
A Study of Reaction of Stock Prices to Dividend Announcements and Market Efficiency

Ravi Changle*
Dr. Sukhjeet Kaur Matharu**

Abstract

The present study investigates the reaction of stock prices to dividend announcements by testing the semi-strong form of market efficiency. It analyzes the dividend announcement of 5 companies representing various sectors listed on the BSE for 2013. Abnormal returns from the market model are evaluated for statistical significance using the CAPM model and Paired t-test. The findings suggest that there is no significant difference in the impact of dividend announcements in pre and post announcement period on the share prices of the selected companies.

Keywords: Stock Prices, Market Efficiency, Dividend Announcements.

Introduction: Stock market is said to be the barometer of an economy and thus its behavior is under constant observation. Stock indices are the combination of representative factors like companies and sectors which play a vital role in growth and development of the sector. Many economic and non economic factors affect the movement of the indices and events. The growing linkages of national markets in currency, commodity and stock with world markets and existence of common players create volatility in the market averse. An understanding of the market volatility is important from the regulatory policy perspective. An investor aims to maximize the return and minimize the risk (losses) in the stock market. A company's liquidity in the present market can be determined by the dividend announcements made by the company. One of the most meaningful events for research is dividend announcements. In simple terms dividend is the cost of equity capital to equity shareholders. Equity investors look upon dividend announcements as the market price of the shares are positively or negatively affected by the dividend announcements made by the companies.

If the dividend announcement meets the expectation of the shareholders it will have a positive impact on the market price of the shares, whereas if the dividend announcement is not up to the expectation of the shareholders it will adversely affect the market price of the shares. Event methodology study has been used to investigate the semi-strong form of market efficiency. Information disclosures related to mergers and acquisitions, stock repurchase announcements, dividends and earnings announcements and macroeconomic variables etc., have been investigated to test the semi-strong form market efficiency in a number of studies. Miller and Modigliani (1961) propose that, in a

world of no taxes and transaction costs, dividends are irrelevant to investors. However, empirical research has revealed findings that support the relevance of the dividends proposition. Dividend announcements, whether a surprise or an increase to an already existing dividend, are one of the most common actions firms take in order to attract new investors. These announcements by firms are usually seen as a sign of strength, suggesting that the firm has a substantial amount of excess capital.

Literature Review:

The Efficient Market Hypothesis proposed by Fama (1965) suggests three types of market efficiency: (i) weak, (ii) semi-strong, and (iii) strong. The weak form of market efficiency proposes that current stock prices reflect all past information. It also suggests that changes in stock prices are random and no investment strategy that is based on past information can yield above average returns to the investor. This implies that technical analysis will not be rewarded with above average returns. The semi-strong form of market efficiency (informational efficiency) proposes that current stock prices incorporate material public information and changes in stock prices will only lead to unexpected public information. This suggests that fundamental analysis will not be rewarded with above average returns. Finally, the strong form of market efficiency proposes that insider trading will not be rewarded as current stock prices incorporate all material nonpublic information (Reilly and Brown, 2008).

Osei (1998) suggests, market efficiency depends heavily on the analytical and interpretational abilities of those who trade in the market and the time they have and are ready to devote to obtaining and spreading price-sensitive information. The important developments in

*Assistant Professor, Prestige Institute of Management & Research, Indore

**Assistant Professor, Prestige Institute of Management & Research, Indore

modern capital theory are the capital asset pricing model (CAPM) (Sharpe, 1964; Lintner, 1965, and Mossin, 1966). CAPM suggest that high expected returns are associated with high level of risk. It postulates that the expected return on an asset above the risk free rate is linearly related to the non-diversifiable risk as measured by the asset's beta (Michailidis et,al, 2006).

Hypotheses:

H01: There is no significant difference in the impact of dividend announcements in pre and post announcement period on the share prices of the selected companies.

Objectives of the Study:

- To study the relationship between BSE sensx and selected stocks with the help of CAPM model.
- To study the impact of dividend announcement on the selected firms' stock price.

Methodology:

The Study: The present study is an attempt to study the relationship between BSE sensx and stock of selected companies like Crisil, Asian Paints Ltd., Escorts Ltd. , Mind tree and Infosys. In the semi-strong form of market efficiency we investigated stock prices (returns) around dividend announcements for the selected stocks.

Data Collection: Monthly, weekly or daily data is used by the researchers to study the impact of price sensitive information of stock prices. However, weekly or monthly data fails to show the exact time of adjustment of stock prices to the new information. In the present study we have used daily adjusted closing stock prices to compute returns. Data for the study is collected for a period 30 trading days before, 30 trading days after and the day of announcement, i.e. day 0 being the day of announcement of dividend in the month of October, 2013 for the stocks of selected companies. Data for the same period is collected of S & P BSE Sensx. Abnormal returns have been calculated for the aforesaid period.

