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Does Money Supply Matter for Inflation in Bangladesh? An ARDL Investigation

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Abstract

Purpose of the study: Inflation is currently a persistent economic problem in Bangladesh. The intention of this research is to figure out whether money supply is the source of inflation in the long-run and short-run in the context of Bangladesh's changing macroeconomic environment throughout 1986 and 2021.

Methodology: For the investigation, the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are employed to investigate the stationarity of the variables, while the auto-regressive distributed lag (ARDL) model is utilized to estimate the long-run and short-run effects. Eviews-10 software is used to analyze the annual time series data.

Findings: When corrected for inflation, the F-bound test reveals that the variables (broad and narrow money supply, gross domestic product, and exchange rate) exhibit a single long-run cointegration relationship. The study's long-run impacts show that broad and narrow money supplies have a positive and significant influence on inflation. The short-run error correction model, on the other hand, demonstrates that the rate of adjustment is extremely rapid (approximately 97 percent), which is negative and significant at the 1 percent level of significance.

Implications: According to the research, the money supply contributes to increasing inflation in Bangladesh. To combat inflation, the research recommends that the Bangladesh government should undertake fiscal and monetary measures, implement exchange rate and import restriction regulations, improve fiscal discipline, address supply-side constraints, and collaborate with international organizations.

Limitations and Future direction: Future studies can use different econometric methods to retest the results in similar economic situations. Moreover, the addition of new independent variables such as government expenditure, tax rate, interest rate, etc. can explore new dimensions.

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1. Introduction

In Bangladesh, inflation is a persistent economic problem that impacts the life of millions of people. For decades, economists have been fascinated by the association between money supply and inflation, and understanding this relationship is crucial for policymakers seeking to effectively manage inflation. Omanukwue (2010) suggests that economic growth, job creation, poverty alleviation, higher per capita income, and improved standard of living are the outcomes of high economic growth rate, which is influenced by the money supply and a moderate inflation rate. These factors, in turn, lead to overall economic development. Inflation is the grow in prices for goods and services that results in a decline in the value of the native currency. The central bank in several countries can impact prices by controlling the money supply, according to Ali & Islam (2010). "Narrow money," or M1, includes demand deposits (DD) and currency (C), while "broad money," or M2, also encompasses savings deposits (SD) in addition to DD and C. M1 and M2 act as a monetary base and have an effect on the amount of "high-powered" money, as noted by Ali & Islam (2010). In Bangladesh, M1 and M2 are money supply indicators, which have a significant and positive influence on stimulating economic activity.

As stated by the Bangladesh Bureau of Statistics (BBS) in Bangladesh, in February 2023, the inflation rate surged from 5.57 percent observed in January 2023 to 8.78 percent. The price increase of food items, which jumped to 8.13 percent from 7.76 percent in January, caused the inflation rate to grow to its highest level in the previous three months and the pace of price growth for non-food items, however, significantly slowed to 9.82 percent from 9.84 percent. According to Bangladesh Bank, as of January 2023, the M1 money supply in Bangladesh stood at BDT 4431523 million, down from BDT 4525409 million in December 2022, while the M2 money supply decreased to BDT 17514.41 billion in January 2023 from BDT 17579.68 billion in December 2022.

The current study makes use of an autoregressive distributed lag (ARDL) technique for estimating the long-run and short-run results of the money supply on inflation in Bangladesh. Past research has discovered various findings regarding the relation between Bangladesh's money supply and inflation. Some research reported a strong or significant association between the two factors, while others found a weak or insignificant relationship. As a result, more research is required to provide a greater understanding of this relationship from a Bangladeshi perspective. Even when the variables are non-stationary, the ARDL approach is a well-known econometric tool for estimating long- and short-run interactions between variables (Pesaran, Shin & Smith, 2001). In Bangladesh, this technique is used in the current study to find out the implications of the money supply on inflation from 1986 to 2021. The study enhances the existing literature by offering a comprehensive analysis of the interplay between Bangladesh's money supply and inflation, thus deepening our understanding of this relationship. This is vital for policymakers to properly manage inflation and support long-term economic growth in the country.

