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Rate of return and information asymmetry around multiple Restatement firms

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Abstract

In this paper we empirically examine the market reaction of multiple restatement announcements by exploring the various reaction dimensions in terms of short and long term market reactions as well as the market reaction by direction of restatement announcements. Our findings show that market does penalize the companies which make more than one restatement announcements. Further we look at pattern of information asymmetry in terms of spread behavior and find that spread widens before the restatement announcements.

Introduction:

The effective functioning of our capital markets is based on the timely and correct filing of financial reporting of publicly traded firms. Firms have to report their financial statements to the Securities Exchange Commission (and to the public) quarterly and as well as annually. When a firm announces financial restatement because of an accounting irregularity or misrepresentation, investors not only lose confidence but also change their future investments strategies. When a financial restatement is announced by a firm, it leads to a decrease in equity values thereby leading to a loss of investor's wealth (GAO, 2002). According to Levitt (2000), significant restatements of audited financial statements have resulted in losses to many investors due to a reduction in the market capitalizations. The empirical studies by Kinney and McDaniel (1989), Palmrose, Richardson and Scholz (2004), Dechow, Sloan and Sweeney (1996),report a negative market reaction of the restatement announcements. Sample used in previous studies have been very limited and results are mixed.

First comprehensive data on restatement announcements was published by GAO office which reports all the announcements between year 1997-2006. Both the reports yield information on 2705 restatement announcements for the period of 1997-2006. Out of 2705 restatement announcements, we find that 1680 announcements are single restatement announcements and 1025 are multiple restatement announcements. These 1025 announcements are reported by 441 companies. Past research adds all of them together and doesn't differentiate between single and multiple announcements. This is the first paper to study these multiple restatement firms' separately in terms of rate of return surrounding the announcement. We postulate that prior research overestimates/underestimate the abnormal return by not separating single restatement companies from multiple restatement companies. Further we study the multiple restatement announcements and its perceived resultant information asymmetry around the announcement day. We examine the pattern of information asymmetry for multiple restatement announcements in terms of bid-ask spread around the announcement day. Study of spread behavior around the corporate events has been performed in the past by Conrad and Niden (1992), Barclay and Smith (1988), Foster and Viswanathan (1994) and many others. Results from these prior studies show a mixed picture. While Conrad and Niden (1992) find weak evidence of spread widening around corporate information event, Barclay and Smith (1988) find an increase in spread during stock repurchases announcements. Palmrose, Richardson and Scholz (2004) do not find any significant proportionate change in bid-ask spread surrounding the financial restatement announcement day. Glosten and Milogrom (1985) report a widening of spread due to superior information of few traders with risk neutral market makers. They show that

under the asymmetric information hypothesis, the relatively well-informed firm trade against the relatively uninformed specialists, which increases the specialist's bid-ask spread. However, in case of restatement announcements, announcements usually come unexpectedly as there is no anticipation, except in cases of the routine restatement announcements like acquisitions and accounting rule changes. Since the available literature suggests that the "announcements" of whatever kind do affect the bid-ask spread, it is pertinent for us to investigate if there is any effect of restatements, either expected or unexpected, on the spread.

In this study, we examine the effect of announcement and its perceived resultant information asymmetry around the financial restatement announcement for the companies with multiple financial restatements during our sample period

When a company announces restatement for the first time, the market reacts with economically and statistically significant negative returns. However, if the market doesn't penalize these companies, then there is no need for managers of multiple restatement companies to worry as there is no penalty for making the repetitive mistakes in terms of financial restatement announcements. Furthermore, the published empirical studies report that the overall effect of restatement results in negative cumulative abnormal return, there must at least a few companies that will show just the opposite trend, that is, positive cumulative abnormal return. Thus, another purpose of this study is to separate the companies in terms of positive versus negative effect of announcement. In other words we examine the market reaction of restatement announcements by the direction of cumulative abnormal return. In the absence of any management prerogative or study providing the effect on the level and direction of the firm's performance due to

restatement, we depend on the sign of cumulative abnormal return during the three-day window of -1 to +1.[1] Furthermore to explore the long term performance of these multiple restatement companies, we also examine the post announcement long term performance for 365 days after the announcement. Assuming that the market is efficient at least in the semi-strong form there shouldn't be any stock price drift for the multiple restatement companies in the long term.

