Market Sensitivity of the IT stocks : A comparison of the pre and post recessionary period
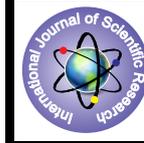
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ABSTRACT

The global economy suffered from a significant meltdown consequent on the origination of the sub-prime crisis in the U.S economy during 2008-09 and the recessionary phase in the global and Indian economy begins. The Indian IT sector was most adversely affected because of the recession. In this backdrop the present paper compares the sensitivity of the market prices (relative to the BSE Sensex) of some of the major IT companies operating in India both for the pre and post –recession period.

Introduction

Recession is a general slowdown in economic activity over a sustained period of time. Production as measured by Gross Domestic Product (GDP), employment, investment spending, capacity utilization, household incomes and business profits all fall during recessions. It is a negative economic growth for two consecutive quarters. This means a fall in Real GDP, -lower National Income and lower National Output. A recession is typically accompanied by a fall in the stock prices, an increase in unemployment, and a decline in the housing market.

In 2008 Global Economy suffered from a significant meltdown consequent on the origination of the sub-prime crisis in the U.S economy. The growth in exports was robust till August 2008. However, in September 2008, export growth experienced a sharp dip and turned negative in October 2008 and remained negative till the end of the financial year. Exports have declined in absolute terms also in October 2008. Employment is worst affected during the meltdown period. This recession has adversely affected the service industry of Indian mainly the BPO KPO, IT Companies etc.

While the entire Indian Economy suffered because of the melt down that occurred in the US market and had a spill over effect on the rest of the world economies, the Information Technologies (IT) sector had the most serious repercussions. In terms of specific sectors, the **IT enabled services sector may be hit** since a majority of Indian IT firms derive 75% or more of their revenues from the United States. A significant portion of IT sector export income comes from the order placed by international financial institutions including investment and commercial banks and due to the virtual collapse of the financial architecture in these countries. The revenue mobilisation by the IT companies were seriously affected. While the global economy had a partial recovery from the meltdown, the recessionary problems are resurfacing again and again. Thus the global economy outlook has had a paradigm shift since 2008 and this is perhaps more precisely applicable for the IT sector. In the post liberalisation era the IT stocks have occupied a place of prominence in the market capitalisation in the Indian stock markets. Many of them are listed in the global stock markets (NASDAQ,LOUXEMBERG) reflecting the increasing globalisation of the Indian economy.

A question then naturally arises as to how the Indian IT companies performed relative to the market. The present paper makes a humble attempt to assess the market sensitivity of selected IT stocks for pre and post melt down phase.

Organisation of the paper

The paper is organised into sections and proceeds as follows.

Section I discusses some important literature relating to Indian stock market.

Section II discusses the research methodology.

Section III provides the result from this study.

Section IV concludes.

Review of literature

Batra (2004) explored the relationship of the trading behaviour of FIIs and returns in Indian equity market using both daily and monthly data.

Wong, Agarwal and Du(2005) investigated the long run equilibrium relationship and short run dynamic linkage between the Indian stock market and stock market of the major developed countries(US,UK and Japan) after 1990 by examining the Granger Causality relationship and the pair wise multiple and fractional co-integration between the Indian stock market and the stock markets from aforementioned developed country markets. The results revealed that the Indian market is integrated with mature markets and sensitive to the dynamics in this markets in a long run. In so far as the short run is concerned both US and Japanese market Granger causes the Indian stock market but not vice versa. Further they found that the Indian stock and the mature stock indices form fractionally co-integrated relationship in the long run with a common fractional non-stationary component.

Bhora and Dutt (2011) attempted to understand the behavioural pattern of FII in India and tried to figure out the reason for indifferent responses of BSE sensex due to FII inflows. They examined the contribution of foreign institutional investment particularly among companies included in sensitivity index (Sensex) of Bombay stock exchange and the relationship between foreign institutional investment and firm specific characteristics in terms of ownership structure, financial performance and stock performance. They found a positive correlation between stock market and investment of FII's in a relation that sensex follows the investment behaviour of FII's.

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About Beta

Beta coefficient is an important measurement which indicates the relations between the changes in returns of market index and depending changes in stock returns (Demir and Kaderli, 2008: 97; Korkmaz and Ceylan, 2006: 536). In other words, it is a coefficient which measures the sensitivity of any stocks to its changes in market index (Kaderli and Akça, 2009: 64; Bekçioğlu, Öztürk and Kaderli; 2003: 34). As seen, Beta coefficient shows how the systematic risk affect a stock's return (Ross et al., 2005: 30). Beta coefficient of any financial assets is calculated by dividing covariance of market portfolio of that financial assets with to variance of which market portfolio return. It can be formulated like that (Copeland et al., 2005: 151; Fama and French, 2004: 5)

