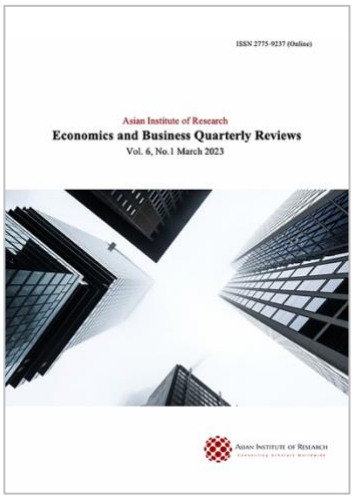

Economics and Business Quarterly Reviews

Ali, K., Malik, I. A., Chisti, K. A., & Showkat, N. (2023). Inflation and Stock Market Returns: An Empirical Study of Sectoral Indices with Special Reference to India. *Economics and Business Quarterly Reviews*, 6(1), 148-154.

ISSN 2775-9237

DOI: 10.31014/aior.1992.06.01.493

The online version of this article can be found at:
https://www.asianinstituteofresearch.org/

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The Asian Institute of Research

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The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.1, 2023: 148-154
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.01.493

Inflation and Stock Market Returns: An Empirical Study of Sectoral Indices with Special Reference to India

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Abstract
In this study an attempt has been undertaken so as to establish the relationship between sectoral indices returns and inflation numbers. In order to achieve the objective of the study, all the sectoral indices have been taken in the study except two (02) indices because they were introduced in the National Stock Exchange in the recent past and, therefore, their data is not available for the whole reference period of the study. The indices that are in the study are, (CNX Auto Index, CNX Bank Index, CNX Energy Index, CNX Finance Index, CNX FMCG Index, CNX IT Index, CNX Metal Index, CNX MNC Index, CNX Pharma Index, CNX PSU Bank Index). The study took eight years of reference period throughout which all the indices that are included in the sample were available. The researchers have employed Pearson correlation method so as to establish the relationship between inflation and sectoral indices returns. The findings of the study put forth that most of the indices do possess statistically significant relationship with inflation numbers.

Keywords: Inflation, Stock Market Returns, Sectoral Indices

1. Introduction

Although inflation is a normal economic phenomenon yet it creates a lot of economic discomfort once it goes beyond a predetermined level and also distorts economic performance of a nation. It also brings about a decline in the value of the money, thereby, deteriorating the economic well being of common man. Higher levels of inflation influence the various macro-economic variables which in turn influence the index returns. The level of inflation manifests the stability of macro-economic variables in an economy. Therefore, every country wants to maintain the levels of inflation within the comfort zone so as to keep the economic growth story continuing.

India has emerged as one of the best-emerging economies in the world and has become an attractive destination for the international investors. The Indian economy has registered substantial economic growth for the last many years but for the last couple of years Inflation has taken centre stage for the rise in global oil prices, depreciation of the domestic currency, besides, fuelled by rise in food prices which pushed the situation from bad to worse,

thereby, compelling the economic policy planners to put the various economic policies in a particular direction, despite, the decline in the Gross Domestic Product.

Stock market sectoral indices play a very significant role for they stand as a barometer of the economic health of a country. These sectoral indices manifest the direction of growth of each sector of the economy and, thereby, facilitating the investors in making their investment decisions. Stock indices are dynamic, therefore, they highlight the overall sate of the economy. Thus, in this study, an attempt has been made so as to find out the level of influence which inflation numbers hold over the index returns.

2. Review of Literature

Loannides, Katrakilidis and Lake (2002) Investigated the relationship between stock market returns and inflation rate over the period of 1985 to 2000. The findings of the study confirmed that there existed a negative relationship between inflation and stock market returns. Wei (2007) undertook a study to find relationship between unexpected inflation and stock returns. The results of the study put forth strong evidence that equity returns responds more negatively to unexpected inflation.

Adrangi, Chatrath and Sarvicente (2000) investigated the relationship between stock returns and inflation in emerging economy (Brail). The study concluded negative relationship between real stock return and inflation. Geyser and Lawies (2001) attempted to study the impact of inflation and stock prices. The findings put forth that the companies listed in the mining sector are negatively correlated against inflation, however, the companies from financial services, Information Technology and FMCG showed slightly positive correlation.

Zhao (1999) undertook the study and concluded that there exists statistically significant negative relationship between stock prices and inflation. Omran and pointon (2001) undertook an analysis to gauge the impact of inflation rate on stock market. The results confirm definite negative impact of inflation on stock market returns. Fama and Schwert(1997) put forth in their study that stock returns are negatively related to inflation because stock returns are positively related to real activity and real activity is negatively related to upward movements in the level of price.

Spyran (2001) analysed the relationship between stock returns and inflation. The results of the study show a negative relationship between stock returns and inflation. Choudary (1998) investigated the relationship between stock returns and inflation. They found a positive relationship between stock market returns and inflation.

