

IMPACT OF INFLATION ON SELECT SECTORS OF NATIONAL STOCK EXCHANGE IN INDIA

BY

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Abstract

One of the most important objectives of any country is to achieve high economic growth with low inflation. The relationship between inflation and economic growth has been a controversial issue among macroeconomists, policymakers, and monetary authorities in the last few decades. Inflation and economic growth have one of the most mysterious relationships in economic theory. The appropriate level of inflation required for economic growth is hard to define. India is facing a fast rise in the general price level for the last couple of years. So, inflation is one such thing which is a major impact on the entire economy in some or another way. So, this study is carried out to know the relationship and effect of Inflation on the select sectors of the national stock exchange in India for the period 2012-2021 using statistical tools such as covariance analysis, and pair wise grangers causality and regression analysis has been used to derive the analysis.

Keywords: Inflation, Select sectors, National stock Exchange, Impact.

INTRODUCTION

The economic stability of a country depends upon the performance of the macroeconomic variables. In simple terminology, inflation is the persistent rise in the general price level which decreases the purchasing power of the people. The role of inflation and deflation on the economic growth, productivity, and output has been one of the widely discussed issues in the macroeconomic context.

To accelerate economic growth with low level of inflation is the main objective of most of the countries. From the macroeconomic policy point of view, inflation and economic growth are two important variables. However, there is no definite relationship between inflation and economic growth as evident from existing theoretical and empirical findings. This relationship has been one of the most controversial among policymakers, economists, and monetary authorities over the last few decades. The inflationary process has remained a controversial topic. It is generally arguable whether the inflationary pace is good or bad for the economies.

It has been observed that high inflation reduces savings and diverts investment into speculative channels. This is explained by the well-known Phillips curve advocating the possible trade-off between inflation and unemployment (Phillips, 1958). This curve

establishes that there is no trade-off between inflation and unemployment in the long run but there are a possible trade-off between inflation and unemployment in the short run.

All most all emerging countries are taking steps to control inflation arising inflation can be matter of concern for the country's economic. India is considered to be the large market that doesn't have a monetary policy framework. This is one of the main reasons why India mostly faces rise in inflation after the financial crises. 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 watch on the movement of stock market prices because it largely affects the economy of a country.

Review of literature

Hasanov (2010) investigated the relationship between the real GDP growth rate, Consumer Price Index Inflation, and the growth rate of real Gross Fixed Capital Formation from 2001-2009 in Azerbaijan and found a non-linear relationship between inflation and economic growth. It is similar to the findings of Eggoh & Khan (2014).

Umaru and Zubairu (2012) run the causality test and identified that GDP caused inflation and not inflation causing GDP in the Nigerian economy. The studies also conclude that there is a significant positive impact of inflation on economic growth and output. Similar results were found by Mallik and Chowdhury (2001) while studying Bangladesh, Pakistan, India, and Sri Lanka. They revealed that although moderate inflation promotes economic growth, faster economic growth absorbs inflation by overheating the economy.

Hussain & Zafar (2018) examined the association between money supply, inflation, government expenditure, and Pakistan's economic growth from 1972 to 2015. Using the Granger Causality tests, the researcher reveals that causality runs from Inflation to Economic Growth.

Barro (2013) investigated inflation and economic growth for 100 countries used the data from 1960 to 1990. He identified that causation runs negatively from high persistent inflation to lower real GDP Growth.

Vinayagathan (2013) discussed the impact of inflation on economic growth for 32 Asian economies from 1980 to 2009. The study concluded that maintaining 5.43% inflation does not hurt the economy, but above that rate, there is an inverse relationship between inflation rate and economic growth.

Ahamed (2021) studied the relationship between macroeconomic variables such as inflation, domestic credit, and banking sector liquidity for the period of 2005-2018. The study concludes that inflation has an inverse relation with liquidity, ultimately affecting the investment and output

Statement of the problem

Rise in price level which causes the major part for the inflation and a reduced purchasing power, so inflation is one such factor which will affect the share price of the stock market. Change in the rate of inflation strongly affects the stock prices. So it is considered that when inflation price rises the stock market also performs better. And the growth stock has minimal cash flows. Rising inflation can be costly for consumers, stock, and economy. Normally the effect of inflation in the economy is the general slowdown of the economy, when this happens it will rise the unemployment level and purchases becomes more expensive. As of now, the consumer price index is estimated to touch 6.3 average this fiscal from 5.5% in the last. So based on this reserve bank of India is also going to rise its policy repo rate by 75-100 basis points. So hence the rise in

inflation in 2022 will definitely have an impact on the stock market. So, this study analysis the relationship and its effect on the stock market performance. Keeping this in view the study has been carried out and uses the statistical tools such as unit root test, causality test, and co-integration test has been included.

