



Research Article

Impact of Money Supply and External Debt on Inflation: A Panel ARDL Analysis from SAARC Countries

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Abstract

Inflation has appeared as a crucial and persistent challenge to sustainable development across many developing countries, making unemployment worse, increasing poverty, and deteriorating the financial stability of the economies. Inflation involves an increase in the cost of consumer commodities and erodes purchasing power, predominantly upsetting poor populations, and can intensify poverty levels due to the higher cost of goods. It has been observed a sustained rise in the overall prices of goods has been observed in diverse SAARC countries. Considering the significance of this emerging issue, our research has focused on the major factors causing inflation in the SAARC countries. We have used data from 1991 to 2021 for the analysis. ARDL results show that in the long run, money supply, imports, external debt, and urban population have caused high inflation in SARC countries. However, money supply, external debt, and urban population resulted in high inflationary pressure in the short run in these countries. Our study recommends the money supply management in these countries. Moreover, there should be control over external debt and imports of the products. The focus should be more on export promotion strategies rather than import substitution strategies. Finally, there is a dire need to control the urban population in SAARC countries.

Keywords: External debt; Inflation, Urban population, and SAARC Countries.

Introduction

The South Asian Association for Regional Cooperation (SAARC) is a common platform for the eight selected South Asian countries for their communal social, economic, cultural, and technical development. This organization was recognized in December 1985 as a momentum for the social development of the member nations. SAARC countries have come to grips with an important and related subject of inflation over the past few decades. Inflation has constantly been an essential theme in strategy negotiations since the country's establishment, prompting the government to put into practice a variety of methods to control it. Inflation is, by and large, characterized made about two key kinds: Demand-Pull and Cost-Push Inflation. Demand-pull inflation happens at what time the requirement for commodities and facilities exceeds supply, driving prices up (Samuelson & Nordhaus, 2010). Cost-push inflation, contrarily, is due to augmented manufacturing expenses, for instance, higher wages or raw material prices, which cause entrepreneurs to increase prices to sustain returns (Mankiw, 2014). These notions are extensively familiar in economic theory, for instance, crucial drivers of inflationary inclinations. Researchers have well-defined inflation; likewise, they give emphasis to its influence on the state.

Mankiw (2022) defines it through a continued upsurge in the general price level, though Samuelson and Nordhaus (2010) show the failure in money's buying power because of escalating prices. Bernanke and Frank

(2007) also outline it in place of an incessant upsurge in the overall price level. The effect of money supply on inflation and economic growth has gained foremost consideration in macroeconomics. Though there is no agreement on the influence of money supply on inflation, economics is equally both practical and theoretical contexts. A situation in point originates that money supply affects positively the inflation and economic growth in line with Adu and Marbuah (2011), Shubhada (2014), Doan Van (2019), and Tegegne (2021).

Inflation has confounded policymakers far back in times past. As financial structures have established and forward-thinking, novel philosophies and models have emerged, and old ones have been reevaluated. For instance, scholars have tried to model inflation by quantifiable dealings such as the equation of exchange, and over and done with the opposite connection between inflation and unemployment, such as the Phillips curve. Although currently many economists make usage Dynamic Stochastic General Equilibrium models with progressive calculations of associations between thousands of diverse factors. As Adu and Marbuah (2011) found that a monetary expansion of 1% will increase the price level by approximately 1.4% in the long run by using ARDL. It was observed that production, nominal exchange rate, broad money supply, nominal interest rate, and fiscal deficit dominantly affect the inflationary process. The investigation between money supply and inflation was conducted by Mpofu (2011) using the VAR model. Findings indicated that a 1% increase in money supply caused for 0.43% increase in inflation in South Africa.

External debt also affects the inflation and growth of SAARC countries. Pakistan has long struggled with an important external debt problem. Such a kind of debt is long-standing and costly, was a challenge for the government. Though this debt is normally well thought-out harmful to an economy, the administration observes it as essential to attain significant macroeconomic targets, like getting better living standards and achieving better economic growth (Khan et al., 2022). Bangladesh has been struggling to get loans and continues to depend on foreign debt to deal with the gap between savings and investment, in addition to running its fiscal imbalance. External borrowing is merely unfavourable to an economy if it fails to make available returns that go beyond the borrowing costs. On the other hand, if tackled inappropriately and without care, it can turn out to be difficult (Ale et al., 2023). Education may enhance economic growth. But economies have to pay the cost of education. Considering this, Fontvieille (1990) has focused on how educational costs or human capital enhance economic growth and economic development in France.

Furthermore, Adeyeye and Fakiyesi (1980) examined that increasing bank credit, money supply, and high government expenditure led to an increase inflation rate. However, government revenue hardly affected the inflation. Fakiyesi (1996) used data from Nigeria and applied an autoregressive distributed lag model, arguing that inflation protected the growing broad money, the rate of exchange of the naira vis-à-vis the dollar, the growth of real income, and the level of rainfall. Chimobi and Uche (2010) focused on the factors affecting inflation in Nigeria. Using time series data, it was found that inflation and money supply were strongly associated. Ahmad and Joyia (2012) used data from 1971 to 2012 to find factors affecting inflation. The result highlighted that growing economic growth led to an increase in demand and inflationary pressures. Jovićić and Kunovac (2017) also focused on the causes of inflation and economic growth in Croatia, Europe. The VAR result showed that worldwide aspects had the for the most part famous the drop in Croatian inflation. Moreover, monetary influences on policy and oil price shocks had a significant influence on both GDP and inflation.