Hess and Lee (1999) put forth in their study that the sign of correlation between stock prices and inflation depends on the nature of the shock creating inflation. They found that a positive monetary shock has a positive effect on stock prices and inflation. Graham (1996) undertook a study to analyse a correlation between stock returns and inflation. The findings of the study confirmed a positive relationship between inflation and stock returns. Chisti et.al. (2020) undertook a study to examine the relationship among macroeconomic variables and confirmed that there is a strong relationship among the macroeconomic variables. Khursheed et.al. (2014) made a study and the findings of the study affirm that there exists no causality relationship between the stock market prices and foreign exchange prices.

The study undertaken by Pearce and Roley (1985) concluded that there existed statistically insignificant relationship between stock returns and inflation. Hardon (1988) analysed the interdependence between stock returns and inflation and the findings of the study corroborates with the findings of Pearce and Roley by concluding that the two variables are not significantly related, thereby, suggesting that the relationship between the variables is not clear.

3. Need for the Study

A critical review of the studies referred above brings to fore that these studies put forth diverse findings as the studies of Loannides, Wei, Geyser, etc. confirm that there exists an inverse relationship between inflation and

stock market returns. Contradicting to these findings, some of the studies reveal that inflation and stock market returns possess positive relationship. However, some of the conclusions drawn in the above mentioned studies confirm that there does not exist any statistically significant relationship between these two variables. Besides, the above reviewed studies do not take into consideration sectoral indices so as to find the level of impact inflation numbers have on these different sectoral indices. It is against these fundamental deviations in the results as well as limited focus of the studies that gave rise to the need for conducting the present study so as to come up with some findings that can facilitate the existing research literature.

4. Objectives of the Study

The present study has been undertaken so as to achieve the aforesaid objective.

- To ascertain the level of relationship that inflation numbers have with the stock market sectoral indices returns.

5. Hypothesis

H1: (Null Hypothesis) There exists statistically no significant relationship between stock indices returns and inflation.
Ho: (Alternate Hypothesis) There exists Statistically Significant relationship between stock indices returns and inflation.

6. Data Base and Research Methodology

So as to accomplish the objective of the study, the researchers have collected relevant data from the website of The National Stock Exchange of India and the official website of Reserve Bank of India. For the purpose of determining the relationship between sectoral indices and inflation numbers, the researchers have employed Pearson correlation method so as to establish the level of relationship between the variables under study. The reference period of the study comprises eight years.

7. Results and discussions

In order to achieve the objective of the study, the researchers have employed Pearson correlation method to ascertain the relationship between inflation numbers and indices returns. The findings obtained in the study are discussed under various heads which can be ascertained from the tables given below.

Table 1.1: Correlation Matrix

		INFLATION	AUTO INDEX	BANK INDEX	FINANCE INDEX	FMCG INDEX	IT INDEX	METAL INDEX	MNC INDEX	PHARMA INDEX	PSU BANK INDEX	ENERGY INDEX
INFLATION	PEARSON CORRELATION	1	.783*	.791*	.753*	.805*	.637	.617	.799*	.838**	.850**	.647
	SIG. (2-TAILED)		.021	.019	.031	.016	.090	.103	.017	.009	.008	.083
	N	8	8	8	8	8	8	8	8	8	8	8
AUTO INDEX	PEARSON CORRELATION	.783*	1	.876**	.852**	.900**	.965**	.686	.941**	.962**	.864**	.662
	SIG. (2-TAILED)	.021		.004	.007	.002	.000	.060	.000	.000	.006	.074
	N	8	8	8	8	8	8	8	8	8	8	8
BANK INDEX	PEARSON CORRELATION	.791*	.876**	1	.995**	.800*	.818*	.922**	.955**	.858**	.980**	.927**
	SIG. (2-TAILED)	.019	.004		.000	.017	.013	.001	.000	.006	.000	.001
	N	8	8	8	8	8	8	8	8	8	8	8
FINANCE INDEX	PEARSON CORRELATION	.753*	.852**	.995**	1	.799*	.796*	.932**	.952**	.840**	.959**	.946**
	SIG. (2-TAILED)	.031	.007	.000		.017	.018	.001	.000	.009	.000	.000
	N	8	8	8	8	8	8	8	8	8	8	8
FMCG INDEX	PEARSON CORRELATION	.805*	.900**	.800*	.799*	1	.815*	.562	.892**	.954**	.765*	.619
	SIG. (2-TAILED)	.016	.002	.017	.017		.014	.147	.003	.000	.027	.102
	N	8	8	8	8	8	8	8	8	8	8	8
IT INDEX	PEARSON CORRELATION	.637	.965**	.818*	.796*	.815*	1	.636	.890**	.890**	.780*	.591
	SIG. (2-TAILED)	.090	.000	.013	.018	.014		.090	.003	.003	.023	.123
	N	8	8	8	8	8	8	8	8	8	8	8
METAL INDEX	PEARSON CORRELATION	.617	.686	.922**	.932**	.562	.636	1	.845**	.635	.886**	.977**
	SIG. (2-TAILED)	.103	.060	.001	.001	.147	.090		.008	.091	.003	.000
	N	8	8	8	8	8	8	8	8	8	8	8
MNC INDEX	PEARSON CORRELATION	.799*	.941**	.955**	.952**	.892**	.890**	.845**	1	.907**	.911**	.851**
	SIG. (2-TAILED)	.017	.000	.000	.000	.003	.003	.008		.002	.002	.007
	N	8	8	8	8	8	8	8	8	8	8	8
PHARMA INDEX	PEARSON CORRELATION	.838**	.962**	.858**	.840**	.954**	.890**	.635	.907**	1	.853**	.638
	SIG. (2-TAILED)	.009	.000	.006	.009	.000	.003	.091	.002		.007	.089
	N	8	8	8	8	8	8	8	8	8	8	8
PSU BANK INDEX	PEARSON CORRELATION	.850**	.864**	.980**	.959**	.765*	.780*	.886**	.911**	.853**	1	.884**
	SIG. (2-TAILED)	.008	.006	.000	.000	.027	.023	.003	.002	.007		.004
	N	8	8	8	8	8	8	8	8	8	8	8
ENERGY INDEX	PEARSON CORRELATION	.647	.662	.927**	.946**	.619	.591	.977**	.851**	.638	.884**	1
	SIG. (2-TAILED)	.083	.074	.001	.000	.102	.123	.000	.007	.089	.004	
	N	8	8	8	8	8	8	8	8	8	8	8

