International Journal of Business Quantitative Economics and Applied Management Research

Volume-3, Issue-12, May-2017 ISSN No: 2349-5677

IMPACT OF INFLATION ON STOCK MARKET PERFORMANCE IN INDIA: AN EMPIRICAL ANALYSIS

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Abstract

In any economy, changes in inflation rate influence the Stock Market Returns directly or indirectly. In the economic theory, it is understood that low and stable inflation is considered necessary as a key objective of economic policy. Accordingly the relationship between inflation and stock market has been a fascinating concern for the researchers and policy makers. In this context, the intention of this study is to examine the impact of the inflation rate on stock market in India during the period 2009 to 2015. In order to explore the impact of inflation on Indian stock market we have used the Consumer Price Index and National Stock Exchange as the proxy for Inflation Rate and stock market respectively. The Granger Causality test reveals that there is no causal relationship between inflation rate and the stock market movement in India which refers to that neither the Inflation rate affects the stock market prices nor the stock market prices affect the Inflation rate. The results suffice that during the selected period of time the changes in the stock prices are not because of the fluctuations in the Consumer Price Index, rather the changes in the stock prices are due to some other factors available in the market.
Keywords: Inflation Rate, Stock Market Returns, Economic Policy, Consumer Price Index, National Stock Exchange.

I. PROLOGUE

Stock markets play a vital role in the financial sector of every economy. An efficient capital market drives the economic growth by stabilizing the financial sector. In an efficient capital market, stock prices adjust swiftly according to the new information available. The stock prices reflect all information about the stocks and also future expectations of the Market. As a result, if stock prices replicate these assumptions in real, then it should be used as a major sign for the economic changes (Ray, 2012). Thus the dynamic relationship between stock prices and macroeconomic variables holds academic interest as well as policy insinuation. The relationship and impacts are very significant between macroeconomic variables and stock prices. The prediction of stock prices has always been a curious thing among the investors. The stock market plays an essential role to explore the economic growth of any economy. It is an approach to utilize unproductive funds into meaningful ways.

II. REVIEW OF LITERATURE

Fama (1981) the study documented evidence of a strong positive relationship between equity returns and real economic activities such as industrial production , capital expenditures and Gross National Product (GNP) , while a negative relationship was found between the share market returns and inflation in the US market. Following Fama (1981), Chen et al. (1986) documented that macroeconomic variables such as industrial production, changes in the risk premium and variations in the yield curve were significant factors in explaining the stock returns.

Martin Feldstein (1983) this paper exhibits a crucial cause of the share prices to rise during decade of substantial inflation during the period of 1967- 1976 had been studied to understand the structural relation between the inflation and share prices . An explicit portfolio model could derive asset demand equations from expected utility maximization and could recognize the indirect ways for the individual to hold assets in a tax favor way.

Chen et. al. (1986) the study tests whether innovations in macroeconomic variables are risks that are rewarded in the stock market. Financial theory suggests that the following macro-economic variables should systematically affect stock market returns: the spread between long and short interest rates, expected and unexpected inflation, industrial production, and the spread between high- and low-grade bonds. The analysis finds that these sources of risk are significantly priced. Furthermore, neither the market portfolio nor aggregate consumption is priced separately. They also find that oil price risk is not separately re-warded in the stock market.

Kaul (1987) This paper explores that the relation between stock returns and inflation is caused by the equilibrium process in the monetary sector. More importantly, these relations vary over time in a systematic manner depending on the influence of money demand and supply factors. Post-war evidence from the United States, Canada, the United Kingdom and Germany indicates that the negative stock return-inflation relations are caused by money demand and counter-cyclical money supply effects.

Naka et. al. (1998) the study analyzed relationships among selected macroeconomic variables and the Indian stock market. By employing a vector error correction model, the Analysis finds that three long-term equilibrium relationships exist among these variables. The results suggest that domestic inflation is the most severe deterrent to Indian stock market performance, and domestic output growth is its predominant driving force. After accounting for macroeconomic factors, the Indian market still appears to be drawn downward by a residual negative trend.