Data and Methodology:

We obtain all the restatement announcements from GAO report published in 2003 and 2006. The GAO database focuses on financial restatements announcements due to accounting irregularities and excludes all restatement announcements due to regulatory changes like mergers and acquisitions, regulatory accounting policy change etc. The majority of the database is compiled using the Lexis-Nexis "Power Search" command and the "U.S. News, Combined" database, with the keyword of "restate", "restated", "restating" or "restatement" within 50 words of "financial statement" or "earnings". For each restatement announced, the database provides information on the date of the announcement, the reasons for the restatement, and the party who initiated the restatement. Database also provides the information regarding the prompters of restatement as well as reasons for restatement. We select all the companies that have

[1] For example, Ikenbery and Ramnath (2002) study the stock split announcements and find that in case of stock split, management does have discretion in determining the timing of corporate news announcement and good news(bad news) are met with positive(negative) market reaction in short term and positive abnormal drift (negative abnormal drift) in long term. In case of restatement there is not much management discretion is available and generally it is externally initiated.

made more than one restatement announcements during the period 1997-2006. We consider the first restatement announcement made by these multiple announcement firms which yields us 441 observations to perform our study. Due to limited availability of data, it is difficult to find the nature of restatements (upward and downward). We will depend on the sign of cumulative abnormal returns around the event date to find whether the restatement announcement had an upward or downward effect. First we use event study methodology with the announcement date being the restatement announcement day. The event study is performed as follows:

For each announcement date, we compute the abnormal returns using the market model. where the market model is defined as:

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

where R_{it} and R_{mt} are respectively the rates of return of the i^{th} stock and the value weighted market index on day *t*. The error tem ε_{it} is assumed to be uncorrelated random variable with expected value equals to zero and constant variance.

The abnormal return for stock *i* on day *t* is calculated as:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

where R_{mt} is the return on the value weighted index, AR_{it} is the abnormal return of firm i for day t. $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least squares estimates of α_i and β_i, the regression parameters. The estimate of the parameters of market model $\hat{\alpha}_i$ *and* $\hat{\beta}_i$ is obtained from market model regression for -245 days prior to the event window. Event window is defined as 30 days before and after the event date.

After computing the abnormal return we compute the cumulative abnormal return around the announcement return as:

$$CAR_{i(\tau,\nu)} = \sum_{e=\tau}^{\nu} AR_{it}$$

where τ,ν are the beginning and ending date of the event window respectively.

Mean cumulative abnormal return (MCAR) is computed as:

$$MCAR_{\tau,\nu} = \frac{1}{n}\sum_{i=1}^{n} CAR_{i,(\tau,\nu)}$$

where n is the number of stocks in our sample. Further to find significance of mean cumulative abnormal return, we use parametric as well as non-parametric tests. For parametric test we use the Patell's Z-statistic.

For information asymmetry we further obtain the intraday quote data from NYSE TAQ .Daily spread is calculated from intraday spread data as the average of spread for every quote reported during the days for each company. The intraday bid and ask values that are negative or equal to zero from is removed from our usable data. Furthermore, we also remove all the intraday quote data after the trading hours (after 4.00 P.M). We delete all those companies from our sample that do not have complete data set, that is, 31 days of spread data (event announcement day, 15 days before and 15 days after the announcement). All these filtering processes yield us samples of 311companies.We use the techniques proposed by Chung and Charoenwong (1998) for the calculation of spread beahaviour. This procedure assumes a naïve stochastic process for the inter temporal behavior of spreads as

$$SPREAD_{i,t} = \mu_i + \varepsilon_{i,t} \qquad (1)$$

where $E(\varepsilon_{i,t}) = 0$ and $COV(\varepsilon_{i,t}, \varepsilon_{i,t-1}) = 0$ for all i and t.

