



## Impact of Inflation and Exchange Rate on Stock Market Performance in India

### KEYWORDS

NSE NIFTY, Inflation, Exchange Rate, Regression Analysis

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**ABSTRACT** NSE NIFTY index is a bench marking index that is used to measure the economic development of a country like India. The aim of the article is to find out the impact of inflation and exchange rate on stock market return in India for the period of 2003 to 2013:9. Multiple correlation and linear multiple regression tools have been applied to find out the relationship between Inflation and Exchange rate taken as Independent variables and Price return of NSE NIFTY as dependent variable. The Results shows that inflation is negatively influencing the price return of NSE NIFTY, the exchange rate is positively affecting the price return of NSE Nifty.

### 1. INTRODUCTION

Stock market plays an important role in determining the growth or fall of an economy of a country. Government, industry and even central banks of a country keep watching on the movement of stock market prices because it largely affects the economy of a country. Many developing countries take steps to revitalize their stock market with the help of the World Bank.

India, an emerging economy, has experienced unprecedented levels of economic expansion after the period of liberalization. The Indian stock market was regulated in par with the foreign countries with the establishment of Security Exchange Board of India. National Stock Exchange was established in the year of 1990 with over two lakh trading terminals. More than 1635 companies have been listed as on July 2013 and it has a market capitalization of more than US\$989 billion. CNX NIFTY 50 is the flagship index of National stock exchange and it is extensively used by investors in India and around the world.

Significant development in Indian stock market was taken place in the post reform period. Changes in economic fundamentals make changes in stock market performance. However if there is any change appear in policies adopted by other countries will also affect the domestic stock market performance. Stock market is more sensitive to the economic fundamentals of an economy. There are certain macro economic factors that drive the stock market prices positively or negatively. Here it is assumed that inflation and exchange rate play determining role in the performance of stock market.

The 1997-98 Asian crises taught a lesson to the entire world that there was a dynamic linkage between stock prices and exchange rate. During this period, the emerging markets experienced a fall in stock market prices due to substantial depreciation of exchange rate in terms US\$. A stock market which blooms up will attract foreign investors to invest their money into domestic market and in turn it creates a demand for the country's currency. As a result of this transaction, currency rate will be appreciated. In case of falling stock prices, foreign investors would like to go out of market by selling the share and converting it into foreign currency against domestic currency. This would create a demand for foreign currency and it will lead to depreciate the domestic currency against foreign currencies. Therefore, movements in stock market influence exchange rate to appreciate or depreciate against foreign currencies. Stock market return is also influenced by inflation.

Many emerging economies are struggling to control inflation because it tends to have a negative impact on stock market performance. Economic stability is measured in terms of price stability of a country. High inflation creates uncertainty in an economy and it will make domestic and foreign investors not to invest in stock market. Anticipated inflation will make some wise investors to manage the stock market price effectively while other will lose due to inflation hike. Unanticipated inflation impact negatively and it affects saving ability of citizens. Therefore, the demand for stocks will go down due to poor saving pattern.

It is an attempt to study the impact of inflation and exchange rate on stock market performance from 2003-2013:9. Multiple Regression and Correlation are used to find out the association among inflation exchange rate on stock market return. This paper is organized as follows. Section 2 discusses review of literature on the impact of inflation and exchange rate on stock market, methodology and data description is given in section 3, the empirical results are given in section 4. This paper is concluded in section 5.

### 2. LITERATURE REVIEW

There are numerous studies done to examine the effects of inflation and exchange rate on the performance of stock market. They are classified into two broad categories. The literature collected has been summarized below

#### 2.1 Literature on Effects of inflation on stock market

**Mohammed Omran, John Pointon(2000)** examine the impact of the inflation rate on the performance of the Egyptian stock market. Market activity and Market liquidity are considered as stock market performance variables. The study found out that there is short and long run relationship exists between the stock market performance variables and inflation rate.

**Daferighe, Emmanuel E, Charlie, Samuel Sunday, (2012)** investigated the impact of inflation on stock market performance in Nigeria using time series data for twenty years from 1991-2010. Regression analysis was used to evaluate the influence of inflation on various measures of stock market performance. Market capitalization, Total value traded ratio, Percentage change in all-share index and turnover ratio. It was found out that there is negative relationship exists between inflation and the stock market performance measures but inflation had a positive relationship with the turnover ratio. Low level of inflation revealed that stock market investment is a good hedge against inflation in Nigeria.

