



The Relationship of Inflation and Stock Return: An Empirical Study of the Hedging or Wealth Effects in Bangladesh

Md. Sharif Ullah Mazumder, David Aadland

Department of Economics and Finance, University of Wyoming, Laramie, Wyoming, USA

Email address:

mmazumde@uwyo.edu (Md. S. U. Mazumder), aadland@uwyo.edu (D. Aadland)

To cite this article:

Md. Sharif Ullah Mazumder, Dr. David Aadland. The Relationship of Inflation and Stock Return: An Empirical Study of the Hedging or Wealth Effects in Bangladesh. *International Journal of Finance and Banking Research*. Vol. 1, No. 2, 2015, pp. 24-31.

doi: 10.11648/j.ijfbr.20150102.12

Abstract: The relationship between stock market returns and inflation is a well studied area in economics and financial economics. Theoretical and empirical researches on this topic establish that inflation causes stock market return. In this paper we study on Bangladesh stock markets return and inflation and find interesting results that stock market returns cause inflation. This empirical study has been conducted on basis of the monthly stock market index and CPI data. The result of the study can be a roadmap to the policymaker of Bangladesh to control the inflation within the tolerance level by adopting well regulation on stock market.

Keywords: Stock Market, Inflation, DSE Index, Granger Causality Effect

1. Introduction

Does inflation affect the stock market returns or do the stock market returns affect the inflation rate in Bangladesh? The research of E.F Fama and G.W. Schwert¹ show that there is a negative correlation between inflation and stock market returns. Warner Kramer says that the equity return is negatively correlated with inflation and that investors want to be more risk averse in high inflationary situations. This is because of the possibility of negative equity return². Another paper, written by Jacob Boudoukh and Matthew Richardson, find that there is a long run positive relationship between inflation and stock market returns for the United States and the United Kingdom³. The lack of the institutional investors and the significant presence of short term investors make the stock market of Bangladesh more impulsive. So, we think the relationship between stock market returns and inflation in Bangladesh is thought provoking.

An abundance of research has been conducted from both an empirical and theoretical standpoint, specifically, whether

there is any relationship between inflation and stock market returns. There are a few studies conducted on Bangladesh stock market returns and macroeconomic indicators, like interest rates and GDP. But literature on the relationship between inflation and stock market returns can be expanded on.

The stock market return is a major economic indicator to the policy makers of all developed and developing countries. In Bangladesh, stock market returns become quite volatile with the change of political wave. Also, people living in the city areas that are familiar with the stock market, but the marginal village people are out of access due to lack of market infrastructure and acquaintance. For the remainder of this paper, we will review the results and findings of some empirical and theoretical research and discuss the model of the paper. In the remaining sections, we cover methodology, the economic significance of the results and provide some recommendations from my conclusions.

2. Literature Review

Both in the context of developed and developing countries, there have been extensive theoretical and empirical studies conducted on the relationship between stock market return and inflation. Inflation and financial sector correlation: The

¹Asset Returns and Inflation, Eugene F Fama and G.William Schwert, 1977, page-1.

²Equity investment as a hedge against inflation: part 1 by Warner Kramer.

³Stock returns and Inflation, a long horizon perspective by Jacob Boudoukh and Matthew Richardson, American Economic Review, December 1993, p-2

case of Bangladesh, by Abu N M Wahid, Muhammad Shahbaz and Pervez Azim (2011), show that inflation tends to induce volatility of the stock returns and so does the returns of savings. Inflation and economic growth in Bangladesh: 1981 to 2005, a working paper conducted by Shamim Ahmed and Golam Mortaza (2005) show that there is a long-run and short-run negative relationship between inflation and economic growth. Owusu Frimpong (2001) find that the stock market return is negatively correlated with inflation. In the study, he conducted a survey and found that people are unwilling to trade in a high-inflation market because they will get less return. Finally, a paper by Nwokoma (2005) find that there is a positive relationship between stock market return and inflation in Nigeria, but that the relationship is inconclusive in the case of Kenya and South Africa⁴.

