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MONEY AND INFLATION NEXUS IN BANGLADESH

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ABSTRACT

This paper studies the causality link between inflation and money supply in Bangladesh. Monthly data running from May 2010 to August 2018 are utilized. M1 and M2 money are the instruments of money supply with CPI the measure of inflation. Unit root test results indicate all variables are stationary at level one. Cointegration tests found a long-run relation between M2 money supply and CPI. As the coefficient value of RESM2 (-1) is -0.40 for the short-run dynamic model, there is a strong indication that any deviation of the consumer price index (CPI) adjusts to its long-run equilibrium concerning M2 money at the rate of 40 per cent per month. However, the error correction model for M2 is found to be superior to M1.

Contribution/ Originality: The purpose of this study is to determine whether any short-run and/or long-run relationships exist between monthly inflation and money supply in Bangladesh. There is a significant message for policymakers that, in the long-run, the monthly adjustment of the increase in M2 money supply is approximately 40 per cent.

1. INTRODUCTION

Over the last two decades, policymakers and economists have been concerned to ensure that price stability remains a primary a goal of economic policy in Bangladesh, along with more awareness of the social and economic costs of inflation. Inflation is defined as the increase in the prices of goods and services that contribute to reducing the purchasing power of the domestic currency. There is a cumbrous effect of moderate-to-high levels of inflation that distort investment and consumption decisions, which can retard economic growth. A significant amount of money “chasing” a few goods, or an incidental increase in prices due to increasing monetary issuance on bank credit, are other common definitions of inflation. Money issuance is one of the most significant factors that govern price levels, not only in developing economies. Excessive money issuance and circulation tends to increase production costs, depress the exchange rate, decrease the availability of resources such as food and fuel, exaggerate the effects of natural disasters, artificially inflate demand, and increase the cost of storing commodities. These are all primary causes of inflation. Increasing the money supply also stimulates consumer spending. This nexus between the money supply and price levels is a significant element in most macro-economic theories (Akter, 2016). However, the quantity theory of money questions whether inflation is affected by extraneous factors. Money supply has a direct link to inflation as shown by the equation of exchange. Monetarists argue that money plays an active role in changes to prices and incomes, as illustrated by rising prices in some countries after World War II. This was due to the acceptance of standard monetary policy. It was found that unidirectional causality went from money to income, as well as costs. There is an argument that increasing expenditure by printing paper money without increasing taxes has a psychological effect on taxpayers that leads to gradual price rises. (Hossain, 2011)contended that "inflation is always and everywhere a monetary phenomenon". The relationship between money and prices has been the subject of numerous empirical studies over the past few decades. In many countries, the central bank has an influence on prices by virtue of its control of the money supply Akter (2016). "Narrow money" (M1) contains currency (C) plus demand deposit (DD), whereas broad money (M2) includes currency(C) plus demand deposit (DD) and savings deposit (SD). M1 and M2 work as a monetary base that influences the amount of "high-powered" money (Ali and Islam, 2010). Money supply is measured by M1 and M2 money in Bangladesh, and that has a positive and powerful effect on accelerating economic activity. Bangladesh is a densely-populated developing country. Policy makers there should place a premium on determining the relationship between money and inflation. Some studies have been conducted on whether there is any causality link between money supply and inflation in Bangladesh, but sophisticated research using advanced econometric techniques with time series data is absent from most of these. The objective of this study was to rectify this. It found that M1 and M2 money supply are both significant causes of inflation in Bangladesh. It is desirable that the agency with responsibility for monetary policy should keep the money supply stable as a means of controlling inflation. But there can, on occasion, be considerable demand to hold in check. In addition, mild inflation can play a useful role in socioeconomic development. It is the moral responsibility of the monetary authority to develop ways to control inflation and maintain a stable money supply through constant monitoring.

2. LITERATURE REVIEW

Lee and Li (1983) tested causality between money, prices, and incomes in Singapore, and found a bidirectional causality found between money and incomes, and a unidirectional causality between money and prices.

Osakwe (1983) tested the causality between inflation and money supply for Nigeria by using Vector Autoregressive (VAR) model for the period of 1970 to 1980 and found a positive relationship between them. Causality test results suggest that a unidirectional causality exists between money supply and the inflation rate. That study concluded that the inflation level should be used as an operational vanguard to measure the effectiveness of monetary policy.

