EMPIRICAL ANALYSIS OF WEAK FORM OF EFFICIENCY IN INDIAN STOCK MARKET- A CASE OF EVENT STUDIES

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ABSTRACT

The event study analysis is useful to capture the effects of an event on the value of firm that will be reflected immediately in security prices. This paper analyzes the event of quarterly financial statements for fifty companies. A twenty day reaction window was studied. The event window comprises of 41 days and movement in the security prices during the event window in the study depicts that the security prices react to the announcement of quarterly earnings. Good or better results than expected result increase the investors' confidence and increases the value of the firm and vice-versa. Therefore, one can say that the announcement of quarterly earnings does affect the value of the firm, but the real investors are generally not able to make profit from those announcements. This paper conclude that event studies are good tool to study the weak form of efficiency.

Keywords: Event study, Market efficiency, NSE, BSE, Security prices,

INTRODUCTION

An event study analysis typically tries to examine behavior of returns for a sample of firms experiencing a common type of event for example declaration of interim/final dividend, issue of bonus shares, stock split etc. All such events tend to change the stock prices which are directly related to change in returns of the security. It is the firm's value that investors and outsiders are interested in best likely to be able to have a clear picture of the firm's past, present and future course. The efficiency of the market may be internal (low cost and high speed transactions) or external. EMH may sometimes be said to create bubbles in the market because the prices may not always be right and may generally be wrong indirectly affecting the value of the firm and also arbitrage/speculation may drive prices to their efficient levels.

REVIEW OF LITERATURE

The event study analysis has continued to make effective contribution to capital market research over last four decades and has grown into a significant discipline in itself. Fama, Fisher, Jenson and Roll (1969) measured the deviations of abnormal returns in market model with respect to factors such as announcement of stock splits and their association with substantial dividend increases. They provided the basic analysis of an event study even though the statistical inferences and results obtained from abnormal returns continue to change with the impact of factors undertaken in the model. Eugene F. Fama (1969), studied efficient capital markets reviewing empirical work in stock price behavior in which he studied the various forms of market under the efficiency hypothesis and derived results using weak form tests, semi-strong form tests and strong semi-form tests concluding that with a few exceptions the efficient market model stood well for all forms and

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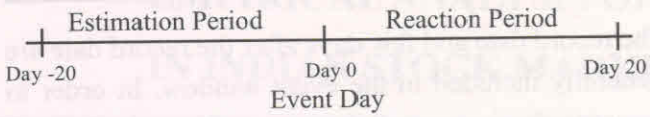
gave favorable results with adjustment of security prices to the information of the market. Brown and Warner (1985) predicted that the absence or presence of abnormal performance of each stock was a function of excess returns of each stock under normal market conditions. Jayanth Ram Verma and Samir K Barua, (1989), analyzed traces the deficiencies of current event study methodology by two main sources: market response to an event may be estimated from abnormal returns whose significance is checked against zero and for the most widespread use of event study in testing being Efficient Market Hypothesis, moving window approach used in methodologies for handling shifts not supported well by the efficiency in the market. Fama and Kenneth R. French (1992) studied the cross section aggregation of expected stock returns and analyzed the contradictory estimates by Sharpe, Lintner and Black (1992) on the asset-pricing model subject to estimated beta calculation on average returns on small and large stocks and further deriving a positive relation between average returns of a firm to its ratio of book and market value. Kothari and Warner (1999) highlighted upon the econometric issues in event study drawing comparisons between short-horizon and long-horizon analysis. Ana Paula Serra(2002) analyzed the event study testing methods to explains the importance of methodology inculcated in them, depicting their use in the event studies undertaken now. Thus all these studies provide that event studies can be good tool to study the value of firm in turn the price of stocks.

PROCESS OF RESEARCH FOR EVENT STUDIES

The preliminary task for conducting an event study is to delineate the event. The event can be recurring after a fixed interval of time or recurring after an erratic interval of time. After defining the event, the next step is to define the event window. Event window is the epoch over which the security prices of the firms involved are examined. For example, to compute the effect of declaration of interim dividend, generally few days before the declaration, the declaration date, the record date and few days after the record date are generally included in the event window. In order to measure the impact of the event, a measure of the abnormal returns is to be constructed. Abnormal return is the actual return on the security over the event window less the normal return over the event window. There are various models under the normal return model such as constant mean return model, the market model etc is abnormal return on security i during time period t, is the expected percentage return on the security i during the time period t. Equivalently, abnormal return is the difference between the return conditional on the event and the expected return unconditional on the event. The next step is to define the null and alternative hypotheses. The hypotheses may be defined to check the impact of event on the market or to check the overall efficiency of the market. The penultimate step is to test the significance of the model and the results. Various statistical and econometrics tests are applied to check the overall significance of the model. The final step is the classification of the event into different categories and to find a pattern in the share price movements on existence of such event for future. Single variate and multivariate line graphs are generally constructed for this purpose.

