscedasticity	1,105207	0,4612

The null hypothesis is accepted for all these tests. Our model is thus statistically validated. The estimated ARDL(2,3,3,3) model is overall good and significant at the 5% level. It explains 88.1866% of the dynamics of inflation in Burundi from 1997 to 2022.

Figure 1: Stability of the Estimated ARDL Model

Based on the above figure, we conclude that the ARDL(2,3,3,3) model is stable over the study period.

3.2.2 Bounds Test for Cointegration

The test involves comparing the obtained Fisher values to the critical (bounds) values simulated by Pesaran et al. for various cases and different significance levels. Thus:

If Fisher > upper bound: Cointegration exists

If Fisher < lower bound: Cointegration does not exist

If lower bound < Fisher < upper bound: No conclusion can be drawn

Table 5: Results of the Cointegration Test by Pesaran et al. (2001)

F-Bounds Test

Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	15.46258*	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Based on the results of the bounds cointegration test in Table 5, we confirm the existence of a cointegration relationship among the model variables (the F-stat value is greater than the upper bound for all critical thresholds), indicating that it is necessary to subject the model variables to an error correction test.

3.3 Error Correction Test of the ARDL Model

The error correction test allows us to regress the short-term dynamics and obtain the adjustment coefficient (force of adjustment). The adjustment coefficient indicates the extent to which the imbalance is corrected, meaning how much any imbalance from the previous period is adjusted in the subsequent period (Emeka and Aham, 2016). A positive adjustment coefficient indicates a divergence from equilibrium, while a negative adjustment coefficient indicates convergence toward equilibrium, ensuring the existence of a long-term relationship (cointegration) among the variables.

3.3.1 Estimation of Short-Term Coefficients

Table 6: Results of the Short-Term Dynamics

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	0.720654	0.137417	5.244285	0.0008
D(DEPC)	-1.131565	0.443893	-2.549185	0.0342
D(DEPC(-1))	-1.294592	0.449425	-2.880552	0.0205
D(DEPC(-2))	1.023657	0.423182	2.418954	0.0419
D(LOGDEPI)	-52.08971	7.110341	-7.325909	0.0001
D(LOGDEPI(-1))	5.706570	4.348012	1.312455	0.2258
D(LOGDEPI(-2))	-7.906200	4.421266	-1.788221	0.1115
D(TXPIB)	3.530953	0.577358	6.115705	0.0003
D(TXPIB(-1))	-1.989707	0.343662	-5.789719	0.0004
D(TXPIB(-2))	-1.481269	0.324511	-4.564618	0.0018
CointEq(-1)*	-2.764008	0.256666	-10.76891	0.0000
R-squared: 0.942871		Mean dependent var: 0.670237		
Adjusted R-squared: 0.895264		S.D. dependent var: 10.45255		
S.E. of regression: 3.382751		Akaike inf criterion: 5.581190		
Sum squared resid: 137.3161		Schwarz criterion: 6.124252		
Log likelihood: -53.18368		Hannan-Quinn criter.: 5.717768		
Durbin-Watson stat: 3.019776				

The results of the short-term econometric analysis, conducted using the ARDL error correction model, are presented in the table above. The calculated coefficient of determination is 0.942871, indicating that 94.2871% of the variations in inflation in Burundi are explained by the model variables, namely consumption expenditure, investment expenditure, and the real GDP growth rate. The remaining 5.7129% of variations are attributed to exogenous factors not included in the model, but accounted for by the error term. Therefore, the selected variables effectively explain the variations in inflation in Burundi.

Regarding the results of the individual significance tests for the short-term variables, all variables are significant, except for investment expenditure lagged by one and two periods, which are not significant. Based on this, we interpret the results of the model estimation. Lagged inflation has a negative and significant effect on short-term inflation in Burundi at the 1% significance level. Thus, a one-percentage-point increase in lagged inflation results in a 0.720654 percentage point increase in current inflation. We observe a positive relationship between lagged inflation and current short-term inflation in Burundi. Therefore, we can conclude that inflation from the previous period negatively impacts current short-term inflation in Burundi.

The coefficients associated with consumption expenditure and lagged consumption expenditure by one period are negative (-1.131565 and -1.294592, respectively) and significant at the 5% level. Thus, a one-percentage-point increase in consumption expenditure and lagged consumption expenditure leads to a decrease in inflation of 1.131565 and 1.294592 percentage points, respectively, in Burundi. We conclude that consumption expenditure and consumption expenditure from the previous period have a positive effect on inflation in Burundi, as they contribute to its reduction. However, consumption expenditure lagged by two periods leads to an increase in short-term inflation, as the estimated coefficient for consumption expenditure from the two previous periods is positive (1.023657) and significant at the 5% level. Thus, in the short term, consumption expenditure from the two preceding periods has a negative effect on inflation in Burundi.

The coefficient for investment expenditure is negative (-52.08971) and significant at the 1% level. Therefore, in the short term, a one-percentage-point increase in investment expenditure results in a decrease in inflation of 52.08971 percentage points in Burundi. We conclude that investment expenditure has a positive effect on inflation in Burundi, as it significantly contributes to its reduction. This result is consistent with studies conducted by Peter (2015) and Cynthia and Dikeogu (2018), which demonstrated a negative relationship between public investment expenditure and inflation in Nigeria. However, investment expenditure lagged by one and two periods has no effect on short-term inflation in Burundi.

The coefficient for the real GDP growth rate is positive (3.530953) and significant at the 1% level. Thus, in the short term, a one-percentage-point increase in real GDP results in a 3.530953 percentage point increase in inflation in Burundi. We conclude that real GDP has a negative effect on inflation in Burundi, according to our results. However, the real GDP growth rate lagged by one and two periods has positive effects on short-term inflation in Burundi, according to our findings. According to the results in Table 6, the adjustment coefficient or force of adjustment is statistically significant at the 1% level. It is negative (-2.764008), indicating convergence toward equilibrium and thus the existence of a long-term relationship (cointegration) among inflation, consumption expenditure, investment expenditure, and the real GDP growth rate.

