Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.3, No.12, 2012

Determinants of Inflation in Bangladesh: An Empirical Investigation

Kazi Mostafa Arif[1*] Munshi Murtoza Ali[2]

1. Assistant Professor, Department of Economics, Islamic University, Kushtia 7003, Bangladesh.
2. Assistant Professor, Department of Politics and Public Administration, Islamic University, Kushtia 7003, Bangladesh.

*E-mail of corresponding: arifeconomics@yahoo.com

Abstract
The study analyzed the major determinants of inflation in Bangladesh using data for the period from 1978 to 2010. The study employed Johansen-Juselius cointegration methodology to test for the existence of a long run relationship between the variables. The cointegrating regression considers only the long-run property of the model, and does not deal with the short-run dynamics explicitly. For this, the error correction from the long run determinants of inflation is then used as a dynamic model to estimate the short run determinants of inflation. The study concluded that the GDP, broad money, government expenditure and import have a positive effect on the inflation in long run. On the other hand, government revenue and export have a negative effect. The government expenditure coefficient is 0.466 and the money supply coefficient is 0.337, implying a one percent increase in government expenditure and one percent increase in money supply elicit 0.466% and 0.337% increase in inflation respectively. In the short-run money supply has been found to be major factor influencing inflation in the country.
Key words: cointegration, error correction model, broad money.

1. Introduction

One of the most enduring debates in economics is whether demand side factors (a consequence of increased economic activity) or supply side factors (due to increased cost) cause inflation. Milton Friedman (1963) wrote Inflation is always and everywhere a monetary phenomenon. The Quantity Theory of Money leads us too agree that the growth in the quantity of money is the primary determinant of the inflation rate. John Maynard Keynes (1936) argued that demand determines output, which, in turn, determines employment and prices. At full employment of men and capital, excessive demand for goods and services drives up the general level of prices causing inflation. High inflation leads to decline in the purchasing power of nominal assets, such as money and wages. It is also argued that inflation brings with it a lot of uncertainty about future prices since not all the prices tend to rise at the same rate. Therefore firms are having hard time planning its future production and how the particular prices of its inputs and production evolve relative to other prices (Dornbusch et al. 1996). With the vision to establish Bangladesh as a middle-income country by 2021, the biggest challenge in macro-economic management is reining the inflation. The inflation rate of Bangladesh in the last five years, starting from FY 2004-05 is above 6 percent and in 2010 is 8.44 percent, with the non-food inflation close to 5.37 percent and food inflation 10.34 percent. The gap between the targeted GDP growth rate and the achieved GDP growth in the last twenty years revealed that increase in average inflation may be one of the major reasons (Bangladesh Economic Update, 2010). The recent inflationary environment in the country may be due to both demand side factors and supply side factors such as M2 growth, trade deficit, increasing world food price and growth of government borrowing. International Food Policy Research Institute (IFPRI) recently published the Global Hunger Index (2010) in which Bangladesh finds its place in one of the lowest rank among the South Asian countries. Bangladesh is in the alarming position with 24.2 score. The increased average inflation is making the situation worse. Caution is needed since higher inflation may trigger inflationary spirals beyond a safe level as implied by larger inflation elasticities. As Bruno (1995: 38) puts it, ―chronic inflation tends to resemble smoking; once you get the habit; it is very difficult to escape a worsening addiction.

The objective of this paper is to examine both demand and supply side determinants of inflation in Bangladesh on the basis of empirical analysis. The rest of the paper is organized as follows; section 2 reviews the literature, section 3 explains the model, data and methodological framework, section 4 presents the test results; and section 5 deals with conclusions.