The above problem is discussed using the questions:

- How is the trend and growth pattern of inflation in India?
- Whether inflation has any relationship with stock market performance?
- Is there any effect of inflation on the stock market performance?

The objective of the study

- To study the trend and growth of inflation in India
- To analyze the causation between inflation and price of select indices of the national stock exchange.
- To examine the integration between inflation and price of select indices of national stock exchange.
- To elucidate the effect of inflation on the price of select indices of the National stock exchange.

The hypothesis of the study

- There is no significant causation between Inflation and Select sectors of the National Stock Exchange.
- There is no significant relationship between Inflation and Select sectors of the National Stock Exchange.
- There is no significant impact Inflation and Select sectors of National Stock Exchange.

Research Methodology

The paper is analytical in Nature.

Source of the data

The data are a secondary source of information. And the data are collected from the official websites of the Reserve Bank of India, the National stock exchange, and other journals, magazines, and news articles for information.

Period of study

The study period covers from 2010 to 2020

Tools used for the study

The study uses statistical tools for analysis such as pairwise Granger's causality test, Covariance Analysis, and Regression Analysis.

Analysis and Interpretation

**Table 1.1
Depicting the Inflation and select sectors of the National Stock Exchange in India for the period 2012-2021**

Year	Inflation	Nifty AUTO	Nifty BANK	Nifty ENERGY	Nifty FMCG	Nifty IT	Nifty PHARMA	Nifty METAL
2012	9.31	1032279	2543497	1917254	3170521	1537210	1324584	712337
2013	11.06	1175776	2637726	1968148	4130039	1872039	1692146	561969
2014	6.65	1652171	2853639	2184321	4486358	2488229	2201592	683540
2015	4.91	2073348	3543419	2077709	5029874	2873115	3038530	534612

2016	4.95	2167756	4487621	2222466	5088924	2649070	2774800	551148
2017	3.33	2628063	4337396	3086294	6128154	2629051	2417302	815602
2018	3.95	2606946	5720545	3486706	7069691	3430270	2259722	877693
2019	3.72	1963478	6422280	3794884	7358038	3813345	2049611	670674
2020	6.62	1851215	7193225	3682135	7571450	4354873	2544680	582292
2021	5.10	2599008	6188636	5021732	9026615	7521131	3374532	1225632

Chart 1.1

Depicting the Inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

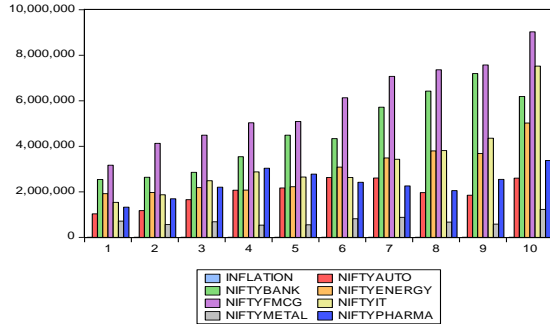


Table 1.2

Analysis of Pairwise Granger's causality for Inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

Null Hypothesis:	Obs	F-Statistic	Prob.
NIFTY AUTO does not Granger Cause INFLATION	8	2.45864	NA
INFLATION does not Granger Cause NIFTYAUTO		1.72980	0.3165
NIFTY BANK does not Granger Cause INFLATION	8	0.49406	0.6524
INFLATION does not Granger Cause NIFTYBANK		2.71034	0.2126
NIFTY ENERGY does not Granger Cause INFLATION	8	0.73873	0.5484
INFLATION does not Granger Cause NIFTY ENERGY		0.92737	0.4858
NIFTYFMCG does not Granger Cause INFLATION	8	0.52371	0.6381
INFLATION does not Granger Cause NIFTYFMCG		0.15283	0.8646
NIFTYIT does not Granger	8	0.29053	0.7668

