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Effect of quarterly earnings announcement under different market conditions

An empirical study of companies constituting SENSEX

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Abstract

Purpose – The main purpose of this research study is to investigate the impact of quarterly earnings announcements on stock price movement of the firms constituting the SENSEX under two different market conditions – booming followed by recessionary. Analysis of price effect of quarterly earnings announcements during the five-year period prior to trading suspension, which is also characterized by a booming market condition have been made. Similar analysis during the five-year period following the trading suspension and marked by recessionary market condition has also been carried out side by side.

Design/methodology/approach – Event study methodology using daily returns and market model has been used for the purpose of analyzing the quarterly earnings announcement effects on the security prices of the firms. A sign test has also been used along with the event study.

Findings – The study reveals that quarterly earnings announcement does not have statistically significant effect on stock returns during the booming as well as the recessionary market conditions. The impact of quarterly earnings announcements on stock price movement of firms constituting the SENSEX has been similar for both periods undertaken in the study.

Research limitations/implications – The study has been undertaken using the firms listed in BSE SENSEX. The effect of the quarterly earnings announcement with reference to firms listed in other indices, if covered, may provide different sets of results.

Originality/value – The paper identifies the informational value of quarterly earnings announcement of BSE-SENSEX.

Keywords Recession, Event study, Boom, BSE-SENSEX, Quarterly earnings announcements

Paper type Research paper

1. Introduction

The effect of the earnings announcements on aggregated stock prices of the firms has been reported in various research studies. Empirical studies have shown that on the day of announcement of positive earnings surprises, there exists statistically significant positive abnormal return. While in case of negative earnings surprises, statistically significant negative abnormal return is observed (MacKinlay, 1997). Positive earnings surprises refer to those announcements where actual earnings reported by the firms



exceed market expectations of earnings. While in negative earnings surprises, the actual reported earnings fall short of market expectations.

The main objective of this research study is to investigate the impact of quarterly earnings announcements on stock price movement of the firms constituting SENSEX under two different market conditions – booming followed by recessionary. The event leading to the temporary suspension of trading in BSE on May 22, 2006 has been used as a base to study the price effect of quarterly earnings announcements on companies constituting SENSEX. Analysis of the price effect of quarterly earnings announcements during the five-year period prior to trading suspension, which is also characterized by a booming market condition, and a similar analysis during the five-year period following the trading suspension and marked by recessionary market condition, have been carried out side by side in this study. This paper first reviews the available literature on the impact of earnings announcement on stock price movement in national and international contexts. It is followed by a discussion on the adopted research methodology, analysis of the data and interpretation of the results. Finally, it concludes the discussion.

1.1 Review of related literature

There exists vast literature on the effect of unexpected earnings on stock prices in international arena. Most of the studies agreed that positive unexpected earnings increase stock prices, while negative unexpected earnings decrease stock prices (Watts, 1978; MacKinlay, 1997; Odabasi, 1998; Dhareshwar *et al.*, 2008; Mahmoudi *et al.*, 2011). In the Indian scenario, some of prominent empirical studies are as follows.

Obaidullah (1990) investigated the market reaction to half-yearly earnings announcements and found that the Indian stock market is semi-strong efficient. Chaturvedi (2000) studied the stock price reaction to semi-annual earnings announcement and found abnormal returns both during the pre- and post-announcement dates. Mallikarjunappa and Iqbal (2003) and Mallikarjunappa (2004) found that the Indian stock market did not react immediately to the quarterly earnings information and provided an opportunity to earn abnormal returns. Manickaraj (2004) investigated the effect of the quarterly earnings announcements on share price movement and found that the information conveyed by quarterly announcements was quickly reflected in stock prices. Gupta (2006) investigated the stock market reaction associated with earnings announcements made in a single quarter of companies constituting CNX Nifty Index. The author found that the abnormal returns were negative for the majority of days for full sample, “good news” sub-sample and “bad news” sub-sample.

Das *et al.* (2007) studied the effect of quarterly earnings announcements made by companies constituting SENSEX for a quarter. Contrary to most of the research studies on earning releases, they found that the quarterly earning announcement releases by the sample companies did not have a substantial impact on stock return. However, this study was limited to a single quarter earnings releases comprising 30 announcements only.

Iqbal and Mallikarjunappa (2007) observed that for the majority of the days for the entire three portfolios, i.e. “full” sample, “good news” sub-sample and “bad news” sub-sample, statistically significant abnormal returns on daily basis were not found.

Das *et al.* (2008a, 2008b) investigated the effect of quarterly earnings announcements on “security returns” of the firm constituting SENSEX over the one-year period from June 1, 2006 and May 1, 2007. The authors did not find evidence of significant abnormal returns for all the three portfolios, i.e. full sample, “good news” sub-sample and “bad news” sub-sample. Further the study could not establish drifting up of share price in case of “good news” announcements and drift down in case of “bad news” announcements.

Saravanakumar *et al.* (2012) examined the abnormal returns of earnings announcements during the pre- and post-announcement periods, of 50 Nifty companies listed on the National Stock Exchange (NSE). The research study concluded that the announcement of quarterly earnings did not convey any useful information to the investors, and investors did not gain from earnings announcements.

From the review of related literature, following research gap in Indian context can be identified with respect to the study of the effect of quarterly earnings announcements on the share price:

- Scant literature on the effect of quarterly earnings announcements on share price movement of companies constituting SENSEX corroborated limited studies undertaken in this aspect in India. The findings of those studies are inconsistent. Hence, it remains inconclusive to understand the effect of quarterly earnings announcement on stock prices, in light of the limited research studies.
- Most of the Indian research studies on the price effect of quarterly earnings announcements are based on samples containing very limited number of such announcements. MacKinlay (1997) observed that in event studies with a limited number of event observations, the empirical results can be heavily influenced by one or two firms. Because event study focus on measuring the sample securities mean abnormal return around the time of an event, and therefore, the limited number of event observations in the sample is likely to cause biased results. This particular problem has been addressed in the present study. In comparison to earlier Indian studies on the effect of quarterly earnings announcement on the companies constituting SENSEX, the present study has incorporated a relatively larger number of such announcements of SENSEX companies and is expected to eliminate any biases arising due to limited event observations.
- It is observed that the phases of the market during the period of financial year (FY) from 2001-2002 to FY 2005-2006 are marked by the existence of a bull phase for relatively greater number of days, and the period may be ascribed to booming market condition. This observation has been made from the research study on regime shift pursued by Ahmad *et al.* (2011) for companies comprising SENSEX during the period of 2001-2000. On the contrary, the period from FY 2005-2006 to FY 2010-2011 is characterized by recessionary market condition. A comparative study on the price effect of quarterly earnings announcements under two different market conditions has been lacking in the Indian context. Such a study may help to understand, in a better way, the behavior of stock price movement corresponding to quarterly earnings announcements during two different market conditions.

The research gap in the Indian context provides the impetus to pursue the present study. The effect of quarterly earnings announcement on stock price movement has been studied over two different periods of time, i.e. from FY 2001-2002 to FY2005-2006 and

from FY 2006-2007 to FY 2010-2011, each period constitute numerous quarterly earnings announcements. Further, SENSEX is regarded as the pulse of the domestic stock market in India. The 30 companies listed in SENSEX are some of the largest and most actively traded stocks and are representatives of various industrial sector of the Indian economy. SENSEX is not only the oldest index but also the most popular index among the investors and brokers. Hence, it becomes more imperative to pursue the present study.

2. Objective of the study

The main objective of this research study is to investigate the impact of quarterly earnings announcements on stock price movement of the firms constituting SENSEX under two different market conditions – booming followed by recessionary.

On May 22, 2006, SENSEX plunged by 1,100 points during intra-day trading, leading to the suspension of trading. It caused investors to lose six lakh crore rupees (US\$131 billion) within seven trading sessions of May, 2006. This particular event caused panic among investor to such an extent that the then Finance Minister of India, Mr P. Chidambaram, had to make an unscheduled press statement to assure the investors that nothing was wrong with the fundamentals of the economy and advised retail investors to stay invested. This aberration in the Indian stock market is used as a base to study the price effect of quarterly earnings announcements on companies constituting SENSEX. Analysis of quarterly earnings announcements on stock price movement during the five-year period prior to trading suspension (from FY 2001-2002 to FY 2005-2006), and a similar analysis during the five-year period following the trading suspension (from FY 2005-2006 to FY 2010-2011) have been carried out separately in this study. An attempt is also made to understand the efficiency of the Indian capital market relative to quarterly earnings announcements during the above stated periods.

3. Research methodology

3.1 Data and their source

The data used for empirical analysis of the effect of quarterly earnings announcement on stock returns are obtained from the corporate data base of the Capital Line.