Data Analysis: The study follows event study methodology to assess the impact of dividend announcements on the stock returns of the target firms. The use of this methodology involves a series of steps like identifying the date of announcement of dividend, estimating the normal(expected/predicted) returns, measuring the Abnormal returns and finally, determining the statistical significance of the Abnormal returns by following appropriate testing procedure. The parameters of the market model like alpha and beta based on returns of stock and market index in the estimation period are first estimated, and then expected returns on the stock are calculated based on the market model. Each security return is divided into two parts i.e. those returns which

can be attributed to market movement and those which cannot be attributed to market movement but to dividend announcement. The stock price responses to the dividend announcement or the event are measured by eliminating the market's influence on stock's observed rate of return.

In our analysis the market model measures the stock returns related to the movement of the market. The market model is based on the fact that the most important factor affecting the stock returns is market factor and it is captured in the market model in the form of beta. It is a simple model to analyze the risk component of the stocks in terms of systematic and unsystematic risk. Thus the market model relates the return on any stock or portfolio of securities to the return on the market in a linear fashion. Model applied for the analysis is CAPM for expected rate of return for selected stocks.

Expected Return is calculated as:

$$ER = RF + \text{Beta} \times (RM - RF)$$

Beta is calculated by using the relationship

$$ER = (\alpha + \text{beta} \times RM + \text{Error})$$

Abnormal return is calculated as

$$\text{Actual returns} - \text{Expected returns}$$

Finally hypotheses are tested by using paired t test for -30 and +30 day daily abnormal returns.

Results and Discussion: The results of paired sample t-test suggest that the Null hypotheses is accepted at 95% level of significance as the $P = 0.350 > 0.05$. The semi-strong form of market efficiency suggests that all material past and public information is reflected by the stock prices. Therefore, above average returns do not result from an investment strategy based on public information. The semi-strong form of market efficiency suggests that all material past and public information is reflected by stock prices. Therefore, above average returns cannot result from an investment strategy based on public information. To investigate the semi-strong form of market efficiency in the BSE, we investigated stock prices (returns) around dividend announcements. Volatility in the stock market highlights a persistent change associated with various economic variables The results of the study show that the reaction of stock prices to dividend announcements by the company is statistically insignificant.

Tax-dividend hypothesis holds that investors dislike cash dividend as they are taxable. However it can be said that firms declare dividends when future prospects are bright for profitability, i.e. the signaling effect. It also implies that positive abnormal returns result from stock dividend announcements. However, it is also held that firms will declare dividends when future prospects are bright for the

firm's operations and profitability, i.e., the signaling effect. The previous literature suggests that payment of extra cash as dividends results in reduction of agency conflicts and costs and hence the market response is positive to announcement of cash dividends.

Conclusion: The results of the study contradict with other studies which show that the results for dividend announcements reject the semi-strong form of market efficiency of the BSE. Simultaneous cash and stock dividends give a very strong signal to investors regarding future growth in dividends and stock value. An investor receives cash flows in the form of cash as well as additional stocks, i.e., capital gains from the company. Therefore, such announcements are perceived positively and as a result the stock prices appreciate. However, it must be noted positive returns will further improve if such dividends are included, as the returns calculated for such announcements are net of cash dividends. The research can be elaborated by having a large sample size. The impact of several other events on the stock can also expand the research by examining different sets of variables that might affect the risk return trade off. In particular, the earnings yield (Basu, 1977), leverage, and the ratio of a firm's book value of equity to its market value (Statman, 1980). The present research has taken BSE sensex benchmark, and Stock prices of selected companies representing various sectors while other indices and stock prices of various sectors can also be taken into consideration.

References:

1. Basu, Sanjoy (1977). Investment Performance of Common Stocks in Relation to their Price Earnings Ratios: A test of the Efficient Market Hypothesis. *Journal of Finance*, 32, 663-82.
2. Fama, E. (1965). The Behavior of Stock Market Prices. *Journal of Business*, 38, 34-105.
3. Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistics*, 47, 13-37.
4. Michailidis, Grigoris, Tsopoglou, Stavros; Papa nastasiou, Demetrios, and Meriola, Eleni (2006). Testing the Capital Asset Pricing Model (CAPM): The Case of the Emerging Greek Securities Market. *International Research Journal of Finance and Economics*, (4).
5. Mossin, J. (1966). Equilibrium in a Capital Asset Market. *Econometrics*, 34, 768-783.
6. Miller, H., and Modigliani, F. (1961). Dividend Policy, Growth and the Valuation of Shares. *The Journal of Business*, 34, 411-433.
7. Osei, K. (1998). Analysis of Factors Affecting the Development of an Emerging Capital Market: The Case of the Ghana Stock Market. African Economic Research Consortium. Research Paper, No. 76.
8. Reilly, F.K., and Brown, K.C. (2006). Investment Analysis and Portfolio Management, 8th Edition, South Western Publishing Company.
9. Sharpe, W. (1964). Capital Asset Price: A Theory of Market Equilibrium under conditions of Risk, *Journal of Finance*, 33, 885-901.
10. Statman Denis (1980). Book Values and Stock Returns, *A Journal of Selected Papers*, 4, 25-45.