Cause INFLATION			
INFLATION does not Granger Cause NIFTYIT		1.61429	0.3343
NIFTY METAL does not Granger Cause INFLATION	8	2.56911	0.2238
INFLATION does not Granger Cause NIFTYMETAL		5.42978	0.1007
NIFTY PHARMA does not Granger Cause INFLATION	8	1.59226	0.3378
INFLATION does not Granger Cause NIFTYPHARMA		0.08264	0.9227
NIFTY BANK does not Granger Cause NIFTYAUTO	8	1.23909	0.4053
NIFTY AUTO does not Granger Cause NIFTYBANK		4.02804	0.1413
NIFTY ENERGY does not Granger Cause NIFTYAUTO	8	0.22619	0.8100
NIFTY AUTO does not Granger Cause NIFTY ENERGY		0.29982	0.7608
NIFTYFMCG does not Granger Cause NIFTYAUTO	8	2.01883	0.2783
NIFTY AUTO does not Granger Cause NIFTYFMCG		0.61058	0.5991
NIFTYIT does not Granger Cause NIFTYAUTO	8	12.8272	0.0339
NIFTY AUTO does not Granger Cause NIFTYIT		1.07284	0.4452
NIFTY METAL does not Granger Cause NIFTYAUTO	8	6.47746	0.0815
NIFTY AUTO does not Granger Cause NIFTYMETAL		0.50783	0.6457

NIFTY PHARMA does not Granger Cause NIFTYAUTO	8	1.47454	0.3581
NIFTY AUTO does not Granger Cause NIFTYPHARMA		0.28588	0.7698
NIFTY ENERGY does not Granger Cause NIFTYBANK	8	2.68480	0.2146
NIFTY BANK does not Granger Cause NIFTYENERGY		2.44485	0.2345
NIFTYFMCG does not Granger Cause NIFTYBANK	8	5.74705	0.0942
NIFTY BANK does not Granger Cause NIFTYFMCG		1.36095	0.3796
NIFTYIT does not Granger Cause NIFTYBANK	8	0.01884	0.9815
NIFTY BANK does not Granger Cause NIFTYIT		1.00608	0.4631
NIFTY METAL does not Granger Cause NIFTYBANK	8	1.82352	0.3032
NIFTY BANK does not Granger Cause NIFTYMETAL		3.62235	0.1585
NIFTY PHARMA does not Granger Cause NIFTYBANK	8	0.35965	0.7244
NIFTY BANK does not Granger Cause NIFTYPHARMA		1.65190	0.3283
NIFTYFMCG does not Granger Cause NIFTY ENERGY	8	0.38896	0.7076
NIFTY ENERGY does not Granger Cause NIFTYFMCG		0.07578	0.9287
NIFTYIT does not Granger Cause NIFTY ENERGY	8	0.73106	0.5513
NIFTY ENERGY does not Granger Cause NIFTYIT		0.22432	0.8114
NIFTY METAL does not Granger Cause NIFTY ENERGY	8	2.26782	0.2512

NIFTY ENERGY does not Granger Cause NIFTYMETAL		3.40293	0.1692
NIFTY PHARMA does not Granger Cause NIFTY ENERGY	8	0.49444	0.6522
NIFTY ENERGY does not Granger Cause NIFTYPHARMA		0.62390	0.5935
NIFTYIT does not Granger Cause NIFTYFMCG	8	0.40951	0.6962
NIFTYFMCG does not Granger Cause NIFTYIT		0.17227	0.8495
NIFTY METAL does not Granger Cause NIFTYFMCG	8	5.25571	0.1046
NIFTYFMCG does not Granger Cause NIFTYMETAL		6.67995	0.0785
NIFTY PHARMA does not Granger Cause NIFTYFMCG	8	0.07051	0.9334
NIFTYFMCG does not Granger Cause NIFTYPHARMA		2.77908	0.2075
NIFTY METAL does not Granger Cause NIFTYIT	8	0.43085	0.6847
NIFTYIT does not Granger Cause NIFTYMETAL		1.56816	0.3418
NIFTY PHARMA does not Granger Cause NIFTYIT	8	0.90625	0.4922
NIFTYIT does not Granger Cause NIFTYPHARMA		1.59351	0.3376
NIFTY PHARMA does not Granger Cause NIFTYMETAL	8	0.06176	0.9413
NIFTY METAL does not Granger Cause NIFTYPHARMA		0.04840	0.9535

Table 1.2 shows the Pairwise Granger causality for inflation and select sectors of the National Stock Exchange in India for the period 2012-2021. According to the results apart from Nifty IT granger cause Nifty AUTO where as other than this variable neither of the variable granger cause any of the select sectors' national stock exchange nor Granger cause inflation.