The study is based on the quarterly earnings announcements for the 30 firms in the Bombay Stock Exchange (BSE), constituting SENSEX.

The quarterly earnings announcements corresponding to the quarterly earnings for the first quarter of the FY 2001-2002 through the last quarter of the FY 2010-2011 have been taken up for the study. The period ranging from first quarter of the FY 2001-2002 to the fourth quarter of the FY 2005-2006 comprises 379 number of quarterly earnings announcements, while the period from first quarter of the FY 2006-2007 to the fourth quarter of the FY 2010-2011 consist of 394 announcements. All those quarterly earnings announcements of the firms are excluded from the sample:

- where other corporate announcements are made along with earnings announcement. When multiple announcements are made on a given day, it becomes difficult to segregate the effect of quarterly earnings released from other announcements. Hence, such quarterly earnings releases have not been considered in the study; and
- where there is lack of availability of quarterly announcement date data.

3.2 Methodology adopted

For the present study, event study methodology using daily returns and market model are used for the purpose of analyzing the quarterly earnings announcement effect. The framework is based on the discussion of the event study by MacKinlay (1997). Event study measures the impact of a specific economic event on the value of a firm. The impact of the event can be assessed by analyzing the security prices over a relatively short period (MacKinlay, 1997). The key focus of event study is on measuring the “sample securities” average abnormal return and cumulative average abnormal return around the time of an event. The null hypothesis to be tested is whether the mean of the cross-sectional distribution of abnormal return at time “t” is equal to zero.

To conduct an event study analysis, the day of announcement of quarterly earnings announcement is considered to be the event date. If return be indexed in event time using “t”, then $t = 0$ is defined as the announcement date. An event window of 41 days ($t = -20$ to $t = 20$) has been taken up for investigation. The length of pre- and post-event windows is 20 trading days prior to and after the announcement date, respectively. The daily returns of the firms (R_{it}) and the corresponding market index (R_{mt}) can be calculated using the following formula:

Current daily return = (current day closing price – previous day closing price)/previous day closing price. The return reported in this study is in percentage terms.

The abnormal return is the actual *ex-post* return of the firm over the event window minus the normal return of the firm over the event window. The normal return is given by the market model. For any security i, the market model is:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

where, R_{it} is the return on security i on day t; R_{mt} is the return on the market index on day t; and ε_{it} is the zero mean disturbance term. α_i , β_i and ε_{it} are the parameters of the market model.

For each of the quarterly earnings announcement of the firms included in the study, 250 trading days prior to the event window (technically called “estimation window”) is used to determine the parameters for the market model. In other words, the length of the estimation window for each of the firms is 250 days. The SENSEX is used as a proxy for the market index. Some of the earlier studies on the impact of earnings announcements on stock price movement, pursued in national and international contexts, also adopted similar method where the firms constituting the sample and the market indices are identical (Gupta, 2006; Odabasi, 1998; Das *et al.*, 2008a, 2008b). Ordinary least squares method has been applied to determine the market model parameter. Given the market model parameter estimates, one can measure and analyze the abnormal returns. The abnormal returns for firm i in the event window is given by:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \text{ where } t = -20 \text{ to } t = 20$$

The abnormal returns (AR_{it}) has been computed during the event window of 41 days for each of the firms and for each of the quarter undertaken for the study.

If earnings announcement convey information to investors, then the impact of the announcement on the stock returns depend on the magnitude of the unexpected component of the announcement. This unexpected component is measured as the deviation of actual announced earnings from market prior expectation. Now, if the announced quarterly earnings exceed market expectation, there should be a positive impact on share prices, i.e. increase in the value of equity, and the announcements may be termed as “good news” announcement and vice-versa for “bad news” announcement. Thus, a measure of the deviation of actual announced earnings from market prior expectation is required. A simple expectation model is used to tap market expectations of quarterly earnings. The model compares the adjusted earnings per share (EPS) for the current quarter with that of the previous quarter. The EPS of the firms has been adjusted for bonus, split and rights issue to arrive at an adjusted EPS. The values of the adjusted EPS of the firms were retrieved from the corporate database of the Capital Line. Based on the model, the earnings announcements of each of the firm are assigned to any one of the two categories – “good news” announcement and “bad news” announcement. The “good news” announcements refer to those announcements in which the adjusted EPS of the current quarter exceeds earnings of the previous quarter. While the “bad news” announcement refers to all those announcements in which the adjusted EPS of the current quarter is less than the earnings of the previous quarter (Gupta, 2006; Das *et al.*, 2007, 2008a, Das *et al.*, 2008b). Odabasi (1998) and Iqbal and Mallikarjunappa (2007) also adopted a similar expectation model in their event study analysis of earnings announcements.

The abnormal returns, corresponding to “good news” announcements of all the firms have been aggregated and averaged for each event day of the event window. The aggregation of abnormal return for each event day has been done across securities, for all those quarters wherein such “good news” announcements occurred. For the sake of simplicity, the sample comprising “good news” announcements of all the firms is referred to as *aggregated good news* sample.

If N is the total number of “good news” announcements of all the firms in the *aggregated good news* sample, then the average abnormal return (AAR_{*t*}) for the event day “*t*” is defined by:

$$AAR_t = \frac{\sum_{i=1}^N AR_{it}}{N} \text{ where } t = -20 \text{ to } t = 20$$

and AR_{it} represent abnormal return of *i*th firm on event day *t* of the event window during one quarter in the *aggregated good news* sample. All the quarters in the *aggregated good news* sample with respect to each of the firms and for all the firms have been used to arrive at AAR_{*t*}.

The variance of the AAR for the period “*t*” is given as follows (MacKinlay, 1997):

$$Var(AAR_t) = \frac{\sum_{i=1}^N Var(AR_{it})}{N^2}$$

$$\text{Var}(\text{AAR}_t) = \frac{\sum_{i=1}^N \sigma_{\varepsilon_i}^2}{N^2}$$

Similarly, the abnormal returns, corresponding to all “bad news” announcements of all the firms are aggregated and averaged for each event day, across the cross-section, and named *aggregated bad news* sample. While, the abnormal returns, corresponding to all the “good news” and all the “bad news” announcements of all the firms are aggregated and averaged for each event day, across the cross-section, and named *aggregated full* sample.

The concept of cumulative average abnormal return (CAAR) is necessary to accommodate multiple period event windows. The cumulative average abnormal return on days surrounding the event, i.e. for event days t_1 through t_2 is defined as follows:

$$\text{CAAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} \text{AAR}_t$$

The variance of the CAAR for event days t_1 through t_2 is defined as follows: (MacKinlay, 1997).

$$\text{Var}\{\text{CAAR}(t_1, t_2)\} = \sum_{t=t_1}^{t_2} \text{Var}(\text{AR}_{it})$$

In the present study, the sign test has been performed along with the event study analysis to figure out the pattern of positive and negative AARs corresponding to “good news” announcements, “bad news” announcements, as well as on full sample basis. If the earnings announcement exert positive or negative influences on stock returns during the event period, then it is expected that corresponding to positive earnings surprises or “good news” announcement, the number of positive abnormal return should be significantly greater than the negative abnormal returns and vice-versa. The sign test is carried out on AARs to test the null hypothesis that there is no significant difference between the number of positive and negative AARs (Iqbal and Mallikarjunappa, 2007).

To analyze the effect of quarterly earnings announcements on stock prices for the period before and after the trading suspension, the aggregation of abnormal return for each of the three portfolios, i.e. “aggregated good news” sample, “aggregated bad news” sample and “aggregated full” sample has been carried out with respect to the following sets:

- The quarterly earnings announcements of all the companies constituting SENSEX during the period from first quarter of the FY 2006-2007 to the last quarter of the FY 2010-2011. For ease of reference, the set is termed as “set A”.
- The quarterly earnings announcements of all the companies constituting SENSEX during the period from first quarter of the FY 2001-2002 to the last quarter of the FY 2005-2006. This set has been termed as “set B”.

With regard to each portfolio, i.e. “aggregated full” sample, “aggregated good news” sample and “aggregated bad news” sample of “set A” and “set B”, the following hypotheses are tested:

- H1.* The AAR of the sample of firms announcing quarterly earnings is zero on the announcement date.
- H2.* The AARs of the sample of firms announcing quarterly earnings is zero on days surrounding the announcement in the event window.
- H3.* The CAARs of the sample of firms announcing quarterly earnings is zero during the event window.
- H4.* There is no significant difference in the number of positive and negative AARs.

The test of significance of AAR and CAAR with respect to each of the portfolio has been pursued in following manner.