Abdullah and Yusop (1996) analyzed the causality between money supply growth and inflation for Malaysia using quarterly data from 1970 to 1992. They found a unidirectional causality from money supply to inflation. Hansen and Kim (1996) examined the causality between the supply of money and inflation for the economy of Germany. They used GNP, price level and money supply as endogenous variables; and real import price as an exogenous variable. Masih and Masih (1998) examined money supply and gross prices causality in some Southeast Asia economies using the Granger Causality test, modified Sims, and vector error correction modeling (VECM). They found that M1 and M2 money Granger causes CPI increases in countries like Malaysia.

Bengali *et al.* (1999) found a unidirectional relationship between prices and the money supply in Pakistan. Pinga and Nelson (2001) examined the causality between money supply and gross prices, something that has become a source of controversy between monetarists and structuralists in recent times. They addressed shortcomings in the literature in three different ways. First, they used alternative measures of large samples countries between money and price variation. Second, they tested the combined data in the literature for causality and suggested a combined result of per capita income level, inflation magnitude and the independence of the central bank. Finally, results were found with different lags due to accepting lag length which is an unrestricted indication of homogeneity on money supply, found to be robust in Kuwait, USA and Paraguay. Structural evidence, on the other hand, was found in Chile and Sri Lanka.

Nicoletti-Altimari (2001) Showed the causality between inflation and M1, M2 and M3; and used money-based indicators (real money gap, money overhang measures) and inflation in the European economy for the period 1980 to 1997. Grauwe and Polan (2005) examined causality between money and CPI among 160 countries over 30 years. They found the relationship between long-run prices, the growth rate of money, and the causality was not proportionate, and was stronger only in high inflation countries. Abbas and Husain (2006) analyzed the causality of prices and the supply of money of Pakistan economy. Unlike Bengali *et al.* (1999) they found a bidirectional relation between the two variables. The relationship between the money supply and inflation is not immediate in normal conditions. It should not be expected that all results stemming from recent applications of monetary policy will occur concurrently. It is not known how much time it takes for changes in the money supply to flow through to the inflation rate. Aikaeli (2007) attempted to evaluate this lag for Tanzania where he used seasonally adjusted monthly data in his analysis for the period 1994 to 2006. The GARCH model is followed in this context. The results suggest that a change in the money supply would affect the inflation rate significantly after seven months.

Thornton (2008) tested the causality between inflation and money for thirty-six African countries using panel data and cross-section data. The study found a weak long-run relation for those countries where inflation and money supply growth were less than ten per cent, and a vibrant connection where the rate was higher than ten. This supported the findings of Grauwe and Polan (2005). Lahura (2010) examined the relevance of monetary aggregates based on an empirical analysis in Peru using the vector error correction model. The results indicated that to forecast inflation in Peru, M3 seems to be the only aspect of monetary policy that appears useful, and the effectiveness of any narrower monetary sum was not supported by clear evidence, whether as a potential monetary policy instrument, or as an information variable. Atrkar (2014) assessed the nexus of the M1 and M2 money supply growth and prices in Iran using cointegration and causality methods. The study's objective was to determine whether the causes of inflation were due to excessive money supply, which had been determined as the exclusive cause of inflation between 1998 and 2010. Variables were not cointegrated, and a bidirectional causality of money supply and price levels were found when using the Johansen cointegration test. These findings are relevant in an economy where inflation can have a negative spiral effect on money growth that causes a self-determining inflationary process.

Yousfat (2015) checked the causality between money growth and inflation in the Gulf Co-operational Council (GCC) region running cointegration and causality tests on data from 1970 to 2013. The study found a significant and positive long-run relation between money supply with inflation. They concluded that price stability could be maintained, and the minimum rate of inflation could be observed, if the money supply was to be reduced.

Although there is a significant body of empirical work on the causality link between money supply and inflation, developing countries like Bangladesh rate barely a mention. Ahmed (2010) checked the long-run relation between inflation and monetary growth using the Bound Test method. He found cointegration in both series. Although they did not get any statistically meaningful connections over the long-run through the ARDL model, they still found a negative and statistically significant short-run relation. The Toda Yammato Causality test has found a relationship between inflation and economic growth, regardless of whether a reverse connection was found.

Amin (2011) attempted to examine the relevance of the quantity theory of money in the Bangladeshi economy from 1976 to 2006. He found that variables were at a stationary level, or in the first level of difference within the Dicky Fuller (ADF) and Phillips-Perron (PP) tests, and that some of the related variables followed the existence of a long-term relationship in the Johansen cointegration test. A unidirectional causality running money supply to inflation was found using the Granger causality test.