Overall, the purpose of this research article is to investigate whether the money supply is a source of inflation in the short-run and long-run in the context of Bangladesh's changing macroeconomic environment. In this research, the second section discusses what previous studies have found. The third section explains the data sources and methodology. Section four talks about the model specification. Additionally, Section 5 shows the results and discussions. Lastly, sections 6 and 7 cover the discussion, policy implications, and concluding remarks, respectively.

2. Literature Review

Multiple studies used various theoretical and methodological approaches to assess short- and long- run correlations between the inflation rate and money supply in various nations. Some of these investigations are discussed in this section, considering their techniques and conclusions. Over the past few decades, extensive empirical research has been conducted to explore the connection between monetary factors and price levels. Khan (2019) observed that an increased money supply increased economic growth, thereby increasing inflation. However, findings support another monetarist proposition that the causality is unidirectional from money to economic growth and not vice versa. In order to ascertain whether there are any short- or long-term

relationships between Bangladesh's monthly inflation and the country's money supply, Uddin, Uddin & Ahmmed (2019) performed a resource-rich analysis. In the context of Bangladesh, the application of co-integration tests reveals a significant and positive long-term association between inflation and money supply. This finding enables an exploration of the relationship between inflation measures, such as the consumer price index (CPI), and different forms of money supply, specifically M1 and M2.

Abdullah, Parvez & Tooheen (2012) have been investigated, providing data on money supply, GDP growth, price level changes, and unemployment rate changes have been quantitatively examined to ascertain the influence of the monetary policy of the Bangladesh Bank and government. According to Sultana, Koli & Firoz (2019), the money supply and inflation have a bidirectional causal relationship over the long term. Therefore, while Bangladesh's short-term inflation is not a major financial event, it can slightly boost the expansion of the money supply, which can have a significant impact on inflation over the long term.

Similar studies have been carried out in several nations. In the context of the Turkish economy, Gocmen (2016) conducted a fresh analysis of the interplay between the money supply and inflation. The current analysis discovers an association between money supply and inflation in comparison to most other research studies on Turkey. The causal link from money supply to inflation is significantly stronger in the bivariate as well as in the multivariate models. However, another research confirmed the quantity theory of money by discovering that over the long term, a rise in Pakistan's money supply causes a greater rate of inflation. It proves that the main cause of inflation is a monetary phenomenon. The result of the money supply on inflation, however, has a significant lag of roughly 9 months and does not immediately affect price levels (Kemal, 2006). Data from 1980 to 2016 were utilized by Tékam (2018) to analyze the connection between inflation and Cameroon's monetary policy. Although interest rates do not show significance in either the short or long term, the study's implementation of the Johansen cointegration and error correction model uncovers a significant and positive association between inflation and the money supply.

The dynamic causal relationship between money, production, interest rates, and prices in Malaysia was examined by Boon & Zubaidi (1999). In contrast to the new Keynesian perspective asserting the neutrality of money, the short-term outcomes derived from vector error-correction models provide evidence that money exerts a non-neutral effect, particularly in the short term. It also means that monetary policy may help keep domestic prices stable. The M1 measure of money stock has been found to be the most effective intermediate monetary aim for controlling inflation among the many measures of money stock. The best intermediate goal to promote continuous economic growth with controlled inflation has now been proposed as M3.

By using data series spanning the years 1972 to 2012, according to the research conducted by Uddin, Chowdhury & Hossain (2018), the inflationary increase in Bangladesh can be attributed to a combination of factors, including the current and previous year's real exchange rates and interest rates. Additionally, it has been emphasized that a decline in the inflation rate can be attributed to both the real dollar exchange rate for the current year and the money supply (M2) for the prior year. Islam, Ferdous, Sultana & Nomi (2022) study the macroeconomic variables that affected Bangladesh's inflation using time series data from 1981 to 2020. Based on the research's findings, broad money supply, export, gross domestic product, and import are the extensive determinants of inflation.

Numerous studies have been conducted to examine the causal relationship between the money supply, inflation, and economic growth. Sultana (2018) specifically explored the presence of positive and significant connections, both in the short and long term, between the money supply and economic growth. The long-term relationship between inflation and economic growth is favorable, while the short-term relationship is negative. Sayeda (2019), has recently undertaken more study in this area. From 1980 to 2016, the study looks at whether there is a long-term or short-term relationship between inflation and economic growth in Bangladesh. The vector error correction mechanism therefore confirms a substantial long-run link between economic growth and inflation. However, no such evidence is discovered in the short run.