If Ω is the test statistic for AAR, then Ω_{AAR} is defined as follows:

$$\Omega_{\text{AAR}} = \frac{AAR_t}{\sqrt{\text{Var}(AAR_t)}}$$

A similar test statistic can be developed using CAAR to test the cumulative effect of AARs on days surrounding the event. The test of significance for the cumulative average abnormal return is pursued using the test statistic (MacKinlay, 1997) which is given as follows:

$$\Omega_{\text{CAAR}} = \frac{CAAR_t}{\sqrt{\text{Var}(CAAR_t)}}$$

In this paper, Z (AAR) and Z (CAAR) represent the values of test statistic for AAR and CAAR, respectively. The test has been carried out at the 5 per cent level of significance. Z test has also been adopted to test the null hypothesis that there is no significant difference in the number of positive and negative AARs. This is because normal approximation to the binomial as sampling distribution can be used when both np and nq are each at least five, where n, p and q refer to the sample size, the proportion of successes and the failure in the sample, respectively (Levin and Rubin, 2008). For the present study, $n = 41$ (the length of event window), $p = 0.5$ and $q = 0.5$.

4. Result analysis and interpretation

This section examines the effect of quarterly earnings announcements on the stock price of firms constituting SENSEX during the five-year periods prior to and after the temporary suspension of trading have been termed as “set B” and “set A”, respectively.

4.1 Analysis of “aggregated full” sample during the period following trading suspension

The results of event study analysis on “aggregated full” sample are presented in Table I and are represented graphically in Figures 1 and 2.

Event days	AAR	Z (AAR)	CAAR	Z (CAAR)
-20	-0.0078	-0.0757	-0.0078	-0.0763
-19	0.0586	0.5719	0.0508	0.3536
-18	0.0969	0.9454	0.1477	0.8388
-17	0.0096	0.0940	0.1573	0.7737
-16	0.0289	0.2819	0.1862	0.8191
-15	0.0013	0.0129	0.1875	0.7531
-14	0.0870	0.8494	0.2746	1.0207
-13	-0.0170	-0.1660	0.2576	0.8957
-12	0.1416	1.3820	0.3991	1.3087
-11	-0.0034	-0.0336	0.3957	1.2308
-10	-0.0601	-0.5864	0.3356	0.9953
-9	-0.0078	-0.0764	0.3278	0.9307
-8	-0.2341	-2.2844*	0.0937	0.2557
-7	-0.1735	-1.6932	-0.0797	-0.2096
-6	-0.0071	-0.0697	-0.0869	-0.2206
-5	-0.2781	-2.7148*	-0.3650	-0.8976
-4	-0.0989	-0.9651	-0.4639	-1.1067
-3	-0.2026	-1.9771*	-0.6665	-1.5451
-2	0.1500	1.4640	-0.5165	-1.1654
-1	0.1678	1.6378	-0.3487	-0.7669
0	-0.2548	-2.4866*	-0.6034	-1.2952
1	-0.2540	-2.4790*	-0.8574	-1.7981
2	0.1095	1.0692	-0.7479	-1.5339
3	-0.0539	-0.5262	-0.8018	-1.6098
4	-0.0744	-0.7259	-0.8762	-1.7236
5	0.1302	1.2713	-0.7459	-1.4389
6	0.0371	0.3622	-0.7088	-1.3417
7	-0.0566	-0.5524	-0.7654	-1.4228
8	-0.0525	-0.5126	-0.8179	-1.4940
9	-0.0330	-0.3221	-0.8509	-1.5281
10	0.0125	0.1225	-0.8384	-1.4811
11	0.0860	0.8393	-0.7524	-1.3082
12	-0.1114	-1.0874	-0.8638	-1.4790
13	0.0456	0.4455	-0.8182	-1.3801
14	-0.1377	-1.3438	-0.9558	-1.5891
15	0.0190	0.1855	-0.9368	-1.5358
16	0.0364	0.3557	-0.9004	-1.4559
17	-0.0169	-0.1653	-0.9173	-1.4637
18	-0.1289	-1.2581	-1.0462	-1.6478
19	-0.0524	-0.5114	-1.0986	-1.7086
20	0.1408	1.3740	-0.9579	-1.4714

Table I.
Results of “aggregated”
“full” sample during the
period following the
temporary suspension of
trading

Note: *Significant at the 5 per cent level

4.2 Analysis of AAR

It is observed that on the day of announcement and the day following it, AAR is significant at the 5 per cent level of significance. This implies that the quarterly earnings announcements have an effect on the stock prices for these two particular

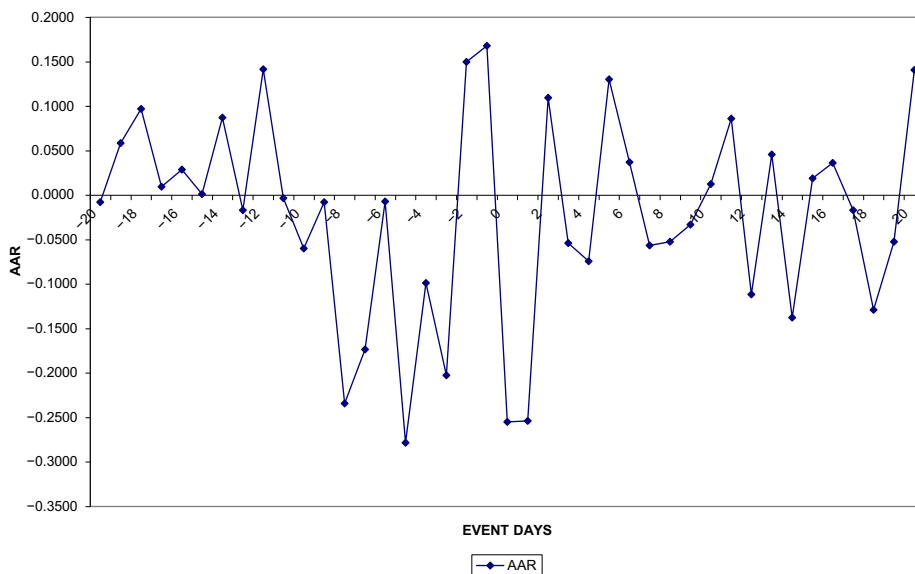


Figure 1.
AAR of “aggregated full”
sample post trading
suspension

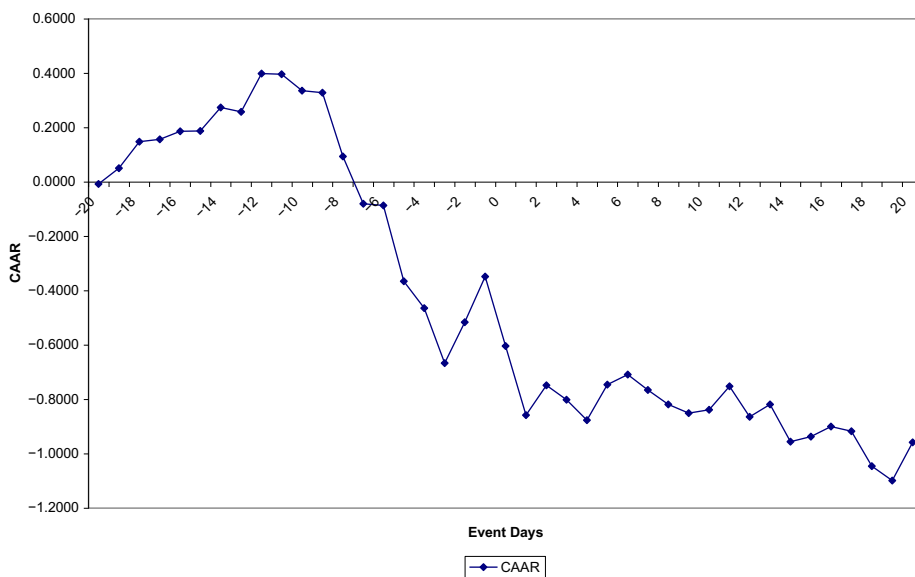


Figure 2.
CAAR of “aggregated
full” sample post trading
suspension

Actual proportion of positive AARs
Z-value

0.44
-0.78

Table II.
Sign test: average abnormal
return of “aggregated” “full”
sample following trading
suspension

event days. Further, it is observed that during the pre-announcement period, the AARs are negative and statistically significant on the event days $t = -3$, $t = -5$ and $t = -8$. This means that the market had reacted to earnings information prior to the actual announcement. This could possibly be attributed to leakage of information prior to the actual announcement. A similar observation was made by [Odabasi \(1998\)](#) and [Gupta \(2006\)](#) in their respective studies. However, the AARs are found to be insignificant for the majority of days in the event window. Graphical analysis of AAR shows that AAR attains the maximum positive value on the day prior to announcement, i.e. $t = -1$. Following the announcement, AAR turns into negative values (also statistically significant) on $t = 0$ and $t = 1$. This implies a negative impact of earnings announcement on the “aggregated full” sample.