3. Model

To examine the relationship between inflation and stock market returns, we will test the causality or direction of influence. Since, the future cannot predict the past, if independent variables cause the dependent variable, then changes in independent variables would precede changes in the dependent variable. Therefore, in a regression of dependent variable on independent variable (including its own past values) if we include past or lagged values of independent variable, then we can significantly improve the prediction of the dependent variables⁵. The structural models to examine the causality are given below:

$$DGEN_t = \beta_1 + \sum_{j=1}^t \beta_2 INF_{t-j} + \sum_{j=1}^t \beta_3 DGEN_{t-j} + \varepsilon_t \quad (1)$$

$$INF_t = \gamma_1 + \sum_{j=1}^n \gamma_2 DGEN_{t-j} + \sum_{j=1}^n \gamma_3 INF_{t-j} + \mu_t \quad (2)$$

Here, $DGEN_t$ is DSE General Index (proxy of the stock market returns) and INF_t is the rate of inflation⁶.

Hypothesis for equation (1)

Null Hypothesis: $H_0: \beta_2 = 0$; Inflation does not Granger cause stock return.

Hypothesis for equation (2)

Null Hypothesis: $H_0: \gamma_2 = 0$; Stock return does not Granger cause inflation.

4. Data and Methodology

We now define the variables and provide the data sources. The DSE General Index (DGEN) has been used as the measure of the stock market return. Rate of inflation is computed from the monthly CPI data [6]. Data sources include "Monthly Economic Trends" published by Bangladesh Bank, Dhaka Stock Exchange website (dsebd.

org) and website of Trading Economics. Data are monthly of 144 observation months from January 2001 to December 2012. We omit the data after the period of December 2012 to avoid miss-measurement as the market index calculation has been changed from January 28, 2013.

Brief overview of Dhaka Stock Exchange

Dhaka Stock Exchange (DSE) was established in 1954 as the first stock exchange in the country, and began operating in 1956. In August 2014, there were 307 listed companies in DSE and the market capitalization of Taka was 3030.3 billion. The market performance has been measured by DGEN index (changed the parameters as DSEX from January 2013) and the DSE20 index (changed as DSE30 from January 2013).

Summary statistics of the two variables

Table 1. Summary statistics.

	DGEN Index	Inflation rate
Mean	2685.32	.0058
Median	1839.79	.0037
Maximum	8602.44	.042
Minimum	607	-.013
Std Deviation	1992.40	.009
Skewness	1.01	.75
Kurtosis	3.03	4.56
Observation	144	144

Methodology

Stationary data

As the data are time series data, the first step involves checking to see if the data is stationary. We have plotted the DGEN variables against time and to see whether there is any trend in the graph. In appendix section 1, the time series data of the DSE general index has been shown graphically. We use the Augmented Dickey Fuller (ADF) test, developed by Dickey and Fuller (1979, 1981), to see whether there is any trend in the variables. We found there is trend in stock market returns. To de-trended the stock market return we use three methods described below and ADF test has done with the three methods and found the trend has been removed successfully.

Lag selection

Final Predictor Error (FPE), Akaike information criterion (AIC), Hannan-Quinn information criterion (HQIC) and Schwarz information criterion (SBIC) criterion have been followed to select the number of lags. All the methods confirm the first lag of both the variables.

Causality effect

The last section of my analysis is to test the causality between stock market return and inflation in Bangladesh. If we reject (accept) the null hypothesis in equation (1), this suggests that stock return does (does not) cause inflation. Alternatively, rejecting (accepting) the null hypothesis in equation (2) suggests that Inflation does (does not) cause stock return.

5. Results and Economic Significance

The result of the ADF model shows whether the variables are stationary or not and determines how many differences of

⁴The competitive performance of African stock Markets: Nominal, real or U.S.Dollar return by Alvan E Ikoku and Ahmed Hossaini, International journal of Business (2008).

⁵Basic Econometrics, 4th Edition, Damodar N Gujarati and Dawn C Porter, page no-696.

⁶Inflation= (CPI_t-CPI_{t-1})/CPI_{t-1}

the variables needs to be taken to make the variables stationary. The hypothesis for checking for stationary data is as follows:

Null hypothesis: H_0 : Variables have unit root or are not stationary.