Researchers made several recommendations after reviewing all the literature on the connection between the money supply and inflation. The fact that the monthly modification of the rise in M2 money supply is around

40 percent over the long term is a key message for policymakers (Uddin et al., 2019). The study conducted by Abdullah et al. (2012) discovered a correlation between inflation and monetary policy, along with their negative consequences and potential solutions. These remedies include aligning the broad money with the anticipated real GDP growth, obtaining funds from non-bank sources, employing diverse open market operations to manage the money supply, upholding the segregation between monetary and fiscal policies, and fostering transparency, communication, and the signaling effects of policy decisions. According to Sultana et al. (2019), the Bangladeshi central bank should implement its monetary policy while taking the long-term impact of the money supply into account.

To examine the present situation, this research has mostly used recent literature. Despite several studies, the market environment over the past few years has been unstable for a number of reasons. The goal of this exploration is to look at the issue using the money supply and inflation as a foundation. Bangladesh's economy has seen a substantial impact from the COVID-19 epidemic that may not have been taken into account in earlier assessments. My study captured the time duration of the pandemic period, and as a result, there may be changes in the relationship between money supply and inflation due to economic disruptions and policy responses, such as changes in money supply growth rates or shifts in consumer spending patterns. This study discovers that the associations are extremely significant in both time periods, contrary to previous research that showed no significant links between money supply and inflation in either the short or long term. The study also demonstrates a rapid rate of adjustment in the short-term error correction model, at about 97 percent, which is a crucial message for policymakers. Additionally, the study covers annual time series data up to 2021, providing the latest macroeconomic situation in Bangladesh. Since different time periods may reflect different macroeconomic conditions, the results of this study may have an influence on how the money supply and inflation are related.

3. Data Sources and Methodology

Several secondary sources are used to compile the annual time series data for the chosen variables. Bangladesh CPI data is based on the 2010 base year and is taken from the World Data Atlas Bangladesh price index, 1960-2021-Knoema.com. The Bangladesh Economic Review (2022) was used to collect data on the broad money supply (M2), narrow money supply (M1), and nominal exchange rate. Moreover, data on Bangladesh's GDP growth (annual%) is gathered from World Bank and OECD National Accounts data files.

The research utilized the auto-regressive distributed lag (ARDL) method to explore the relationships between money supply (both broad and narrow) and inflation in Bangladesh over both the short and long runs. The ARDL is a popular econometric technique used to evaluate the long-run relationships between two or more variables while accounting for short-run dynamics. To estimate the ARDL model, several steps will be followed. The initial stage will involve examining the time-series data for stationarity, utilizing the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The data will be modified to become stationary if it is not stationary. The model will then be calculated using the F-bound test, conditional error correction regression, and the estimation of the long-run coefficient and short-run error correction model. The independent variable in the model will be money supply (both broad and narrow), while the dependent variable will be inflation. Other control variables, such as the annual percentage of GDP growth and nominal exchange rate, may also be integrated into the model. Diagnostic tests, such as the normality of residuals, heteroscedasticity, and serial correlation, will be used to check the ARDL model. The long-run and short-run outcomes of the ARDL model will be presented, and the significance of the coefficients will be evaluated by comparing the probability value with the 5 percent significance level. The ARDL model's stability will be evaluated using the CUSUM and CUSUMSQ tests. Ultimately, the ARDL analysis will provide valuable insight into both the long-term relationship between money supply and inflation in Bangladesh and the short-term dynamics that may influence this connection.

4. Model Specification

The dependent variable in this study is the consumer price index, which is utilized as an alternative to inflation. The broad and narrow money supply are the independent variables, and GDP growth and the exchange rate are regarded as the control variables. Hence, the model may be stated as:

$$CPI=f(NMSY, BMSY, EXCR, GDP) \ldots\ldots\ldots\ldots (i)$$

Where, CPI=Consumer price index, NMSY= Narrow money supply, BMSY=Broad money supply, EXCR= Nominal exchange rate and GDP=Gross domestic product growth (annual%).