4.3 Analysis of CAARs

The CAARs, for all event days in the event window is found to be insignificant at the 5 per cent level of significance. This implies that the market participant cannot act on quarterly earnings information to earn an average abnormal return during the event window. Hence, the null hypothesis that the CAAR of the sample of firms announcing quarterly earnings is zero during the event window is accepted for “aggregated full” sample. Graphical analysis of cumulative average abnormal return reflects that CAAR drifts up during the period from $t = -20$ to $t = -12$, thereafter it gradually drifts down in the period from $t = -11$ to $t = 19$. It is observed that in 56.1 per cent of event days, AARs are negative. This seems that, for the “aggregated full” sample, the announcements have a negative impact on security prices, although it is not statistically significant.

4.4 Sign test on AARs of “aggregated full” sample during the period following trading suspension

Sign test on AARs of “aggregated full” sample as depicted in [Table II](#) reveals that sign test values are not significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative average abnormal returns is accepted.

4.5 Analysis of “aggregated full” sample during the period prior to trading suspension

The analysis of this section is analogous to that of the foregoing section. Thereby, a comparative study of the price effect of quarterly earnings announcement on the “aggregated full” sample for the period before and after the temporary suspension of trading is attempted. The results of the event study analysis on “aggregated full” sample are presented in [Table III](#) and are represented graphically in [Figures 3](#) and [4](#).

4.6 Analysis of AAR

During the event window, AAR is significant only at $t = 4$ (AAR = 0.2371) and $t = 5$ (AAR = 0.3232). The AARs on the rest of the days in the event window period are

					Effect of quarterly earnings
Event days	AAR	Z (AAR)	CAAR	Z (CAAR)	
-20	0.0481	0.3737	0.0481	0.4382	139
-19	0.0510	0.3965	0.0991	0.6386	
-18	-0.0131	-0.1017	0.0860	0.4526	
-17	0.0698	0.5427	0.1558	0.7102	
-16	0.1370	1.0650	0.2928	1.1938	
-15	0.0241	0.1870	0.3168	1.1793	
-14	-0.1011	-0.7858	0.2157	0.7435	
-13	-0.1606	-1.2483	0.0552	0.1779	
-12	0.0273	0.2126	0.0825	0.2508	
-11	-0.0270	-0.2096	0.0556	0.1602	
-10	-0.0514	-0.3994	0.0042	0.0115	
-9	-0.0353	-0.2745	-0.0311	-0.0819	
-8	-0.0056	-0.0433	-0.0367	-0.0927	
-7	0.0643	0.5000	0.0276	0.0673	
-6	-0.0533	-0.4143	-0.0257	-0.0604	
-5	-0.1172	-0.9112	-0.1429	-0.3256	
-4	0.0266	0.2071	-0.1162	-0.2570	
-3	0.0010	0.0075	-0.1153	-0.2477	
-2	0.0516	0.4008	-0.0637	-0.1332	
-1	-0.1630	-1.2676	-0.2267	-0.4623	
0	-0.1751	-1.3610	-0.4018	-0.7994	Table III. Results of “aggregated full” sample during the period prior to temporary suspension of trading
1	0.0581	0.4516	-0.3437	-0.6681	
2	-0.1102	-0.8567	-0.4539	-0.8630	
3	-0.0019	-0.0149	-0.4558	-0.8483	
4	0.2371	1.8437	-0.2187	-0.3988	
5	0.3232	2.5127*	0.1045	0.1869	
6	0.0242	0.1878	0.1287	0.2258	
7	0.0346	0.2687	0.1632	0.2812	
8	0.0779	0.6060	0.2412	0.4083	
9	-0.1415	-1.0998	0.0997	0.1660	
10	0.0738	0.5740	0.1735	0.2842	
11	0.0887	0.6895	0.2622	0.4227	
12	-0.1981	-1.5403	0.0641	0.1018	
13	-0.1571	-1.2211	-0.0929	-0.1453	
14	-0.0606	-0.4709	-0.1535	-0.2366	
15	0.1115	0.8672	-0.0420	-0.0638	
16	0.0840	0.6534	0.0421	0.0631	
17	-0.1004	-0.7808	-0.0584	-0.0863	
18	0.0106	0.0823	-0.0478	-0.0698	
19	0.0073	0.0568	-0.0405	-0.0583	
20	-0.1514	-1.1773	-0.1919	-0.2732	

Note: *Significant at the 5 per cent level

not statistically significant at the 5 per cent level of significance. Thus, the existence of statistically significant abnormal returns for the majority of days in the event window is rejected. Graphical analysis of average abnormal return reflects random fluctuations in the movement of AAR throughout the event window.

Figure 3.
AAR of aggregated full
sample during the period
prior to temporary
suspension of trading

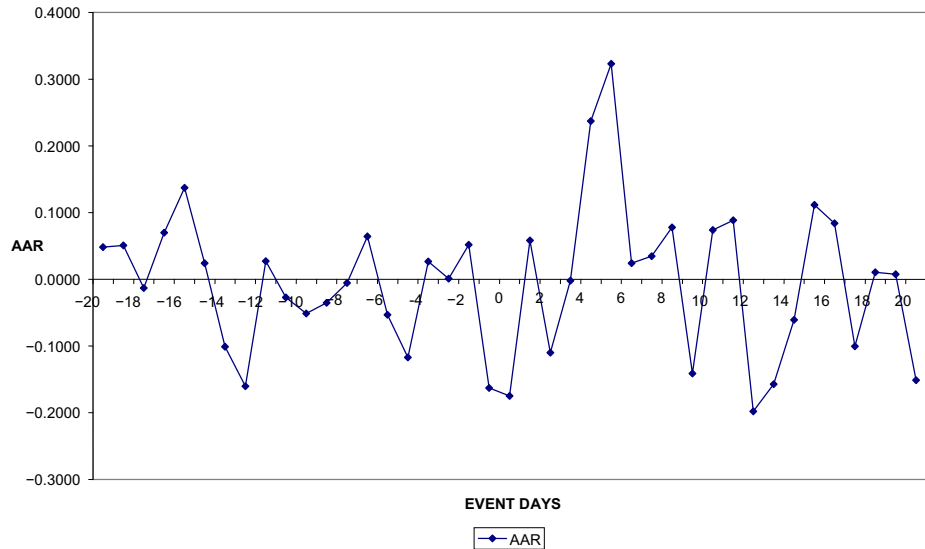
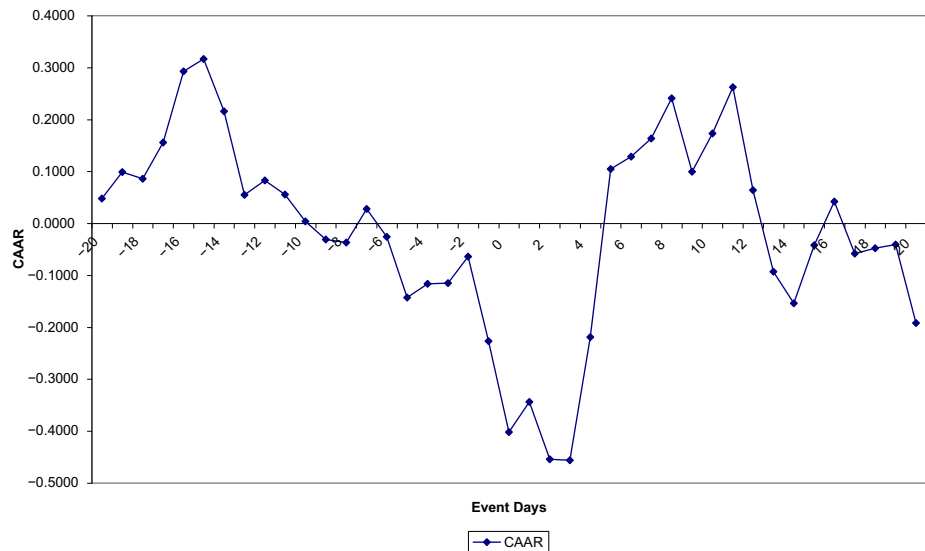


Figure 4.
CAAR of aggregated full
sample during the period
prior to temporary
suspension of trading



4.7 Analysis of CAAR

The cumulative average abnormal return on the announcement day ($t = 0$) is -0.4018 which is insignificant at the 5 per cent level of significance. The CAARs, for all other event days in the event window, is also found to be insignificant at the 5 per cent level of significance. Hence, the null hypothesis that the CAAR of the sample of firms announcing quarterly earnings is zero during the event window is accepted for

“aggregated full” sample. It appears from the graphical analysis of cumulative average abnormal returns that there is a random movement of CAAR throughout the event window.