From the result, the t statistic of $DGEN_t$ is -1.942, but the critical value for the 5% level is -3.44. This means that we cannot reject the null hypothesis. It means that the variable DGEN is non-stationary. But in the case of the inflation variable, the t-statistics is -7.535 and the critical value is -3.44 at 5% significance level. We can reject the null hypothesis (results are shown in appendix section 1). So, from the test we can say that the stock market index is not stationary. To make the data stationary we will use three methods:

1. Growth rates of DSE general index, $\Delta \ln(DGEN_t)$.
2. Residuals: I will run a regression on $\ln(DGEN)$ and save the residuals.
3. Hedrick- Prescott (HP) filters method.

First, we take the first differences of $\ln(DGEN_t)$ and test for stationary data using ADF method. The result of the ADF has shown that we can reject the null hypothesis as the test value is -11.76 and the critical value for 5% confidence interval is -3.44, so the variable has been de-trended successfully. We can use the de-trended variable in my further analysis. Secondly, the predicted residual of the second model graphically shows in appendix section 1 that the data has been also de-trended successfully. Therefore we will use this de-trended data to run the regression. Finally, the HP filter method is used for smoothed-curve representation of time series data. The adjustment of the sensitivity of the trend to short term fluctuations is achieved by modifying a multiplier λ . A Graph of the filtered data shows that (appendix section 1) it has been de-trended successfully.

To determine the lag length we have used FPE, AIC, HQIC and SBIC parameters. All the parameters are the lowest in one lag, so we can use one lag for the Vector Autoregressive Model and Granger causality analysis. The results of the lag selection have been shown in appendix section-2.

Multicollinearity test

The test of multicollinearity using VIF test gave a value 1 which is less than 5. In another test of multicollinearity, correlation matrix has shown that the correlation between the two variables is 0.04 which is very insignificant. So we can say that there is no multicollinearity between the variables of lag inflation and first difference of lag $\ln DGEN$. The other regression variables of residuals and inflation has also showed that they are not multicollinearity because the correlation matrix between this variables is also 0.04. The results of the multicollinearity test have been shown in appendix section-5.

Autocorrelation test

Null hypothesis: H_0 : There is no auto correlation.

The result of Durbin Watson test (h test), to test autocorrelation has shown that the number of the test is 1.37 for lag 1 and the p-value is 0.24. Therefore, we failed to reject the null hypothesis. Another test for auto correlation

named Breusch-Godfrey Test using 8 lags gives the result of 8.87 with p-value 0.3532. So in this case we also failed to reject the null hypothesis. But in the case of lag 12, the test statistics is statistically significant. To measure the seasonality effect we have tested up to 12 lags.

In the other regression, the variables of inflation and HP-filtered DGEN, the Durbin Watson test (h-test) shows that there is no serial correlation in the 1 lag between the residuals. The test statistics is .65 for lag 1 and the p-value is 0.42, so we failed to reject the null hypothesis. The result of Breusch-Godfrey Test with 8 lags gave the result of 10.882 with p-value 0.20. We also failed to reject the null hypothesis. But in the case of lag 12, the test statistics is statistically significant. This means that there is some seasonality effect in the variables. The AIC and SIC lag selection criterion gave one lag to test the Breusch-Godfrey test. Therefore, we found that there is no autocorrelation between the residuals. The results of the autocorrelation test have been shown in appendix section-6.

Model Specification

Null hypothesis: H_0 : There is no misspecification.

The result of Ramsey's RESET test, to test whether the model is correctly specified has shown that the number of the test statistics is .93 and the p-value is 0.43. Therefore, we failed to reject the null hypothesis. The results of the model specification test have been shown in appendix section-7.