Pethe and Karnik (2000) using Indian data for April 1992 to December 1997, attempts to find the way in which stock price indices are affected by and affect other crucial macroeconomic

variables in India. The study of course avers that in the absence of cointegration it is not legitimate to test for causality between a pair of variables and it does so in view of the importance attached to the relation between the state of economy and stock markets. The study explores weak causality causing from IIP to share price index (Sensex and Nifty) but not the other way from Share price Index to IIP.

Bhattacharya and Mukherjee (2002) investigated the nature of the causal relationship between BSE Sensitive Index and the five macroeconomic aggregates in India (i.e., IIP, money supply, national income, interest rate and inflation rate) using monthly data for the period 1992- 93 to 2000. By applying the techniques of unit–root tests, co-integration and the long–run Granger non–causality test recently proposed by Toda and Yamamoto (1995), their major findings suggested that there was no causal linkage between stock prices and money supply, national income and interest rate while IIP lead the stock price, and there was two- way causation between stock price and inflation rate.

III. RESEARCH GAP

The brief review of the selected literature on the sector of the present analysis shows no consensus on the impact of macroeconomic variables on stock market. It can be observed from the review of literature that findings of different studies vary. Different findings in different studies might be due to different methodologies applied, different set of variables used for the study and different time periods considered for the study etc. Hence, the relationship between fundamental macroeconomic variables and stock market movements needs fresh enquiry.

IV. OBJECTIVES

The present research aims at following objective:

- To analyze the impact of Inflation Rate on Indian Stock Market.

Hypothesis Development

There is relentless debate on the effect of Inflation Rate on Stock Market which needs to be comprehended in totality. This paper ventures to make an empirical analysis on the same lines in the Indian context. To ascertain the effect, the present paper proceeds to expose the feasibility of the following null hypothesis

The present research proceeds with the following hypothesis:

- H_0: There is no impact of Inflation Rate on Indian Stock Market.

In case of the acceptance of the null hypothesis, it would indicate that there is no impact of inflation rate on Indian Stock Market. In case of rejection of the null hypothesis, it would be clear that significant impact of Inflation Rate on India Stock market is evidenced.

Data & Period of the study

The data used to explore the impact of Inflation Rate affecting the Indian Stock Market comprises of daily closing prices of S&P CNX Nifty and Consumer Price Index & (Proxy used

for Inflation rate) for the sample period of 1st April, 2009 to 31st March, 2015. Closing data pertaining to Nifty are collected from the official website of National Stock Exchange and the Inflation rate (CPI) related data are collected from various issues of Handbook of Indian Statistics on the Indian Economy and Reserve Bank of India Bulletin, published by Reserve Bank of India and Eviews is used for econometric analysis.

Methodological issues

The empirical literatures documented different methodologies to analyze the impact of inflation on the securities market. We extended the previous studies by exploring the causal relationship between Inflation and Indian Stock Market. The data used in the study are essentially time series and it becomes necessary to unfold for the observation of characteristics of the data under the study ADF test is applied. The study proceeds with applying Augmented Dickey Fuller Test for testing the presence of unit root test. Moreover, in order to explore the causal relationship between Consumer Price Index and CNX Nifty Granger Causality Test has been applied.

Empirical analysis

The correlation between a series and its lagged values are assumed to depend only on the length of the lag and not when the series started. This property is known as the stationarity and any series following this property is called a stationary time series. For checking the stationarity of the series different econometric tools are used, we herby, used the Augmented Dickey Fuller Test (Dickey & Fuller 1979, 1981) modified version of Dickey Fuller Test followed by the Granger Causality Test. Before applying any econometric technique it is mandatory to determine the lag length , optimum lag order is searched and selected by using the "inflation criteria" like Akaike Information Criteria, Schwarz Information Criteria in a VAR framework , thus we have obtained one lag order under SIC and AIC as the optimum one in order to present a realistic results . Bearing in mind the informational efficiency of the security markets, empirical studies prefer low order lag length i.e. one throughout the subsequent studies.