4.8 Sign test on AARs of “aggregated full” sample during the period prior to trading suspension

Sign test on AARs of “aggregated full” sample as depicted in Table IV reveals that the sign test values are not significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative average abnormal returns is not rejected.

4.9 Analysis of “aggregated good news” sample during the period following trading suspension

Event study of “aggregated good news” sample of “set A”, consisting of 221 quarterly earnings announcements, has been undertaken. The result of “aggregated good news” sample is presented in Table V and has been represented graphically in Figures 5 and 6.

4.10 Analysis of AAR

On the day of announcement of quarterly earnings results, i.e. when $t = 0$, the AAR is positive but statistically insignificant at the 5 per cent level of significance. Hence, the null hypothesis that average abnormal return is zero on the announcement day is not rejected. Further, only 4.9 per cent of AARs during the event window were found to be significant at the 5 per cent level of significance. This rejects the existence of abnormal returns for the majority of days in the event window. It is observed from the graphical plot of AARs that the values of AARs are negative for a greater part of the event window. However, the AAR attains the most positive value (also statistically significant) on the day preceding the announcement day. It indicates that the market positively reacts to earnings news prior to the actual announcement.

4.11 Analysis of CAAR

The CAARs, for all event days in the pre- and post-event periods, are also found to be insignificant at the 5 per cent level of significance. This means that, the market participants cannot act on quarterly earnings information to earn an average abnormal return during the event window. Hence, the null hypothesis that the CAARs of the sample of firms announcing quarterly earnings is zero during the event window is accepted for “aggregated good news” sample.

Graphical analysis of CAAR of the “aggregated good news” sample reveals that there is no drifting up of CAAR values following the earnings announcement. In fact, there is a gradual drift down of CAAR during the post-event period $t = 1$ to $t = 20$. The results are consistent with the findings of Das *et al.*, 2007 and 2008a and 2008b. It is observed that AARs

Table IV.
Sign test: average
abnormal return of
“aggregated full” sample
prior to trading
suspension

Actual proportion of positive AARs	0.54
Z-value	0.47

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Event days	AAR	Z (AAR)	CAAR	Z (CAAR)
-20	-0.0494	-0.3765	-0.0494	-0.3765
-19	-0.0714	-0.5438	-0.1208	-0.6507
-18	0.1288	0.9807	0.0079	0.0349
-17	0.0650	0.4949	0.0729	0.2776
-16	0.0444	0.3380	0.1173	0.3995
-15	-0.0267	-0.2036	0.0906	0.2815
-14	-0.0824	-0.6272	0.0082	0.0236
-13	-0.0116	-0.0881	-0.0034	-0.0091
-12	0.1837	1.3990	0.1803	0.4578
-11	0.0240	0.1826	0.2043	0.4920
-10	0.0837	0.6373	0.2880	0.6613
-9	-0.0845	-0.6439	0.2034	0.4473
-8	-0.1129	-0.8595	0.0906	0.1913
-7	-0.0605	-0.4608	0.0301	0.0612
-6	-0.0222	-0.1690	0.0079	0.0155
-5	-0.2652	-2.0199*	-0.2573	-0.4900
-4	-0.0664	-0.5059	-0.3237	-0.5980
-3	-0.1723	-1.3121	-0.4960	-0.8904
-2	0.1597	1.2163	-0.3363	-0.5876
-1	0.4256	3.2414*	0.0893	0.1520
0	0.1054	0.8031	0.1947	0.3236
1	-0.1869	-1.4233	0.0078	0.0127
2	-0.0810	-0.6168	-0.0732	-0.1162
3	0.0382	0.2911	-0.0349	-0.0543
4	-0.2513	-1.9142	-0.2863	-0.4361
5	0.2005	1.5267	-0.0858	-0.1282
6	-0.0187	-0.1428	-0.1046	-0.1533
7	-0.0763	-0.5808	-0.1808	-0.2603
8	-0.2341	-1.7831	-0.4149	-0.5868
9	-0.0082	-0.0628	-0.4232	-0.5884
10	-0.0272	-0.2073	-0.4504	-0.6161
11	-0.0653	-0.4977	-0.5157	-0.6944
12	-0.0498	-0.3795	-0.5656	-0.7498
13	0.1219	0.9285	-0.4437	-0.5795
14	-0.1340	-1.0203	-0.5776	-0.7436
15	-0.0202	-0.1541	-0.5979	-0.7589
16	-0.0469	-0.3569	-0.6447	-0.8073
17	-0.1341	-1.0210	-0.7788	-0.9622
18	-0.1257	-0.9571	-0.9045	-1.1030
19	-0.0234	-0.1784	-0.9279	-1.1174
20	-0.0460	-0.3507	-0.9739	-1.1584

Table V.
Results of “aggregated
good news” sample
during the period
following trading
suspension

Note: *Significant at the 5 per cent level

and CAARs in “aggregated good news” sample of the “set A” are found to be negative during 70.73 and 63.41 per cent of days, respectively, in the event window. This seems that, for the “aggregated good news” sample the announcements have a negative impact on security prices, although it is not statistically significant.

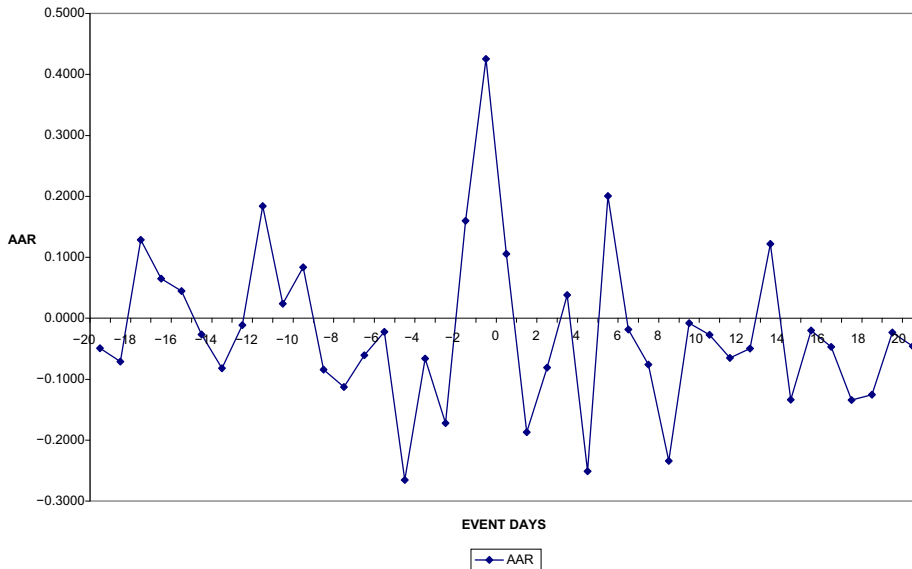


Figure 5.
CAAR of aggregated good
news sample post trading
suspension

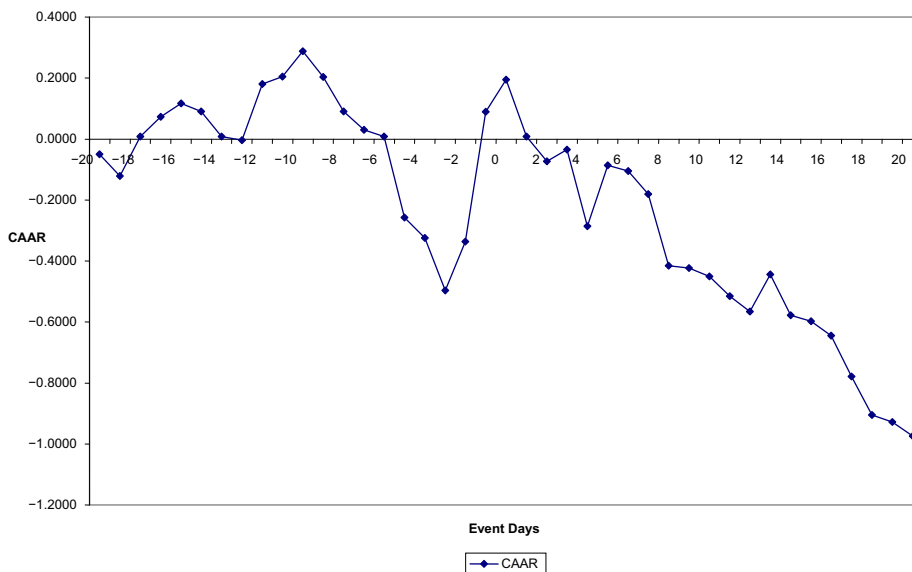


Figure 6.
CAAR of aggregated good
news sample post-trading
suspension

4.12 Sign test on AARs of “aggregated good news” sample during the period following trading suspension

Sign test on average abnormal returns of “aggregated good news” sample of “set A” reveals that the sign test values are significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative

average abnormal returns is rejected. It is observed that for the majority of days in the event window (70.73 per cent), AARs are negative. Gupta (2006) also gave evidence of the majority of negative AARs in “good news” sample. Existence of a large number of negative AARs reflect that “good earnings news” announcement does not lead to positive abnormal returns for the majority of event days in the event window. Hence, “good earnings news” announcement does not have positive impact on the firms’ share price (Table VI).