Dalis and Mohammed (2018) focused on the monetary variables affecting Inflation in Nigeria. Using data from Nigeria, it was found that money supply, interest rates, effective exchange rates, and structural factors like average wages, import price indices, and real output affected inflation. It was also found that increasing energy prices affected agricultural production and transportation costs. However, worldwide energy and food prices conventionally contributed to inflation. The study recommended that the Government should focus on food and energy prices to control this inflation. Ali et al. (2024) investigated the major determinants of inflation in Pakistan by using data from 1991 to 2022. They used the ARDL model for this analysis. The results showed that imports, GDP growth, and total debt service tended to increase inflation. However, GDP per capita, military expenditure, and population contributed to reduced inflation. Moreover, imports, GDP growth, and debt service increased inflation in the long run. And GDP per capita, population growth, and unemployment rate decreased

inflation. The study suggested for need for targeted monetary policies to manage imports and optimize debt service policies. Buthelezi (2023) focused on how the money supply affected inflation in South Africa. The author has used data from 1990 to 2021. The TVP-VAR model was used by the author. The result found that the money supply affected negatively and positively the inflation states 1 and 2, with rates of 0.05% and 0.35% in the respective states. However, its multiplier effect was found on gross domestic product and inflation. Mulu et al. (2024) found a relationship between inflation and other major factors by using data from 1982 to 2022. The authors have used cointegration analysis, error correction models, and Granger causality. The study result showed that GDP growth, debt financing, government expenditure, and exchange rate tended to increase inflation in the short run and long run. The findings suggested adopting coordinated fiscal and monetary policies, managing inflation expectations through transparent communication, and debt management.

Ayal et al. (2024) examined major factors that affected inflation in Ethiopia. They used data from 2003 to 2023 and used the ARDL model for the analysis. It was pointed that exchange rate, broad money supply, import price, government expenditure, and budget deficit led to increase inflation in Ethiopia in long and short run. However, interest rates and GDP growth decreased inflation in the economy. The study recommended managing fiscal imbalances for lower inflation rates. Albahouth (2025) highlighted the causes for inflation in Saudi Arabia. The author has used data from the ARDL model to check this analysis. The Result showed an unbalanced relationship between oil price fluctuations and inflation rate volatilities in Saudi Arabia. Moreover, a rise in oil prices resulted in higher inflation; however, low oil prices did not alleviate inflationary pressures in the short-run and the long run.

Our research investigates how money supply, imports, external debt, and urban population have caused inflation in the SAARC countries. The existing work will make provision of strategies for additional development and the course of action.

Significance of the Study

It has been noticed that a lot of studies show the important factors such as exports, unemployment, human capital, and foreign direct investment, on inflation or human development. But, our research work has emphasized the major determinants such as money supply with imports, external debt, and urban population of inflation in SAARC countries.

Research Hypothesis

The main hypotheses of the study are provided as:

- H₁: The Higher the money supply, the higher the inflation.
- H₂: Imports of goods and services and inflation are positively related.
- H₃: There is a positive relationship between external debt and inflation.
- H₄: Increased urban population will lead to an increase the inflation.

Methodology

In this research, we have utilized data from 1991 to 2021 of some selected SAARC countries to investigate the major determinants of inflation. We have used the consumer price index as the dependent variable. Though money supply, imports, external debt, and urban population were considered as explanatory variables. We have collected data from three SAARC countries, such as Bangladesh, India, and Pakistan, for this time period. The necessary data were taken from World Development Indicators. Moreover, we have used a panel ARDL approach for this analysis.

Model Specifications

The econometric model is being presented here.

$$CPI = \beta_0 + \beta_1 MS_{it} + \beta_2 IMP_{it} + \beta_3 DEBT_{it} + \beta_4 URBNPOP_{it} + \text{uit} \quad (1)$$

CPI= Consumer prices (annual percent)

MS= Broad money (% of GDP)

IMP= Imports of goods and services (% of GDP)

URBNP= urban population % of total population

it = (time trend)

ui_t = (error term)

Results and Discussion

We have explained the summary statistics of the major determinants of inflation in SAARC countries in this section. Table 1 reveals that, on average, CPI is 7.3659 percent in Bangladesh, India, and Pakistan, and its standard deviation is 3.5281, which is less than the mean value. This indicates the normality of the data. On average, the money supply is 51.8869 percent in these SAARC countries. And its range varies from 24.0087 to 87.6767 percent in these countries. It is found that the mean value of imports (IMP) is 18.9687 percent in these countries. On average, debt (DEBT) has been observed as 28.0067 percent in the SAARC countries

Table 1. Summary statistics.