2. Literature Review

There have been ample literatures to examine the relationship between inflation and its determinants. But a few studies are found on empirical analysis of inflation and its determinants in Bangladesh. This section provides a summary of the findings from the previous literature. And also some related findings of other countries will be

included here. Bangladesh Bank, IMF and CPD (2007) explored that both demand and supply side factors constitute the relevant sources of inflation in Bangladesh. Among these are M2 growth, private sector credit growth, market capitalization growth, growth of government borrowing, remittance growth, exchange rate change, market syndicate. Taslim (1980) used regression models for explaining the inflationary process of Bangladesh. He explored that one year lagged money supply had significant positive effect on inflation. However, the introduction of wage variable as an additional independent variable resulted in dramatic fall of statistical significance of coefficients of other variables in the regression model. Another way, Khanam and Rahman (1995), examined the causative factors of inflation in Bangladesh during the period from 1972-73 to 1991-92 using Ordinary Least Square (OLS) method. Their results showed that growth rate of import prices and money wages, both considered as supply side variables, affect the inflation positively. They also found that all demand side variables have insignificant influence on the rate of growth of prices. In an analytical writing Ahmed and Das (2007) found that world food price and fuel price triggered inflationary pressure in Bangladesh. They also detected inflation inertia is another reason to sustain higher inflation. Kibria (2010) also traced there is a upward trend in inflation as international commodity prices are showing signs of increase, excess liquidity prevailing in the domestic market, increased flow of remittance and its impact on Forex Reserve and stagnancy in investment in Bangladesh. Basir et al. (2011) traced determinants of inflation in Pakistan for the period from 1972 to 2010 using Johansen Co-integration and Vector Error Correction approached. The study carries out long run as well as short run estimates of some factors influencing consumer price index (inflation) in Pakistan. The results of the analysis reveal that in the long run money supply, gross domestic product, government expenditures and imports are contributed in raising consumer price index while consumer price index is bound to decrease due to higher government revenues. In the short run, the coefficient of error correction term is -0.03 suggesting 3 percent annual adjustment towards long run equilibrium. Kim (2001) estimated the determinants of polish inflation during 1990-1999, using cointegartion and error correction models, identified three possible sources of inflation namely, the monetary sector, the labor sector and the external sector. Laryea and Sumaila (2001) examined the major determinants of inflation both in the long-run and short-run in Tanzania using OLS method, ADF test for unit root and error correction model for the time series data from 1992 to 1998 on quarterly basis. The result shows that in the short run, output and monetary factors are the main determinants of inflation. However, in the long run, the parallel exchange rate also plays a key role, in addition to output and money. The positive coefficients on the exchange rate variable reflect the effect on inflation via trade in goods, mainly through imports in the informal sector. Similarly, Abidemi and Maliq (2010) analyzed the dynamic and simultaneous inter-relationship between inflation and its determinants in Nigeria between 1970 and 2007. The findings reveal that growth rate of GDP, money supply, Imports, 1st lag of inflation and interest rate give positive impression on inflation rate. While other explanatory variables such as fiscal deficit and exchange rate are indirectly associated to inflation. Saatsiglu and Korap (2006) investigated the potential causes of chronic-high inflationary environment in Turkish economy for the period 1989-2004 using monthly observations. The results obtained support the view of cost-push or supply side factors such as exchange rate, wage indexation mechanism and real interest structure in the economy seem to be the main causes of inflationary process in Turkish economy, while demand-pull monetary factors have not been found indicating consequential effects on inflation. Khan et al. (2007) examined the main determinants of recent inflation trends in pakistan. Using data from the 1972-73 to 2005-06 period, applying ordinary least square method and verifying results through Breusch-Godfrey Serial Correlation LM and Augmented Dickey-Fuller tests. The analysis concludes that government sector borrowing, real demand, private sector borrowing, import prices, exchange rate, government taxes, previous year consumer price index and wheat support prices are found to have direct contribution in consumer price index of Pakistan. Khathlan (2011) examined the determinants of inflation in Saudia Arabia for the period 1980 to 2009, both in the long run as well as in the short run, using cointegration method developed by Pesaran et al. (2001). The result shows that inflation in world economy, depreciation of domestic currency and supply bottlenecks are the major factors influencing inflation in the long run. In the short run, money supply and supply bottlenecks have been found to be the major factors influencing inflation in the country. Shahadudheen(2012) analyzed the major determinants of inflation in India extracting 54 time series quarterly observations. The study employed Johansen-juselius cointegration methodology to test for the existence of a long run relationship between the variables. The error correction from the long run determinants of inflation is used as a dynamic model to estimate the short run determinants of inflation. The study concluded that the GDP and broad money have a positive effect on the inflation in long run. On the other hand, interest rate and exchange rate has a negative effect. Mosayed and Mohammad (2009) examined the determinants of inflation in Iran for the data from 1971 to 2006. The study adopted Autoregressive and distributed lag model (ARDL) and concluded that money supply, exchange rate, gross domestic product, change in domestic prices and foreign prices, a variable that capture the effect of Iran or

Iraq war are the major determinants of inflation in Iran and all are positively contributing to the domestic prices in Iran.

