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**The Effect of Inflation on CNX Nifty Movement in India-A Study**

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**Abstract**

The stock market is a barometer to test the health of the Indian economy. The health of the economy depends on growth of macroeconomic variables of that country. The stock market has been influenced by the various macroeconomic fundamentals like, interest rate, inflation rate, exchange rate, index of industrial production, gross domestic production and balance of payments and more. The present study has been focused to study inflation influence on movement of CNX Nifty index. The study found that there is an effect of inflation on movement of CNX Nifty index and Multi-regression model proved that there is no inflation effect on volatility of CNX Nifty index. Finally, found that the inflation has influenced highly risk on Sensex than CNX Nifty index during the study period.

**Keywords:** Inflation rate, CNX Nifty, stock market, Multi-regression model, RAP Model

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**Introduction**

The stock market plays a vital role to test the health of the Indian economy. The stock market is a place where the investors or traders are buying and selling the shares by stock broker through electronic form. The market has been influenced by various factors like all public information, company financial results, and industrial policies, volume of trade, industrial reports and political events. Moreover, macroeconomic factors are Money supply, Gross Domestic Product, interest rate, inflation rate, Balance of Payments and index industrial

production have influenced. Therefore, an attempt is made to check the inflation influence on movement of CNX Nifty.

### **Inflation rate**

Inflation is a sustained increase in price level of goods and services in an economy over a period of time. When the prices are increased, lesser quantity of goods and services obtained with higher the currency; accordingly, inflation reflects a decrease in the purchasing power per unit of currency, a loss of real value in the medium of exchange and unit of account within the economy. -Wikipedia

The rate at which common prices of goods and services are rising and consequently, the purchasing power of currency is falling is known inflation. -Investopedia

Inflation is the long term rise in prices of goods and services caused by devaluation of currency. -Money crashers

### **Literature Review**

Bulent.N Gultekin (1983) investigated the relationship between common stock returns and inflation in 26 countries for the postwar period. Their results do not support the fisher hypothesis, which states the real rates of return on common stock and expected inflation rates are independent and that nominal stock returns vary in one-to-one correspondence with expected inflation. There is a consistent lack of positive between stock return and inflation in most of the countries.

Chandra mohan .N and Chitradevi.N (2014) discussed the impact of inflation and exchange rate on stock market return in India for the period of 2003 to 2013. They found that the inflation is negatively influencing the price return on NSE CNX Nifty, the exchange rate positively affecting the price return on NSE CNX Nifty.

Narayana and Bhole (1990) examined the impact of inflation in India on the rate of return on equity. The real rate of return for each year and all multiyear holding periods between 1953 and 1987 are presented. Whereas equities provided a positive real rate of return over long periods, it is negative in the short run especially in years of extraordinary inflation.

Michael (2014) found that there is a negative statistically relationship between inflation and returns in the short run and positive statistically significant relationship in the long run

Richard and Donald (1981) discussed the results that ratio of price to dividends is negatively related to interest rates although this effect is statistically significant only for the United Kingdom. And there is no case sign of the inflation variable positive, although the co-efficient are significant only for Canada.

Saurabh Singh, Thripathi and Kirthi (2012) examined the level of influence of exchange rate of inflation on BSE S&P Sensex. For establishing the relationship regression analysis has been used. The results suggested that inflation rate and exchange rate significantly affect the performance of BSE S&P Sensex.

Shahbaz Akmal MD (2007) established the relationship between stock market prices and inflation over the period of 1971-2006. They used the techniques ARDL; co-integration technique to detect the long run and short run effects between variables by error correction approach. The results proved that stocks are minimized the risk against the inflation in long run but not in short run, while black economy promotes the stock market prices to have as well as in short run.

Susan M Wachter (1983) attempted to explain the effects of inflation and real factors on the performance of the U.S. stock market over the years 1960 to 1980. In their study found that a positive short run correlation between inflation and shares holding period rate of return in the U.S.

Zhongqiang Bai (2014) verified that the impact of inflation rate on stock prices of Shanghai Composite Index of stock prices. And their results found that combined with the actual situation of China's economic development process and analyze and discuss the feasibility of high specific policy proposals, such as policy formulations in line with inflation current and future trends, respect for objective facts and reasonable policies.

