Impact of Inflation on FMCG Stocks Performance: an Empirical study of HUL and ITC

Umashankar	Prof.Himabindu
Research Scholar, (Ph.D.) UGC NET, SET, FET, MBA,M. Com., Associate Professor, dept. of. Management Holy Mary Institute of management Studies, Hyderabad,	Assistant professer and Research scholar, Dept. of Management, Holy Mary Institute of Management Studies, Hyderabad

ABSTRACT *Volatility in inflation rate will affect the cost of manufacturing and customer consumption which leads to precariousness in stock price movements. This study investigates the impact of inflation on stock price performance of two Indian behemoth Fast Moving Consumer Goods (FMCG) companies. Monthly inflation rates and stock prices for a period of 10 years starting from 2005 are collected. It is hypothesized that increase in inflation rate will have negative impact on stock prices. The results are mixed. We found a negative and significant relationship between inflation and stock price movements for four years and significant positive relation for three years.*

Introduction

The relationship between stock returns and inflation has been a topic of great interest both in theoretical and empirical literature. In spite of the extensive research on the relationship between them, the issue still remains inconclusive. Fama (1981) argued that the negative relationship between stock returns and inflation has its basis in the money-demand theory and the quantity theory of money. The Reverse Causality hypothesis by Geske and Roll (1983), another popular explanation of the negative association between inflation and stock prices, brings in fiscal and monetary linkages to explain the relationship between stock returns and inflation. According to this hypothesis, a reduction in real activity not only affects the stock prices adversely, but it also leads to a fall in government revenue and rise in fiscal deficits.

Although numerous studies emerged on the topic, most of them concern with developed nations particularly, in the United States. Only a few studies analyzed this topic in the context of emerging economies with relatively growing stock markets and potentially unique transmission mechanisms mediating real activity and monetary policies (Chatrath et al., 1997). The present study attempts to analyze the stock returns-inflation relationship in India with reference to FMCG stocks.

Literature Review

According to Feldstein (1980), stock prices boost when inflation rate is at high constant rate. On the opposing, the stock prices fall when the expected inflation rate rises. Cohn and Lessard (1980) reported negative correlation between stock prices and inflation rate is characteristic of most major industrialized countries. The Fisher hypothesis, when studied using real rather than nominal stock returns, suggests that real stock returns should be independent of inflation. Fama (1981) argued that the negative relationship between stock returns and inflation has its basis in the money-demand theory and the quantity theory of money. Fama hypothesis that rising inflation rates reduce real economic activity and demand for money. When economic activity dips, it negatively affects the future corporate profits and hence, stock prices.

Interestingly, findings of Ram and Spencer (1983) are inconsistency with that of both Fisher's and Fama's Hypotheses. They find a positive relationship between real activity and inflation, consistent with the conventional Phillips curve theory and a negative relationship between real activity and real stock returns. They also find that inflation "causes" real stock return unidirectional.

Evidences from developing are reported by Floros (2004) who found no relation between inflation and stock returns in Greece. Spyrou (2004) found little evidence to support the Fisher hypothesis in a study of ten emerging economies.

Objectives of the Study

The primary objectives of this study are:
*   To determine whether an empirical relationship between inflation and FMCG stocks listed in BSE Sensex exists.
*   To statistically analyze the effect of Inflation on HUL and ITC stocks.
*   To evaluate the stock price performance of HUL and ITC stocks

Hypotheses

The hypotheses developed for the study are:

H1: Inflation may have a negative and significant relationship with stock price of HUL

H2: Inflation may have a negative and significant relationship with stock price of ITC

Methodology

This study explores the relationship between inflation and stock price performance of FMCG stocks listed in BSE for a period of 10 years from 2005 to 2014. The data for the study was obtained from BSE website (www.bseindia.com) and from RBI website (www.rbi.gov.in). The data comprises of HUL and ITC were sourced from respective company's official websites.

Sample Size

The size of the final sample used in the study was determined by the availability of complete data on each vari-

able over the entire ten-year period. There are only two companies in FMCG sector i.e. HUL and ITC with sufficient data. Hence our final sample was comprised of 20 firm-year observations.