3. Data, Model and Methodological Framework

3.1 The data

Annual data from 1978 to 2010 were used to investigate the relationship between Inflation and its sources. The data of all variables have been collected from various issues of Bangladesh Economic Review.

3.2 The Econometric Model of Sources of Inflation

As the primary focus of this paper is to analyze the sources of inflation, the econometric model is specified to facilitate the test of hypothesis that whether explanatory variables cause inflation. Following Basir et al. (2011) we consider some important supply-side factors and demand-side factors for building the model as:

$$INF = \beta_0 + \beta_1 M2 + \beta_2 GDP + \beta_3 GOVREV + \beta_4 GOVEXP + \beta_5 EXPORT + \beta_6 IMPORT + u_i \quad (1)$$

Where

INF= CPI Inflation based on 1996 prices
M2= Broad money supply
GDP= Gross Domestic Product
GOVREV= Government Revenue
GOVEXP= Government Expenditure
Export= Exports of Goods and Services
Import= Imports of Goods and Services
U_i = Error term

Descriptive statistics and correlation matrix of the variables of our selected model are expressed in Table 1a and 1b respectively.

Table 1a

	EXPORT	GDP	GOVEXP	GOVREV	IMPORT	INFLATION	M2
Mean	4613.094	42027.13	5547.092	3699.253	7377.173	199.0915	1826.672
Median	2534.000	40725.76	4425.320	3122.780	4191.000	177.0000	891.5740
Maximum	16204.70	57441.51	16003.91	11509.41	23738.40	436.0000	8891.281
Minimum	499.0000	32300.90	1417.710	858.4000	1409.000	113.8700	52.43600
Std. Dev.	4608.048	6121.348	3642.967	2726.108	6298.697	80.67452	2250.281
Skewness	1.213426	1.131277	1.275838	1.212269	1.347003	1.477522	1.660596
Kurtosis	3.441251	3.698538	4.100458	3.904747	3.831651	4.496704	4.999764
Jarque-Bera	8.365934	7.709769	10.61783	9.208304	10.93030	15.08706	20.66539
Probability	0.015253	0.021176	0.004947	0.010010	0.004232	0.000530	0.000033
Sum	152232.1	1386895.	183054.1	122075.3	243446.7	6570.020	60280.18
Sum Sq. Dev.	6.79E+08	1.20E+09	4.25E+08	2.38E+08	1.27E+09	208268.1	1.62E+08
Observations	33	33	33	33	33	33	33

Table 1 b

	EXPORT	GDP	GOVEXP	GOVREV	IMPORT	INFLATION	M2
EXPORT	1						
GDP	0.497	1					
GOVEXP	0.982	0.487	1				
GOVREV	0.987	0.487	0.993	1			
IMPORT	0.997	0.521	0.985	0.986	1		
INFLATION	-0.222	0.140	-0.253	-0.249	-0.203	1	
M2	0.984	0.522	0.976	0.980	0.986	-0.184	1

3.3 Methodological Background

The main objective of the study is to explore the links between inflation and its determinants in Bangladesh. To see the short-run and long-run relationship in the models unit root rest, co-integration test and error correction method will be used. A stationary time series is one whose basic properties do not change over time, while a non stationary variable has some sort of upward or downward trend. Most of the economic variables exhibit a non-

stationary trend. If variables are non-stationary then it will inflate R-square and the t score, in this condition regression known as spurious regression means the results become meaningless. If a time series has a unit root (non-stationary), the first difference of such time series will be stationary. The Augmented Dickey-Fuller (ADF) unit root test is used to examine the stationarity of the data set. The ADF test is based on following regression:

$$\Delta y_t = \alpha + \beta y_{t-1} + \delta t + \sum_{j=1}^{p} \gamma_j \Delta Y_{t-j} + \varepsilon_t \quad (2)$$