4.13 Analysis of “aggregated good news” sample during the period prior to trading suspension

The AARs and CAARs of the “aggregated good news” sample have been analyzed using the event study method, and the result of “aggregated good news” sample is presented in Table VII and is represented graphically in Figures 7 and 8.

4.14 Analysis of AAR

On the day of announcement of quarterly earnings results, the AAR is statistically insignificant at the 5 per cent level of significance. It is also observed that for the majority of events days in the event window, AAR is not significant. Hence, it cannot be deduced that quarterly earnings announcement have a significant effect on stock prices for “aggregated good news” sample during the period prior to trading suspension.

4.15 Analysis of CAAR

The CAARs, for all other event days in the event window barring the event day ($t = -15$), are also found to be insignificant at the 5 per cent level of significance. Graphical analysis of CAAR of the “aggregated good news” sample reveals that all the CAAR values are positive, but a continual upward drift of the CAAR is not observed during the event period. It seems that, for the “aggregated good news” sample, the announcements have positive but statistically insignificant impact on security prices.

4.16 Sign test on AARs of “aggregated good news” sample during the period prior to trading suspension

Table VIII provides the result of the sign test conducted on AARs of “aggregated good news” sample of “set B”.

Sign test on average abnormal returns of the “aggregated good news” sample of “set B” reveals that the sign test values are not significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative average abnormal returns is not rejected.

4.17 Analysis of “aggregated bad news” sample during the period following trading suspension

Like the analysis of “aggregated good news” sample undertaken in previous section, the result of “aggregated bad news” sample is presented in Table IX and is also reflected through appropriate graphs in Figures 9 and 10.

Table VI.
Sign test: average
abnormal return of
“aggregated good news”
sample following trading
suspension

Actual proportion of positive AARs	0.29
Z-value	-2.65*
Note: *Significant at the 5 per cent level	

4.18 Analysis of AAR

It is observed that on the day of the announcement, AAR is statistically significant at the 5 per cent level of significance and has the largest negative value among all the values of AAR in the event window. This reflects the effect of bad announcement on

Event days	AAR	Z (AAR)	CAAR	Z (CAAR)
-20	0.0996	0.7025	0.0996	0.7025
-19	0.1424	1.0046	0.2420	1.2071
-18	0.0606	0.4275	0.3026	1.2324
-17	0.1100	0.7759	0.4126	1.4553
-16	0.1988	1.4024	0.6114	1.9288
-15	0.1184	0.8355	0.7298	2.1018*
-14	-0.0287	-0.2028	0.7011	1.8693
-13	-0.2313	-1.6317	0.4698	1.1717
-12	0.1358	0.9583	0.6056	1.4241
-11	-0.0431	-0.3039	0.5626	1.2550
-10	-0.0869	-0.6128	0.4757	1.0118
-9	-0.1319	-0.9303	0.3438	0.7001
-8	0.1290	0.9103	0.4728	0.9252
-7	0.2162	1.5250	0.6890	1.2991
-6	-0.1932	-1.3630	0.4958	0.9031
-5	-0.0332	-0.2341	0.4626	0.8159
-4	0.1110	0.7832	0.5737	0.9815
-3	0.0798	0.5626	0.6534	1.0865
-2	0.0248	0.1751	0.6782	1.0976
-1	-0.0834	-0.5882	0.5948	0.9383
0	-0.2029	-1.4310	0.3920	0.6034
1	0.3714	2.6198*	0.7633	1.1481
2	-0.1042	-0.7348	0.6592	0.9696
3	-0.1795	-1.2661	0.4797	0.6908
4	0.1465	1.0333	0.6262	0.8835
5	0.4191	2.9563*	1.0453	1.4461
6	-0.0994	-0.7009	0.9459	1.2842
7	-0.0217	-0.1529	0.9242	1.2322
8	0.0471	0.3320	0.9713	1.2724
9	-0.2080	-1.4673	0.7633	0.9831
10	-0.0291	-0.2056	0.7342	0.9302
11	0.1215	0.8571	0.8557	1.0671
12	-0.2603	-1.8364	0.5953	0.7311
13	-0.0855	-0.6030	0.5099	0.6168
14	-0.0726	-0.5123	0.4372	0.5214
15	-0.0461	-0.3251	0.3911	0.4599
16	0.1776	1.2529	0.5688	0.6596
17	-0.2292	-1.6168	0.3396	0.3886
18	0.0649	0.4577	0.4044	0.4569
19	0.0615	0.4340	0.4660	0.5198
20	-0.1708	-1.2050	0.2952	0.3252

Note: *Significant at the 5 per cent level

Table VII.
Results of “aggregated
good news” sample
during the period prior to
trading suspension

Figure 7.
AAR of aggregated good news sample during the period prior to temporary suspension of trading

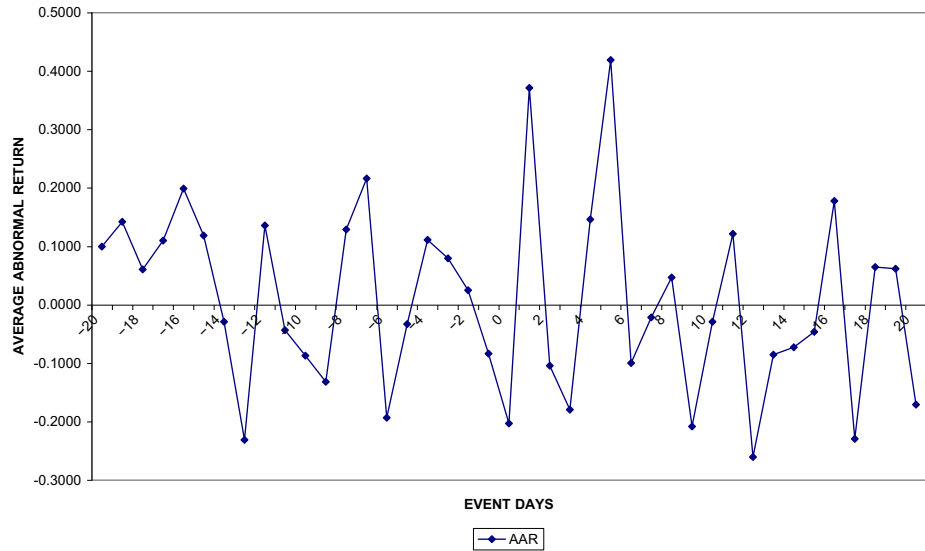
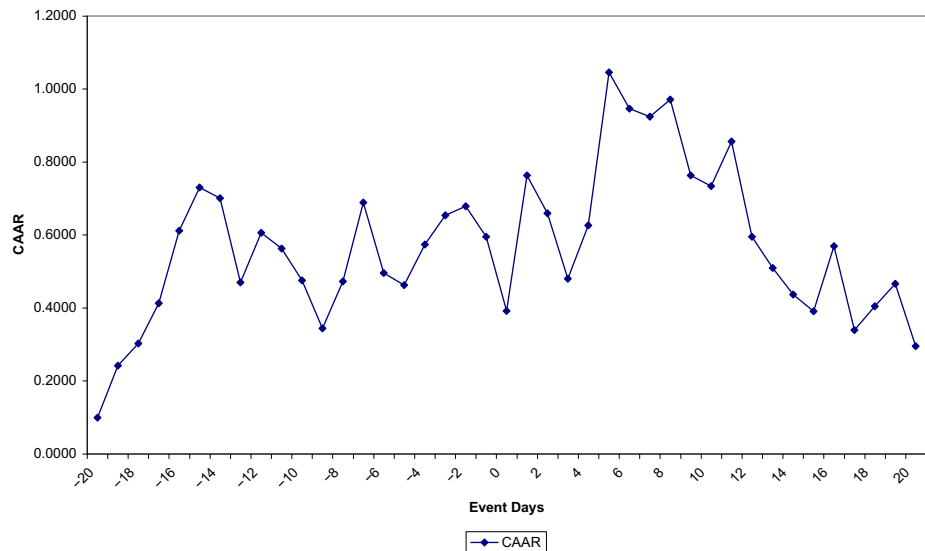


Figure 8.
CAAR of aggregated good news sample during the period prior to temporary suspension of trading



the security prices on the announcement date. Further, it is observed that on the day of announcement, the magnitude of abnormal return (ignoring the sign) of “aggregated bad news” firms is much higher than the magnitude of abnormal return of “aggregated good news” firms. Hence, it can be concluded that the share price reaction in case of “bad news” is much larger than the price reaction in case of “good news”. The result is consistent with other empirical studies carried out on the effect of earnings announcements on stock prices in the South African market

(Bhana, 1995) and in NIFTY representing the Indian market (Gupta, 2006). However, during the entire event window, the majority of AARs are not significant.