Annexure

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post	.0045	30	.96023	.17531
	Pre	-2.5995	30	14.64325	2.67348

Paired Sample t-test

	Mean	Std. Deviation	Std. Error Mean	t	diff	Sig.(2 tailed)
Pair 1 Post & Pre	2.60400	15.01183	2.74077	0.95029		0.350

Paired Sample Correlations

	N	Correlation	Sig.
Pair 1 Post & Pre	30	-.356	.054

Table 1

Days	CRISIL	CO. RETURNS	BSE	BSE RETURNS	BETA CO.	Expected Daily	ACTUAL-EXPECTED
30	1054.7	1.000284441	20,229.05	2.007410135	0.417235	0.611554339	0.388730102
29	1065.25	-1.027927716	20,635.13	1.239100505	1.3915	0.381215111	-1.409142828
28	1054.3	0.64497771	20,890.82	-0.191854604	0.299845	-0.04778523	0.692762941
27	1061.1	1.366506456	20,850.74	-2.164527494		-0.639192563	2.005699018
26	1075.6	0.525288211	20,399.42	-1.005028574		-0.291574787	0.816862998
25	1081.25	0.087861272	20,194.40	0.433337955		0.139647499	-0.051786227
24	1082.2	0.328035483	20,281.91	1.030721466		0.318743075	0.009292408
23	1085.75	0.897996776	20,490.96	0.854962383		0.266050503	0.631946274
22	1095.5	1.182108626	20,666.15	0.757857656		0.236938505	0.945170121
21	1108.45	-0.189453742	20,822.77	0.346591736		0.113640982	-0.303094724
20	1106.35	1.432638858	20,894.94	0.382149937		0.124301331	1.308337526
19	1122.2	1.822313313	20,974.79	1.261371389		0.387891922	1.434421391
18	1142.65	-1.794075176	21,239.36	-0.200335603		-0.050327834	-1.743747342
17	1122.15	0.089114646	21,196.81	-0.152334243		-0.035937026	0.125051672
16	1123.15	0.422917687	21,164.52	-0.616834211		-0.175194117	0.598111803
15	1127.9	0.789077046	21,033.97	-0.499002328		-0.139868118	0.928945164
14	1136.8	1.209535538	20,929.01	-1.714032341		-0.504134116	1.713669654
13	1150.55	1.29503281	20,570.28	0.550502959		0.174773567	1.120259243
12	1165.45	1.141190098	20,683.52	0.202625085		0.070479781	1.070710318
11	1178.75	-0.7126193	20,725.43	0.204820841		0.071138068	-0.783757368
10	1170.35	0.452855983	20,767.88	0.467500775		0.149889512	0.302966471
9	1175.65	0.387019946	20,864.97	0.138605519		0.051286715	0.335733232
8	1180.2	-0.410947297	20,893.89	-0.05264697		-0.006050782	-0.404896515
7	1175.35	-1.391074999	20,882.89	-2.238100186		-0.661249656	-0.729825343
6	1159	-0.254529767	20,415.51	0.647106048		0.203735173	-0.45826494
5	1156.05	0.670386229	20,547.62	0.291615282		0.097159042	0.573227187
4	1163.8	0.184739646	20,607.54	-0.383112201		-0.105124258	0.289863904
3	1165.95	-0.29589605	20,528.59	-1.24548252		-0.363662879	0.067766829
2	1162.5	-0.924731183	20,272.91	-0.116658141		-0.025241331	-0.899489852
1	1151.75	1.12871717	20,249.26	-1.311899793		-0.383574778	1.512291947
0	1164.75	-0.768405237	19,983.61	-0.442912967		-0.123052528	-0.64535271
-1	1155.8	0.536424987	19,895.10	0.104799674		0.041151722	0.495273265