Using quarterly data for the period 1972 to 2011 (Nguyen *et al*., 2011) found a healthy long-run relationship of M2 money and CPI compared to M1 money, but strong and stable relations exist in the short-run dynamic analysis in Bangladesh.

Kamal (2016) checked the causality between the supply of money and price movements from 1977 to 2013, and found a true directional causality in Bangladesh. Cointegration analysis ascertains the long-run causality between the variables. Using monthly data from May 2010 to December 2017, Sultana *et al.* (2019) found a robust long-run relationship between inflation and money supply, but no such relation over the short-run. They applied cointegration, and the vector error correction model with a result that suggests those responsible for monetary policy in Bangladesh should think about the long-run effects of the money supply in when setting policy.

3. METHODOLOGY

This study uses monthly time series data on CPI, M1 and M2 money from Bangladesh for the period May 2010 to August 2018. The data were collected from the economic trends, the Bangladesh Bank, the Bangladesh Bureau of Statistics, and the Bangladesh Ministry of Finance. All these sources are recognized and accepted. Data and information covered by these sources are used widely and are appropriate to this analysis. The following tests are used for certain purposes:

i. Unit root tests are used to check the stationarity of the variables.
ii. Cointegration tests the determination of the number of cointegration equations among the variables.
iii. To verify the short-run dynamics with long-run equilibrium, the error correction model (ECM) is employed.
iv. Granger Causality is used to check the indication of variables.

The relevant equations are discussed in the next section along with the computed results using EViews 9 software.

4. EMPIRICAL RESULTS ANALYSIS AND DISCUSSION

4.1. Analysis of Unit Root Test Results

The unit root problem is checked for every variable by using DF test, ADF test, PP test and KPSS test with intercept(C) and trend (T) terms. The common form of DF or ADF is estimated by Equation 1:

$$\Delta CPI_t = \alpha_0 + \gamma CPI_{t-1} + \sum_{i=1}^{n} \delta CPI_i + \varepsilon_t \qquad (1)$$

Here, $CPI =$ Consumer Price Index, $\Delta =$ First Operator, $CPI_{t-1} =$ Measures of the unit root, $n =$ optimal number of lags in the depended variable and $\varepsilon_t =$ random error term.

PP and KPSS tests are also used to verify the results of the ADF test. Estimated results are shown in Table 1 (A to E). In the Phillips and Perron (PP) test, M1 is found to be stationary at level, and other variables become stationary at level one. Hence, the KPSS is a powerful test, and it indicates that three variables are non-stationary at the level, and becomes stationary at first difference, I (1). The final result is shown in Table 1(E).

4.2. Cointegration Test Results

Since all the variables are stationary at level one, we need to a employ cointegration test to check the long-run relationships of the variables, and the Engle-Granger and Johansen-Juselius cointegration tests are used in this connection. In the Engle-Granger cointegrations test, Equations 2 and 3 are used thus:

$$lnCPI_t = a + blnM_{it} + u_{t,} \qquad (2)$$

$$\text{Where, } i = lnM1I \text{ or } lnM2I \qquad (3)$$

Table 2 covers the Engle-Granger long-run cointegrating results of the coefficients of the equation. Here coefficients are in natural logarithm (ln) form. Thus, we can take the estimates as elasticities, and the long-run elasticity coefficients of M1 and M2 are found to be 0.48 and 0.46 respectively. Both are positive but less than one (1). The t values shown are very high, and the null hypothesis (time series is non-stationary) is accepted. Besides, the adjusted R^2 values are 0.95 and 0.99 for lnM1 and lnM2 respectively. These are very high, and indicate substantial explanatory power for the two models of money supply in the prediction of inflation in Bangladesh. It should be noted that the F-statistics are 1893.82 and 12101.02 for lnM1 and lnM2 respectively, and represent the significance of the overall regression. But in both models, the adjusted R^2 is more significant than the corresponding Durbin-Watson (D-W) statistic, and could be interpreted as a spurious relationship (Granger and Newbold, 1974).

Table-1. Unit Root tests' results.