The serially uncorrelated random stochastic term ε_{it} represents the abnormal component of spread and μ_i is the *ex ante* expected spread measured from the estimation period. The abnormal component of spread around the restatement announcement date is measured by subtracting an estimate of μ_i from the spread on and around the event day. We take the standard definition of the relative spread as follows.

$$SP_{it} = \frac{AP_{it} - BP_{it}}{(1/2)(AP_{it} + BP_{it})} \qquad (2)$$

where AP_{it} and BP_{it} are respectively ask and bid prices of stock i at time t

The standardized abnormal spread of stock i on day t is calculated using the following formula:

$$SAS_{i,t} = \frac{(spread - \bar{x}_i)}{s_i} \qquad (3)$$

where s_i and $\bar{x}_i$ are respectively the sample standard deviation and the sample mean of spread of stock i in the estimation period. The average abnormal spread on day t is calculated by averaging the standardized abnormal spread across all securities. Thus, $AAS_t = \sum_i SAS_{it} / N$, where N is the number of securities on that particular event day.

Following the conventional event study methodology, we compute CASs (cumulative average spreads) by summing the average abnormal spread across time. Thus, $CAS_\tau = \sum_\tau AAS_t$ where $\sum_\tau$ stands for summation over t $= \nu$ through τ. τ and ν are ending and beginning day of CAS calculation.

Obviously the standardized SAS_{it} will have a probability distribution with mean zero and variance 1. Defining average abnormal spread as $AAS_t = \sum_i SAS_{it} / N$, then by Central Limit theorem the statistic Z defined as $\frac{AAS_t}{1/\sqrt{N}} or AAS_t.\sqrt{N}$ will follow a standard normal distribution. We calculate the significance of cumulative abnormal spread suggested by Chung and Charoenwong (1998) in their paper as:

$$Z_t = \frac{CAS_\tau}{\sqrt{(\tau - \nu + 1)}}\sqrt{N}$$

where N is number of stocks in the event sample, τ is the ending day for cumulative abnormal spread event window and ν is the beginning day for cumulative abnormal spread event window. For each firm we use a spread of 15 days before and 15 days after restatement announcement. Our estimation period is t = -15 to –6 and 6 to 15 with t = 0 is the day of the event. The event period is a total of ten days surrounding the event, i.e., t = -5 to 5. We calculate the cumulative abnormal spread and its significance for different event windows to see the pattern of information asymmetry on the aggregate basis for all the event announcements samples separately.

Results and analysis:

First we investigate the effects of multiple restatement announcements on a short term basis. For the short term market reaction of multiple restatement announcements, we choose three different windows as (-1, 0), (-1, +1), (0, 0).

Table 1, we present the mean cumulative abnormal return and Patell Z statistics along with p-values for our restatement announcement. For three days window of (-1, +1), we find that when firms make the first announcement, the market penalizes the

companies with statistically significant negative return of -5.88%. Our results from other windows also confirm our findings that market does penalize restatement announcements. In figure 1, we graph average abnormal and cumulative abnormal returns for our event sample against days. This figure shows the pattern of average abnormal as well as cumulative abnormal returns over a period of 60 days. Looking at the figure we find that from day -30 to -10, the graph of cumulative abnormal return is declining but at a slower pace. From day -10 to -2 it starts declining at a higher rate and there is a large drop from day -2 to +2 days. After day + 2, a cumulative abnormal returns remains highly negative but do not show any further decline or sign of improvement in positive direction. We find that on the event day (0, 0) cumulative mean abnormal return decreases as the firms go for more restatement announcements. For the window (-1, +1) we find the same results.

Further, we divide our samples by the direction of restatement. As the data for direction (upward revision/downward revision) of restatement announcements is not available, we depend on the sign of cumulative abnormal return from day -1 to day +1. When the cumulative abnormal return is negative, we recognize them as downward (negative) restatement announcement and when the sign is positive, we recognize as upward (positive) restatements. In table 2, we present the results for restatement announcements for negative and positive direction. Our findings show that on the event day mean cumulative abnormal return is significant across all the announcement samples from -4.30% for event day which increases to -11.17% for 3 days window surrounding the event. Looking at all positive restatement announcement sample we find that on the event day mean cumulative abnormal return is 2.08% and goes up to 5.4% for 3 days

window surrounding the event date. Overall we see that 260 events have negative and 122 events have a positive return meaning all the restatement announcements are not bad.

Further, we investigate our samples for long term performance. We feel motivated to see the pattern of abnormal return over the time horizon of 360 days after the announcement day. Table 3 presents the result for long term study for multiple restatement announcements .We select six different windows (0, +30) (0, +60) (0, +90) (0, +180) (0, +240) (0, +360) to find if there is any pattern in the mean cumulative abnormal return. For the first announcement, we find that the mean cumulative abnormal return remains negative and significant for 90 days after the announcement. For the window (0, +90) we find a negative mean cumulative abnormal return of -2.42% which is significant at 5% level. After 90 days abnormal return becomes positive and market doesn't penalize these companies if another announcement comes after 90 days.