Statistical tools used in the Study

We use SPSS 20 statistical package and MS – Excel to carry out our descriptive and quantitative analysis of the data. We use descriptive statistics to determine the mean and standard deviation value of each variable. We also use Correlation analysis to assess the relationship between inflation and stock price movements. We use the Pearson Product Moment Correlation throughout our study. Our model also includes Regression analysis which we use to help us shade more light on our understanding of the relationship between inflation and stock price changes.

Regression Model

We use the following regression equation to examine the effect of the inflation on stock performance of sample stocks:

$$Y' = b_{yx}X + a_{yx}$$

$$b_{yx} = r_{xy}\frac{\sigma_y}{\sigma_x} = \frac{N\sum XY - (\sum X)(\sum Y)}{N\sum X^2 - (\sum X)^2}$$

$$a_{yx} = \overline{Y} - b_{yx}\overline{X}$$

Results

Results of this study are presented in three parts. First part presents the descriptive statistics of Inflation, HUL, and ITC stocks. In second section we present the correlation analysis between inflation and HUL stock, and inflation and ITC stock. Finally, hypotheses testing results using regression analysis is presented.

Descriptive Statistics

Table 1 showing percentage change and standard deviation of Inflation

	Inflation	
Year	% Change During the Year	Standard Deviation (%)
2005	53.80	55.95
2006	27.42	50.27
2007	-11.10	35.31
2008	65.55	45.24
2009	51.43	40.71
2010	-39.78	33.00
2011	-30.11	36.49
2012	67.81	54.57
2013	-16.58	26.03
2014	-28.81	59.44

During the study period high inflation change in a year was reported in 2012. In this year there was an increase of 67% in the inflation rate. Least decrease was in the year 2010. Of the 10 years of the study for five years there was increased inflation and for five years there was decreased inflation. The volatility of the inflation rate is also high. This high volatility in inflation rate will highly influence the stock prices.

Table 2 presents annualized returns and standard deviation of HUL and ITC stocks

	HUL		ITC	
Year	Annualized Return	Annualized Standard Deviation	Annualized Return	Annualized Standard Deviation
2005	36.60	30.86	-57.61	97.84
2006	16.00	38.36	27.31	34.75
2007	2.47	28.44	21.07	26.03
2008	20.07	24.30	-16.13	29.37
2009	8.66	25.91	43.21	33.75
2010	19.42	25.24	-17.39	53.89
2011	29.68	24.09	15.70	17.06
2012	26.77	16.98	37.45	18.50
2013	12.33	30.38	13.54	21.05
2014	30.61	19.66	14.72	15.36

Table two above presents the annualized returns and annualized standard deviations of HUL and ITC. HUL reported highest return in the year 2005 (36.60 %) with SD (30.86 %). In the same year ITC also reported highest return (97.84 %) for the sample period. On the other hand HUL witnessed lowest annual return in the year 2007 (2.47 %). With regard to ITC lowest annual return (14.72 %) was in the year 2014. The average annual return of HUL during this 10 year period was 20 percent and for ITC it was 9 percent. Of the two companies, HUL performed better when compared to ITC.

Correlation Analysis

Table 3 depicts correlation analysis among inflation, HUL, and ITC

	Correlation with Inflation	
Year	HUL	ITC
2005	0.30	0.37
2006	**-0.26**	0.53
2007	**-0.37**	0.61
2008	0.49	**-0.49**
2009	0.69	0.86
2010	**-0.84**	**-0.81**
2011	**-0.37**	**-0.09**
2012	0.57	-0.71
2013	**-0.53**	**-0.15**
2014	**-0.70**	**-0.74**

Table 3 above portrays the significance of correlation results among the inflation rate, HUL, and ITC stocks. Results of the correlation analysis between inflation and HUL show a significant negative relation for 6 years. The highest negative relation (-0.84) was found in the year 2010 followed by -0.70 in the year 2014. However, for four years we found significant positive relation between inflation and HUL stock price. At the same time ITC stock price was significantly negatively related to inflation for five years. The highest negative relations were found in the years 2010,

2014, and 2012. The results were mixed and suggest that, as these two companies have global presence, highly diversified business interests, and product portfolios along with inflation many other economic, industry, and company specific issues have influenced the relationship between inflation and stock prices.