Days	CRISIL	CO. RETURNS	BSE	BSE RETURNS	BETA CO.	Expected Daily	ACTUAL-EXPECTED
-2	1162	1.320998279	19,915.95	-0.069692884		-0.011161147	1.332159426
-3	1177.35	-1.325009555	19,902.07	-1.934070175		-0.570101458	-0.754908097
-4	1161.75	1.975468044	19,517.15	1.076591613		0.332494946	1.642973098
-5	1184.7	-0.185701021	19,727.27	0.844414863		0.262888356	-0.448589377
-6	1182.5	1.171247357	19,893.85	-0.189053401		-0.04694543	1.218192787
-7	1196.35	0.589292431	19,856.24	0.322165727		0.106318065	0.482974366
-8	1203.4	0.448728602	19,920.21	-0.096635527		-0.019238551	0.467967153
-9	1208.8	0.157180675	19,900.96	1.822776389		0.556201141	-0.399020466
-10	1210.7	1.247212356	20,263.71	1.889732926		0.576274711	0.670937645
-11	1225.8	-4.303312123	20,646.64	-3.315212548		-0.984167942	-3.319144181
-12	1173.05	-2.796129747	19,962.16	-0.792148745		-0.227753414	-2.568376333
-13	1140.25	-0.767375576	19,804.03	-0.310845823		-0.083458798	-0.683916778
-14	1131.5	-0.11931065	19,742.47	-0.049183309		-0.005012376	-0.114298274
-15	1130.15	-1.663495996	19,732.76	0.248926151		0.08436084	-1.747856836
-16	1111.35	0.490394565	19,781.88	1.089734646		0.336435227	0.153959338
-17	1116.8	-0.774534384	19,997.45	-0.001750223		0.009208063	-0.783742447
-18	1108.15	-1.479944051	19,997.10	-3.63572718		-1.080258229	-0.399685822
-19	1091.75	-0.970918251	19,270.06	-1.506482076		-0.441910546	-0.529007704
-20	1081.15	-0.036997641	18,979.76	-2.171839897		-0.641384821	0.60438718
-21	1080.75	0.272958594	18,567.55	-1.792859047		-0.527766362	0.800724956
-22	1083.7	-0.33680908	18,234.66	3.572701657		1.080828737	-1.417637817
-23	1080.05	1.495301143	18,886.13	-1.410611915		-0.413168672	1.908469815
-24	1096.2	1.318190111	18,619.72	-1.174453751		-0.342368455	1.660558566
-25	1110.65	1.557646423	18,401.04	-2.200364762		-0.649936576	2.207582999
-26	1127.95	-1.219025666	17,996.15	-0.155977806		-0.037029366	-1.1819963
-27	1114.2	0.484652666	17,968.08	3.283878968		0.994239694	-0.509587029
-28	1119.6	1.112004287	18,558.13	-0.208480057		-0.052769541	1.164773828
-29	1132.05	1.79762378	18,519.44	-1.115044515		-0.324557566	2.122181346
-30	1152.4	0.48160361	18,312.94	-2.222636016		-0.656613498	1.138217107
	1157.95		17,905.91				

Table 2

ESCORTS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
122.1	-4.873054873	20,850.74	-2.16452749	-2.680032369	0.048186952	-4.921241825
116.15	-1.162290142	20,399.42	-1.00502857	170.3267915	0.029942642	-1.192232784
114.8	2.526132404	20,194.40	0.433337955	-0.01573465	0.007310448	2.518821956
117.7	-2.378929482	20,281.91	1.030721466		-0.002089173	-2.376840309
114.9	0.087032202	20,490.96	0.854962383		0.000676335	0.086355867
115	-3.913043478	20,666.15	0.757857656		0.002204244	-3.915247722
110.5	3.755656109	20,822.77	0.346591736		0.008675369	3.746980739
114.65	-0.69777584	20,894.94	0.382149937		0.008115873	-0.705891713
113.85	-3.469477383	20,974.79	1.261371389		-0.005718368	-3.463759014
109.9	-5.641492266	21,239.36	-0.2003356		0.01728108	-5.658773345
103.7	-6.509161041	21,196.81	-0.15233424		0.016525795	-6.525686836
96.95	-4.589994843	21,164.52	-0.61683421		0.023834539	-4.613829382
92.5	-1.297297297	21,033.97	-0.49900233		0.021980496	-1.319277793
91.3	-0.383351588	20,929.01	-1.71403234		0.041098568	-0.424450156
90.95	2.41891149	20,570.28	0.550502959		0.005466898	2.413444592
93.15	2.630166398	20,683.52	0.202625085		0.010940634	2.619225764
95.6	3.608786611	20,725.43	0.204820841		0.010906085	3.597880526
99.05	-2.423018677	20,767.88	0.467500775		0.006772908	-2.429791585
96.65	-0.310398345	20,864.97	0.138605519		0.01194796	-0.322346304
96.35	-2.594706798	20,893.89	-0.05264697		0.014957251	-2.609664049
93.85	1.065530101	20,882.89	-2.23810019		0.049344592	1.016185509
94.85	-1.634159199	20,415.51	0.647106048		0.003946882	-1.638106081
93.3	3.32261522	20,547.62	0.291615282		0.009540405	3.313074815
96.4	0.622406639	20,607.54	-0.3831122		0.020157005	0.602249634
97	-6.443298969	20,528.59	-1.24548252		0.033726101	-6.47702507
90.75	1.873278237	20,272.91	-0.11665814		0.015964444	1.857313793
92.45	0.648999459	20,249.26	-1.31189979		0.034771153	0.614228306
93.05	-1.450832886	19,983.61	-0.44291297		0.02109795	-1.471930835
91.7	-5.234460196	19,895.10	0.104799674		0.012479883	-5.246940079
86.9	0.172612198	19,915.95	-0.06969288		0.015225462	0.157386736
87.05	0.459506031	19,902.07	-1.93407017		0.044560786	0.414945245
87.45	-3.602058319	19,517.15	1.076591613		-0.002810923	-3.599247396
84.3	-2.728351127	19,727.27	0.844414863		0.000842297	-2.729193424
82	0.914634146	19,893.85	-0.1890534		0.017103558	0.897530588
82.75	0.84592145	19,856.24	0.322165727		0.009059704	0.836861746
83.45	0.179748352	19,920.21	-0.09663553		0.015649395	0.164098957
83.6	0.418660287	19,900.96	1.822776389		-0.01455188	0.433212167
83.95	-0.41691483	20,263.71	1.889732926		-0.015605417	-0.401309413
83.6	1.375598086	20,646.64	-3.31521255		0.066292578	1.309305508
84.75	-0.471976401	19,962.16	-0.79214875		0.026593052	-0.498569453
84.35	0.296384114	19,804.03	-0.31084582		0.019019919	0.277364195
84.6	-0.650118203	19,742.47	-0.04918331		0.014902751	-0.665020954
84.05	0	19,732.76	0.248926151		0.010212103	-0.010212103
84.05	-1.070791196	19,781.88	1.089734646		-0.003017724	-1.067773471
83.15	2.405291642	19,997.45	-0.00175022		0.014156408	2.391135233