Where α is constant, t is a linear time trend, β, δ and γ_j *are* slope coefficients, ε_t is the error term. The null hypothesis of non-stationary series could be written as: H_0: $\beta = 0$. On the other hand, the one-sided alternative hypothesis of stationary series could be expressed as: H_1: $\beta < 0$. Once value for the test statistic is computed it can be compared to the critical value for the Dickey-Fuller Test (MacKinnon, 1991). If the test statistic is less than the critical value, then the null hypothesis of $\gamma=0$ is rejected and no unit root is present. Otherwise, the alternative hypothesis is accepted, that is unit root is present. If the variable is differenced once and the differenced series is stationary, then it is integrated of order one [i.e., I (1)]. Similarly, if it is differenced twice and the differenced is stationary, then it is integrated of order two [i.e., I (2)] and so on. Johansen cointegration test is used to test the long-run movement of the variables. As Engle and Granger (1987) pointed out, only variables with the same order of integration could be tested for cointegration. Therefore, both variables are examined for cointegration. Only variables with the same order of integration can be tested for their cointegration. A standard test – Johansen cointegration test is used to check the long-run movement of the variables (Johansen 1988; Johansen 1991). The test is based on the maximum likelihood estimation of the K-dimensional Vector Autoregression (VAR) of order *p*:

$$y_t = A_1 y_{t-1} + \text{---------} + A_p y_{t-p} + Bx_t + \varepsilon_t \quad (3)$$

where y_t is a *k*-vector of non-stationary I(1) variables, x_t is a *d*-vector of deterministic variables (such as a constant, or a constant and time trend etc.) and ε_t is a vector of errors (innovations). We use the Trace (Tr) eigenvalue statistic and Maximum (L-max) eigenvalue statistic (Johansen 1988; Johansen and Juselius 1990). The trace test evaluates the null hypothesis that there are *r* or less cointegrating vectors against the alternative hypothesis that there are more than *r*. This test is expressed by

$$\text{Tr} = -T \sum_{i=r+1} \ln(1 - \hat{\lambda}_t) \quad (4)$$

Where, T is the number of usable observations, and the $\lambda_{1,s}$ are the estimated eigenvalue from the matrix.The maximal eigenvalue test assesses the null hypothesis that there are exactly *r* cointegrating vector against the alternative hypothesis that there is *r+1*. The maximal eigenvalue test uses the *(r+1)* eigenvalue and is given by

$$L - \max = -T \sum_{i=r+1} \ln(1 - \lambda_{r+1}) \quad (5)$$

If trace eigenvalue test and maximum eignevalue test yield different results, the results of the maximum eigenvalue test should be used because the power of the maximum eigenvalue test is considered greater than the power of the trace eigenvalue test (Johansen and Juselius 1990). The order of VAR, p, in the error-correction model was chosen by minimizing the Akaike's information criterion. According to Granger (1988), if the variables are integrated of order I(1) and are cointegrated, then there must exist at least one way causation. If the variables are cointegrated, the existence of an error-correction representation may take the following form:

$$\Delta x_t = \alpha + \sum_{i=1}^{r} \beta_i \Delta x_{t-i} + \sum_{i=1}^{s} \gamma_j \Delta y_{t-j} + \delta ECT_{t-1} + u_t \quad (6)$$

$$\Delta y_t = a + \sum_{i=1}^{p} b_i \Delta y_{t-i} + \sum_{i=1}^{q} c_j \Delta x_{t-j} + dECT_{t-1} + v_t \quad (7)$$

where *ECM* explains the error-correction mechanism term. This ECM_{t-1} is the one period lagged value of the estimated error of the cointegrating regression obtained from OLS (Ordinary Least Squares) estimation. The logic behind this model is that generally a long-run equilibrium relationship between two economic variables exists. But, in the short run there can be disequilibrium. Therefore, the error correction mechanism corrects a proportion of disequilibrium in the next period. So, the error correction process is an instrument of reconciling short-run and long-run behavior. In the error correction model, β_i/b_i & γ_j /c_j are the short-run dynamic coefficients and δ is the long-run coefficient, u_t & v_t are white-noise residuals. The absolute value of δ determines how quickly the equilibrium is restored. Conversely, in the absence of cointegration, a vector autoregression (VAR) needs to be constructed using first differences of the variables.