### **Objectives of the study**

1. To measure the inflation influence on CNX Nifty returns
2. To measure the influence of inflation on CNX Nifty volatility
3. To measure the risk reward of CNX Nifty and compare with inflation

### **Hypotheses**

Null Hypothesis:  $H_{01}$ : inflation will not influence the CNX Nifty returns

Null Hypothesis:  $H_{02}$ : inflation will not influence the CNX Nifty volatility

### **Empirical Study**

Inflation rate

CNX Nifty

Granger Causality test

Multi-regression model

Modigliani Risk Adjusted Performance

## Research Methodology

The present study has been done based on secondary data that is from April-2005 to Mar-2017, by using descriptive statistical tools. Following tools considered for the study.

**Granger Causality test:** This test has been used whether the variable of inflation had granger caused or not on CNX Nifty during study period.

$$y_t = \beta_{1,0} + \sum_{i=1}^p \beta_{1,i} y_{t-i} + \sum_{j=1}^p \beta_{1,p+j} x_{t-i} + e_{1t}$$

$$x_t = \beta_{2,0} + \sum_{i=1}^p \beta_{2,i} y_{t-i} + \sum_{j=1}^p \beta_{2,p+j} x_{t-i} + e_{2t}$$

**Johnson Co integration test:** This test has been applied to know the co integration between selected economic variables and CNX Nifty.

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{\infty} \ln(1 - \hat{\lambda}_i)$$

$$\lambda_{max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1})$$

$\lambda_{trace}$  tests the null that the number of cointegrating vectors is less than or equal to  $r$  against an unspecified alternative.

$\forall \lambda_{trace} = 0$  when all the  $\lambda_i = 0$ , so it is a joint test.

$\lambda_{max}$  tests the null that the number of cointegrating vectors is  $r$  against an alternative of  $r+1$ .

**Multi-regression model:** This test has been applied to know the influence inflation on CNX Nifty.

$$Y = a + b_1 X_1 + b_2 X_2 + B_3 X_3 + \dots + B_t X_t + u$$

Where:

Y= the variable that we are trying to predict(DV)

X= the variable that we are using to predict Y(IV)

a= the intercept

b= the slope (Coefficient of X1)

u= the regression residual (error term)

**Modigliani Risk Adjusted Performance:** This test has been used to know the risk reward inflation with comparison of CNX Nifty and S&P Sensex.

$$M\text{-squared} = (\bar{R}_p - \bar{R}_f) \left( \frac{\hat{\sigma}_m}{\hat{\sigma}_s} \right) - (\bar{R}_m - \bar{R}_f)$$

## Data Analysis

### 1. to Measure the Inflation Influence on CNX Nifty

**Table: 1 Johenson Cointegration test**

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of Ces	No Trend	No Trend	No Trend	Trend	Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	-1296.744	-1296.744	-1296.74	-1296.74	-1296.68
1	-1285.106	-1280.661	-1280.658	-1280.463	-1280.41
2	-1277.174	-1269.913	-1269.913	-1269.507	-1269.51
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	19.02527	19.02527	19.0542	19.0542	19.08234
1	18.91458	18.86466	18.8791	18.89077	18.90455
2	18.8576	18.78135*	18.78135*	18.80445	18.80445
Schwarz Criteria by Rank (rows) and Model (columns)					
0	19.36467	19.36467	19.43602	19.43602	19.50658
1	19.33882	19.31011*	19.34576	19.37865	19.41364
2	19.36669	19.33286	19.33286	19.39839	19.39839

Source: Data compiled

The above analysis of Johnson co integration test has been applied on the stationary data selected variables and the test result indicated that Log likelihood rank values observed to be in increasing trend both nonlinear and Quadratic model along with the Alpha level hence, the data is stated to be co integrated between the selected economic variables.