After performing the event study in terms of rate of return we perform analysis of spread behavior surrounding the event. Table 4 presents the descriptive statistics of standardized abnormal spread for the announcement sample for the event day as well as five days before and after the event announcement day. For 311 firms we find that mean of standardized abnormal spread is positive for all days except 5 days after the event. We find that mean and standard deviation of standardized abnormal spread is wider on days -1 to +1 including the event day.

After the descriptive statistics we compute the average abnormal spread, cumulative abnormal spread and Z statistics for average abnormal spread for event day and 10 days surrounding the event day. Table 5 presents the results for the average abnormal spreads, cumulative abnormal spreads and Z statistics for average abnormal

spread for first restatement announcement sample. In Figure 2, we graph the average abnormal spread and cumulative abnormal spread against the event and 10 days surrounding the event day. From the graph we can infer that there is a sharp rise in average abnormal spread from day -1 to 0 and sharp decline for windows (0,1), (1,2), (2,3). After day +4 average abnormal spread becomes negative from positive values. In examining table 5, the obtained values of average abnormal spreads, we find that average abnormal spread is significant from day -2 to -1 at 10% significance level (Z value 1.711 and 1.856 respectively) and becomes highly significant for event day and the following day at 1% significance level (Z values 6.44 for event day and 5.432 for day +1). Thus, on the basis of our results we find an element of informed trading on the event day, before the event day and a day after the event day.

Conclusion:

We empirically examine the market reaction of multiple restatement announcements by companies by grouping them on the basis of number of restatement announcements. We explore various reaction dimensions in terms of short and long term market reactions as well as the market reaction by direction of restatement announcements. Our results show that in the short term, market does penalize the companies which make more than one restatement announcements. Further, result for the long term show that market has a short memory and companies are not penalized for their repetitive mistakes in the form of multiple restatement announcements in the long term as well and after 90 days period, most of the companies start making positive profit.

Our results regarding pattern of information asymmetry clearly show that spread widens before the restatement announcements. Our findings are in line with previous

findings in literature (Barclay and Smith (1991), Foster and Viswnathan (1991) showing the widening of spread around information events announcements.

References:

Barclay,M., and C.Smith,1988,Corporate Payout Policy: Cash Dividends versus Open Market Repurchases, Journal of Financial Economics 22,61-82

Chung., K. H., and Charoenwong.,1998.Insider Trading and the Bid-Ask Spread, The Financial Review 33(1998) 1-20

Conrad,J., and C.Niden ,1992 ,Order flow, Trading costs and Corporate Acquisition Announcements, Financial Management 21,22-31

Dechow, P.M , R.G Sloan and, A.P Sweeney 1996.Causes and Consequences of earnings manipulations: An Analysis of firms subject to enforcement actions by SEC. Contemporary Accounting Research(Spring);1-36

Foster, F.D., and S. Viswanathan , 1994, Trading Costs for Target Firms Around Takeovers, Advances in Financial Economics , 1, 37-57.

GAO report 2006, "Financial Restatements: Update of Public Company Trends, Market Impacts, and Regulatory Enforcement Activities

GAO report 03-138, 2002,"Financial Statement Restatements: Trends, Market Impacts, Regulatory Responses and Remaining Challenges"

Glosten L and P.Milgrom,1985, Bid-ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders, Journal of Financial Economics 9,265-69

Ikenberry, D.L., and S.Ramnath, 2002. Under-reaction to self-selected news events: The case of Stock Splits, The Review of Financial Studies 15, 489-526

Kinney W.R., and L.S. McDaniel.1989.Charactersistics of firms correcting previously reported quarterly earnings, Journal of Accounting and Economics 11(71-93)

Levitt, A. 2000. Renewing the Covenant with Investors. Speech at New York university Center for Law and Business (From SEC website)

Palmrose., Z.VVernon J.Richardson, and Susan Scholz. 2004. Determinants of Market Reaction to Restatement Announcements. Journal of Accounting and Economics 37 (January), 59-89