4. Test Results

The empirical results of the test are encouraging. They are discussed as below. Before conducting tests for cointegration and causality, the stationarity properties of the variables have been checked by using Augmented Dickey-Fuller (ADF) unit root test. To determine the order integration of time series, unit root test is applied on level as well as on first difference. The table-2 shows the results of ADF unit root test.

Table 2: ADF Test Result

Variables	Level		First Difference	
	Constant & Trend	Result	Constant & Trend	Result
Inflation	-2.572	I(1)	-5.624	I(0)
M2	25.664	I(0)	6.611	I(0)
GDP	-2.333	I(1)	-4.616	I(0)
Export	1.707	I(1)	-4.131	I(0)
Import	1.056	I(1)	-4.443	I(0)
Gov. Revenue	2.966	I(1)	-3.846	I(0)
Gov. Expenditure	3.001	1(1)	-7.369	I(0)

Note: Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

The reported result in table reveals that the hypothesis of a unit root can't be rejected in all variables in levels. However, the hypothesis of a unit root is rejected in first differences at 0.05 level of significant which indicates that all variables are integrated of degree one, I (1). That means all the variables achieve stationarity only after first difference. The estimation of the equation by direct OLS gives the following results:

Table 3: Estimation of the model

Dependent Variable: INFLATION				
Method: Least Squares				
Sample: 1978 2010				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXPORT	-0.050301	0.050313	-0.999752	0.3266
GDP	0.002254	0.002892	0.779383	0.4428
GOVEXP	-0.040260	0.039174	-1.027739	0.3135
GOVREV	-0.001027	0.058031	-0.017698	0.9860
IMPORT	0.045457	0.040341	1.126808	0.2701
M2	0.030875	0.039805	0.775666	0.4449
C	171.7823	122.1883	1.405881	0.1716
R-squared	0.253988	Mean dependent var		199.0915
Adjusted R-squared	0.081832	S.D. dependent var		80.67452
S.E. of regression	77.30321	Akaike info criterion		11.71918
Sum squared resid	155370.4	Schwarz criterion		12.03662
Log likelihood	-186.3665	Hannan-Quinn criter.		11.82599
F-statistic	1.475334	Durbin-Watson stat		0.887612
Prob(F-statistic)	0.225481			

The findings of the estimated equation are as follows: The results reveal that money supply, GDP and import are found to be directly related to the price level in case of Bangladesh. The coefficient having positive sign is significant suggesting that 1 percent increase in money supply leads to 0.03 percent increase in consumer price index on the average in the long run. The result is according to macroeconomic phenomenon of classical economists given in quantity theory of money as increase in money supply leads to higher price levels. Due to higher money supply, more funds will be available to invest in the economy, investment will be taken place, more employment will be generated, aggregate demand will increase, and finally there will be increase in consumer price index. It affects price level through demand side. GDP is inducing consumer price index at 1 percent level of significance implying that consumer price index will increase by 0.002 percent due to 1 percent increase in gross domestic product on the average in the long run. In the same manner, if imports of goods and services will be raised by 1 percent, price level will increase by 0.454 percent on the average in the long run. With regards to government revenue, government expenditure and export it is having inverse effects on consumer price index.

4.1 Johanson Co-integration Result

The next step in our empirical analysis is to test for cointegration. Since the variables are considered to be I (1).