Table 1.3

Covariance Analysis for inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

Covariance					
Correlation					
t-Statistic					
Probability	INFLATION	NIFTYAUTO	NIFTYBANK	NIFTY ENERGY	NIFTYFMCG
INFLATION	5.698100				
	1.000000				

NIFTY AUTO	-1133516.	2.91E+11			
	-0.880389	1.000000			
	-5.250619	-----			
	0.0008	-----			
NIFTY BANK	-2217721.	5.13E+11	2.62E+12		
	-0.574501	0.588269	1.000000		
	-1.985249	2.057560	-----		
	0.0824	0.0736	-----		
NIFTY ENERGY	-1197300.	3.40E+11	1.37E+12	9.76E+11	
	-0.507830	0.638233	0.856832	1.000000	
	-1.667360	2.344887	4.700371	-----	
	0.1340	0.0471	0.0015	-----	
NIFTY FMCG	-2521601.	6.82E+11	2.58E+12	1.66E+12	3.01E+12
	-0.608760	0.728424	0.918514	0.967415	1.000000
	-2.170320	3.007173	6.570647	10.80696	-----
	0.0618	0.0169	0.0002	0.0000	-----
NIFTY IT	-1522350.	5.04E+11	1.91E+12	1.46E+12	2.51E+12
	-0.394984	0.578653	0.730319	0.916801	0.895630
	-1.216063	2.006778	3.023916	6.493406	5.695210
	0.2586	0.0797	0.0165	0.0002	0.0005
NIFTY METAL	-147522.4	5.90E+10	1.11E+11	1.48E+11	2.14E+11
	-0.308893	0.546495	0.343805	0.748121	0.615085
	-0.918605	1.845720	1.035552	3.188856	2.206478
	0.3852	0.1021	0.3307	0.0128	0.0584
NIFTY PHARMA	-811988.8	2.30E+11	4.35E+11	2.88E+11	6.23E+11
	-0.587873	0.735522	0.464995	0.504270	0.620352
	-2.055443	3.070657	1.485581	1.651669	2.237113

	0.0739	0.0153	0.1757	0.1372	0.0557
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Table 1.3 reveals the covariance analysis and correlation analysis among the inflation and select sectors of the National Stock Exchange in India for the period 2012-2021. Nifty AUTO has a high positive relationship with Inflation with the value of .088 and they have negative covariance. Nifty ENERGY has a strong positive relationship with Nifty AUTO with a value 0.638 and Nifty BANK with a value of .0856. and Nifty FMCG has a strong negative relationship with Inflation with value -.608, Nifty AUTO at 0.728, Nifty BANK at 0.918 and Nifty ENERGY with value 0.967. Nifty IT has strong positive relationship with Nifty BANK with a value of 0.730, Nifty ENERGY with value 0.916, and Nifty FMCG at 0.895. Apart from that Nifty METAL has a strong positive relationship with Nifty ENERGY with a value 0.748 and Nifty FMCG with value 0.615. And Nifty PHARMA has strong relationship with Nifty AUTO with the value of 0.735 and Nifty FMCG with value 0.620. hence two of the select sectors have of National Stock Exchange have strong positive relationship, hence it can be concluded that there is relationship among select sectors of national stock exchange and inflation in India where the significant value is below 0.05.

Regression Analysis for the inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

Table 1.4
Model summary for inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

Particulars	Particulars	R	R Square	Adjusted R Square	Durbin Watson
INFLATION (INDEPENDENT)	NiftyAUTO	0.880	0.775	0.747	2.044
	NiftyBANK	0.575	0.33	0.246	0.774
	NiftyENERGY	0.508	0.258	0.165	0.392
	NiftyFMCG	0.609	0.371	0.292	0.532
	NiftyIT	0.395	0.156	0.051	0.527
	NiftyPHARMA	0.588	0.346	0.264	1.104
	NiftyMETAL	0.309	0.095	-0.018	1.422

Table 1.4 exhibits the Model summary for inflation and select sectors of the National Stock Exchange in India. When Inflation is kept independent and select sectors of National stock exchange is dependent. R-value of Nifty AUTO is 0.880 which shows a strong relationship. R square value with 0.775 shows 75.5 percent of the proportion of variance in dependent variable that can be explained with independent variable. And Adjusted R -square value is 0.747 which shows a moderate fit and percentage variance explained by input variables that are not significant in model. And Durbin Watson value is 2.044 which means there is no auto correlation in the model. Nifty BANK has a R value of 0.575 which shows the relationship and R square value is 0.330 which means the proportion of variance depends variable based on independent variable and the adjusted R square value of 0.246 which shows the fit of model is not good. And Durbin Watson is 0.774 which means that there is positive autocorrelation.