3.3.2 Estimation of Long-Term Coefficients

Table 7: Results of the Estimation of Long-Term Coefficients

Variable dependents: INF				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEPC	0.438724	0.156928	2.795711	0.0234
LOGDEPI	-29.06301	5.447169	-5.335433	0.0007
TXPIB	2.978906	0.406635	7.325746	0.0001
C	751.1370	139.0198	5.403095	0.0006
EC = INF - (0.4387*DEPC -29.0630*LOGDEPI + 2.9789*TXPIB + 751.1370)				

Based on the results in Table 7, we conclude that, in the long term, consumption expenditure, the real GDP growth rate, and investment expenditure have significant long-term effects on inflation in Burundi. Specifically, consumption expenditure and the real GDP growth rate have negative effects on long-term inflation, while investment expenditure has a positive effect on long-term inflation.

3.4 Causality Test Between Model Variables

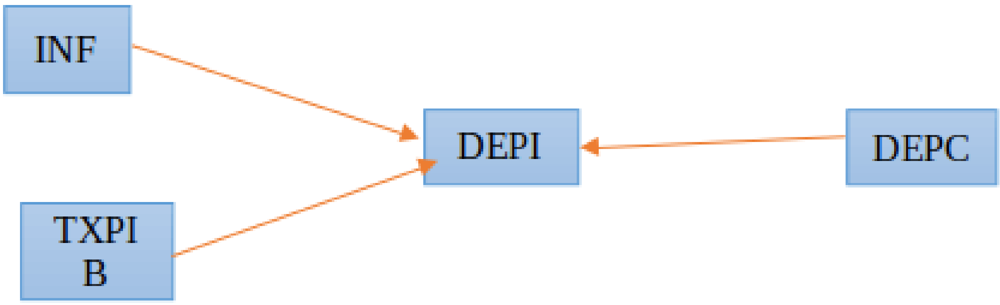
In cases where the variables are integrated to different orders, the traditional Granger causality test becomes ineffective. In such cases, we resort to the Toda-Yamamoto (1995) causality test, which is based on the Wald statistic" W," distributed according to a chi-squared distribution. The null hypothesis states that there is no causality between the variables (probability > 5%). The results of the Toda-Yamamoto causality test are presented in the following table:

Table 8: Results of the Toda-Yamamoto Causality Test

k	d_{max}	Dependent Variables	Explanatory Variables or Causality			
			INF	DEPC	LOGDEPI	TXPIB
4	1	INF	-	0,3592 (0,9857)	0,2877 (0,9906)	1,0682 (0,8993)
		DEPC	0,4498 (0,9782)	-	1,3043 (0,8606)	1,8707 (0,7595)
		LOGDEPI	10,19** (0,0373)	24,9766*** (0,0001)	-	32,1876*** (0,0000)
		TXPIB	4,2634 (0,3715)	2,571 (0,632)	3,8883 (0,4213)	-

***: Significant at the 1% level; **: Significant at the 5% level; (.) : Probabilities (p-value); values = statistics of $\chi 2$; k: optimal lag of the VAR in levels (SIC); dmax: maximum order of integration of the variables.

Based on the results in Table 8, we deduce the following causalities in the sense of Toda Yamamoto: Unidirectional causalities: investment expenditure is caused by consumption expenditure, the real GDP growth rate at the 1% level, and inflation at the 5% level. This result is consistent with that of Magazzino Cosimo (2011), who found a unidirectional causal relationship from inflation to public expenditure in Portugal. The following diagram summarizes the causal links between the variables according to our results.



Conclusion

This study employs an econometric approach to analyze the relationship between public expenditure and inflation in Burundi. The data utilized comes from reliable sources such as the World Bank and the Central Bank of Burundi. Econometric methods, particularly the Autoregressive Distributed Lag (ARDL) model, are applied to estimate the effects of public expenditure on inflation in both the short and long term.

The results of the econometric estimations indicate a relationship between public expenditure and inflation in Burundi. In the short term, government consumption and investment expenditures lead to a decrease in inflation. This may be explained by the fact that these expenditures stimulate aggregate demand, which can alleviate inflationary pressures. However, in the long term, the results suggest that only government investment expenditure results in a decrease in inflation, while government consumption expenditure leads to an increase in inflation. This can be attributed to factors such as the efficiency of public spending and its impact on long-term productivity.

Furthermore, the results highlight a unidirectional causal relationship between government investment expenditure and inflation. This indicates that rising inflation leads to an increase in government investment expenditure, according to the Toda-Yamamoto approach. These findings underscore the importance of prudent inflation management to ensure effective resource allocation and sustainable economic growth.

Based on these results, this study proposes policy recommendations for the Government of Burundi. It is suggested to encourage and prioritize investment expenditure over consumption expenditure. Investment spending can help strengthen the productive capacity of the economy in the long term, which may have beneficial effects on inflation and economic growth. Addition- ally, it is recommended that the government closely monitor the effects of public expenditure on inflation and conduct regular evaluations to adjust policies accordingly.

This study nevertheless entails certain limitations that should be acknowledged. First, the analysis relies on aggregated macroeconomic data, which does not allow for distinguishing the specific effects of different components of public expenditure, such as infrastructure, health, or education spending. Future research could deepen this analysis by broadening the empirical and methodological framework. It would be particularly relevant to incorporate monetary policy variables, such as the policy interest rate, money supply growth, or exchange rate policy, in order to examine the interactions between fiscal and monetary instruments in controlling inflation.

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