*. Correlation is significant at the 0.05 level (2- tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The table 1:1 depicts the correlation of inflation with various sectoral indices as well as inter-sectoral and intra-sectoral relationship. From the table, it can be seen that the findings are not clear as some indices are depicting statistically significant relationship with inflation numbers while some indices do not show statistically significant relationship with the inflation numbers. The summary of the results is discussed under the following heads.

- **Auto Index**
  In the table 1:1 it can be seen that their does exist statistically significant relationship between auto index and inflation which stands at 0.783 at 0.05 significance level and the two tailed test stands at 0.021 which is less than the significance level, thereby, affirming the relationship between the two variables.
- **Bank Index**

  The correlation matrix in the table 1:1 signifies that the Bank Index is statistically related to the inflation numbers as the person method put forth relationship between the variable at 0.791 at 0.05 significance level and the t tailed test number stands at 0.019 which is less than the significance level that stands as confirmation of direct relationship between the variables.

- **Finance Index**

From the table 1:1 it is quite evident at 0.05 level of significance that the finance index returns are statistically correlated with the inflation numbers. The results obtained by using Pearson method stands at 0.753 and the two tailed test at 0.031 which is less than the 0.05 significance level. Thus, making it amply clear that the variable possess direct relationship with each other.

- **FMCG Index**

In the table 1:1 the FMCG Index depicts statistically significant relationship with the inflation numbers at significance level of 0.05 levels. The Pearson correlation method puts forth findings whereby the relationship stands at 0.805 and the two tailed test at 0.016 which is lesser than 0.05 level of significance.

- **IT Index**

From the correlation matrix in the table 1:1 the IT Index relationship with the inflation numbers is quite weak which is statistically insignificant as the two tailed test stands at 0.090 which is higher than the 0.05 level of significance which supports that IT Index does not follow the inflation numbers.

- **Metal Index**

The Metal Index in the correlation matrix signifies the weakest level of relationship between the two variables as the two tailed test stands at 0.103 which is higher than the 0.05 level of significance thereby negating any statistically significant relationship between inflation numbers and metal index.

- **MNC Index**

The results of the two tailed test signifies that MNC Index and inflation numbers hold statistically significant relationship as the two tailed test stands at 0.017 which is less than the 0.05 level of significance and the correlation also stands at 0.017 level, affirming, that there do exist a relationship between the variables.

- **Pharma Index**
  The Pharma Index in the correlation matrix not only depicts statistically significant relationship with the inflation numbers at 0.05 significance level but it also records statistically significant relationship at 0.01 level of significance as the two tailed test stands at 0.009 level which is less than the 0.01 level of significance.

- **PSU Bank Index**

  The PSU Bank Index records statistically most significant relationship with the inflation numbers both at 0.05 level of significance level and 0.01 level as the two tailed test stands at 0.008 level which is lower than the 0.01 level of significance. The pearson correlation stands at 0.850 , thus , suggesting that the variables do possess statistically significant relationship.

- **Energy Index**

  After taking into consideration the two tailed test reveals that the Energy Index do not posses statistically significant relationship with the inflation numbers as the two tailed test stands at 0.083 which is higher than 0.05 significance level , thus, confirming that the variables do not have statistically significant relationship.

8. Conclusion

From the above discussion it can be seen that some sectoral indices possess statistically significant relationship with inflation numbers while as some do not have any statistically significant relationship. The sectoral indices such as Pharma Index and PSU Bank Index signify statistically significant correlation both at 0.05 level of significance and at 0.01 level of significance. While as the sectoral indices such as Auto Index, Bank Index, Financial Index, FMGC Index and MNC Index possess statistically significant relationship at 0.05 level of significance. On the other hand, the Indices such as IT Index, Metal Index and Energy Index do not signify statistically significant relationship both at 0.05 and 0.01 levels of significance. Thus, it can be concluded that the inflation numbers do influence certain sectoral indices while there do not exist statistically significant relationship of inflation with some other sectoral indices in the sample.

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