4.19 Analysis of CAAR

CAARs are negative and statistically insignificant for 68.29 per cent of days in the event window. This seems that, for the “aggregated bad news” sample, the announcements have a negative impact on security prices, although it is statistically insignificant.

4.20 Sign test on AARs of “aggregated bad” news sample during the period following trading suspension

According to Table X, the sign test on average abnormal returns of “aggregated bad news” sample of “set A” reveals that the sign test values are not significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative AARs is not rejected. It is observed that for the majority of days in the event window (51.22 per cent), AARs are positive. Iqbal and Mallikarjunappa (2007) also gave evidence of majority of positive AARs in bad news sample.

4.21 Analysis of “aggregated bad news” sample during the period prior to trading suspension

The result of event study analysis on “aggregated bad news” sample is presented in Table XI and is also reflected through appropriate graphs in Figures 11 and 12.

4.22 Analysis of AAR

It is found that on the day of the announcement, AAR is statistically insignificant at the 5 per cent level of significance. Contrary to the observation made for the sample of companies undertaken for the study of “set A”, it is observed that on the day of announcement, the magnitude of abnormal return (ignoring the sign) of “aggregated bad news” firms of “set B” is smaller than the magnitude of abnormal return of “aggregated good news” firm of the same set. Hence, it cannot be concluded that the share price reaction in case of “bad news” is larger than the price reaction in case of “good news”. During the entire event window, AARs are found to be insignificant for majority of days. It is obvious from the graphical analysis of AAR that the number of negative AARs in the pre-announcement period exceeds the number of

Table VIII.
Sign test: average
abnormal return of
“aggregated good news”
sample prior to trading
suspension

Actual proportion of positive AARs	0.49
Z-value	−0.16

Event days	AAR	Z (AAR)	CAAR	Z (CAAR)
-20	0.0455	0.2850	0.0455	0.2850
-19	0.2246	1.4074	0.2701	1.1967
-18	0.0561	0.3515	0.3262	1.1800
-17	-0.0611	-0.3826	0.2652	0.8306
-16	0.0091	0.0570	0.2743	0.7684
-15	0.0372	0.2329	0.3114	0.7965
-14	0.3034	1.9007	0.6148	1.4558
-13	-0.0240	-0.1501	0.5909	1.3087
-12	0.0878	0.5501	0.6787	1.4173
-11	-0.0385	-0.2411	0.6402	1.2683
-10	-0.2437	-1.5269	0.3965	0.7489
-9	0.0902	0.5649	0.4866	0.8801
-8	-0.3889	-2.4363*	0.0978	0.1699
-7	-0.3178	-1.9909*	-0.2200	-0.3684
-6	0.0121	0.0757	-0.2079	-0.3364
-5	-0.2947	-1.8460	-0.5026	-0.7872
-4	-0.1403	-0.8792	-0.6430	-0.9769
-3	-0.2412	-1.5114	-0.8842	-1.3056
-2	0.1376	0.8620	-0.7466	-1.0731
-1	-0.1615	-1.0120	-0.9082	-1.2722
0	-0.7149	-4.4788*	-1.6231	-2.2189*
1	-0.3397	-2.1282*	-1.9628	-2.6216*
2	0.3529	2.2112*	-1.6098	-2.1029*
3	-0.1716	-1.0751	-1.7814	-2.2781*
4	0.1517	0.9503	-1.6297	-2.0420*
5	0.0406	0.2541	-1.5892	-1.9525
6	0.1085	0.6795	-1.4807	-1.7853
7	-0.0315	-0.1972	-1.5122	-1.7904
8	0.1795	1.1243	-1.3327	-1.5504
9	-0.0646	-0.4048	-1.3974	-1.5983
10	0.0634	0.3969	-1.3340	-1.5010
11	0.2793	1.7499	-1.0547	-1.1681
12	-0.1901	-1.1908	-1.2448	-1.3575
13	-0.0518	-0.3244	-1.2965	-1.3930
14	-0.1424	-0.8922	-1.4390	-1.5238
15	0.0691	0.4331	-1.3698	-1.4303
16	0.1429	0.8950	-1.2270	-1.2637
17	0.1327	0.8313	-1.0943	-1.1121
18	-0.1330	-0.8334	-1.2273	-1.2312
19	-0.0894	-0.5601	-1.3167	-1.3043
20	0.3794	2.3770*	-0.9373	-0.9171

Table IX.
Results of “aggregated
bad news” sample during
the period following
trading suspension

Note: *Significant at 5 per cent level

such AARs in the post announcement term. In fact, AAR attains the most positive value at $t = 4$, although it is statistically insignificant. This gives an impression that bad earnings announcements have some positive effect on the stock return of the aggregated sample.

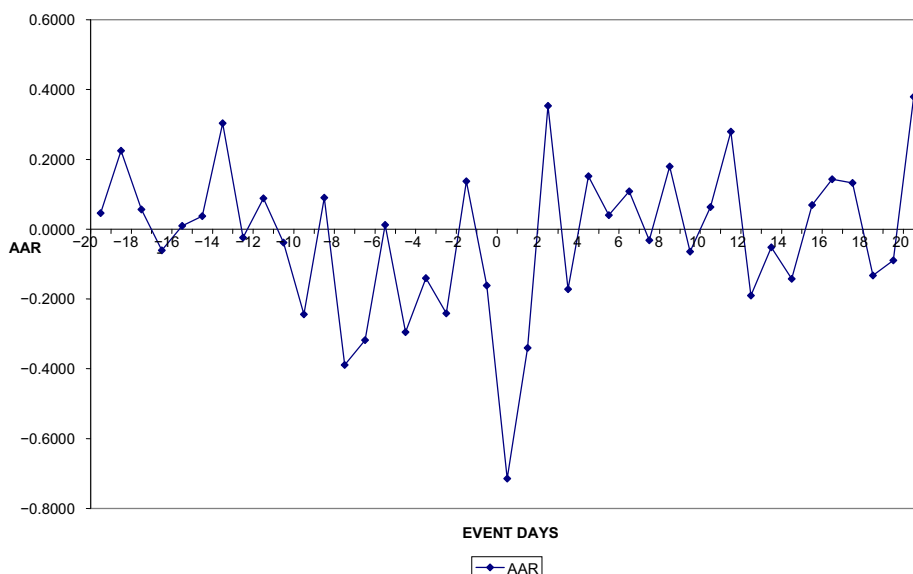


Figure 9.
AAR for aggregated bad
news sample post trading
suspension

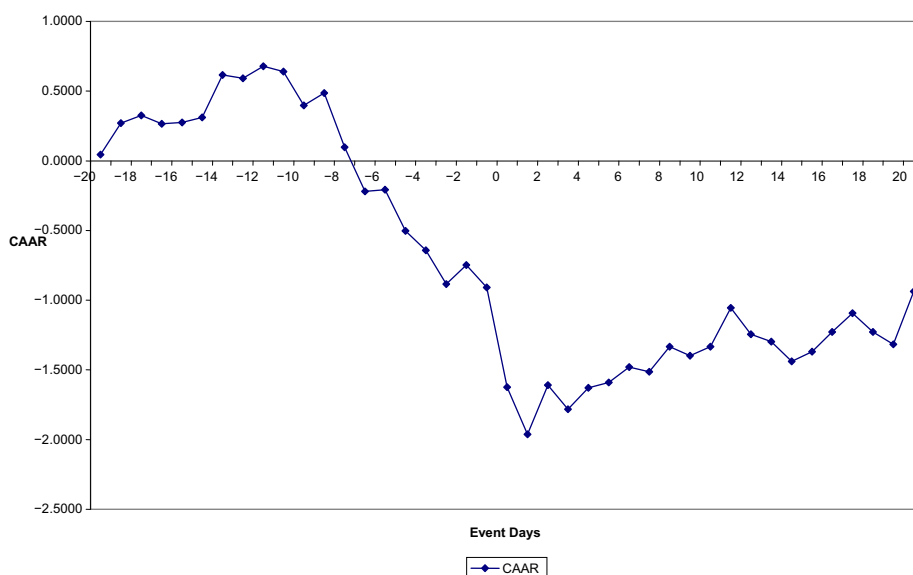


Figure 10.
CAAR of aggregated bad
news sample post trading
suspension

4.23 Analysis of CAAR

The CAARs during event days other than $t = 1$ and $t = 2$, are insignificant. From graphical analysis of CAAR, it is found that CAARs drift down during the event period $t = -20$ to $t = 2$ and attains the most negative value at $t = 2$. Subsequently, the CAAR shows upward drift from $t = 2$ to $t = 11$. However, all the CAARs are negative throughout the event window.