The model's regression form is as follows:

$$CPI_t = \beta_0 + \beta_1 NMSY_t + \beta_2 BMSY_t + \beta_3 EXCR_t + \beta_4 GDP_t + U_t \ldots\ldots\ldots\ldots (ii)$$

For the dependent variable close to the explanatory variable, the log model provides reasonable elasticity coefficients. Also, we converted the variable into logarithms to smooth the data. As a result, equation (ii) is modified into:

$$LnCPI_t = \beta_0 + \beta_1 LnNMSY_t + \beta_2 LnBMSY_t + \beta_3 LnEXCR_t + \beta_4 LnGDP_t + U_t \ldots\ldots\ldots\ldots (iii)$$

Here, Ln represents the natural log, β denotes the coefficient of the model, t indicates the time and U is the error term.

5. Results and Discussions

5.1. Plot of the logarithm of variables in levels and first difference

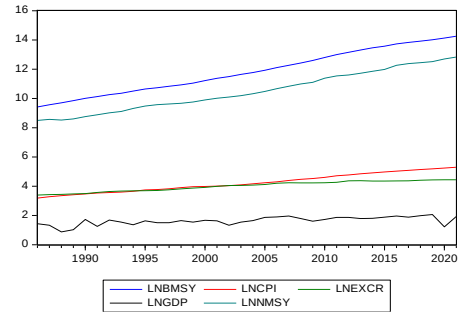

Figure 1: Depict the plot of the logarithm of the variables in levels.

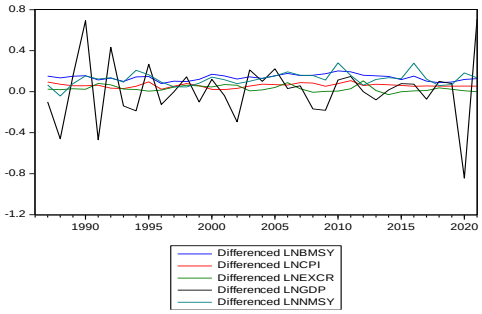

Figure 2: Depict the plot of the logarithm of the variables in first difference.

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 2. Descriptive statistics

The variables' descriptive statistics from 1986 to 2021 are shown in Table 1. The mean, median, maximum, minimum, and standard deviations for each variable are illustrated in the table.

Table 1: Descriptive statistics

	LNCPI	LNBMSY	LNNMSY	LNEXCR	LNGDP
Mean	4.23	11.83	10.48	4.00	1.64
Median	4.13	11.70	10.25	4.06	1.65
Max	5.30	14.26	12.83	4.44	2.06
Min	3.19	9.42	8.50	3.39	0.87
Std. Dev.	0.63	1.50	1.36	0.34	0.27
Observations	36	36	36	36	36

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 3. Unit root tests

The initial phase of the investigation is to figure out if the variables have a unit root or not. For the five variables, the Phillips-Perron and augmented Dickey-Fuller unit root tests are adopted. The outcomes are shown in tables 2 and 3. According to Dickey & Fuller (1979) test LNCPI, LNNMSY, LNEXCR have unit roots at first difference in constant. But LNGDP has unit root at level in constant. On the other hand, LNCPI and LNEXCR have unit roots at first difference in constant and trend while LNBMSY and LNGDP have unit roots at level in constant and trend.

According to the Phillips & Perron (1988) test LNCPI, LNBMSY, LNNMSY and LNEXCR have unit roots at first difference in constant. But LNGDP has unit root at level in constant. In constant and trend LNCPI, LNNMSY and LNEXCR also have unit roots at first difference. The auto-regressive distributed lag (ARDL) model is appropriate for further econometric research when variables are mixed with unit root at level and first difference.

Table 2: Augmented Dickey-Fuller (ADF) unit root test

Variables	Level		First Difference	
	Constant	Constant and Trend	Constant	Constant and Trend
LNCPI	0.989	0.438	0.00***	0.00***
LNBMSY	0.967	0.02**	0.1387	0.517
LNNMSY	0.999	0.742	0.00***	0.274
LNEXCR	0.205	0.987	0.00***	0.00***
LNGDP	0.01***	0.00***	0.00***	0.00***

Source: Eviews-10 software, based on annual time series data (1986-2021).