ESCORTS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
85.15	-0.528479154	19,997.10	-3.63572718		0.071335764	-0.599814918
84.7	-0.177095632	19,270.06	-1.50648208		0.037832837	-0.214928469
84.55	0.177409817	18,979.76	-2.1718399		0.04830201	0.129107807
84.7	-4.6635183	18,567.55	-1.79285905		0.042338879	-4.705857178
80.75	-0.371517028	18,234.66	3.572701657		-0.042086341	-0.329430687
80.45	1.491609695	18,886.13	-1.41061191		0.036324354	1.455285342
81.65	0.612369871	18,619.72	-1.17445375		0.032608488	0.579761384
82.15	-2.191113816	18,401.04	-2.20036476		0.048750838	-2.239864655
80.35	-0.062227754	17,996.15	-0.15597781		0.016583125	-0.078810879
80.3	4.545454545	17,968.08	3.283878968		-0.037541817	4.582996363
83.95	4.109589041	18,558.13	-0.20848006		0.01740923	4.092179811
87.4	1.487414188	18,519.44	-1.11504452		0.031673704	1.455740483
88.7	0.281848929	18,312.94	-2.22263602		0.049101269	0.23274766
88.95	-5.677346824	17,905.91	1.899540431		-0.015759735	-5.661587089
83.9	7.091775924	18,246.04	0.336949826		0.008827081	7.082948842
89.85	-100	18,307.52	1.587653598		-0.010852305	-99.9891477
		18,598.18				