RESEARCH METHODOLOGY

This paper analyzes the event of quarterly financial statements for fifty companies. A total of 1000 events serve up to be the universe of the study. The study has been conducted over a five year period (2008-09 to 2012-13) for the fifty companies used in computation of CNX Nifty, main index of National Stock Exchange (NSE) of India. In order to completely capture the effect of the news on the share prices, a twenty day estimation window was studied. Sometimes the market either over-reacts or under-reacts to the news, which causes correction in the share prices (returning back to their original range of support and resistance levels) in the near future. Therefore, a twenty day reaction window was studied. On the whole, the event window comprises of 41 days as depicted by the following image.



EVENT WINDOW

The abnormal returns are calculated using the Market Model given by Fama, Fisher, Jensen and Roll (FFJR methodology). The Market model establishes a relationship between the return on a particular security and return on the market portfolio after accounting for the other related factors. Two sets of hypotheses were studied. The first set checked that the impact had effect on the market and the other that the market is efficient.

H_{a0}: The event has no impact on the value of the firm.

H_{a1}: The event has impact on the value of the firm.

H_{b0}: The market is efficient.

H_{b1}: The market is inefficient.

The data was then amassed through time to conduct the correlation and regression analysis. Various tests were also conducted to check the frequent problems of the market model. For analyzing and interpreting the results more precisely the data was then aggregated across securities.

MODEL ESTIMATION

Market model is the simplest form asset pricing model. According to the model, the returns on a security depend on three factors:

- Systematic factor: The movement in security prices due to factors accrued to the entire market.
- Unsystematic factor: The movement in security prices due to actors accrued to a specific company or industry.
- Residual factor: The movement in security prices which is unexpected or abnormal.

Where is percentage return on security *i* during the time period *t,* is percentage return on market portfolio during the time period *t, is* non-market component of return on the security, is the sensitivity of movement of stock prices with respect to the movement of market portfolio and is the abnormal return on the security (zero mean disturbance term). The model used is Market Model Value Weighted (MMVW) as the Nifty (free float market capitalization value weighted index) was considered.

ABNORMAL RETURNS

The model assumes that all the information that was disseminated in the market during the event window was related only to the quarterly reports. The information could either be the announcements made by the company, interviews of key personnel of the company or expert reviews of financial and investment analysts on the earnings of the company. The abnormal returns in the model are represented by the term

Equivalently, abnormal returns is the percentage return on the security *i* in the time period *t* less the non-market component of the return on the security and the product of the sensitivity of movement of security prices with respect to the movement of market portfolio and the percentage change in the market portfolio during the time period.

DATA INTERPRETATION

The data of all the 1000 events was amassed together through time. As no two observations of the same date can exist in the data set, therefore mean of the corresponding abnormal returns was taken.

Table No. 1

	N	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statis-tic	Std. Error	Statis-tic	Std. Error
Stock Returns	1274	-.1299	.1660	.000322	.0004932	.0176049	.289	.069	9.626	.137
Nifty Returns	1274	-.1220	.1774	.000323	.0004666	.0166537	.675	.069	13.529	.137
Valid N (list-wise)	1274									

Above tests, statistics and graphs were obtained using IBM SPSS. In this study, the dependent variable is assumed to be percentage returns of stock prices and the independent variable is assumed to be percentage returns of Nifty. The range of which percentage change in stock prices move is -12.99% to 16.60% as depicted by minimum and maximum values in the Stock Returns row. Nifty lies in the range of -12.20% and 17.74%. The average stock return percentage is 0.0322% with a standard error of 0.00049 while that of Nifty is 0.0323% with a standard error of 0.00047. The value of both the standard errors is low due to the large number of observations (N=1274). With 1.7605% and 1.6654% as respective standard deviations, it evident that a significant number of observations lie away from the respective mean values. The skewness coefficient for Stock Returns and Nifty Returns is 0.289 and 0.649 respectively, which implies that the distribution curve is positively asymmetrical (or mean is greater than the mode). Skewness of both the variables also depicts that most of the observations lie close to the mean values. The difference between the mean and median values is very low as the value of skewness lies between -1 and +1. In both the cases the value of kurtosis is greater than 3, thus implying a leptokurtic distribution with values concentrated around the mean and thicker tails. This means high probability of extreme values. Due to higher kurtosis and skewness value, the Nifty Returns curve should be steeper as compared to the Stock Returns curve.