4.24 Sign test on AARs of “aggregated bad” news sample during the period prior to trading suspension

According to Table XII, the sign test on average abnormal returns of “aggregated bad news” sample of “set B” reveals that the sign test values are not significant at the 5 per cent level of significance. Hence, the null hypothesis that there is no significant difference in the number of positive and negative AARs is not rejected.

5. Conclusion

Quarterly earnings announcements do not lead to statistically significant average abnormal return for the majority of the days in the event window in case of “aggregated full” sample and “aggregated good news” sample and “aggregated bad news” sample. This observation is true during the booming as well as recessionary market conditions. The impact of quarterly earnings announcements on stock price movement of firms constituting SENSEX has been similar for both the periods.

6. Limitations of the study

The limitations of the present study are summarized as under:

- The announcements under study are classified as “good news” announcements and “bad news” announcements on the basis of simple expectation model which may not substantially reflect the interpretation of the investor regarding announcements.
- The movement of the price of the securities during the event window is influenced by factors other than quarterly earnings announcements.
- The study has been undertaken using only 30 most actively traded firms listed in BSE SENSEX on the basis of market capitalization. The effect of the quarterly earnings announcement with reference to firms listed in BSE-100, BSE-200, BSE-500, etc., if covered, may provide different sets of results.
- The quarterly earnings information announced with other corporate events has been excluded in the study.

7. Scope for further research

The limitations of the present study provide the genesis for undertaking further research in this area.

The present study examined the effect of quarterly earnings announcements of the companies constituting SENSEX. Future studies may be carried out to study the effect of quarterly earnings announcement with respect to companies listed in different indices.

Table X.
Sign test: average
abnormal return of
“aggregated bad news”
sample following trading
suspension

Actual proportion of positive AARs	0.51
Z-value	0.16

Event days	AAR	Z (AAR)	CAAR	Z (CAAR)
-20	-0.0153	-0.0891	-0.0153	-0.0891
-19	-0.0614	-0.3579	-0.0767	-0.3161
-18	-0.1037	-0.6044	-0.1803	-0.6071
-17	0.0204	0.1189	-0.1599	-0.4663
-16	0.0610	0.3556	-0.0990	-0.2580
-15	-0.0920	-0.5364	-0.1909	-0.4545
-14	-0.1900	-1.1078	-0.3809	-0.8395
-13	-0.0736	-0.4290	-0.4545	-0.9370
-12	-0.1061	-0.6184	-0.5606	-1.0895
-11	-0.0071	-0.0416	-0.5677	-1.0468
-10	-0.0077	-0.0451	-0.5754	-1.0117
-9	0.0834	0.4865	-0.4920	-0.8282
-8	-0.1711	-0.9974	-0.6631	-1.0723
-7	-0.1224	-0.7137	-0.7855	-1.2240
-6	0.1187	0.6922	-0.6668	-1.0038
-5	-0.2205	-1.2856	-0.8872	-1.2933
-4	-0.0771	-0.4496	-0.9643	-1.3638
-3	-0.0959	-0.5592	-1.0602	-1.4571
-2	0.0844	0.4922	-0.9758	-1.3053
-1	-0.2610	-1.5216	-1.2368	-1.6125
0	-0.1409	-0.8214	-1.3777	-1.7529
1	-0.3271	-1.9071	-1.7047	-2.1192*
2	-0.1176	-0.6857	-1.8223	-2.2156*
3	0.2164	1.2616	-1.6059	-1.9114
4	0.3486	2.0326*	-1.2574	-1.4663
5	0.2053	1.1969	-1.0521	-1.2031
6	0.1760	1.0262	-0.8761	-0.9831
7	0.1037	0.6046	-0.7724	-0.8511
8	0.1159	0.6758	-0.6565	-0.7108
9	-0.0596	-0.3477	-0.7161	-0.7624
10	0.2004	1.1687	-0.5157	-0.5401
11	0.0483	0.2819	-0.4673	-0.4817
12	-0.1216	-0.7092	-0.5890	-0.5978
13	-0.2450	-1.4288	-0.8340	-0.8340
14	-0.0457	-0.2667	-0.8798	-0.8671
15	0.3053	1.7802	-0.5744	-0.5582
16	-0.0310	-0.1807	-0.6054	-0.5804
17	0.0579	0.3374	-0.5476	-0.5179
18	-0.0562	-0.3276	-0.6037	-0.5637
19	-0.0594	-0.3461	-0.6631	-0.6113
20	-0.1276	-0.7438	-0.7907	-0.7200

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Table XI.
Results of “aggregated
bad news” sample during
the period prior to trading
suspension

Note: *Significant at the 5 per cent level

Figure 11.
AAR for aggregated bad news sample during the period prior to temporary suspension of trading

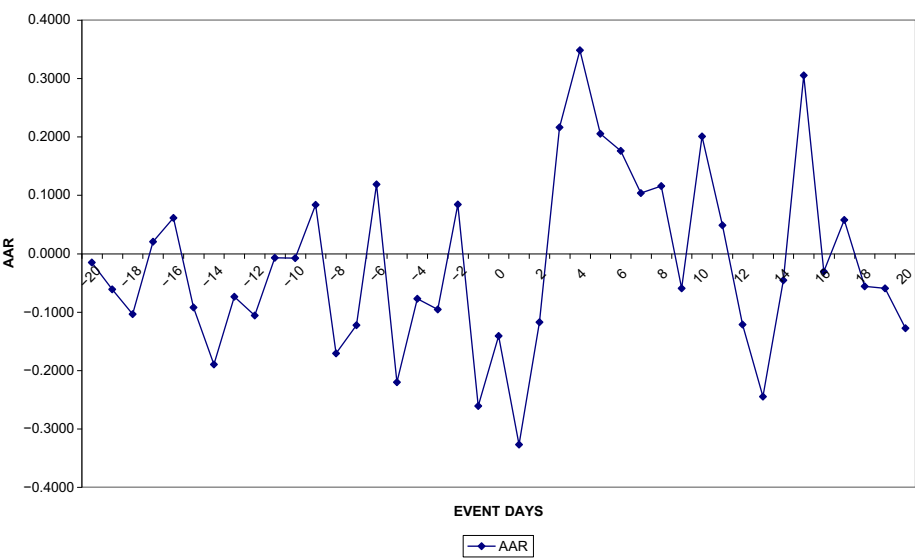


Figure 12.
CAAR of aggregated bad news sample during the period prior to temporary suspension of trading

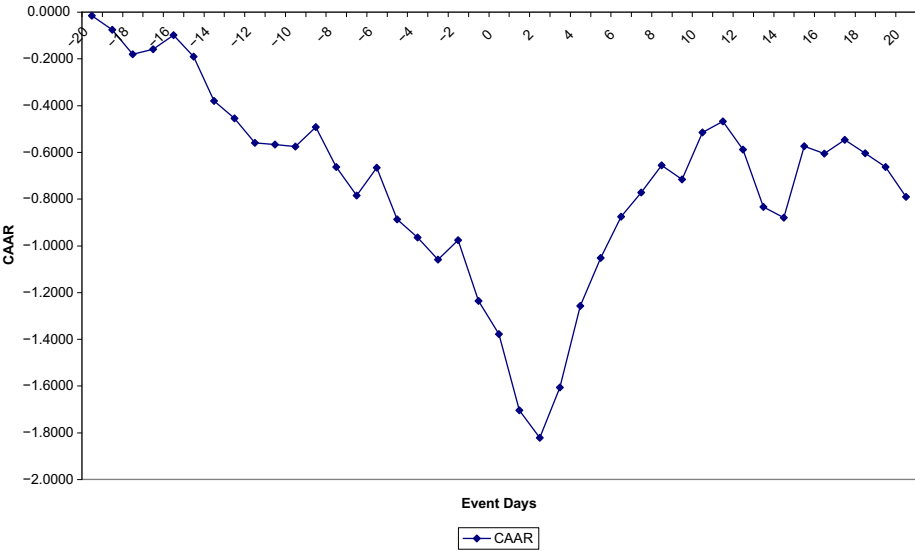


Table XII.
Sign test: average abnormal return of “aggregated bad news” sample prior to trading suspension

Actual proportion of positive AARs	0.63
Z-value	-1.72

The present study has adopted a simple expectation model as a proxy to capture the market expectation of earnings. Future study on how investors base their expectation of earnings with regard to various firms and how they perceive the earnings announcement as “good news” and “bad news” need to be studied in greater details.

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