Augmented Dickey Fuller Test

After the selection of the optimum lag length order i.e. one the study proceeds with the Augmented Dickey Fuller (ADF) test which is employed in order to analyze unit roots. The results are presented in levels and first difference. This enables us determine in, comparative terms, the unit root among the time series and also to obtain more robust results. Owing to the aforesaid fact, it is imperative to analyze whether there is the presence of unit root in the NSE, CPI, and WPI series. The hypothesis tested in the unit root test is as follows;

Ho; the series does have a unit root

H_1; the series does not have unit root

Table:1 Unit Root Test of CPI (Inflation) and CNX Nifty

Variables	At Level		At first Difference	
	Intercept	Trend & Intercept	Intercept	Trend & Intercept

	t-Stat.	p-value	t-Stat.	p-value	t-Stat.	p-value	t-Stat.	p-value
CPI	-1.1932	0.6732	-2.5493	0.3043	-7.4890	0.0000	-7.5279	0.0000
CNX Nifty	-0.4068	0.9016	-1.1776	0.9072	-8.4459	0.0000	-8.4596	0.0000

Source: Computed

In order to explore the relationship, monthly Consumer price index as a proxy of inflation and monthly average of daily closing prices of CNX Nifty as a proxy of Indian stock market have been used. As a prerequisite, characteristics of both the time series have been diagnosed by applying ADF test to know the presence of unit root. The outputs of ADF test has been documented in Table 1 and stated that both the series are stationary at first difference and there is presence of unit root at level. The t-statistics of all series at first difference are -7.489 & -8.4459 having p-values of 0.00 and statistically significant. Accordingly, first difference series of consumer price index and CNX Nifty have been generated using Eviews.

Further, causal relationship between inflation and stock prices/returns has been explored by applying Granger causality test in order to know whether changes in inflation cause changes in Stock price or changes in Stock price cause changes in inflation.

Table 2: Granger Causality Test of CPI and CNX Nifty

Null Hypotheses	**F-statistics**	**Probability**	**Results**
CPI does not cause Stock Returns	0.2899	0.7492	Accepted
Stock Returns does not cause CPI	2.4067	0.0982	Accepted

Source: Computed

The outputs as documented in Table 2 asserted that F-statistics are 0.2899 & 2.4067 having p-value of 0.7492 & 0.0982 for both the hypotheses. As p-values are statistically insignificant at 5% level of significance, the test fails to reject the null hypothesis of consumer price index does not cause stock returns as well as the null hypothesis of Stock returns does not cause consumer price index. It seems that there is no causality between CPI and stock prices/returns.

V. CONCLUSIONS

The present study explored the relationship between the stock prices and Inflation as a key indicator of Indian economy during the period 2009:4 to 2015:3 using the monthly indexes of NSE Nifty and Consumer Price Index (CPI) , the econometric test ADF, Granger Causality Test have been applied to test the hypothesis. VAR has been conducted for determining the optimum lag length. Even though it seems to be a noteworthy relationship between the macroeconomic variables and the stock market but the results of the study show ambiguous results that the stock market returns is not much affected by real economic fundamentals. To explore the results monthly data is used from April 2009 to March 2015 and analysed by first applying the basic statistical and analytical tools such as Unit Root Test and Granger Causality Test, the results reported that series of variables used are non stationary at levels but stationary

at first difference. Granger Causality Test was applied between the two Variables Consumer Price Index with Stock market Returns one by one and found that there exists no Causality between Consumer Price Index and Stock Market Returns. Fama and Schwert (1977) found a negative relationship between the performance of the stock market and inflation. Hence the present study contradicts the Fisher's Hypothesis and at the same time the study proves and supports the Fama Proxy Hypothesis. The empirical findings of the present study are consistent with some studies as discussed earlier. Empirical tests have documented a negative relationship between inflation and nominal stock returns (Fama and Schwert ; Gutekin , 1983. In the light of the lack of agreement between the theory and evidence, it is difficult to predict the direction of the relationship between stock market returns and inflation.

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