Table 3

MINDTREE	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
140.55	8.253290644	20,850.74	-2.164527494	-3.077650044	0.051579541	8.201711103
152.15	-1.774564574	20,399.42	-1.005028574	171.7344795	0.031529486	-1.80609406
149.45	3.579792573	20,194.40	0.433337955	-0.017920979	0.006657252	3.573135321
154.8	3.972868217	20,281.91	1.030721466		-0.003672704	3.976540921
160.95	-1.491146319	20,490.96	0.854962383		-0.000633478	-1.490512841
158.55	3.185115106	20,666.15	0.757857656		0.001045657	3.184069449
163.6	-6.601466993	20,822.77	0.346591736		0.008157267	-6.60962426
152.8	0.85078534	20,894.94	0.382149937		0.007542395	0.843242945
154.1	-2.04412719	20,974.79	1.261371389		-0.007661102	-2.036466088
150.95	-1.523683339	21,239.36	-0.200335603		0.017614735	-1.541298074
148.65	-5.01177262	21,196.81	-0.152334243		0.016784695	-5.028557316
141.2	2.90368272	21,164.52	-0.616834211		0.024816829	2.878865891
145.3	3.785271851	21,033.97	-0.499002328		0.02277928	3.762492571
150.8	2.519893899	20,929.01	-1.714032341		0.043789579	2.47610432
154.6	3.589909444	20,570.28	0.550502959		0.004631235	3.585278209
160.15	0.187324383	20,683.52	0.202625085		0.010646739	0.176677645
160.45	-1.558117794	20,725.43	0.204820841		0.01060877	-1.568726563
157.95	2.975625198	20,767.88	0.467500775		0.006066508	2.96955869
162.65	-0.338149401	20,864.97	0.138605519		0.011753765	-0.349903166
162.1	6.107341147	20,893.89	-0.05264697		0.015060903	6.092280244
172	-0.145348837	20,882.89	-2.238100186		0.05285176	-0.198200597
171.75	-5.269286754	20,415.51	0.647106048		0.002960774	-5.272247528
162.7	-0.399508297	20,547.62	0.291615282		0.00910792	-0.408616218
162.05	1.079913607	20,607.54	-0.383112201		0.020775308	1.059138299
163.8	-0.824175824	20,528.59	-1.24548252		0.035687415	-0.85986324
162.45	-3.385657125	20,272.91	-0.116658141		0.016167784	-3.40182491
156.95	-3.153870659	20,249.26	-1.311899793		0.036835903	-3.190706562
152	-5.197368421	19,983.61	-0.442912967		0.021809383	-5.219177804
144.1	-1.59611381	19,895.10	0.104799674		0.012338336	-1.608452146
141.8	2.009873061	19,915.95	-0.069692884		0.015355661	1.9945174
144.65	-5.254061528	19,902.07	-1.934070175		0.047594473	-5.301656001
137.05	-8.573513316	19,517.15	1.076591613		-0.00446589	-8.569047426
125.3	1.436552275	19,727.27	0.844414863		-0.00045109	1.437003365
127.1	-2.202989772	19,893.85	-0.189053401		0.017419643	-2.220409415
124.3	1.206757844	19,856.24	0.322165727		0.008579642	1.198178202
125.8	-0.079491256	19,920.21	-0.096635527		0.015821553	-0.095312809
125.7	-0.238663484	19,900.96	1.822776389		-0.017368918	-0.221294567
125.4	-0.079744817	20,263.71	1.889732926		-0.01852673	-0.061218087
125.3	1.516360734	20,646.64	-3.315212548		0.071477187	1.444883547
127.2	-0.825471698	19,962.16	-0.792148745		0.027848368	-0.853320066
126.15	1.189060642	19,804.03	-0.310845823		0.019525678	1.169534964
127.65	-0.313356835	19,742.47	-0.049183309		0.015001009	-0.328357845
127.25	-0.353634578	19,732.76	0.248926151		0.009846101	-0.363480678
126.8	-0.512618297	19,781.88	1.089734646		-0.00469316	-0.507925137
126.15	2.298850575	19,997.45	-0.001750223		0.014180797	2.284669778

MINDTREE	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
129.05	-2.014722976	19,997.10	-3.63572718		0.077019526	-2.091742502
126.45	0.474495848	19,270.06	-1.506482076		0.04020062	0.434295228
127.05	-2.518693428	18,979.76	-2.171839897		0.051705987	-2.570399415
123.85	-2.018570852	18,567.55	-1.792859047		0.04515265	-2.063723502
121.35	-0.988875155	18,234.66	3.572701657		-0.047628625	-0.941246529
120.15	1.664585934	18,886.13	-1.410611915		0.038542833	1.626043101
122.15	0.163733115	18,619.72	-1.174453751		0.034459186	0.129273929
122.35	-2.370249285	18,401.04	-2.200364762		0.052199239	-2.422448524
119.45	-0.837170364	17,996.15	-0.155977806		0.0168477	-0.854018064
118.45	-1.435204728	17,968.08	3.283878968		-0.042634303	-1.392570424
116.75	-0.599571734	18,558.13	-0.208480057		0.017755569	-0.617327303
116.05	-2.800517019	18,519.44	-1.115044515		0.033431881	-2.8339489
112.8	0.576241135	18,312.94	-2.222636016		0.052584354	0.523656781
113.45	-2.159541648	17,905.91	1.899540431		-0.018696321	-2.140845327
111	2.972972973	18,246.04	0.336949826		0.008323995	2.964648978
114.3	-100	18,307.52	1.587653598		-0.013303174	-99.98669683
		18,598.18				