Patell,J.M.,1976. Corporate Forecasts for Earnings Per Share and Stock Price Behavior :Empirical Tests., Journal of Accounting Research 14,246-276

Table 1: Abnormal return surrounding restatement announcements

This table shows the mean cumulative abnormal return and Patell Z statistics for all the multiple restatement companies when they make their first announcement. Mean cumulative abnormal return (MCAR) is computed as $MCAR_{\tau,\nu} = \frac{1}{n}\sum_{i=1}^{n} CAR_{i,(\tau,\nu)}$ .Where $CAR_{i(\tau,\nu)} = \sum_{e=\tau}^{\nu} AR_{it}$ and τ,ν are the beginning and ending date of the event window respectively.

Event Window	Number of firms	Mean cumulative abnormal return	Patell Z statistics	p-value
(-1,0)	382	-2.66%	-12.056	<.0001
(-1,+1)	382	-5.88%	-19.668	<.0001
(0,0)	380	-2.25%	-14.656	<.0001

Table 2: Abnormal return surrounding restatement announcements for negative/positive direction

This table shows the mean cumulative abnormal return and Patell Z statistics for all the restatement announcements for negative/positive direction .Negative/positive direction is decided on the basis of -1 to +1 days cumulative abnormal return. When CAR for -1 to +1 days is negative, restatement is considered negative direction and vice versa. Mean cumulative abnormal return (MCAR) is computed as $MCAR_{\tau,\nu} = \frac{1}{n}\sum_{i=1}^{n} CAR_{i,(\tau,\nu)}$ .Where $CAR_{i(\tau,\nu)} = \sum_{e=\tau}^{\nu} AR_{it}$ and τ,ν are the beginning and ending date of the event window respectively.

Event Window	Number of firms	Mean cumulative abnormal return	Patell Z statistics	p-value
Negative direction				
(-1,0)	260	-5.61%	-20.009	<.0001
(-1,+1)	260	-11.17%	-30.846	<.0001
(0,0)	258	-4.30%	-22.356	<.0001
Positive direction				
(-1,0)	122	3.61%	7.821	<.0001
(-1,+1)	122	5.40%	10.235	<.0001
(0,0)	122	2.08%	6.588	<.0001

Table 3: Announcements and long term performance

This table shows the mean cumulative abnormal return and Patell Z for all the multiple restatement announcement companies in the long term. Mean cumulative abnormal return (MCAR) is computed as $MCAR_{\tau,\nu} = \frac{1}{n}\sum_{i=1}^{n} CAR_{i,(\tau,\nu)}$ .Where $CAR_{i(\tau,\nu)} = \sum_{e=\tau}^{\nu} AR_{it}$ and τ,ν are the beginning and ending date of the event window respectively.

Event Window	Number of firms	Mean cumulative abnormal return	Patell Z statistics	p-value
(0,+30)	381	-3.72%	-4.349	<.0001
(0,+60)	381	-3.76%	-3.236	0.0012
(0,+90)	382	-2.42%	-1.976	0.0482
(0,+180)	382	0.32%	-1.889	0.0589
(0,+240)	382	5.33%	0.273	0.7846
(0,+360)	382	15.79%	3.499	0.0005

Table 4: Descriptive statistics for standardized spread and two sample t-test for the restatement announcement sample

This table provides the basic descriptive statistics of the standardized abnormal spread for the complete event period for standardized spread before and after the event announcement day. The standardized abnormal spread of stock i on day t is calculated using the following formula $SAS_{i,t} = \frac{(spread - \bar{x}_i)}{s_i}$ where s_i is the sample standard deviation and $\bar{x}_i$ is the sample mean of spread of stock i in the estimation period.