Table 1(A): DF Test[Null hypothesis, H_0: Time series is non-stationary]				
Variables	**Only Constant(C)**		**Constant & Trend(CT)**	
	At level	At 1st Difference	At level	At 1st Difference
lnCPI	1.230717	-2.115817**	-1.563093	-3.909997***
lnM1	0.662161	-2.298585**	-2.154352	-3.908627***
lnM2	0.015325	-1.649377*	-1.064916	-3.799830***
Table 1(B): ADF Test[Null hypothesis, H_0 : Time series is non-stationary]				
Variables	Only Constant(C)		Constant & Trend(CT)	
	At level	At 1st Difference	At level	At 1st Difference
lnCPI	-0.979299	-3.871070***	-2.002118	-3.932433**
lnM1	0.623190	-2.599417*	-2.031924	-5.117652***
lnM2	-2.507611	-4.010914***	-0.146674	-5.310225***
Table 1(C): PP Test[Null hypothesis, H_0 : Time series is non-stationary]				
Variables	Only Constant(C)		Constant & Trend(CT)	
	At level	At 1st Difference	At level	At 1st Difference
lnCPI	-2.005697	-6.078836***	-3.999364	-6.079183***
lnM1	-0.275406	-16.28913***	-4.670664***	-------
lnM2	-3.434874**	-------	-1.989752	-14.57973***
Table 1(D): KPSS Test[Null hypothesis, H_0 : Time series is stationary]				
Variables	Only Constant(C)		Constant & Trend(CT)	
	At level	At 1st Difference	At level	At 1st Difference
lnCPI	1.218090***	0.252107	0.272542***	0.042563
lnM1	1.213787***	0.051095	0.249516***	0.044353
lnM2	1.212353***	0.720136	0.299176***	0.030549

Table 1(E): Final Decision					
Test→ Variable ↓	DF	ADF	PP	KPSS	Decision
lnCPI	I(1)	I(1)	I(1)	I(1)	**I(1)**
lnM1	I(1)	I(1)	I(0)	I(1	**I(1)**
lnM2	I(1)	I(1)	I(1)	I(1)	**I(1)**

Source: Author own calculation using Eviews-9.

Table-2. OLS Estimation for M1 and M2 models using Engle-Granger Long-run Cointegration.

Coefficient (T-Statistic)	**Estimation with M1**	**Estimation with M2**
C	-0.468914*** (-3.541630)	-0.912100*** (-16.17020)
lnM1	**0.484897***** (43.51813)	-------------
lnM2	--------	**0.462194***** (110.0047)
Adjusted R-squared	0.950297	0.991885
F-statistic	1893.828	12101.02
Probability (F-statistic)	0.000000	0.00000
Durbin-Watson statistic	0.409151	0.521348
Dependent Variable	**lnCPI**	**lnCPI**

Source: Author own calculation using Eviews-9.

As the variables are found to be non-stationary, and the relation of money supply to inflation is found to be spurious, traditional criteria are not therefore applicable in this regard. The second step of the Engle-Granger method needs to be conducted to determine the existence of cointegration based on whether the residuals obtaining from these two long-run equations are stationary or not. The ADF, PP and KPSS unit root test are applied as residuals. RESM1 is derived from the money supply equation M1 [$CPI_t = \alpha + \beta lnM_{it} + lnu_t\,; i = lnM1I \text{ or } lnM2I$] and RESM2 is derived from money supply equation M2. The results of the tests are shown in Table 3:

Table-3. Unit root test for residual.

Equation→ Test ↓	RESM1		RESM2	
	Level	**First Difference**	**Level**	**First Difference**
ADF	-1.698152 (N)	----	-3.011621 (N)	----
PP	-3.305929 (N)	----	-4.550835 (N)	----
KPSS	0.33 (C)	----	0.05 (C)	----
Decision	I(0)		I(0)	

Source: Author own calculation using Eviews-9.

According to the ADF test, at one per cent and five per cent levels of significance, RESM1 is found to be non-stationary, but at the ten per cent level it is found to be stationary. Besides this, at all levels of significance and in all tests, RESM1 and RESM2 are found to be stationary at the level I(0). So, these results signify the actuality of the long-run cointegrating causality for both M1 and M2 money supply with CPI, so inferring the appearance of long-run relationships among the variables.

The results of the cointegration condition using the methodology of Johansen and Juselius (1990) is depicted in Table 4. From the Trace statistic as well as from maximum eigenvalue statistical results, it is indicated that the null hypothesis r=0 is rejected, but r≤1 is not rejected which implies that M1 money supply and inflation have a cointegration relationship, and that there is only one cointegration vector. Again, for regression with M2 both the null hypothesis r=0 and r≤1 are not accepted, thus there is a cointegrating equation at a five per cent level of significance. Accordingly, the conclusion is that the variables have at least one cointegration relationship.

Table-4. Johansen-Juselius Cointegration Test.