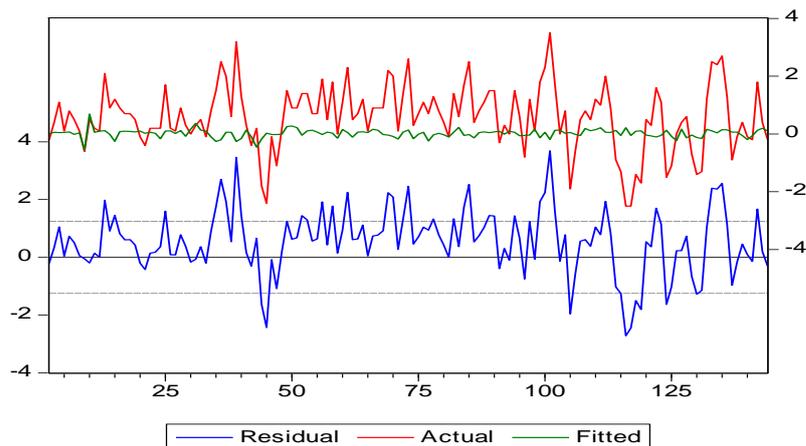
**Table: 2 Granger Causality test**

Null Hypothesis:	Obs	F-Statistic	Prob.
DCNX NIFTY does not Granger Cause DINFLATION	141	0.02324	0.977
DINFLATION does not Granger Cause DCNX NIFTY		0.0839	0.9196

Source: Data compiled

The above table 2 analysis of granger causality test result reveals that the inflation had granger caused the CNX Nifty during the study period. The null hypothesis has been rejected because the probability value to be observed greater than the significant ( $0.977 > 0.05$ ). The null hypothesis has been rejected and accepted the alternative hypothesis.

## 2. To Measure the Influence of Inflation on CNX Nifty Volatility



**Fig.1: Residual Graph**

The above graph depicts the CNX Nifty volatility with inflation; the trend line has crossed a fitted line which indicates CNX Nifty is having volatility. Hence, the multi-regression model applied to identify the influence of inflation on CNX Nifty.

**Table: 3 Multi-regression Model**

	Variable	Coefficient	Std. Error	z-Statistic	Prob.
ARCH	DCNX NIFTY	0.000231	0.000168	1.375163	0.1691
GARCH	DCNX NIFTY	0.00028	0.000179	1.564403	0.1177
TARCH	DCNX NIFTY	0.000283	0.000179	1.587305	0.1124
EGARCH	DCNX NIFTY	0.000303	0.00017	1.778344	0.0753
PARCH	DCNX NIFTY	0.000278	0.000181	1.535557	0.1246

Source: Data compiled

The above analysis of multi-regression model has been applied to know the influence of inflation on CNX Nifty volatility the regression under conditional heteroskedasticity the probability value of ARCH,GARCH, TARCH, EGARCH and PARCH models are found to be insignificant. The probability values in all 5 conditions are observed greater than 0.05. Hence, the inflation influence has not been observed on CNX Nifty volatility.

## 3. To measure the risk reward of CNX Nifty and compare with inflation

**Table: 4 Modigliani Risk Adjusted Performance**

	D	S	M2
CNX Nifty	1.05	0.10	355
S&P Sensex	0.7	0.12	467

Source: Data Compiled

The above analysis Modigliani Risk Adjusted Performance result indicates that the M square of the S&P Sensex is observed to be greater than the CNX Nifty returns performance (467 >355).

### **Findings of the Study**

The study has been done to know the inflation influence on CNX Nifty movement got found the influence of inflation on CNX Nifty is insignificant.

1. The study found through granger causality test revealed that inflation had granger caused CNX nifty during the study period.
2. The Multi regression model found that inflation has not been influenced on CNX Nifty volatility.
3. Modigliani risk adjusted performance method has explained that the influenced the highly risk on S&P Sensex than CNX Nifty with the inflation.

### **Conclusion**

The study concludes titled 'The effect of inflation on CNX Nifty movement in India'. The study has been done to check the influence of inflation on CNX Nifty movement and found that inflation has not been influenced on CNX Nifty during the study period. As per granger causality test inflation had granger caused on CNX Nifty movement. The present study observed that inflation has not been influenced on CNX Nifty volatility and returns. Hence, there is further scope to do research by considering the other macro-economic variables and lengthy period. So that equity investments community will be benefited.

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