$$\beta i = Cov i,p / \delta 2$$

Here βi = i Beta coefficient of securities, Cov i, p = covariance of return rate of the securities with market return rate, and $\delta 2$ = symbolize the variance of the market return rate. The Capital Assets Pricing Model (CAPM) which developed by Sharpe (1964) is generally depending on one variable. In this model the

independent variable is market portfolio and, returns of securities in the market are compared with returns of market index. Beta coefficient can be calculated with the Capital Assets Pricing Model too, because it shows the relations between a securities' return and its market index's return (Demir and Kaderli, 2007: 186-187; Campbell et al., 1997: 182). E(Ri) = Rf + bi Rm – Rf Here, E (Ri) = expected return of the securities, Rf = risk free interest rate, b I = i Beta coefficient of the securities, Rm = symbolizes the expected return of the market index. In calculation Beta coefficient of securities with formula above, generally past return rates of that securities are used (Foster, 1978: 265). If the coefficient which calculated with this formula is bigger than 1, it means that 1% change in market index creates bigger than 1% change in returns of the securities. If the coefficient smaller than 1, it means, that 1% change in market index creates smaller than 1% change in returns of the securities. If the coefficient equal 1, it means that the change in market index return and change in returns of the securities are the same. If the Beta coefficient is negative it means that, the relations above occurs visa versa (Hirt and Block, 2006: 170; Levy, 2006: 343; Civelek and Durukan, 1998: 110-111; Tiniç and West, 1979: 174-175). As long as beta coefficients increase, the sensitivity of a securities return to market return increases.

Research objective
To study the market sensitivity of the major IT stocks with pre and post meltdown period.

Hypothesis to study
There is no significant difference between pre recession market sensitivity and post recession market sensitivity of in-sample IT companies.

Research Methodology
The present study included nine Information Technology stocks (TCS,WIPRO, INFOSYS,CMC etc) for the period 2005to 2008 and 2009 to 2012.Since 2008-09 was an abnormal year (and we are desirous of comparing pre and post recessionary period) the information corresponding to that particular year was not considered. For the two phases betas were calculated for each of the aforementioned stocks. For the purpose of computation

of beta BSE sensex was used as the market benchmark. The present paper compares the market sensitivity of selected IT scripts for the pre and post melt down periods. We are trying to compare the population betas on the basis of samples drawn from the high frequency data available from the BSE website. For each stock monthly betas have computed separately for the two periods. Subsequently paired t test have been calculated to test for any differences. The computations have been made using SPSS. The results corresponding to the stocks are presented in the table below.

Detailed Result

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Oracle	.520584	36	.4414474	.0735746
	Post Oracle	.425418	36	.3631482	.0605247
Pair 2	Pre Hexa	.469186	36	.5596051	.0932675
	Post Hexa	.851848	36	.7338765	.1223127
Pair 3	Pre Fin. Tech	.648984	36	.6149102	.1024850
	Post Fin. Tech	.720752	36	.4767432	.0794572
Pair 4	PRE HCL	.288387	36	.6563833	.1093972
	POSTHCL	.499667	36	.4123298	.0687216
Pair 5	Pre TCS	.663348	36	.2671131	.0445189
	post TCS	.616642	36	.3588242	.0598040
Pair 6	Pre Wipro	.800262	36	.4260415	.0710069
	Post Wipro	.554915	36	.3263607	.0543935
Pair 7	Pre Infy	.730956	36	.3474402	.0579067
	Post Infy	.569893	36	.2894728	.0482455
Pair 8	Pre Mphasis	.262687	36	.2556664	.0426111
	Post Mphasis	.199209	36	.1337357	.0222893
Pair 9	pre cmc	.476739	36	.3942359	.0657060
	post cmc	.464194	36	.5781452	.0963575

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Pre Oracle - Post Oracle	.0951655	.6281596	.1046933	-.1173731	.3077042	.909	35	.370
Pair 2	Pre Hexa - Post Hexa	-.3826612	.8312854	.1385476	-.6639278	-.1013947	-2.762	35	.009
Pair 3	Pre Fin. Tech - Post Fin. Tech	-.0717684	.8775165	.1462528	-.3686773	.2251405	-.491	35	.627
Pair 4	PRE HCL - POSTHCL	-.2112795	.8062769	.1343795	-.4840843	.0615253	-1.572	35	.125
Pair 5	Pre TCS - post TCS	.0467053	.4948316	.0824719	-.1207216	.2141323	.566	35	.575
Pair 6	Pre Wipro - Post Wipro	.2453470	.5178960	.0863160	.0701162	.4205777	2.842	35	.007
Pair 7	Pre Infy - Post Infy	.1610630	.4809982	.0801664	-.0016834	.3238093	2.009	35	.052
Pair 8	Pre Mphasis - Post Mphasis	.0634775	.3030281	.0505047	-.0390525	.1660074	1.257	35	.217
Pair 9	pre cmc - post cmc	.0125448	.7153642	.1192274	-.2294996	.2545893	.105	35	.917

Findings
A paired-samples t-test was conducted to compare pre and post recessionary market sensitivity of Indian IT companies. The results indicated that the p-value between prerecession market sensitivity index and post recession market sensitivity index of Oracle is .370 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of Oracle company during pre and post meltdown period. The mean value of β before recession was .520584 and the mean value after recession was .425418 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company , indicated by standard deviation is .4414474 during prerecession and .3631482 during post recession period. The correlation coefficient r=-.212and its p-

value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of Oracle company.