Table 4: Co-integration Result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.915691	179.1099	125.6154	0.0000
At most 1 *	0.679312	102.4387	95.75366	0.0160
At most 2	0.597390	67.18286	69.81889	0.0797
At most 3	0.497389	38.97948	47.85613	0.2611
At most 4	0.274121	17.65341	29.79707	0.5917
At most 5	0.217954	7.721859	15.49471	0.4956
At most 6	0.003246	0.100784	3.841466	0.7509
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.915691	76.67120	46.23142	0.0000
At most 1	0.679312	35.25584	40.07757	0.1582
At most 2	0.597390	28.20337	33.87687	0.2043
At most 3	0.497389	21.32607	27.58434	0.2570
At most 4	0.274121	9.931550	21.13162	0.7511
At most 5	0.217954	7.621075	14.26460	0.4185
At most 6	0.003246	0.100784	3.841466	0.7509

i. r refers to the number of cointegrating equation.
ii. The test has been conducted assuming linear deterministic trend.
iii. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values have been used for this purpose.

At 5 per cent significance level, the trace test indicates 2 cointegrating equations while the maximum eigenvalue test indicates 1 cointegrating equation among the variables. As the maximum eigenvalue test is usually preferred for trying to pin down the number of cointegrating vectors (Enders 2004), we conclude that there is 1 cointegrating equation among the variables based on this test.

Normalized cointegrating coefficients (standard error in parentheses)						
INFLATION	EXPORT	GDP	GOVEXP	GOVREV	IMPORT	M2
1.000000	-0.276631	0.014847	0.466707	-0.380927	0.089780	0.337776
	(0.04703)	(0.00230)	(0.03830)	(0.05825)	(0.03400)	(0.09208)

The normalized cointegration equation is depicted in above table which reveals that the GDP, government expenditure, import and money supply have a positive effect on inflation. On the other hand, export and government revenue have a negative. The GDP coefficient is 0.014, implying that in Bangladesh; a one percent increase in GDP while others keep constant contributes 0.014% increase in inflation. The government expenditure coefficient is 0.466, implying a one percent increase in government expenditure triggers 0.466% increase in inflation. One percent increase in import leads to a 0.089% increase in inflation. Similarly the money supply (M2) coefficient is 0.337 and showing significant, implying that in Bangladesh, one percent increase in money supply leads to a 0.337% increase in price level. Export and government carries expected negative and significant coefficient. By specifying the long run determinants of inflation in an error correction model, the short run as well as the long run effects of all right hand side variables in equation are estimated in one step, which is a major advantage that error correction modeling has in comparison to other estimation.

Table 5: Error Correction Model

Error Correction:	D(INFLATION)	D(EXPORT)	D(GDP)	D(GOVEXP)	D(GOVREV)	D(IMPORT)	D(M2)
CointEq1	-0.043942	-1.204167	-26.44302	-2.248040	-0.178896	-3.663284	0.043538
Standard Error	(0.09777)	(0.57152)	(5.36717)	(0.95640)	(0.40477)	(0.87587)	(0.07012)
t statistics	[-0.44946]	[-2.10695]	[-4.92681]	[-2.35052]	[-0.44197]	[-4.18246]	[0.62094]

Table-5 shows the speed of adjustment coefficients which reveals that only one variable is adjusting. The adjustment coefficients on cointegration equation 1 for all variables are negative except money supply. The empirical study is performed by using PC version of Eviews 6.0.

5. Conclusions

In this paper, we have examined the effects of some factors on inflation in Bangladesh by means of cointegration and error correction methods using yearly data for a period of 33 years. The results of the analysis reveal that in the long run money supply, government expenditures, gross domestic product and imports are contributed in raising consumer price index while consumer price index is bound to decrease due to higher government revenues, and higher exports. In the short run, the coefficient of error correction term is -0.04 suggesting 4 percent annual adjustment towards long run equilibrium. Government expenditure and money supply (M2) have more positive effect on inflation than GDP and import. The government expenditure coefficient is 0.466 and the money supply coefficient is 0.337, implying a one percent increase in government expenditure and one percent increase in money supply trigger 0.466% and 0.337% increase in inflation respectively. On the basis of the findings of the study, it does conclude that inflation in Bangladesh is triggered by both demand side factors as well as supply side factors but government expenditure and money supply are critical. The policy implication is that in Bangladesh to lessen inflation momentum the government will have to pursue a monetary and fiscal policy which matches with the actual scenario of real sectors and monetary sectors.

It is strongly experienced that further study should be carried out using different sets of variables and appropriate mathematical models to detect the inflation determinants in Bangladesh.