Granger causality tests:

The Granger causality test of the first difference in $\ln DGEN_t$ and inflation shows a very interesting result. It shows that the stock market return causes inflation. From previous literature, we saw that inflation had a negative impact on stock market return, but in the case of Bangladesh, the result tells us that as the stock market return increases, it causes inflation. The test statistics of $\widehat{\beta}_2$, the inflation (lag 1) is .11 and the p-value is .88, which means that it is statistically insignificant. We cannot reject the null hypothesis that inflation does not cause stock market returns. Most interestingly, the test statistics of $\widehat{\gamma}_2$ explaining how stock market return causes inflation is statistically significant. This means that the stock market return causes inflation. The results of the Granger causality test is shown in appendix section 3.

The results of the vector autoregressive model are below:

Table 2. Regression result.

Data Range	2001m1 to 2012m12	No of Observation	143
1 Regression of Inflation and $\Delta \ln DGEN$			
Variables	Inflation	$\Delta \ln DGEN$	
	Co-efficient	t- value	Co-efficient t- value
Inflation	0.3626	4.68***	0.1100 0.14
Lag1			
$\Delta \ln DGEN$	0.0200	2.30*	0.0094 0.11
lag1			
Constant	0.0036	4.29***	0.0130 1.55
R ²	0.1600		0.0002
Adjusted R ²	0.1500		-0.0142
2 Regression of Inflation and Residuals			
Variables	Inflation	Residuals	
	Co-	t- value	Co-efficient t- value

Data Range	2001m1 to 2012m12		No of Observation	143
	efficient			
Inflation	.3562	4.52***	0.1702	0.23
Lag1				
Residuals	.0019	0.60	0.9501	31.09***
lag1				
Constant	.0037	4.44***	-0.0040	-0.60
R ²	0.13		.8737	
Adjusted R ²	0.12		.8719	
3 Regression of Inflation and HP filtered DGEN				
Variables	Inflation		HP filtered DGEN	
	Co-efficient	t- value	Co-efficient	t- value
Inflation	.3503	4.5201**	1847.5701	.6104
Lag1		*		
HP Filtered	.0000	.9301	.9302	28.3901***
DGEN lag1				
Constant	.0036	.0008	-22.1703	-.6802
R ²			.85	
Adjusted R ²			.85	

t-value is statistically significant at the 5% level, * t-value is statistically significant at the 1% level.

OLS estimators and analysis

From the Granger causality effect we can see that the stock market return causes the inflation in Bangladesh in the growth rate model. But other two models do not show this causation. Table-2 shows the coefficients, t-values and adjusted R² of the models. From the Granger causality result, we found that the stock market causes inflation, we are interested in the coefficients of the first dependent variable (inflation). If inflation in the t-1 month increases by 1% then the inflation in the month of t will increase by 0.36, other thing remaining constant. If the growth rate of DGEN (stock market return) in the t-1 month increases by 1% then the inflation will increase by 0.02% in the month of t, other thing remaining constant. The adjusted R² is very insignificant. At 15.00%, the co-relation is very low between these variables and, that means the variables in lag 1(t-1 month) is not highly correlated to the variable of inflation in the month of t.

On the other hand, for the regression of inflation and the linearly de-trended model (residuals method), we find that if the inflation of the month t-1 increase by 1% then the inflation in the month of t will increase by 0.35, other thing remaining constant. This is very similar to the previous regression result. If the residuals of stock return growth rate (residuals of regression of lnDGEN against time) in the t-1 month increases by 1% then the inflation will increase by 0.002% in the month of t, other thing remaining constant. The adjusted R² dramatically rises to 87%. But here the granger causality result shows that neither of the variables causes each other.

In the other regression model of inflation and HP-filtered DGEN variable, we find that if the inflation of the month t-1 increase by 1% then the inflation in the month of t will increase by 0.35, other thing remaining constant. This result is similar to the previous findings. The lag filtered stock return has almost no impact on the current stock return.

Economic significance of the coefficients

A significant number of coefficients are statistically significant and are economically significant too. Because the

previous month's (t-1) inflation need not affect the current month's inflation, it is also true for the previous month's stock return growth. To control the inflation rate the government usually uses intensive macro-economic tools. So, if the month t's inflation follows the previous month's inflation, that means the mechanisms are not working properly. It is difficult to comment about the monetary policy of the government to control the inflation with these two factors model because the inflation is dependent on lots of issues other than previous year's inflation and the stock price returns, which is beyond this paper.