Table 4

ASIAN PAINTS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
41.6	2.163461538	18598.18	-1.562841095	-1.784491408	0.029333779	2.134127759
42.5	3.764705882	18307.52	-0.335818287	182.4187404	0.017331042	3.74737484
44.1	-4.761904762	18246.04	-1.864130518	-0.009782391	0.032280992	-4.794185754
42	0.714285714	17905.91	2.273160091		-0.008189984	0.722475699
42.3	-0.709219858	18312.94	1.127617958		0.003015709	-0.712235567
42	2.380952381	18519.44	0.208915604		0.012002455	2.368949926
43	-2.325581395	18558.13	-3.179469052		0.045147634	-2.370729029
42	3.69047619	17968.08	0.156221477		0.012517909	3.677958281
43.55	3.903559127	17996.15	2.249870111		-0.007962162	3.911521289
45.25	3.867403315	18401.04	1.188411109		0.00242103	3.864982285
47	1.063829787	18619.72	1.430794878		5.00321E-05	1.063779755
47.5	3.684210526	18886.13	-3.449462648		0.047788711	3.636421815
49.25	-0.507614213	18234.66	1.82558929		-0.003811847	-0.503802366
49	0	18567.55	2.220055958		-0.00767052	0.00767052
49	0	18979.76	1.529524082		-0.000915737	0.000915737
49	0	19270.06	3.77284762		-0.022859928	0.022859928
49	0	19997.09	0.001800262		0.014028457	-0.014028457
49	-1.326530612	19997.45	-1.077987443		0.024590941	-1.351121553
48.35	-0.206825233	19781.88	-0.248308048		0.016475017	-0.22330025
48.25	2.590673575	19732.76	0.049207511		0.01356472	2.577108855
49.5	-0.808080808	19742.47	0.311815087		0.010995892	-0.819076701
49.1	0.916496945	19804.03	0.798473846		0.006235396	0.910261549
49.55	-0.100908174	19962.16	3.428887455		-0.019495309	-0.081412864
49.5	3.03030303	20646.64	-1.854684346		0.03218859	2.99811444
51	-2.843137255	20263.71	-1.79014603		0.031557276	-2.874694531
49.55	4.439959637	19900.96	0.096729002		0.013099865	4.426859772
51.75	2.415458937	19920.21	-0.321131153		0.017187373	2.398271565
53	0.943396226	19856.24	0.18941149		0.012193244	0.931202982
53.5	-0.46728972	19893.85	-0.837344204		0.022236969	-0.489526688
53.25	5.164319249	19727.27	-1.761520981		0.031277266	5.133041983
56	-3.75	19379.77	0.708883542		0.007111769	-3.757111769
53.9	-0.185528757	19517.15	1.972214181		-0.005246131	-0.180282625
53.8	-3.531598513	19902.07	0.069741489		0.013363856	-3.544962369
51.9	0	19915.95	-0.10468996		0.015070145	-0.015070145
51.9	-2.023121387	19895.1	0.444883414		0.009694218	-2.032815605
50.85	5.211406096	19983.61	1.329339394		0.00104247	5.210363627
53.5	-1.869158879	20249.26	0.116794391		0.012903585	-1.882062463
52.5	-2.857142857	20272.91	1.261190426		0.001709103	-2.85885196
51	4.411764706	20528.59	0.384585595		0.010284051	4.401480655
53.25	5.164319249	20607.54	-0.29076736		0.016890354	5.147428895
56	-2.232142857	20547.62	-0.642945509		0.020335361	-2.252478218
54.75	-6.849315068	20415.51	2.289337861		-0.008348235	-6.840966833
51	1.960784314	20882.89	0.052674702		0.013530804	1.94725351
52	0.384615385	20893.89	-0.13841367		0.01540003	0.369215354
52.2	-3.352490421	20864.97	-0.465325375		0.01859788	-3.371088302

Table 4

ASIAN PAINTS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL- EXPECTED
50.45	10.80277502	20767.88	-0.204402183		0.01604553	10.7867295
55.9	-2.504472272	20725.43	-0.202215346		0.016024138	-2.52049641
54.5	0.825688073	20683.52	-0.547489015		0.019401605	0.806286468
54.95	-7.188353048	20570.28	1.743923758		-0.003012995	-7.185340054
51	3.921568627	20929.01	0.501504849		0.009140347	3.91242828
53	3.867924528	21033.97	0.620662671		0.007974745	3.859949783
55.05	1.725703906	21164.52	0.152566654		0.012553661	1.713150245
56	7.142857143	21196.81	0.200737753		0.012082451	7.130774692
60	-3.416666667	21239.36	-1.245659003		0.026231104	-3.442897771
57.95	10.35375324	20974.79	-0.380695111		0.017770027	10.33598321
63.95	-11.10242377	20894.94	-0.345394627		0.017424718	-11.11984849
56.85	-1.495162709	20822.77	-0.752157374		0.021403671	-1.51656638
56	0.714285714	20666.15	-0.847714741		0.022338413	0.691947301
56.4	1.063829787	20490.96	-1.020205984		0.024025723	1.039804065
57	10.52631579	20281.91	-0.431468239		0.01826669	10.5080491
63	-100	20194.4	1.015231945		0.004115069	-100.0041151
		20399.42	-100		0.992246068	-0.992246068