Regression Analysis

We also run regression analysis to provide further insight into the relationship between variables of inflation and stock price. We provide these results in Table 4 and Table 5. In Regression Analysis first inflation and HUL stock are regressed. In second analysis inflation and ITC are regressed.

Table 4: Regression analysis between inflation and HUL

Year	HUL	R2	Constant	Beta	SE	Sig.
2005	0.30	0.09	125.89	8.32	19.60	0.34
2006	-0.26	0.07	275.60	-6.31	24.61	0.41
2007	-0.37	0.14	242.28	-6.04	11.11	0.24
2008	0.49	0.24	195.14	4.60	14.45	0.11
2009	**0.69**	**0.48**	**191.27**	**6.45**	**14.79**	**0.01**
2010	**-0.84**	**0.70**	**379.55**	**-9.39**	**17.06**	**0.00**
2011	-0.37	0.13	499.10	-19.31	44.89	0.24
2012	**0.57**	**0.33**	**243.36**	**24.08**	**55.74**	**0.05**
2013	**-0.53**	**0.28**	**1069.81**	**-46.16**	**58.59**	**0.08**
2014	**-0.70**	**0.49**	**1071.18**	**-63.88**	**65.38**	**0.01**

Regression one explores the relationship between inflation and HUL stock. The results were mixed. We found significant positive association between inflation and HUL stock during the years 2009, and 2012. In these two years the coefficient of determination is also stood high (0.48, and 0.33). In contrast to this result and in support to our hypotheses, inflation was significantly negative related during the years 2010, 2013, and 2014. The coefficient of determination was also very high. In the year 2010 the R^2 value was 0.70 and in 2014 it was 0.49. The results explain that, inflation may or may not influence the stock price movements.

Table 5: Regression analysis between inflation and ITC

Year	ITC	R2	Constant	Beta	SE	Sig.
2005	0.37	0.13	508.69	41.47	79.36	0.24
2006	**0.53**	**0.28**	**519.68**	**82.63**	**140.86**	**0.08**
2007	**0.61**	**0.38**	**582.34**	**80.58**	**75.54**	**0.03**
2008	-0.49	0.24	1207.35	-41.36	128.76	0.11
2009	**0.86**	**0.74**	**-190.35**	**114.20**	**147.85**	**0.00**
2010	**-0.81**	**0.66**	**2187.90**	**-48.06**	**95.65**	**0.00**
2011	-0.09	0.01	1752.21	-15.61	150.26	0.77
2012	**-0.71**	**0.50**	**1950.88**	**-53.57**	**87.46**	**0.01**
2013	-0.15	0.02	2152.00	-43.90	233.22	0.65
2014	**-0.74**	**0.54**	**3307.58**	**-189.25**	**174.59**	**0.01**

Regression two investigates the relationship between inflation and ITC stock. The results were mixed. We found significant positive association between inflation and ITC stock during the years 2006, 2007, and 2009. In this year the coefficient of determination is also stood high (0.28, 0.38 and 0.74 respectively). In support of our hypotheses, inflation was significantly negative related during the years 2010, 2012, and 2014. The coefficient of determination was also very high. In the year 2010 the R^2 value was 0.66, in 2012 it was 0.50, and in 2014 it was 0.54. The results explain that, inflation may or may not influence the stock price movements.

Conclusion

The study uses regression analysis to investigate relationship between inflation and stock price movements. It examines the FMCG stocks listed in BSE Sensex. There were two stocks in this list i.e. HUL and ITC. The study period was between 2005 and 2014. We collected 10 years of monthly data related to inflation and stock prices. A series of statistical tools were used to analyze the data. The results of the study were mixed. We failed to find concrete evidence in support of our hypotheses. For few years inflation had statistically significant positive relation with stock price movements. As against to it, we also found statistically significant negative relationship between inflation and stock price movements. These two companies are highly diversified and have very large product categories. Their revenues spread across the world. Because of these two reasons, the inflation may not had similar impact for all the years.

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