In table the p value between pre and post melt down market sensitivity index of Hexaware is .009 since p<.01 therefore we reject the null hypothesis H06 at 1% level of significance it means that there is significant difference between market sensitivity of Hexaware company during prerecession and post recession period .The mean value of β before recession was .469186 and the mean value after recession was .851848 which shows that companies sensitivity towards market has significant change due to recession. Also the risk factor of the company , indicated by standard deviation is 0.5596051during pre recession and 0.7338765 during post recession period . The correlation coef-

ficient r=.196 and its p-value>.05 which indicates that there is a very low positive correlation between the pre and post melt down market sensitivity of Hexaware company.

The results indicated that the p-value between pre and post recessionary market sensitivity index of Financial Technology is .627 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of Financial Technology company during pre and post melt down period ,the mean value of β before recession was .648984 and the mean value after recession was .720752 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company , indicated by standard deviation is .6149102 during pre recession and .4767432 during post recession period. The correlation coefficient r=-.281and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of Financial Technology company.

The results indicated that the p-value between prerecession market sensitivity index and post recession market sensitivity index of HCL is .125 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of HCL company during prerecession and post recession period and the mean value of β before recession was .288387 and the mean value after recession was .499667 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company, indicated by standard deviation is .6563833 during pre recession and .4123298 during post recession period. The correlation coefficient r=-.091 and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of HCL company.

The results indicated that the p-value between prerecession market sensitivity index and post recession market sensitivity index of TCS is .575, since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of TCS company during prerecession and post recession period. The mean value of β before recession was .663348 and the mean value after recession was .616642 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company, indicated by standard deviation is .2671131 during pre recession and .3588242 during post recession period. The correlation coefficient r=-.233and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of TCS company.

In table the p value between prerecession market sensitivity index and post recession market sensitivity index of Wipro is .007 since p<.01 therefore we fail to reject the null hypothesis H06 at 1% level of significance it means that there is significant difference between market sensitivity of Wipro company during prerecession and post recession period .The mean value of β before recession was .800262 and the mean value after recession was .554915 which shows that companies sensitivity towards market has significant change due to recession. Also the risk factor of the company , indicated by standard deviation

is 0.4260415 during prerecession and 0.3263607 during post recession period . The correlation coefficient r=.071 and its p-value>.05 which indicates that there is a very low positive correlation between the pre and post recession market sensitivity of Oracle company.

The results indicated that the p-value between prerecession market sensitivity index and post recession market sensitivity index of Infosys is .052 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of Infosys company during prerecession and post recession period .the mean value of β before recession was .730956 and the mean value after recession was .569893 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company, indicated by standard deviation is .3474402 during prerecession and .2894728 during post recession period. The correlation coefficient r=-.233 and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of Infosys company.

The results indicated that the p-value between prerecession market sensitivity index and post recession market sensitivity index of Mphasis is .217 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of Mphasis company during prerecession and post recession period ,the mean value of β before recession was .262687 and the mean value after recession was .199209 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company , indicated by standard deviation is .4414474 during prerecession and .3631482 during post recession period.The correlation coefficient r=-.212and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of Mphasis company.

The results indicated that the p-value between prerecession market sensitivity index and postrecession market sensitivity index of CMC is 0.917 since p>.05 therefore we fail to reject the null hypothesis H01 at 5% level of significance it means that there is no significant difference between market sensitivity of CMC company during prerecession and post recession period .The mean value of β before recession was .476739 and the mean value after recession was .464194 which shows that companies sensitivity towards market has no significant change due to recession. Also the risk factor of the company , indicated by standard deviation is .394239 during prerecession and .5781452 during post recession period. The correlation coefficient r=-.048and its p-value>.05 which indicates that there is a very low negative correlation between the pre and post recession market sensitivity of CMC company.

Conclusion
We observed that apart from two IT stocks(Hexaware and Wipro) the rest of the seven IT stocks having no difference between pre and post recession market sensitivity. The observed differences in results available from the study is likely because of differences in company fundamentals which are also taken into consideration for the purpose of market valuation of companies. However this is an area, which needs further research.

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