Chart No.-1

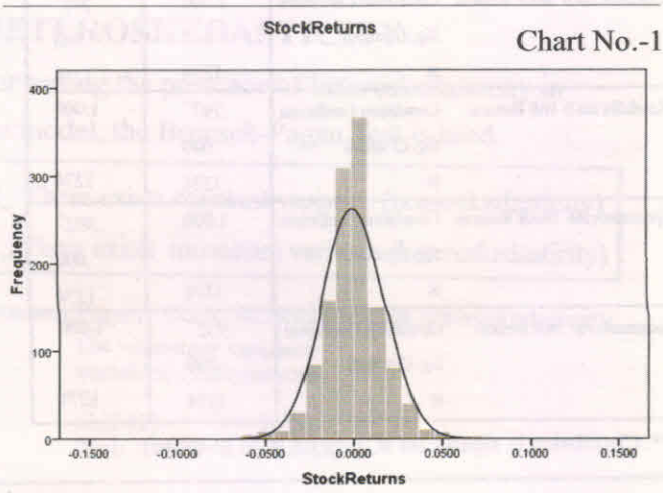
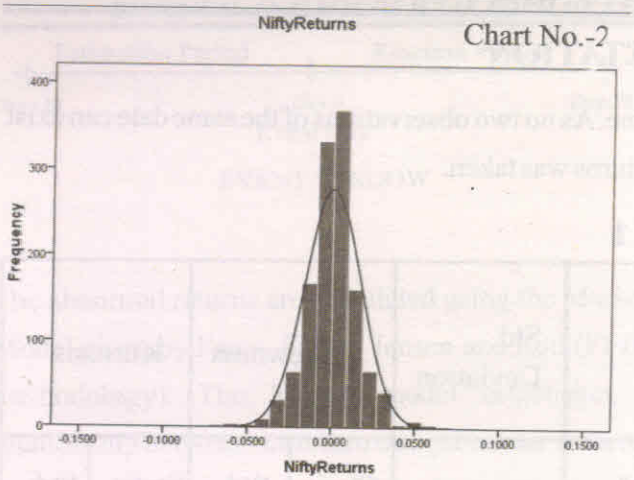


Chart No.-2



CORRELATION

Parametric Correlation

Correlations : Table No. 2

		Stock Returns	Nifty Returns
Stock Returns	Pearson Correlation	1	.950**
	Sig. (2-tailed)		.000
	N	1274	1274
Nifty Returns	Pearson Correlation	.950**	1
	Sig. (2-tailed)	.000	
	N	1274	1274

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

NON-PARAMETRIC CORRELATION

Correlations : Table No. 3

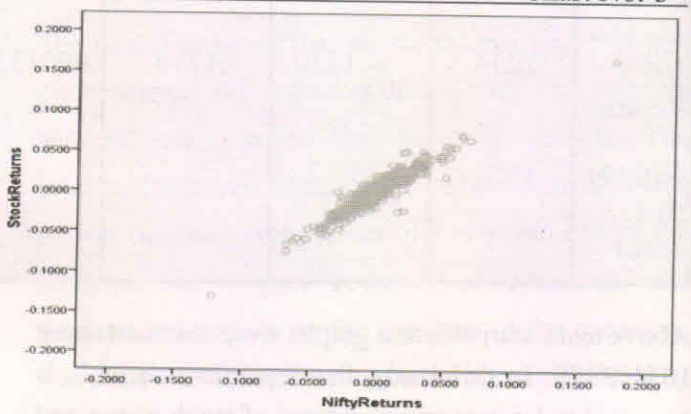
		Stock Returns	Nifty Returns
Kendall's tau b Stock Returns	Correlation Coefficient	1.000	.797**
	Sig. (2-tailed)		.000
	N	1274	1274
Kendall's tau b Nift Returns	Correlation Coefficient	.797**	1.000
	Sig. (2-tailed)	.000	
	N	1274	1274
Spearman's rho Stock Returns	Correlation Coefficient	1.000	.932**
	Sig. (2-tailed)		.000
	N	1274	1274
Spearman's rho Nift Returns	Correlation Coefficient	.932**	1.000
	Sig. (2-tailed)	.000	
	N	1274	1274

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

The value of Karl Pearson's correlation coefficient (r), Kendall's tau_b and Spearman's rho are 0.950, 0.797 and 0.932. This connotes that the coefficients are strongly related to each other in a positive manner. The value of parametric correlation coefficient is higher than the non-parametric correlation coefficient because the latter establishes a relationship between the ordinal positions of the observation. The difference between the three also explains that the major portion of the observations recline together, while others have extreme divergence.