Nifty ENERGY has a R value of 0.508 which indicates the relationship. R square value of 0.258 shows the variance of dependent variable from the independent variable, and Adjusted R square value is 0.165 which means the model is not fit. Durbin Watson value is 0.392 which means negative autocorrelation prevails in the model. And Nifty FMCG has R value of 0.609 which shows a positive relationship. R square value is 0.371 which shows the variation among dependent and independent variable and adjusted r square value is 0.292 which shows model is not good to fit, Durbin Watson value is 0.532 model is suffering negative autocorrelation.

And the Nifty IT has a R value of 0.395 shows a low relationship square value of 0.156 shows the variation among the variables, Adjusted R square value of 0.051 indicates the model is not good to fit and Durbin Watson is 0.527 there prevails a negative autocorrelation. Nifty PHARMA has a R-value of 0.588 shows a positive relationship square value of 0.346 shows the variation among the variables, Adjusted R square value of 0.264 indicates the model is not good to fit and Durbin Watson is 1.104 there prevails a positive autocorrelation. Nifty METAL has a R-value of 0.309 shows a low relationship square value of 0.095 shows the variation among the variables, Adjusted R square value of -0.018 indicates the model is not good to fit and durbin Watson is 1.422 there prevails a negative autocorrelation.

H₀ = there is no significant impact of inflation on select sectors of National stock exchange in India.

Table 1.5
ANOVA for inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

	ANOVA	F	Sig
INFLATION (INDEPENDENT)	NiftyAUTO	27.569	0.001
	NiftyBANK	3.941	0.082
	NiftyENERGY	2.78	0.134
	NiftyFMCG	4.71	0.062
	NiftyIT	1.479	0.259

	NiftyPHARMA	4.225	0.074
	NiftyMETAL	0.844	0.385

Table 1.5 depicts the ANOVA for inflation and selects sectors of the National Stock Exchange in India. The significant value of Nifty AUTO is below 0.05 which means there is an impact of inflation on nifty AUTO. And the significant value of Nifty FMCG AND Nifty PHARMA is close to the significant value where we can conclude by rejecting the null hypothesis, that there is an impact of inflation on select sectors of the National Stock exchange in India.

Table 1.6
Coefficient of inflation and select sectors of the National Stock Exchange in India for the period 2012-2021

	COEFFICIENT	standardized Beta Coefficient	T statistics	Sig
INFLATION (INDEPENDENT)	NiftyAUTO	-0.88	-5.251	0.001
	NiftyBANK	-0.575	-1.985	0.082
	NiftyENERGY	-0.508	-1.667	0.134
	NiftyFMCG	-0.609	-2.17	0.062
	NiftyIT	-0.395	-1.216	0.259
	NiftyPHARMA	-0.588	-2.055	0.074
	NiftyMETAL	-0.309	-0.919	0.385

Table 1.6 shows the Coefficient of inflation and select sectors of the National Stock Exchange in India. The significant value of Nifty AUTO is below 0.05 which means there is an impact of inflation on nifty AUTO. And the significant value of Nifty FMCG AND Nifty PHARMA is close to the significant value where we can conclude by rejecting the null hypothesis, that there is an impact of inflation on select sectors of the National Stock exchange in India.

Findings

- According to the results apart from Nifty IT granger cause Nifty AUTO where as other than this variable neither of the variable granger cause any of the select sectors national stock exchange nor granger cause inflation.
- Nifty AUTO has a high positive relationship with Inflation with the value of .088 and they have negative covariance.
- Nifty ENERGY has a strong positive relationship with Nifty AUTO with a value 0.638 and Nifty BANK with a value of .0856.

- Nifty FMCG has a strong negative relationship with Inflation with value -.608, Nifty AUTO at 0.728, Nifty BANK at 0.918, and Nifty ENERGY with value 0.967.
- Nifty IT has strong positive relationship with Nifty BANK with a value of 0.730, Nifty ENERGY with value 0.916 and Nifty FMGC at 0.895.
- Apart from that Nifty METAL has a strong positive relationship with Nifty ENERGY with a value of 0.748 and Nifty FMCG with a value of 0.615. And Nifty PHARMA has a strong relationship with Nifty AUTO with a value of 0.735 and Nifty FMCG with a value 0.620.
- There is a relationship among select sectors of the national stock exchange and inflation in India where the significant value is below 0.05.
- The significant value of Nifty AUTO is below 0.05 which means there is an impact of inflation on nifty AUTO.
- And the significant value of Nifty FMCG AND Nifty PHARMA is close to the significant value where we can conclude by rejecting the null hypothesis, that there is an impact of inflation on select sectors of the National Stock exchange in India.

Conclusion

From the above study, we can conclude that as a economic indicator inflation must has an impact of the price level changes of stock market whereas

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