Regressions	Null Hypo	Alter. Hypo	Eigenvalues	Max-Eigen Statistic	5% Critical value	Trace Statistic	5% Critical value
Regression with M1	r = 0	r > 0	0.266927	**25.03524**	14.26460	**37.21604**	25.87211
	r ≤ 1	r > 1	0.070548	0.779049	3.841466	7.096548	12.51798
Regression with M2	r = 0	r > 0	0.130270	**36.03119**	14.26460	**50.79500**	15.49471
	r ≤ 1	r > 1	0.141187	**14.76380**	3.841466	**14.76380**	3.841466

Source: Author own calculation using Eviews-9.

4.3. Dynamics and Error Correction Regression

Since the residuals of least squared estimation are stationary at level; I(1) confirms the cointegration between explained and explanatory variables. Now it is possible to estimate the error correction model to explore the short-term dynamics regression and the adjustment speed to long-run equilibrium using the following three regression(s) in Equations 4 to 6:

$$\Delta LCP_t = \alpha_{10} + \alpha_{12}\Delta LCPI_{t-i} + \sum_{i=1}^{k}\delta_{1i}\,\Delta LM1_{t-1} + \sum_{i=1}^{k}\partial_{1i}\,\Delta LM2_{t-i} + \gamma_1 u_{t-i} + \varepsilon_{1t} \quad (4)$$

$$\Delta LM1_t = \alpha_{20} + \alpha_{22}\Delta LM1_{t-i} + \sum_{i=1}^{k}\delta_{1i}\,\Delta CPI_{t-1} + \sum_{i=1}^{k}\partial_{1i}\,\Delta LM2_{t-i} + \gamma_2 u_{t-i} + \varepsilon_{2t} \quad (5)$$

$$\Delta LM2_t = \alpha_{30} + \alpha_{32}\Delta LM2_{t-i} + \sum_{i=1}^{k}\delta_{1i}\,\Delta CPI_{t-1} + \sum_{i=1}^{k}\partial_{1i}\,\Delta LM1_{t-i} + \gamma_3 u_{t-i} + \varepsilon_{3t} \quad (6)$$

Here, u_{t-1} = error term for adjustment.

In this ECM model, five lags (k*=5) and six lags (k*=6) are used for the M1 and the M2 respectively. The statistics of the lag-length criterion of final prediction error (FPE), Akaike information criterion (AIC), sequentially modified LR test statistic (LIR), the Schwartz criterion (SC) and the Hannan-Quinn (HQ) information criterion are applied to determine the number of optimal lags. The ECT is the coefficient of lagged residual derived from the estimate in Equation 1. By using the OLS method, the error correction model may be calculated.

Table 5 depicts the outputs of the ECM model. The error correction term coefficient for the equation of M2 is stronger than that of M1. In both cases, the ECT found an expected negative sign and is also statistically significant. The deployment of the error correction dynamic model for M1 was not satisfactory. Almost all of the lagged coefficients in this model were found to be statistically insignificant apart from ΔCPI(-1), ΔMi, and ΔMi(-1). Besides, the coefficient of RESM1(-1) is very low (-0.0466) and is also significant at the ten per cent level. Adjusted R^2 is not so much (0.397), and the D-W statistics are close to two which indicates no serial correlation in the data. The negative coefficient of RESM1 confirms the stability of the model.

By contrast, the error correction dynamic model for the equation with M2 is superior to that of M1. Despite the most lagged coefficients being statistically insignificant except ΔCPI(-1), ΔCPI(-2), ΔCPI(-5), ΔCPI(-6), ΔMi(-1), and ΔMi(-6), the model is more acceptable with a well-adjusted R^2 (0.618) value. The probability of the F statistic is below one per cent, and the D-W statistics indicate no existence of autocorrelation in the data. Thus, the coefficient of RESM2 is very strong (-0.4019) with the desired negative sign, and at a level of one per cent the results are statistically significant.

Table-5. Result of Error Correction Model.