Table 3: Phillips-Perron (PP) unit root test

Variables	Level		First Difference	
	Constant	Constant and Trend	Constant	Constant and Trend
LNCPI	0.969	0.828	0.00***	0.00***
LNBMSY	0.950	0.779	0.05**	0.1946
LNNMSY	0.999	0.336	0.00***	0.00***
LNEXCR	0.222	0.992	0.00***	0.00***
LNGDP	0.01***	0.00***	0.00***	0.00***

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 4. Long run form and bound test

F-bound test

Table 4 provides a visual representation of the econometric outcomes of the long-run cointegration relationship between inflation, broad money supply, narrow money supply, gross domestic product, and the exchange rate. Moreover, according to Table 4, the F-statistic value of 8.46 surpasses the critical values of 5.06, 4.01, and 3.52 at the significance levels of 1 percent, 5 percent, and 10 percent, respectively. As a result, the no level relationship null hypothesis is rejected. It means that the variables have a single long-term cointegration economic relationship when normalized for inflation.

Table 4: F-bound test

Significance level	Critical value		F-statistic
	Lower bound	Upper bound	
1%	3.74	5.06	8.46
5%	2.86	4.01	
10%	2.45	3.52	

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 5. Conditional error correction regression

Table 5 represents the conditional error correction regression. The table shows that most of the coefficients are significant at the three significance levels mentioned above.

Table 5: Conditional error correction regression

Variable	Coefficient	Std. error	Prob.
C	-0.426	0.0876	0.00
LNCPI (-1) *	-0.968	0.1544	0.00
LNBMSY**	0.264	0.0727	0.00
LNNMSY (-1)	0.195	0.0592	0.00
LNEXCR (-1)	-0.193	0.0713	0.01
LNGDP (-1)	0.098	0.0362	0.01
D (LNCPI (-1))	0.479	0.1289	0.00
D (LNNMSY)	-0.010	0.0639	0.86
D (LNNMSY (-1))	-0.128	0.0526	0.02
D (LNNMSY (-2))	-0.241	0.0606	0.00
D (LNEXCR)	-0.036	0.0954	0.70
D (LNGDP)	0.023	0.0137	0.10
D (LNGDP (-1))	-0.038	0.0203	0.06

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 6. Long-run coefficient

The findings regarding the long-term association between Bangladesh's inflation and its external variables (broad money supply, narrow money supply, exchange rate, and GDP) are presented in Table 6. The results offer compelling evidence supporting a noteworthy and statistically significant relationship between inflation, broad money supply, narrow money supply, and gross domestic product (GDP) in Bangladesh spanning the years 1986 to 2021. On the contrary, there exists an inverse relationship between inflation and the exchange rate. All of the coefficients are significant at the 1 percent level of significance, which is a positive indicator for the long-run coefficient. The estimated coefficient of 0.273 shows that inflation is positively impacted by broad money supply. In other words, broad money increases inflation over the long term. However, when all other variables remain constant, every 1 percent increase in broad money supply necessitates a 0.273 percent increase in inflation. The same scenario is presented for narrow money supply, which positively influences inflation. It

can be said that when all other factors are held constant, a 1 percent rise in the narrow money supply will boost inflation by 0.201 percent. Additionally, the long-term results show that Bangladesh's gross domestic product has a positive and significant impact on inflation. As per the coefficient estimate, a growth of 1 percent in gross domestic product leads to an inflation increase of approximately 0.101 percent. The analysis concludes with evidence of a negative link between inflation and exchange rates, which is significant at a 1 percent significance level. Based on the coefficient estimation, a rise of 1 percent in the exchange rate corresponds to a decline of approximately 0.199 percent in inflation.

Table 6: Long-run coefficient

Dependent variable: LNCPI

Variable	Coefficient	Std. Error	Prob.
LNBMSY	0.273	0.0581	0.00
LNNMSY	0.201	0.0535	0.00
LNEXCR	-0.199	0.0604	0.00
LNGDP	0.101	0.0320	0.00

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 7. Short-run error correction model