**Aliyu Shehu Usman Rano(2010)** assessed stock market returns and volatility by using GARCH model (autoregressive conditional heteroskedasticity) in Nigeria and Ghana. Inflation rate and its three month average were found that there is a significant effect on stock market volatility in the two countries. It was concluded that Measures employed towards restraining inflation in the two countries, therefore, would certainly reduce stock market volatility, improve stock market returns and boost investor confidence.

**2.2 Literature on Effects of Exchange rate on stock market**  
**Razan Stefanescu and Ramona Dumitriu(2013)** explored the influence of the foreign exchange rates variation on the returns and volatility of the stock prices from the Romanian Capital market for the period of January 2000- December 2012. This period was split in four sub-samples and GARCH model was used to investigate the results. There is no influence of foreign exchange market on the Bucharest Stock Exchange during the transition period January 2000 – December 2007. During the period of Romania's adhesion to European union, there was a significant impact of the foreign exchange rates on the stock returns. During the period of September 2008 to February 2010, and March 2010 to December 2012 the stock returns was influenced by the foreign exchange rates. It is concluded that the influence of foreign exchange rates variation on the returns depends on various factors such as foreign capital inflows, the global crisis effects and the perceptions of national economy.

**Kate Phylaktis, Fabiola Ravazzolo(2005)** studied the short and long run dynamics between stock prices and exchange rate by using cointegration methodology and multivariate granger causality test. They applied it to pacific basic countries over the period 1980-1998. It is concluded that stock and foreign exchange markets are positively related.

### 3. RESEARCH METHODOLOGY

#### 3.1 DATA DESCRIPTION

The study covers the period from 2003 to September 2013. It is fully based on the secondary sources. In order to find out the impact of Inflation and exchange rate on stock market performance, three variables have been taken they are NSE Nifty, Exchange rate, and Inflation. Nifty Return has been taken as dependent variable and exchange rate and inflation have been taken as independent variable. Linear multiple Regression has been used to find out the impact of inflation and exchange rate on stock market performance.

Regression model was used to find out the impact of inflation and exchange rate on stock market performance and the formula applied is given below.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2$$

Where,

Y –NSE Nifty Price Return

$\alpha$  = Intercept.

$\beta_1$  =Slope of inflation

$\beta_2$  =Slope of forex.

X1= Inflation

X2= Exchange rate

### 3. DEFINITION AND EXPLANATION OF THE VARIABLES

#### 3.2.1 NSE NIFTY 50

It is a well diversified 50 stock index of 22 sectors of the Indian economy and it is the index of India's benchmark index. It is a free float market capitalization weighted index. Initially it was calculated on full market capitalization methodology; later it has been changed to free float methodology. NSE nifty index has been collected from the website of national stock exchange for the period of 31-12-2002 to 31-09-2013. To find out the stock market performance, the following formula was used to calculate the return of the stock in terms of Percentage.

$$R_t = \left( \frac{P_c - P_p}{P} \right) * 100$$

Where:

$R_t$  = Return of stock for the time period

$P_c$  is value of current day closing price,

$P_p$  is value of previous day closing price.

Average return has been calculated and it is used as dependent variable in multiple regression analysis.

#### 3.2.2 INFLATION

The rise in price of goods and services reduces the purchasing power of each unit of currency. Inflation is an unpredictable factor which affects the share prices either positively or negatively. An increase in inflation affects the stock market negatively and a decrease in inflation affects the stock market positively. Consumer Price Index (CPI) is considered as measuring inflation and it has been collected from International financial statistics book and IMF website for the period of 2003 to September 2013.

#### 3.2.3 EXCHANGE RATE

Exchange rate is the rate at which one currency is being converted into another currency. The exchange rate taken for this study is average period of a year from 2003 to September 2013. It is taken against per US dollar .It has been collected from International financial statistics book and IMF website.