The previous year's growth of stock market return effect on inflation can be taken more seriously. From my study, we found that stock market returns in Bangladesh positively affect inflation. Inflation is a phenomenon when the money supply increases in the market those results to an artificial demand in the commodity market. The investors who invest in the stock market reap up the short term capital gain from the market, money supply increases in the market, and consequently, it pressures the commodity market.

6. Conclusion

This paper empirically shows the relationship of inflation and stock market return in the context of Bangladesh. In this paper, the granger causality and vector auto regressive models have been applied. We found a very economically significant result from the analysis. It is well known that the inflation affects stock market negatively. However, in case of Bangladesh, the stock market returns affect the inflation, which means that there is a pressure on commodity market of the stock market returns. So, it is an indicator to the policy makers of Bangladesh to focus on the stock market volatility. The government of Bangladesh tries to control the inflation to fulfill their political manifesto, and they adjust several market mechanisms to keep the inflation within a tolerable level. So, a well-established and regulated stock market will decrease the stock market volatility in Bangladesh which will lessen the extra pressure in the commodity market.

Appendix

1. ADF tests and results:

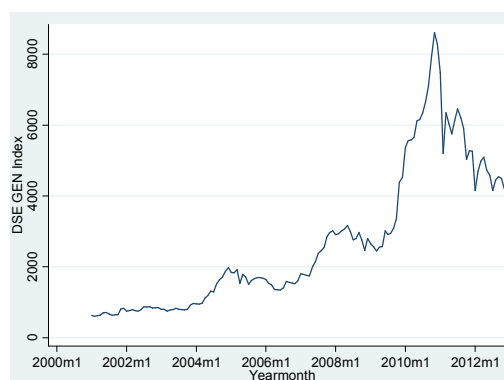


Fig. A.1. The trend line of the DSE General Index.

Table 1.A.1. The result of Augmented Dickey Fuller Test of DGEN.

Test Statistics	1% critical value	5% critical value
-1.942	-4.026	-3.44
P-value .63		

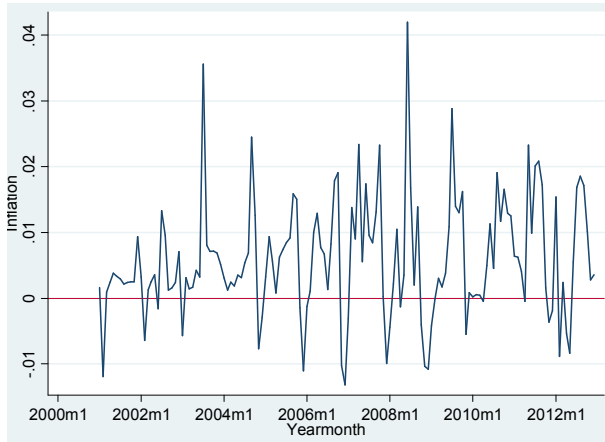


Figure 1.B.1. Trend line of inflation.

Table 1.B.1. The result of Augmented Dickey Fuller Test of inflation.

Test Statistics	1% critical value	5% critical value	10% critical value
-11.74	-3.50	-2.89	-2.57
P-value 0.00			

De-trended data of DGEN:

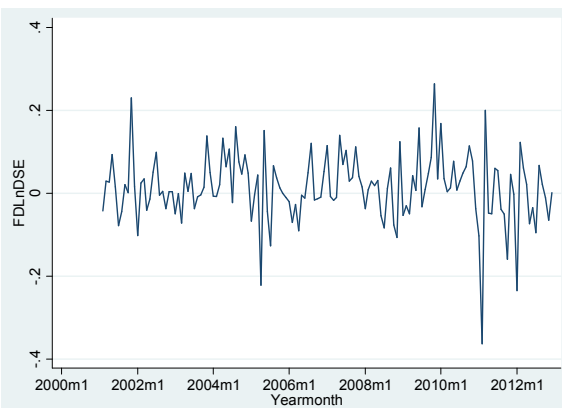


Figure 1.C.1. Trend Line stationary of First difference of lnDGEN Index.