The reliability of the long-term coefficient was confirmed by looking at the error correction model (ECM) to assess the short-run dynamic link between inflation and its extrinsic deceives (broad money supply, narrow money supply, gross domestic product, and exchange rate). The long run predictions are normalized to estimate them. The ECM coefficient has a negative sign and is statistically significant at the 1 percent significance level, which is the preferred level, according to the findings in Table 7. The predicted ECM coefficient (-0.968) also controls how quickly the adjustment moves toward equilibrium (0.968). Furthermore, the ECM suggests that any deviation from the long-run relationship in the current period be adjusted by roughly 97 percent in the next period, implying that adjustment is relatively quick. Additionally, it signifies that the short-run dynamic process annually corrects about 97 percent of the errors from the preceding periods. The model shows that in the short run, narrow money supply and exchange rate have a negative influence on inflation. It is also discovered that the gross domestic product is positively and significantly correlated with inflation in the short term. Additionally, Table 7 also shows that the model's R-squared is 0.75, which is quite good. 75 percent R^2 means that changes in the explanatory variables can explain 75 percent of the variations in the response variable. The F-probability statistic's value is 0.00, which is likewise extremely significant. Besides, the Durbin-Watson statistic's value is 2.31, demonstrating the absence of serial autocorrelation.

Table 7: Short-run error correction model

Variable	Coefficient	Std. error	Prob.
C	-0.426	0.0654	0.00
D(LNCPI(-1))	0.479	0.1133	0.00
D(LNNMSY)	-0.010	0.0417	0.80
D(LNNMSY(-1))	-0.128	0.0449	0.00
D(LNNMSY(-2))	-0.241	0.0504	0.00
D(LNEXCR)	-0.036	0.0801	0.65
D(LNGDP)	0.023	0.0095	0.02
D(LNGDP(-1))	-0.0389	0.0120	0.00
ECM(-1)	-0.968	0.1359	0.00
R-squared=0.75, Adjusted R-squared=0.66, F-statistics=8.88, Prob (F-statistic=0.00, Durbin-Watson stat=2.31			

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 8. Residual diagnostics tests

Table 8 provides the results of residual diagnostic tests.

Table 8: Diagnostic tests results

Test	Prob.	Level of significance	Conclusion
Normality (JB test)	0.593	0.05	Residuals are normally distributed
Breusch-Godfrey Serial Correlation LM Test	0.083	0.05	No serial correlation exists
Breusch-Pagan Godfrey heteroskedasticity test	0.195	0.05	Homoskedasticity exists

Source: Eviews-10 software, based on annual time series data (1986-2021).

5. 9. Stability of the model

To evaluate the strength of the model, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSR) tests are employed on the recursive residuals. The blue lines in both tests, as depicted in Figures 3 and 4, remain inside the range of acceptable values based on a significance level of 5 percent, thereby confirming the model's stability.

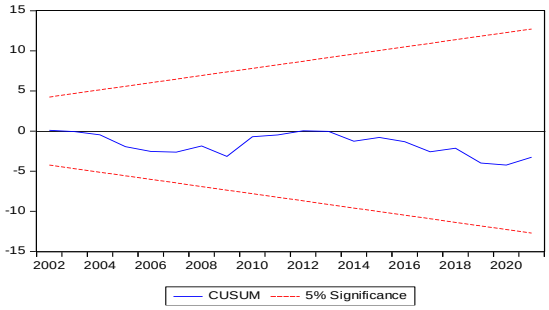

Figure 3: Cumulative Sum (CUSUM)

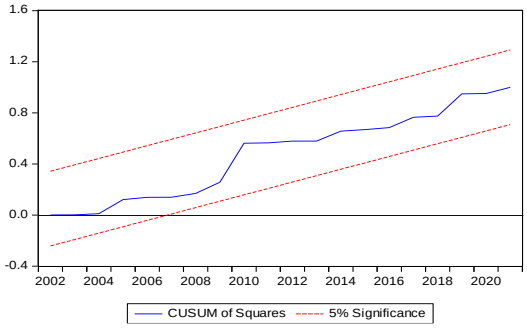

Figure 4: Cumulative Sum of squares (CUSUMSR)

Source: Eviews-10 software, based on annual time series data (1986-2021).

6. Discussion and Policy Implications

The empirical analysis conducted in Bangladesh reveals a long-term association between broad and narrow money supply and inflation. The findings demonstrate that alterations in both broad and narrow money supply exert a positive, significant, and enduring impact on the inflation level. The positive and significant coefficient of broad and narrow money supply in the long run suggests that an increase in the broad and narrow levels of the money supply rises in tandem with inflation. Based on the short-run error correction model, the speed of adjustment is extremely rapid (about 97%). The adjustment coefficient error term was also found to be negative as well as statistically significant at the 1% significance level, demonstrating the dynamic stability of inflation. As a result, the model deviates from equilibrium in the short run. To allow for the regulation of any changes in