### 4. EMPIRICAL RESULTS

#### 4.1 DESCRIPTIVE STATISTICS OF NSE NIFTY 50 PRICE RETURN

Mean, Median, standard deviation, skewness, kurtosis, Minimum Maximum have been calculated for each independent variable and dependent variable taken for the analysis and it is tabulated below.

Table -1

Mean	0.07
Median	0.10
Standard deviation	0.15
Skewness	-1.10
Kurtosis	1.11
Minimum	-0.26
Maximum	0.26

Source: Author's Computation

The average price return of NSE NIFTY is 0.07 with the deviation of 0.15. Skewness shows negative value of -1.10. It shows that the left side of the banking index is longer or fatter than the right side. Kurtosis value is below 3. Therefore the CNX NIFTY Price return is normally distributed and the values lies about to mean. The Minimum Banking index is 0.26 and maximum banking index 0.26.

#### 4.2 DESCRIPTIVE STATISTICS OF INFLATION

Table -2

Mean	133.46
Median	122.30
Standard deviation	37.87
Skewness	0.74
Kurtosis	-0.60
Minimum	92.40
Maximum	205.52

Source: Author's Computation

The average inflation index is 133.46 and its volatility is 37.87. The skewness value is positive 0.74 and it shows that most value of value concentrated on the left side of the mean and the extreme values on the right side. The kurtosis is -0.6 and the inflation is normally distributed . The minimum inflation and maximum inflation index are 92.4 and 205.52 respectively

### 4.3 DESCRIPTIVE STATISTICS OF EXCHANGE RATE

Table -3

Mean	47.65
Median	45.72
Standard deviation	6.16
Skewness	-1.7
Kurtosis	4.79
Minimum	44.349
Maximum	63.75

Source: Author's Computation

The average value of exchange rate is 47.65 and its volatility is 6.16%. The skewness shows a negative value of -1.7. It indicates that the most of the values are concentrated on the right side and extreme values are on the left side. Kurtosis value is 4.79. It indicates that an extreme value lies in the right side. The minimum exchange rate against dollar is 44.34 and the maximum exchange rate is 63.75.

### 4.4 CORRELATION MATRIX OF INDEPENDENT VARIABLES

Table -6

Independent variable	Inflation	Exchange rate
Inflation	1	
Exchange Rate	0.798**	1

Source: Author's Computation

Correlation is significant at the 0.01 level

The correlation matrix explains that the value is less than 2, so there is no possibility for arising multi co-linearity among the independent variables.

- There is a significant positive relationship between exchange rate and inflation rate with the value of 0.798.

### 4.5 REGRESSION RESULTS

Multiple regression analysis is applied on the Price return of NSE NIFTY taken as a dependent variable and the Inflation and Exchange rate as independent variables for the period 2003 to September 2013. The result of the analysis is tabulated below.

Table -7

Variables	Co-efficient	Standard Error	t-statistics	P Value
Intercept	-.126	.433	-.291	.779
Inflation	-.003	.002	-1.358	.212
Exchange Rate	.012	.013	.938	.376
R	.438			
R square	.192			
Adjusted R Square	-.010			
Standard Error of Estimate	.15294			
Durbin -Watson	3.105			
F Statistics	.951			

Source: Author's Computation

It is observed from the analysis that inflation is negatively influencing the price return of NSE NIFTY and it has a negative co efficient -.003 of and its' value is -1.358. It implies that the inflation hike has a negative impact on the price return of India. Another factor taken for the study is exchange rate which gives positive co efficient on price return of NSE NIFTY. It indicates that if exchange rate appreciates against US dollar, the return of NSE NIFTY in India is getting increased.. The value of R squared (0.438) is low. It is the percentage of variance of dependent variable explained by the independent variables and its percentage is 43.8%. The value of Durbin Watson statistics for dependent variable is 3.105, if the value lies between 1.5 to 2.5, there is no autocorrelation exists in the study.

### 5. CONCLUSION

Over the years, it has been observed that there is a significant relationship exists between price return of NSE NIFTY and macro economic factors such as Inflation and exchange rate in India. It is concluded from the study that in order to improve the index value of banks, it is necessary to manage the macro economic factors effectively. The Government, Banks should always keep an eye on the movements of macroeconomic factors because the macro economic factors are influencing the price return of NSE NIFTY.

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