References:

Abidemi, O. I. and Maliq, S. A. A. (2010) 'Analysis of Inflation and its determinant in Nigeria'. *Pakistan Journal of Social Sciences*, 7(2), 97 – 100.

Bangladesh. Ahmed, Nasiruddin and Das, N. K. (2007) *An Investigation into the Recent Inflationary Trends in Bangladesh.* Dhaka: Finance Division, Ministry of Finance.

Bangladesh Bank (2007) 'Inflation in Bangladesh: The Evidence and the Policy Alternatives', *Inflation in Bangladesh.* CIRDAP Auditorium 19 August 2007, Dhaka.

Bangladesh Economic Review, Finance Division, Ministry of Finance, *Government of Bangladesh*, Various Issues.

Bangladesh. Centre for Policy Dialogue (2007) *Price of Daily Essentials: A Diagnostic Study of Recent Trends.* Dhaka: Ministry of Commerce.

Basir, F., Nawaz, S., Yasin, K., Khursheed, U., Khan, J. and Qureshi, M. J. (2011) 'Determinants of Inflation in Pakistan: An Econometric Analysis using Johansen Co-integration Approach'. *Australian Journal of business and Management Research,* 1(5), 71-82

Bruno, M. (1995) 'Does high inflation really lower growth?'. *Finance and Development*, vol. 32, 35-38.

Dornbusch, R., S. Fischer and C. Kearney (1996) Macroeconomics. Sydney: The Mc-Graw-Hill Companies, Inc.

Enders, W. (2004) *Applied Econometric Time Series*, 2nd ed., John Wiley & Sons, Inc.

Engle, R. F. and Granger, C. W. J. (1987) 'Co-integration and Error Correction: Representation, Estimation, and Testing'. *Econometrica*, 55, 251 – 276.

Friedman, Milton (1963) *Inflation: Causes and Consequences*. New York: Asia Publishing House.

International Food Policy Research Institute (2010). http://www.ifpri.org/publication/2010-global-hunger-index

International Monetary Fund, 2007, Bangladesh: Selected Issues (IMF Country Report No. 07/230, June 2007), pp. 16-23.

Johansen, S. (1988) 'Statistical Analysis of Cointegrating Vectors'. *Journal of Economic Dynamics and Control*, 12, 231-54.

Johansen, S. (1991) 'Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models'. *Econometrica*, 59(6) 1551–1580.

Johansen, S. and Juselius, K. (1990) 'Maximum Likelihood Estimation and Inferences on Cointegration – with applications to the demand for money'. *Oxford Bulletin of Economics and Statistics*, 52, 169 – 210.

Keynes, John Maynard (1936) *The General Theory of Employment, Interest and Money*. London: Macmillan (reprinted 2007).

Kim, Byung-Yeon, Determinants of Inflation in Poland: A Structural Cointegration Approach (December 18, 2001). BOFIT Discussion Paper No. 16/2001. Available at SSRN: http://ssrn.com/abstract=1015770 or http://dx.doi.org/10.2139/ssrn.1015770

Khan, A. A., Bukhari, S. K. H. and Ahmad, Q. M. (2007) 'Determinants of Recent Inflation in Pakistan'. *Munich Personal RePEc Archive (MPRA),* paper no. 16254, 1 – 16.

Khanam, R. and Rahman, M. M. (1995) 'The Cusative Factors of Inflation in Bangladesh- An Econometric Study'. *Chittagong University Studies*, Social Science, Vol. XVI (1), 100-116.

Khathlan, Al Khalid (2011) 'Inflation in the United Kingdom of Saudi Arabia: The bound test analysis'. *African Journal of Business Management*, 5(24), 10156-10162.

Kibria, Ashzadul (2010) Inflationary Pressure on whole Asia and Bangladesh. *Daily Protho-alo*, March 6, p. 12.

Laryea, S. A. and Sumaila, U. R. (2001) 'Determinants of Inflation in Tanzania'. Chr. Michelsen Institute Development Studies and Human Rights, WP-12, 1 – 17.

MacKinnon, J.G. (1991) 'Critical Values for Cointegration Tests', in Engle, R.F. and Granger, C.W.J (eds.), *Long-run Economic Relationships*, Oxford University Press, Oxford.