REGRESSION

Chart No.-3



Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.950[a]	.903	.903	0054856	1.935

a. Predictors: (Constant), Nifty Returns

b. Dependent Variable: Stock Returns

R Square value summing up to 0.903 means that 90.3% variation in percentage changes in stock prices is explained by percentage changes in nifty. Standard error of estimate being 0.00549 implies that most of the observations cluster near to the regression line. The value of Durbin-Watson statistics is 1.935 meaning that the size of residual for one event has no impact on the size of the residual for the next event. Thus, there is absence of serial correlation.

ANOVA[b] Table No.-5

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.356	1	.356	1.184E4	.000[a]
	Residual	.038	1272	.000		
	Total	.395	1273			

a. Predictors: (Constant), Nifty Returns
b. Dependent Variable: Stock Returns

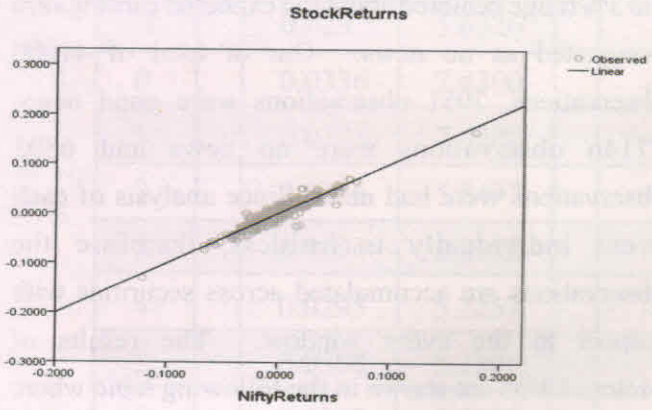
P-Value (Sig.) is 0.00 which elucidates that the probability that the events occurred randomly is negligible. The F-value is 1.184e4 greater than P-value which implies that the model has high explanatory power. Thus, the coefficient of percentage returns in Nifty is not zero.

Coefficients[a] Table No. 6

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-2.208E-6	.000		-.014	.989	.000	.000
	NiftyReturns	1.005	.009	.950	108.807	.000	.986	1.023

a. Dependent Variable: StockReturns

Since P-value of NiftyReturns is less than 0.95, thus we can say that measure of NiftyReturns helps in predicting the StockReturns. Unstandardized beta of NiftyReturns is 1.005 which lies between that range 0.986 and 1.023 produced by the 95% confidence interval implying that it is statistically significant.



The above plot demonstrates that observations cluster around the positive regression line. The y-intercept is just above -0.2000.

TESTS

An event study analysis is usually blemished with the problems such as normality, heteroskedasticity, autocorrelation and absence of unit root. The following tests were conducted to address these problems using STATA 12.0.

NORMALITY

For normality, Shapiro-Wilk Test and Shapiro-Francia Test are conducted.

H_{a0}: StockReturns is normally distributed.

H_{b0}: NiftyReturns is normally distributed.

H_{a1}: StockReturns is not normally distributed.

H_{b1}: NiftyReturns is not normally distributed.

Shapiro-Wilk W test for normal data

Variable	Obs	w	v	z	Prob>z
stockreturns	1274	0.92970	55.286	10.034	0.00000
niftyreturns	1274	0.91285	68.540	10.571	0.00000

Shapiro-Francia W' test for normal data

Variable	Obs	w	v'	z	Prob>z
stockreturns	1274	0.92615	61.534	9.589	0.00001
niftyreturns	1274	0.90892	75.889	10.078	0.00001

In both the tests, P-value (0.0000 in Shapiro-Wilk test and 0.00001 in Shapiro-Francia test) is less than the alpha value (0.05.) Therefore, the null hypothesis is rejected. This implies that both the StockReturns and NiftyReturns are not normally distributed.