Coefficient (T-Statistic)	Estimation with M1	Estimation with M2
ECT(-1)	**-0.046656*** (-1.77471)	**-0.401986***** (-5.02851)
ΔCPI(-1)	0.414975*** (3.47334)	0.492876*** (3.71191)
ΔCPI(-2)	-0.047753 (-0.38576)	0.347945** (2.55387)
ΔCPI(-3)	-0.064872 (-0.54445)	0.076735 (0.61881)
ΔCPI(-4)	-0.181172 (-1.44615)	-0.065614 (-0.54649)
ΔCPI(-5)	0.174491 (1.59119)	0.336481*** (2.83348)
ΔCPI(-6)	--------	0.183476* (1.76464)
ΔMi	0.041229* (1.85243)	0.023507 (0.29427)
ΔMi(-1)	0.074720*** (2.72499)	0.187358** (2.09943)
ΔMi(-2)	0.017177 (0.61141)	0.004646 (0.04642)
ΔMi(-3)	0.044914 (1.60182)	0.013372 (0.13348)
ΔMi(-4)	0.045132 (1.58519)	0.141298 (1.40084)
ΔMi(-5)	-0.001304 (-0.05521)	-0.113592 (-1.21500)
ΔMi(-6)	----------	-0.167008* (-1.97343)
Adjusted R-squared	0.397154	0.618315
F-statistic	6.105683	11.64545
Probability (F-statistic)	0.000000	0.000000
Durbin-Watson statistic	**2.032791**	**1.721585**
Dependent Variable	**ΔCPI**	**ΔCPI**

Source: Author own calculation using Eviews-9.

With the coefficient value of RESM2(-1) being -0.40 for a short-run dynamic model, wM2 indicates that the speed of adjustments takes from any deviation of the CPI to its long-run equilibrium at the rate of 40 per cent per month. In other words, the output of the short-run dynamic regression recommends that when the CPI is troubled and departs from its long-run equilibrium by any external factor, the broad money (M2) supply will quickly fix at 40 per cent to bring prices back to its long-run equilibrium. It is clear, then, that the error correction model for the M2 model is superior to that of the M1. This output demonstrates that the broad money (M2) is a more important and significant element in explaining the level of CPI, not only for long-run co-integration, but also for short-run dynamics in Bangladesh.

4.4. Granger Causality Test

The Granger causality results indicate a bi-directional causality appearance between money supply (M1) and CPI. By contrast, there is no Granger causality of money supply (M2) and CPI (short-run independence between M2 money and CPI). These results are contrary to Nguyen *et al.* (2011). However, a pair-wise Granger causality test indicates a bi-directional causality between M2 money and CPI, and a uni-directional causality stemming from CPI to M2 money.

Table 6 shows the pairwise Granger causality between M1 money and CPI. Since p-value < F-statistic, the null hypothesis that LM1 does not Granger cause LCPI and LCPI does not Granger cause LM1 is rejected, and it is safe to conclude that a bi-directional causality exists between money supply and CPI in Bangladesh. Similarly, the results in Table 7 reject the null hypothesis that LM2 does not Granger cause LCPI and the LCPI does not Granger cause LM2, which also confirms the appearance of bi-directional causality between economic growth and CPI in Bangladesh. Both tests were run at twelve lags.

Table-6. Pair-wise Granger Causality Test (Lags=12).

Null Hypothesis:	F-Statistic	P-value	Observation
LM1 does not Granger Cause LCPI	1.42129	0.1802	88
LCPI does not Granger Cause LM1	2.59649	0.0072	

Table-7. Pair-wise Granger Causality Test (Lags=12).

Null Hypothesis:	F-Statistic	P-value	Observation
LM2 does not Granger Cause LCPI	2.98608	0.0023	88
LCPI does not Granger Cause LM2	3.75791	0.0003	

Source: Author own calculation using Eviews-9.

5. CONCLUSION

One of the most important targets for any developing country like Bangladesh is to keep inflation under control. Managing the money supply is a substantial concern for the country's central bank, and these two variables, taken together, represent a significant challenge for policymakers. This study has attempted to check the causality between CPI (measures of inflation) and money supply (M1 and M2) in Bangladeshi context. Monthly time series data covering May 2001 to August 2018 were employed.

The variables were found to be nonstationary at level, but did become stationary after first difference. Cointegration tests indicate the appearance of a statistically significant positive long-run relationship between inflation and money supply. The ECM results suggest that the RESM1 (-1) coefficient is significant at the level of ten per cent but was nevertheless very low (-0.0466). By contrast, the coefficient of RESM2 (-1) is statistically highly significant with the expected sign. These results conclude that where there is a stable, vibrant long-term relationship, the occurrence of a shock will cause a move back towards equilibrium.

The adjustment of M2 is faster than adjustment of M1. The speed of adjustment to be estimated concerning the M2 equation is found to be 0.40 (about 40 per cent per month). These results are somewhat similar to Nguyen *et al.*

(2011). In the ECM model, five lags (k* =5) are used for M1 and six lags (k*=6) for M2. The Granger causality test in this study reveals a bi-directional relationship between CPI and money supply in Bangladesh.

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