Table 1.C.1. The result of Augmented Dickey Fuller test of first Difference of lnDEGN.

Test Statistics	1% critical value	5% critical value	10% critical value
-7.53	-4.026	-3.44	-3.14
P-value 0.00			

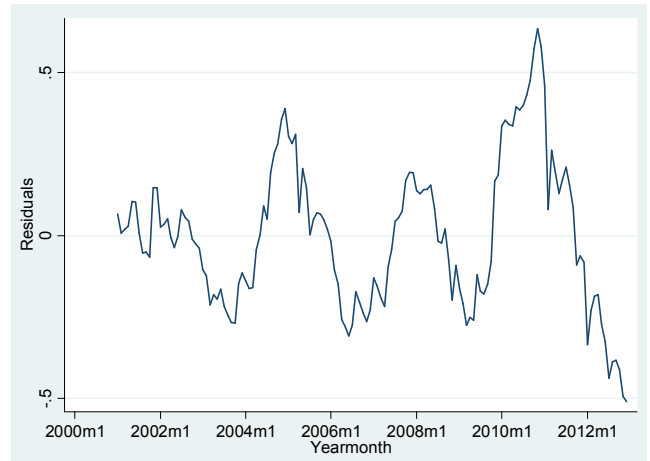


Figure 1.C.2. Trend line of residuals.

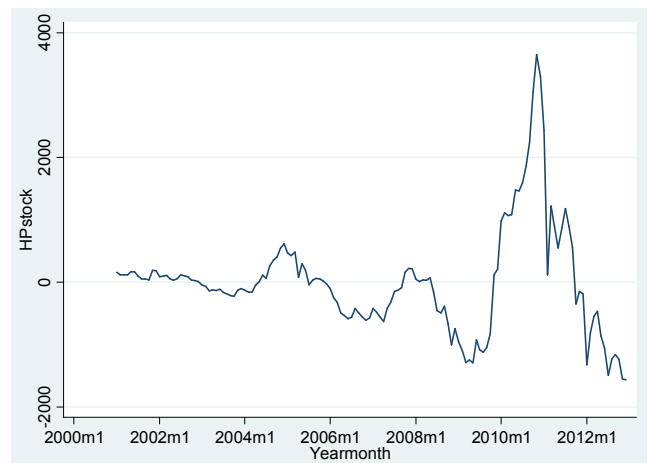


Figure 1.C.3. Trend line of HP filtered DGEN data.

2. Table 2.1: Lag selection:
Selection-order criteria

Sample: 2001m10 - 2012m12, Number of obs = 135

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	586.797				5.9e-07	-8.6665	-8.646	-8.620
1	598.316	23.040*	4	0.000	5.3e-07*	-8.775*	-8.722*	-8.644*
2	599.313	1.994	4	0.737	5.5e-07	-8.730	-8.643	-8.515
3	601.754	4.882	4	0.300	5.7e-07	-8.707	-8.58503	-8.406
4	603.292	3.076	4	0.545	5.9e-07	-8.671	-8.51358	-8.283
5	605.394	4.203	4	0.379	6.1e-07	-8.642	-8.45048	-8.169
6	608.149	5.509	4	0.239	6.2e-07	-8.624	-8.39705	-8.064
7	609.105	1.912	4	0.752	6.5e-07	-8.579	-8.31697	-7.933
8	610.724	3.239	4	0.519	6.7e-07	-8.544	-8.24672	-7.812

3. Granger causality effect:

Table 3.A.1. Regression of inflation and first difference of lnDGEN.

Null Hypothesis	Chi ²	Df	P-value of chi ²
Stock return does not Granger cause inflation	5.40	1	.02
Inflation does not Granger cause stock return.	.02	1	.88

Table 3.B.1. Regression of inflation and first difference of Residuals.

Null Hypothesis	Chi ²	Df	P-value of chi ²
Stock return does not Granger cause inflation	0.37	1	.54
Inflation does not Granger cause stock return.	.053	1	.81

Table 3.C.1. Regression of inflation and HP filtered DGEN data.