HETEROSKEDASTICITY

For testing the presence of heteroskedasticity in the model, the Breusch-Pagan Test is used.

H_0: There exists constant variance (homoskedasticity)
H_1: There exists inconstant variance (heteroskedasticity)

Breusch Pagan / Cook-Weisberg test for heteroskedasticity
Ho : constant variance
variables : niftyreturns

chi2 (1) = 31.20
Prob > chi2 = 0.0000

Since chi-square value (31.20) is greater than P- value (0.0000), we reject the null hypothesis of constant variance. As a result, heteroskedasticity is present in the model.

AUTOCORRELATION

For measuring autocorrelation, Q-Test (Portmanteau Test) is applied to the model.

H_{a0}: White noise exists in Stock Returns

H_{b0}: White noise exists in Nifty Returns

H_{a1}: White noise doesn't exists in Stock Returns

H_{b1}: White noise doesn't exists in Nifty Returns

```
- wntestq stockreturns
(note : time series has 305 gaps)

Portmanteau test for white noise
---------------------------------------
Portmanteau (Q) statistic     =   55.4060
Prob > chi2 (40)              =    0.0534

- wntestq niftyreturns
(note : time series has 305 gaps)

Portmanteau test for white noise
---------------------------------------
Portmanteau (Q) statistic     =   53.3872
Prob > chi2 (40)              =    0.0765
```

In both the cases, P-value (0.0534 in StockReturns and 0.0765 in NiftyReturns) is greater than the alpha value (0.05), therefore we do not reject both the null hypotheses. Therefore, due to presence of white noise there is no autocorrelation in the model.

ABSENCE OF UNIT ROOT

To deal with the problem of unit root, Augmented Dickey-Fuller (ADF) Test is applied.

H_0: Presence of a unit root in the model.

H_1: Absence of unit root in the model.

Dickey-Fuller test for unit root — Number of obs = 968

	Test Statistic	Interpolated Dickey-Fuller: 18 Critical Value	58 Critical Value	108 Critical Value
Z(t)	-32.284	-3.430	-2.860	-2.570

Mackinnon approximate p-value for Z(t) = 0.0000

At all the three critical values of the test (-2.570 at 10% critical value, -2.860 at 5% critical value and -3.430 at 1% critical value) are less than the P-value (0.0000), therefore we do not reject the null hypothesis of presence of unit root in the model. Hence, the model is not stationary.

RESULTS AND INTERPRETATION

To capture the deviations in the stock prices, the announcements are categorized into three groups: good news, no news and bad news. Each announcement is classified using the deviation of actual earnings from the expected earnings. If the actual exceeds the expected by more than 1.5% then the announcement is designated as good news and if the actual is more than 1.5% lesser than the expected then the announcement is designated as bad news. Those announcements where the actual earnings are in the 3% range centered about the expected earnings are designated as no news. Out of total of 41000 observations, 7051 observations were good news, 27146 observations were no news and 6803 observations were bad news. Since analysis of each event individually is fruitless, therefore the observations are accumulated across securities with respect to the event window. The results of accumulation are shown in the following table where MAR stands for Mean Abnormal Returns and CAR stands for Cumulative Abnormal returns.