inflation through the adjustment of the money supply, exchange rate, and gross domestic product toward convergence in the equilibrium. If the central bank's increased supply of money surpasses the economic productive capacity's growth, inflation can occur due to an excess amount of money circulating in the economy, leading to an increase in the product and service costs. The rise in the supply of money provides banks with more money to lend, which increases the economy's money supply. This increase in money supply creates more demand for goods and services, resulting in upward pressure on prices and inflation. Government spending can also be financed through the money supply, which may increase aggregate demand, eventually leading to inflation. Foreign investment can be a double-edged sword for a developing economy like Bangladesh. On the one hand, it can bring in much-needed capital, technology, and expertise that can fuel economic growth. However, an increase in foreign investment can also lead to an expansion in the money supply, as foreign investors bring in their money. Inflation may arise when there is a rise in the money supply without a corresponding increase in the production of goods and services. The banking system in Bangladesh plays a crucial role in the creation of money in the economy. Banks create money by lending out more money than they have in deposits, which can result in a boost in the money supply. Inflation may occur if the growth in the money supply is not accompanied by an equivalent rise in the production of goods and services. Supply chain issues can also contribute to inflation in Bangladesh. For example, raw material shortages or disruptions in transportation networks might reduce the availability of goods and services. This can lead to an increase in prices, which can cause inflation. Finally, changes in exchange rates can impact the price of imports and exports, which can, in turn, impact the domestic price level. A decrease in the value of the Bangladeshi currency can result in a boost in import prices, which can cause inflation. Some policy implications are given below.

- Fiscal and monetary policies of the government have an impact on the money supply and inflation in Bangladesh. In order to maintain control over inflation, the government has the option to increase interest rates, which would result in a reduction of the money supply and subsequently curb inflation. Conversely, during periods of low inflation, the government can opt to lower interest rates to stimulate economic growth. At periods of high inflation, the government can restrict government spending to reduce aggregate demand.
- To alleviate inflationary pressures on the production side, the government might address supply-side constraints such as supply chain inefficiencies, infrastructural bottlenecks and inefficiencies in the agricultural sector. Investment in education and skill training could boost productivity and lower production costs, lowering inflationary pressures.
- The government can an implement exchange rate policy. By enabling the exchange rate to move in regard to changes in the money supply, a managed floating exchange rate regime could help lower inflation. In order to help reduce inflation, the government can also think about enacting import restrictions. For instance, lowering import tariffs on necessities could help in lowering costs and lowering inflation.
- The Bangladeshi government may work with its regional and global allies to address money supply and inflation challenges. Bangladesh, for example, could collaborate with other countries in the region to manage inflation expectations and stabilize exchange rates. It could also collaborate with global organizations such as the International Monetary Fund (IMF) to obtain financial assistance and technical assistance on macroeconomic management.
- The government's fiscal policy can also influence inflation. To address this, the government should concentrate on enhancing fiscal discipline through measures like lowering budget deficits, raising tax revenues, and enhancing the efficiency of public spending. These efforts could alleviate the burden on monetary policy to manage inflation.

7. Conclusion

Using annual time series data from 1986 to 2021, the key intentions of this research project were to assess the long- and short-run implications of money supply on inflation in Bangladesh. The analysis shows that, in the long run, the broad and narrow money supply have a positive and significant impact on inflation utilizing the autoregressive distributed lag (ARDL) method. This observation implies that an increase in broad and narrow

money supply can result in corresponding growth in the long run. This finding provides support for the concept known as the "quantity theory of money", which posits that alterations in the money supply exert a direct and proportional dominance on the overall price level.

Likewise, the short-term error correction model suggests that the rate of adjustment is exceedingly rapid (around 97 percent), and the adjustment coefficient is negative and highly significant. The research findings indicate that the primary reasons for higher inflation rates in Bangladesh are monetary policy, increased demand, government spending, foreign investment, the banking system, the supply chain, and the exchange rate, all of which contribute to an expansion in the money supply. Hence, policymakers should be cautious when using expansionary monetary policy in both the short and long term. The study recommends that to curb inflation, the Bangladesh government should implement fiscal and monetary policy measures, adopt exchange rate and import restriction policies, enhance fiscal discipline, address supply-side limitations, and collaborate with international organizations.

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