Null Hypothesis	Chi ²	Df	P-value of chi ²
Stock return does not Granger cause inflation	0.85	1	.35
Inflation does not Granger cause stock return.	.38	1	.54

4. Regression result:

Table 4.A.1. Regression of lnDGEN against time.

Dependent Variable	2001m1 to 2012m12		Time			
Data	Co-efficient	Std. Error	Z value	P-value	95% confidence Interval	
Time	.0170	0.0004	37.8610	0.0000	.01631	.01810
Constant	-2.1201	0.2600	-8.2310	0.0000	-2.6331	-1.6100
R ²	.9102					
Adjusted R ²	.9101					
Sum of Squared Estimate	74.4010		MSE	74.392	F(1,142)	1433.3600
Sum of Squared residuals	7.3720		MSR	.051	P-value(F)	0.0001

Table 4.B.1. Regression result of Inflation and First Difference of lnDGEN.

Dependent Variable	2001m1 to 2012m12		Inflation			
Data	Co-efficient	Std. Error	Z value	P-value	95% confidence Interval	
Inflation Lag1 (γ_2)	.3601	.0830	4.74	.0000	.2100	.5100
1 st diff. lnDGEN lag1 (γ_3)	.0200	.0080	2.33	.0200	.0027	.0370
Constant (γ_1)	.00361	.0008	4.33	.0000	.0019	.0053
R ²	.1601					
Adjusted R ²	.1502					
Sum of Squared Estimate	.00180		MSE	.0018	F(2,139)	13.19
Sum of Squared residuals	.0100		MSR	.0096	P-value(F)	0.000

Table 4.C.1. Regression result of First Difference of lnDGEN and inflation.

Dependent Variable	2001m1 to 2012m12		First difference of lnDGEN			
Data	Co-efficient	Std. Error	t- value	P-value	95% confidence Interval	
1 st diff. lnDGEN index Lag1 (β_2)	.0094	.0840	.1100	.9100	-.15801	.17702
Inflation Lag1 (β_3)	.1100	.7600	.1400	.8800	-1.4001	1.6101
Constant (β_1)	.0131	.0080	1.5500	.1241	-.0036	.0291
R ²	.0002					
Adjusted R ²	-0.0142					
Sum of Squared Estimate	.0002		MSE	.0001	F(2,139)	.0201
Sum of Squared residuals	.9440		MSR	.0067	P-value (F)	.9841

Table 4.D.1. Regression result of inflation and residuals.

Dependent Variable	2001m1 to 2012m12		Inflation			
Data	Co-efficient	Std. Error	t- value	P-value	95% confidence Interval	
Lag residuals γ_2	.0019	.0032	.60	.5480	-.0044	.0082
Inflation Lag1 (γ_3)	.3561	.0781	4.52	0.0000	.2000	.5101
Constant (γ_1)	.0031	.0008	4.44	0.0000	.0020	.0051
R ²	.1300					
Adjusted R ²	.1201					
Sum of Squared Estimate	.0015		MSE	.0007	F(2,139)	484.2600
Sum of Squared residuals	.0100		MSR	.0000	P-value (F)	0.0000

Table 4.E.1. Regression result of inflation and residuals.

Dependent Variable	2001m1 to 2012m12		Residuals		
Data			No of Observation		143
	Co-efficient	Std. Error	t- value	P-value	95% confidence Interval
Lag residuals β_2	.9501	.0300	31.09	.0000	.8901 1.0110
Inflation Lag1 (β_3)	.1711	.7500	.23	.8202	-1.3101 1.6501
Constant (β_1)	-.0048	.0081	-.60	.5501	-.0201 .0111
R ²	.8700				
Adjusted R ²	.8701				
Sum of Squared Estimate	6.4301		MSE	3.2200	F(2,139) 484.2601
Sum of Squared residuals	.9303		MSR	.0067	P-value (F) 0.0000
Sum of Squared residuals	.9441		MSR	.0067	

Table 4.F.1. Regression result of inflation and HP-filtered DGEN data.