Table No. 4

Day	Good News		No News		Bad News	
	MAR	CAR	MAR	CAR	MAR	CAR
-20	0.0289	5.1135	-0.0003	-0.2023	-0.0258	-3.6157
-19	0.0287	4.8134	-0.0001	-0.0707	-0.0273	-4.2907
-18	0.0286	4.4841	-0.0003	-0.1728	-0.0276	-4.2222
-17	0.0299	5.4086	-0.0002	-0.1518	-0.0259	-4.4226
-16	0.0287	5.2810	0.0000	-0.0314	-0.0268	-3.6448
-15	0.0285	4.6521	-0.0002	-0.1195	-0.0260	-4.4004
-14	0.0294	5.5800	-0.0004	-0.2850	-0.0276	-4.2249
-13	0.0288	4.9171	-0.0003	-0.2274	-0.0273	-4.4837
-12	0.0274	4.9778	-0.0008	-0.5041	-0.0286	-4.4889
-11	0.293	4.5635	-0.0004	-0.2688	-0.0273	-5.1962
-10	0.0290	4.7337	-0.0001	-0.0822	-0.0292	-4.4150
-9	0.0280	4.4807	-0.0003	-0.1811	-0.0280	-5.0971
-8	0.0287	4.5299	-0.0006	-0.4275	-0.0293	-4.7181
-7	0.0283	4.4205	-0.0008	-0.5688	-0.0270	-4.6200
-6	0.0289	5.0778	0.0000	0.0296	-0.0268	-4.4563
-5	0.0282	4.7648	-0.0003	-0.1876	-0.0287	-5.3169
-4	0.0294	4.7314	-0.0006	-0.3739	-0.0301	-5.6351
-3	0.0320	5.5309	0.0003	0.2113	-0.0298	-4.6734
-2	0.02878	4.7617	-0.0003	-0.1865	-0.0284	-4.9979
-1	0.0295	5.6326	-0.0007	-0.4511	-0.0329	-5.3594
0	0.0336	7.4300	-0.0002	-0.1258	-0.0340	-8.5585
1	0.0333	7.6200	-0.0004	-0.1912	-0.0313	-8.3564
2	0.0316	5.8497	-0.0006	-0.3734	-0.0304	-5.2858
3	0.0294	5.2582	-0.0002	-0.1413	-0.0260	-4.5212
4	0.0295	5.2257	-0.0008	-0.4961	-0.0313	-5.5314
5	0.0308	5.2301	0.0003	0.1814	-0.0261	-4.1959
6	0.0292	5.4681	-0.0004	-0.2776	-0.0281	-4.2967
7	0.0262	4.2712	-0.0007	-0.4726	-0.0307	-4.9798

8	0.0259	4.2143	-0.0007	-0.5060	-0.0323	-4.7099
9	0.0284	4.9156	0.0000	-0.0186	-0.0271	-3.8514
10	*0.0260*	*4.2361*	*-0.0004*	*-0.2523*	*-0.0264*	*-4.7979*
11	0.0300	5.3177	-0.0003	-0.2366	-0.0271	-3.1431
12	0.0289	5.0263	0.0000	0.0223	-0.0276	-4.1608
13	0.0270	4.4605	-0.0006	-0.4271	-0.0259	-3.8611
14	0.0279	4.1871	-0.0012	-0.8236	-0.0267	-4.3493
15	0.0277	3.9127	0.0000	0.0311	-0.0271	-4.0915
16	0.0281	4.7788	-0.0006	-0.3926	-0.0274	-4.3292
17	0.0275	4.7380	-0.0005	-0.3221	-0.0335	-5.0876
18	0.0262	4.0105	-0.0005	-0.3573	-0.0268	-4.5830
19	0.0265	4.2980	-0.0006	-0.4066	-0.0344	-5.5053
20	0.0298	5.2231	0.0000	-0.0314	-0.0247	-3.7794

Chart No.-5

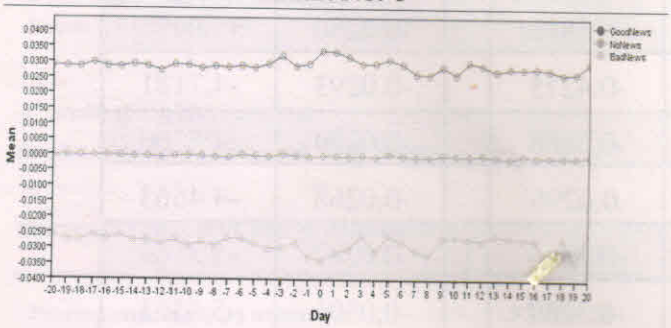
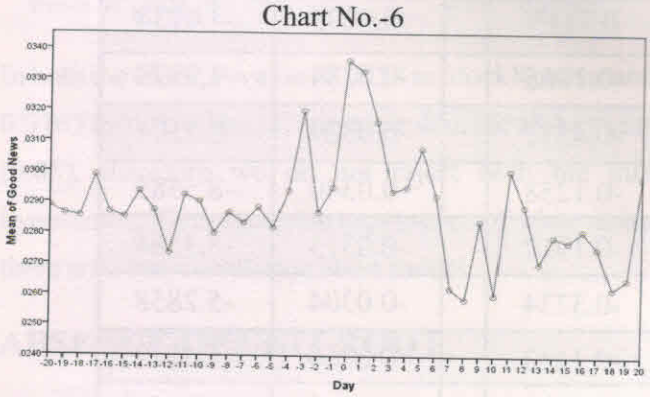
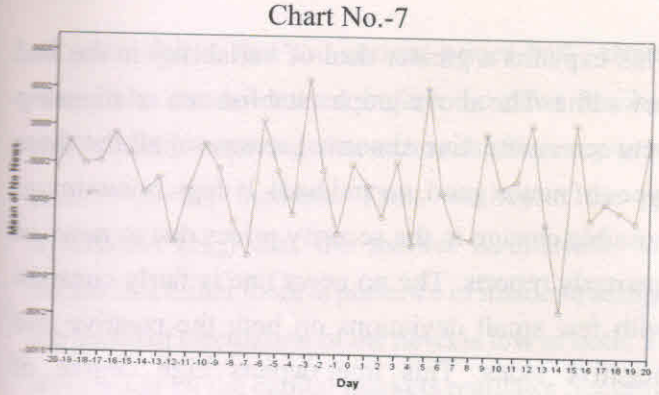