Mosayeb, P. and Mohammad, R. (2009) 'Sources of Inflation in Iran: An application of the real approach'. *International Journal of Applied Econometrics and Quantitative Studies*, 6(1), 61 – 76.

Pesaran, M.H., Shin, Y. and Smith, R. J. (2001) 'Bound testing approaches to the analysis of level relationships". *Journal of Applied Econometrics*, 16, 289-326.

Saatsioglu, Cem and Korap, H. Levent, 2006, 'Determinants of Turkish Inflation', Discussion Paper 2006/07, Turkish Economic Association.

Shahadudheen, I. (2012) 'A cointegration and Error Correction Approach to the Determinants of Inflation in India'. *International Journal of Economic Research*, Vol 3(1): 105-112.

Taslim, M. A., 1980, 'Inflation in Bangladesh: A Re-examination of the Structuralist Monetarist Controversy'. *The Bangladesh Development Studies*, X (1), 100-116.

Unnayan Onneshan (2010) *Bangladesh Economic Update*. Dhaka: Economic Policy unit. 1 (4).

Annex table 1: Data Sheet

Real GDP is calculated at 1995-96 constant market prices, while the base year for CPI inflation is 1995-96, i.e., 1995-96 = 100.				Govrev = Government revenue Govexp = Government expenditure Except Inflation all variables are shown in Crore Taka(Local currency)			
	Inflation	M2	GDP	Import	Export	Govrev	Govexp
1978	177	52.436	32300.9	1409	499	858.4	1417.71
1979	191	67.572	33852.5	1641	586	1054.2	1793.46
1980	227	79.451	57441.5	2436	743	1121.9	2370.51
1981	255	101.298	56801.9	2593	821	1454.1	2356.53
1982	297	111.437	47112.5	2610	725	1277	2282.47
1983	326	144.453	41478.5	2307	782	1116	2156.86
1984	357	205.388	41133.2	2353	822	1118.1	2376.13
1985	396.58	257.996	37242.7	2647	971	1359.3	2479.29
1986	436	302.179	37699.4	2364	909	1381.1	2513.14
1987	113.87	351.53	37761.4	2620	1000	1528.4	2764.15
1988	121.12	401.861	37662.8	2986	1186	1682.7	3001.8
1989	131.3	467.254	38955	3375	1281	1806.1	3364.17
1990	136.37	546.118	37141.9	3759	1524	2033.67	3890.49
1991	147.7	612.417	36487.7	3470	1669	2233.6	3763.79
1992	154.44	698.677	37191.6	3463	1904	2495	3945.32
1993	158	772.373	37878.5	4071	2383	2826.48	4425.32
1994	162.4	891.574	39546.3	4191	2534	3122.78	4215.7
1995	179.1	1033.85	40725.8	5834	3473	3526.1	5188.28
1996	191.5	1119.05	41050.3	6880.5	3882.4	3660.79	5307.64
1997	196.4	1239.97	40573.7	7162	4427	4015.1	5521.21
1998	210.2	1368.33	40247.4	7524	5172	4218.33	5617.67
1999	228.9	1543.64	40732	8018	5324	4098.67	6090.58
2000	124.31	1831.06	40272.2	8374	5762	4179.98	7056.88
2001	126.72	2135.05	39214	9335	6476	4211.14	6822.38
2002	130.26	2415.28	40977.3	8540	5986	4828.43	7002.47
2003	135.97	2791.94	42803	9658	6548.4	4857	6737
2004	143.9	3177.13	43247.3	10903.2	7602.99	5690.59	8108.54
2005	153.23	3709.18	42438	13145.7	8654.5	6382	9061.16
2006	164.21	4425.03	43918	14746	10526.2	6688.73	9102.56
2007	176.04	5180.11	46899	17156.8	12177.9	6900.14	9043.23
2008	193.54	6093.44	49447	21629	14110.8	8822.73	13642.1
2009	206.43	7261.82	52045	22507.1	15565.2	10017.38	13631.6
2010	221.53	8891.28	54617	23738.4	16204.7	11509.41	16003.9