Days	N	Mean	Standard Deviation	25 th percentile	Median	75 th percentile	Minimum	Maximum
-5	311	0.070	1.047	-0.607	-0.185	0.695	-2.011	4.287
-4	311	0.055	1.049	-0.642	-0.122	0.664	-4.065	6.098
-3	311	0.064	1.037	-0.649	-0.111	0.614	-2.354	4.356
-2	311	0.097	1.336	-0.697	-0.071	0.635	-2.528	12.130
-1	311	0.105	1.714	-0.672	-0.214	0.593	-3.642	21.268
0	311	0.365	2.049	-0.637	-0.074	0.893	-8.101	21.751
1	311	0.308	2.386	-0.660	-0.082	0.896	-7.672	29.582
2	311	0.071	1.152	-0.696	-0.170	0.593	-2.970	5.544
3	311	0.017	1.059	-0.693	-0.170	0.594	-2.027	4.686
4	311	0.018	0.965	-0.604	-0.188	0.537	-2.709	3.531
5	311	-0.090	1.126	-0.733	-0.209	0.520	-10.042	3.640

Table 5: Average abnormal spread (AAS), cumulative average spread (CAS), and Z- statistics

In this table, we present the average abnormal spread ($AAS_t = \sum_i SAS_{it} / N$ where SAS_{it} is the standardized abnormal spread of stock i on day t and N is the number of securities on that particular event day), the cumulative average spreads ($CAS_t = \sum_t AAS_t$ where $\sum_t$ stands for summation over t = ν through τ), and the Z-statistics ($\frac{AAS_t}{1/\sqrt{N}}$ $or AAS_t . \sqrt{N}$)for first event announcement sample. These values are presented for the whole event period (i.e., t = -5 to 5).

Days relative to first announcement Event Dates	Average Abnormal Spread (AAS)	Cumulative Average Spread (CAS)	Z = AAS*sqrt(N)
-5	0.070	0.070	1.235
-4	0.055	0.125	0.969
-3	0.064	0.189	1.126
-2	0.097	0.286	1.711*
-1	0.105	0.391	1.856*
0	0.365	0.756	6.444***
1	0.308	1.064	5.432***
2	0.071	1.136	1.260
3	0.017	1.153	0.298
4	0.018	1.170	0.312
5	-0.090	1.081	-1.585

Figure 1: Event average abnormal return and cumulative abnormal return.

This figure shows the average abnormal return and cumulative abnormal return for the event sample. Blue (solid) line represents the average abnormal return and broken line represents the cumulative abnormal return.

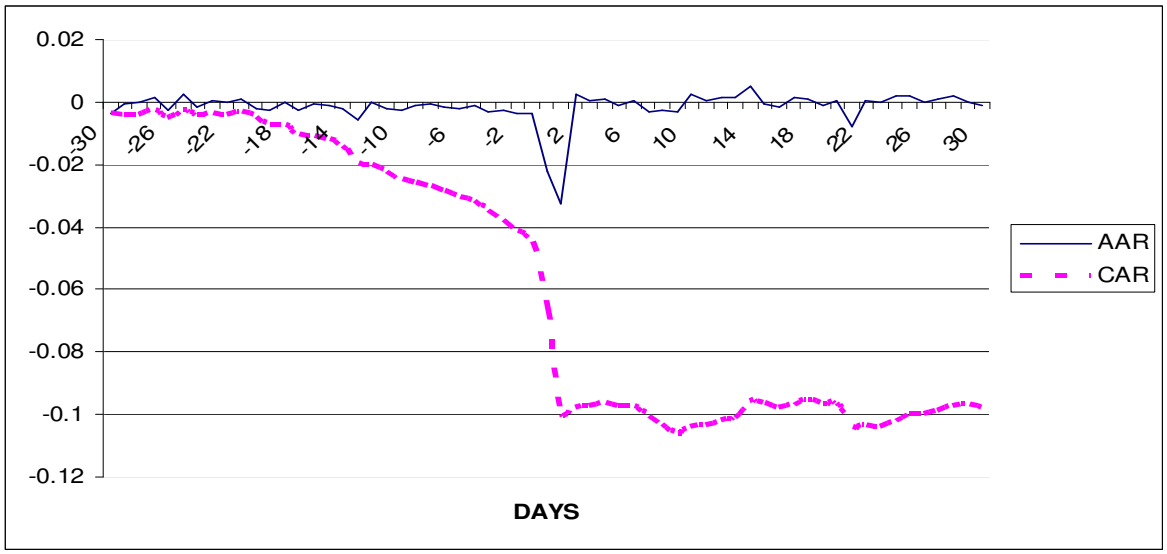

FIGURE 2: Average abnormal spread and cumulative abnormal spread around restatement announcements

This figure presents Average abnormal spread and cumulative abnormal spread around Restatement Announcements from day -5 to day 5.