Dependent Variable	2001m1 to 2012m12		Inflation		
Data			No of Observation		142
	Co-efficient	Std. Error	Z value	P-value	95% confidence Interval
Inflation Lag1 (γ_2)	.3501	.0780	4.5201	0.0000	.1900 .5000
HP-filtered DGEN lag1 (γ_3)	-.0000	.0000	.9300	0.3550	.0000 .0000
Constant (γ_1)	.0036	.0008	4.5202	0.0000	.0021 .0054

Table 4.G.1. Regression result of First Difference of HP-filtered DGEN data and inflation.

Dependent Variable	2001m1 to 2012m12		First difference of HP-filtered DGEN		
Data			No of Observation		142
	Co-efficient	Std. Error	t- value	P-value	95% confidence Interval
HP-filtered DGEN Lag1 (β_2)	.9300	.032	28.69	0.00	.86 .99
Inflation Lag1 (β_3)	1847	3009	.61	.54	-4050 7745
Constant (β_1)	-2217	32.42	-.68	.49	-85.71 41.37

5. Multicollinearity test:

Table 5.1. VIF test: lagfdlnlse and inflation.

Variable	VIF	1/VIF
Lagfdlnlse	1.00	.99
Laginflation	1.00	.99

Table 5.2. Correlation matrix: lagfdlnlse and inflation.

	Lagfdlnlse	Laginflation
Lagfdlnlse	1.00	
Laginflation	.04	1.00

Table 5.3. VIF test: HP-filtered DGEN and inflation.

Variable	VIF	1/VIF
HP-filtered DGEN	1.01	.99
Laginflation	1.01	.99

Table 5.4. Correlation matrix: HP-filtered DGEN and inflation.

	HP-filtered DGEN	Laginflation
HP-filtered DGEN	1.00	
Laginflation	-.08	1.00

6. Auto correlation test:

Table 6.1. Durbin's Alternative test.

Model	Lag(p)	Chi ²	Df	P-value
Inflation and lnfdlse	1	1.3740	1	.2411
Hp-filtered and inflation	1	0.6490	1	.4203

Table 6.2. Breusch- Godfrey test.

Model	Lag(P)	Chi ²	df	P-value	Lag(P)	Chi ²	df	P-value
Inflation and lnfdlse	12	26.27	12	.01	8	8.87	8	.35
Hp-filtered and inflation	12	30.41	12	.002				

7. Model specification:

Null hypothesis: the model has no omitted variables:

Table 7.1. Ramsey RESET test.

Model	F-value	p-value
Inflation and lnfdlse	.93	.43
Hp-filtered and inflation	.83	.48

References

- [1] Damodar N Gujarati and Dawn C Porter, Basic Econometrics, 5th Edition, McGraw Hill.
- [2] Website of Dhaka Stock Exchange (www.dsebd.org).
- [3] Website of Bangladesh Bank (www.bangladeshbank.org).
- [4] Boudoukh, J., & Richardson, M. (1993). Stock returns and inflation: A long-horizon perspective. *The American economic review*, 1346-1355.

- [5] Ahmed, S., & Mortaza, M. G. (2010). *Inflation and economic growth in Bangladesh: 1981-2005* (No. id: 3033).
- [6] Muktadir-al-Mukit, D. (2013). Effects of Interest Rate and Exchange Rate on Volatility of Market Index at Dhaka Stock Exchange. *Journal of Business and Technology (Dhaka)*, 7(2), 1-18.
- [7] Ikoku, A. E., & Hosseini, A. (2008). The Comparative Performance of African Stock Markets: Nominal, Real and US Dollar Returns. *International Journal of Business*, 13(3), 251.
- [8] Boyd, J. H., Levine, R. E., & Smith, B. D. (1996). *Inflation and financial market performance* (Vol. 9617). Federal Reserve Bank of Cleveland.
- [9] Ibrahim, T. M., & Agbaje, O. M. (2013). The Relationship between Stock Return and Inflation in Nigeria. *European Scientific Journal*, 9(4).
- [10] Fama, E. F., & Schwert, G. W. (1977). Asset returns and inflation. *Journal of financial economics*, 5(2), 115-146.