Chart No.-6



The above graph establishes a relationship between the mean values of all three types of news (good, no and bad) and the corresponding event days. The no news line tend to move in an unwavering manner around the 0.0000 value with very few and small deviations. This indicates that when the company has no news related to it, the share price tends to remain fairly constant through time, thus neither the shareholders' wealth changes nor the market capitalization of the company on the exchange changes. In case of good news, the share prices tend to remain fairly constant at 3.00% levels till day -3 with small deviations. Post this values form a 'U' shape till the event day. For the remaining event window, the share prices tend to move between the support and resistance levels. For bad news, the share prices tend to move in an unvarying manner till day -2 with meager deviations. Post that the values forms a 'stretched U' pattern till day 3, followed by a 'V' pattern. The movements post that is fairly steady till day 16. The bad news line ends with a 'W' pattern. Formation of 'stretched U', 'V' and 'W' patterns suggest high level of speculation in the security.

Chart No.-7



The graph establishes a relationship between mean of good news and the corresponding day in the event window. The above plot depicts that in the estimation period the mean values tend to move in a range of 3% and 2.8% forming the resistance and support levels respectively for the period up to day 5. During this time, the share breaks the support level only once on day 12, reaching the lowest point of the estimation period of 2.75%. On the next day itself, it reaches back to the support and resistance levels. From day 5, the values rise perpetually till day 3 to reach the highest point of 3.2% of the estimation period. After day 3, the values tend to fall on day 2 and marginally rise back again on day 1. On the event day share prices surge to the utmost point of the whole event window reaching 3.35% showing that the market rewards the companies with good or better than the street expectations of quarterly results. In the reaction period, the values fall and follow a pattern of lower lows to reach at a value of 2.58% on day 8 which is the lowest in the event window. This connotes that the market had overreacted to news of quarterly reports and a correction in prices of securities is taking place. Post this trend the values tend to regain the lost value in a lopsided manner forming a support level at 2.6%. highest on day 3 with a mean value of 0.035%. The maximum changes in the mean values are during the period from day 5 to day 1. This implies that the speculation is at its peak five days prior to the release of quarterly reports. On the event day, the share price tends to reach a value of -0.02%, strengthening from the previous values. In the reaction period, the share initially tends to fall forming a short pattern of lower lows till day 4, after which it tries to show resistance. During this period the share hits the highest point on day 5 of 0.03%. Post day 13, the mean value hits the lowest point of -0.115% on day 14. After this, the values regain again to end at a value of 0.05%. This is clear evidence that the market generally overreacts to the speculations when there is no news about the companies.

The graph establishes a relationship between mean of bad news and the corresponding day in the event window. It is evident from the above plot that the markets punish the companies' share prices when they come out with bad quarterly reports. In the estimation period the mean values keep dipping to lower lows. The maximum dips are persistent in the period just prior to the news (from day 5 to day 1.) The fall in this period signifies that the market is already expecting poor results from the company in the respective quarter. The share prices tend to sustain in the period from day 5 to day 3, but then fall invariably to a mean value of -3.30% which is the lowest point in the estimation period. On the event day, it further dips to the value -3.40%. In the reaction period, the values initially tend to regain to the previous falls till day 3. This shows that the market overreacted to bad quarterly reports. After reaching to one of the highest crest of the event window of -2.6%, the values form a short trend of lower lows till day 9, post which values tend to form new support and resistance levels. They are broken on day 16, after which extreme speculation is apparent as it touched a maximum low of -3.45% and a maximum high of -2.55%.