Table 5

INFOSYS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
3363.1	-0.16651304	20,281.91	1.030721466	2.71691561	0.030595876	-0.1971089
3357.5	0.049143708	20,490.96	0.854962383	165.469001	0.02771167	0.021432
3359.15	-1.58522245	20,666.15	0.757857656	0.01641948	0.026118181	-1.6113406
3305.9	-1.23869446	20,822.77	0.346591736		0.019369307	-1.2580638
3264.95	0.445642353	20,894.94	0.382149937		0.019952817	0.4256895
3279.5	-0.02286934	20,974.79	1.261371389		0.034380841	-0.0572502
3278.75	0.911932901	21,239.36	-0.200335603		0.01039423	0.9015387
3308.65	0.463935442	21,196.81	-0.152334243		0.011181932	0.4527535
3324	0.327918171	21,164.52	-0.616834211		0.003559487	0.3243587
3334.9	-0.33134427	21,033.97	-0.499002328		0.005493109	-0.3368374
3323.85	0.215111994	20,929.01	-1.714032341		-0.014445534	0.2295575
3331	-0.63494446	20,570.28	0.550502959		0.02271549	-0.65766
3309.85	0.432043748	20,683.52	0.202625085		0.017006815	0.4150369
3324.15	0.31887851	20,725.43	0.204820841		0.017042847	0.3018357
3334.75	0.035984706	20,767.88	0.467500775		0.021353425	0.0146313
3335.95	-0.59353408	20,864.97	0.138605519		0.015956253	-0.6094903
3316.15	-1.38865853	20,893.89	-0.05264697		0.0128178	-1.4014763
3270.1	2.391364178	20,882.89	-2.238100186		-0.023045487	2.4144097
3348.3	-0.74067437	20,415.51	0.647106048		0.024300747	-0.7649751
3323.5	-1.49240259	20,547.62	0.291615282		0.018467144	-1.5108697
3273.9	-4.57405541	20,607.54	-0.383112201		0.007394866	-4.5814503
3124.15	-0.53134453	20,528.59	-1.24548252		-0.006756631	-0.5245879
3107.55	-2.41830381	20,272.91	-0.116658141		0.011767377	-2.4300712
3032.4	-0.42375676	20,249.26	-1.311899793		-0.007846539	-0.4159102
3019.55	-0.13578182	19,983.61	-0.442912967		0.006413535	-0.1421954
3015.45	0.774345454	19,895.10	0.104799674		0.0154015	0.758944
3038.8	-0.79307621	19,915.95	-0.069692884		0.012538077	-0.8056143
3014.7	0.024878097	19,902.07	-1.934070175		-0.018056355	0.0429345
3015.45	-0.30012104	19,517.15	1.076591613		0.031348605	-0.3314696
3006.4	0.231173497	19,727.27	0.844414863		0.027538585	0.2036349
3013.35	-0.1841804	19,893.85	-0.189053401		0.010579371	-0.1947598
3007.8	0.23272824	19,856.24	0.322165727		0.018968476	0.2137598
3014.8	0.12770333	19,920.21	-0.096635527		0.012095948	0.1156074
3018.65	-0.76524274	19,900.96	1.822776389		0.043593497	-0.8088362
2995.55	0.797850144	20,263.71	1.889732926		0.044692254	0.7531579
3019.45	-0.1241948	20,646.64	-3.315212548		-0.040720901	-0.0834739
3015.7	0.253672448	19,962.16	-0.792148745		0.000682576	0.2529899
3023.35	-1.02700647	19,804.03	-0.310845823		0.008580757	-1.0355872
2992.3	1.20141697	19,742.47	-0.049183309		0.012874639	1.1885423
3028.25	1.18385206	19,732.76	0.248926151		0.017766615	1.1660854
3064.1	1.842302797	19,781.88	1.089734646		0.031564282	1.8107385
3120.55	0.966175834	19,997.45	-0.001750223		0.013653016	0.9525228
3150.7	-4.12130638	19,997.10	-3.63572718		-0.045980546	-4.0753258
3020.85	-0.60082427	19,270.06	-1.506482076		-0.011039634	-0.5897846
3002.7	3.436906784	18,979.76	-2.171839897		-0.021958156	3.4588649

Table 5

INFOSYS	RETURNS	BSE	RETURNS	BETA	EXPECTED DAILY	ACTUAL-EXPECTED
3105.9	-2.31977849	18,567.55	-1.792859047		-0.01573908	-2.3040394
3033.85	1.433821712	18,234.66	3.572701657		0.072309771	1.3615119
3077.35	0.745771524	18,886.13	-1.410611915		-0.009466405	0.7552379
3100.3	0.280618005	18,619.72	-1.174453751		-0.005591049	0.2862091
3109	0.36346092	18,401.04	-2.200364762		-0.022426249	0.3858872
3120.3	-1.99339807	17,996.15	-0.155977806		0.011122141	-2.0045202
3058.1	-0.90088617	17,968.08	3.283878968		0.067570191	-0.9684564
3030.55	-1.05756381	18,558.13	-0.208480057		0.010260579	-1.0678244
2998.5	0.827080207	18,519.44	-1.115044515		-0.004616144	0.8316964
3023.3	-2.31369695	18,312.94	-2.222636016		-0.02279172	-2.2909052
2953.35	1.819967156	17,905.91	1.899540431		0.044853195	1.775114
3007.1	-0.05487014	18,246.04	0.336949826		0.019211084	-0.0740812
3005.45	-1.02646858	18,307.52	1.587653598		0.039735132	-1.0662037
2974.6	3.20043031	18,598.18	4.137017708		0.081570197	3.1188601
3069.8	0.491888722	19,367.59	-0.711239757		0.002010292	0.4898784
3084.9	-100	19,229.84	-1.470943076		-0.010456439	-99.989544
		18,946.98				