Variables	Observations	Mean	Standard deviation	Maximum	Minimum
CPI	96	7.3659	3.5281	20.2861	2.0071
MS	96	51.8869	15.4454	87.6767	24.0087
IMP	96	18.9687	5.0510	31.2593	8.4935
DEBT	96	28.0067	10.2139	55.8974	14.8800
URBNPOP	96	31.0049	4.7434	39.7110	20.2570

Table 2 shows the ARDL long-run results of the determinants or major factors of inflation. Money supply is the major cause of high inflation in the economy. It has been observed that a lot of money circulates in the economy and people spend more on daily purchasing and dealings. So prices of the goods increase due to demand-pull and cost-push inflation. The result shows that a one percent increase in money supply has resulted in increased inflation by 0.3587 units in the long run in SAARC countries. The result is supported by Ayal et al. (2024).

Table 2. ARDL Long-run Results. The dependent variable is the Consumer Price Index.

Variables	Coefficients, Standard Errors and t-values
MS	0.3587** 0.1426 (2.51)
DEBT	0.3198* 0.0937 (3.41)
IMP	0.5176* 0.1714 (3.0192)
URBNPOP	0.2013 0.1474 (1.37)

T-values are in parentheses; ** $p < 0.05$, * $p < 0.1$.

External debt is another factor that boosts inflation in different countries. External debt increases debt servicing and expenditures of the economies. An increase in prices of different goods is the condition or result of high inflation. It has been observed that a one percent increase in external debt leads to increased inflation by 0.3198 percent in the long run in SAARC countries. The result is favoured by Ali et al. (2024).

It has been observed that imports also increase inflation in diverse nations of the world. People are very conscious about their living standards and status. Moreover, the public also imports a lot of things, such as spare parts, raw materials, and products, which are expensive and lead to an increase in the prices of the products in domestic markets. So the result is the high inflation in these SAARC economies. A one percent increase in imports results in increased inflation by 0.5176 units in the selected SAARC countries. Our finding is consistent with Ali et al. (2024).

The role of urbanization in determining inflation cannot be ignored. The urban population is increasing day by day. People are migrating from rural and urban areas for different perspectives. Due to it, people are demanding more goods to feed themselves and for their survival. All this increases the inflation in the economies. Our result also shows the positive role of inflation in the SAARC countries.

Table 3. ARDL Short-run Results. The dependent variable is the Consumer Price Index.

Variables	Coefficients, Standard Errors and t-values
COINTEQ ₀₁	-0.7707* 0.2192 (-3.51)
D(MS)	-0.0012* 0.0004 (-2.97)
D(MS(-1))	0.1914* 0.0421 (4.55)
D(MS(-2))	0.3234* 0.0699 (4.63)
DEBT	0.1297 0.1389 (0.93)
D(DEBT(-1))	-0.0081 0.0215 (-0.38)
D(DEBT(-2))	-0.2135* * * 0.1168 (-1.83)
IMP	0.1634 0.3723 (0.44)
D(IMP(-1))	-0.1584 0.2309 (-0.68)

D(IMP(-2))	0.0990 0.1126 (0.87)
URBNPOP	26.6867 36.1389 (0.74)
D(URBNPOP(-1))	-21.3811 14.7642 (-1.4482)
D(URBNPOP(-2))	0.1414 * 0.0276 (5.11)
C	-4.5030 8.6099 (-0.52)

T-values are in parentheses; ** $p < 0.05$, * $p < 0.1$.

In Table 3, we have observed the value of the co-integration equation, which is negative and significant, which is good for the analysis. Money supply seems to affect inflation negatively and positively in the short run. Initially, money supply results in decreased inflation. As the value of the coefficient is -0.0012 units. However, money supply tends to increase inflation at the first and second difference in the short run in these SAARC countries. The values of its coefficients are 0.1914 and 0.3234, respectively. The results are supported by Ayal et al. (2024). Debt also seemed to be affecting the inflation negatively in the short run at the second difference. As the value of the coefficient is -0.2135. Moreover, the urban population has also affected the inflation in the short run. The result shows that a one percent increase in urban population tends to increase inflation by 0.1414 units in the selected SAARC economies.

Conclusions

The existing work attempts to highlight the major determinants of inflation in selected SAARC countries. We have considered the money supply, imports, external debt, and urban population are used as independent variables that affect the inflation rate in this analysis. By using data from 1991 to 2021 from SAARC countries, we have analyzed how these factors determine inflation or inflationary pressure on the economies of Bangladesh, India, and Pakistan. The study has focused on the panel ARDL analysis for the empirical estimation. The ARDL results show that money supply, imports, and external debt have increased inflation in the long run in these economies. However, the role of money supply, debt, and urban population seemed to affect inflation in the short run in these SAARC countries. Considering the study findings, it is suggested that there should be more focus on money supply management and debt control in these economies. The government must impose heavy taxes or duties on the imports of luxury commodities. The focus should be more on export promotion strategies rather than import substitution strategies. Moreover, strategies should be made to handle the increasing urban population in SARC countries.

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