Chart No.-8

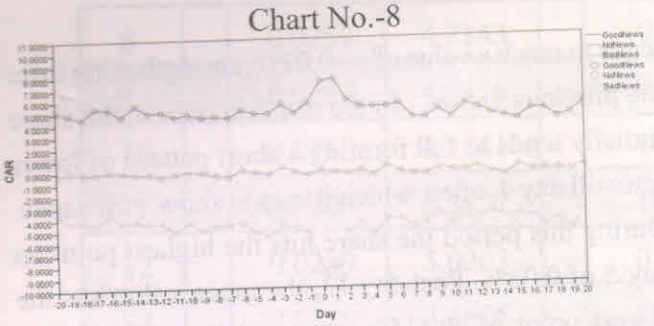
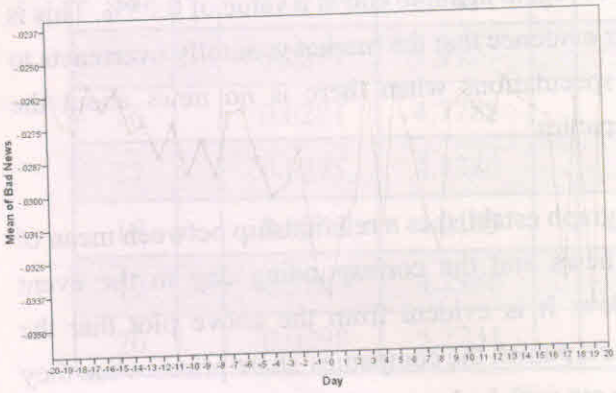


Chart No.-9



The above graph establishes a relationship between cumulative abnormal returns of all the three types of news (good, no and bad). It depicts maximum possible change in the security prices due to news of quarterly reports. The no news line is fairly constant with few small deviations on both the positive and negative sides. This line depicts high degree of efficiency in the market as when there is no news about the company's earning the share price tends to remain constant thus removing the speculation factor. The good news and bad news lines depict a lot of ups and downs implying a great deal of speculation whenever there is news about the earnings of a firm. The good news line depicts that the stock tends to have higher digression in reaction period as compared to the estimation window. This signifies that the investors are cautious even after good news in the estimation period. But in reaction window the cautious levels falls and the digression increases. In the bad news case, the major portion of investors tends not to invest in the firms and divert their investment to other avenues. Thus, only big players and investors with high risk appetite invest according to such news. This explains a greater deal of variability in the bad news line. The above graph establishes a relationship between cumulative abnormal returns of all the three types of news (good, no and bad). It depicts maximum possible change in the security prices due to news of quarterly reports. The no news line is fairly constant with few small deviations on both the positive and negative sides. This line depicts high degree of efficiency in the market as when there is no news about the company's earning the share price tends to remain constant thus removing the speculation factor. The good news and bad news lines depict a lot of ups and downs implying a great deal of speculation whenever there is news about the earnings of a firm. The good news line depicts that the stock tends to have higher digression in reaction period as compared to the estimation window. This signifies that the investors are cautious even after good news in the estimation period. But in reaction window the cautious levels falls and the digression increases. In the bad news case, the major portion of investors tends not to invest in the firms and divert their investment to other avenues. Thus, only big players and investors with high risk appetite invest according to such news. This explains a greater deal of variability in the bad news line.

CONCLUSION

Event Study analysis is vital component in accessing the impact of a particular event on the value of the firm. The movement in the security prices during the event window in the study depicts that the security prices react to the announcement of quarterly earnings. Thus, we can reject the null hypothesis (H_{a0}) that the quarterly results have no impact on the value of the firm. Good results or better than expected results increase the investors' confidence and increases the value of the firm and vice versa. The respective movement in the security prices according to the type

of news shows that the current prices had already reacted to the news even before the news has been made public implying that external efficiency is not present in the markets. Thus, we reject the null hypothesis (H_{b0}) that the market is efficient. This means that either there is presence of insider trading or the speed of circulation of the news is low or both. The rules made by the capital markets regulator Securities and Exchange Board of India (SEBI) for insider trading are quite stringent but are still unable to completely bring the latter to a standstill. The other possibility of speed of news circulation entails that till the time news reaches out to the real investing public, the security prices have already reacted to the news and thus, the avenue is no longer profitable for them. India does possess the infrastructure but the efficiency level is low. The average time taken to square off the deal is still very high. Therefore, one can say that the announcement of quarterly earnings does affect the value of the firm, but the real investors are generally not able to make profit from those announcements.

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