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Changes in Market Responses to Financial Statement Restatement Announcements in the Sarbanes–Oxley Era.*

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Abstract

We examine changes in the market's response to financial statement restatement announcements during the Sarbanes–Oxley (SOX) era. We define this era as beginning with the U.S. Department of Justice initiation of a criminal investigation into the collapse of Enron, and its attendant loss of billions of dollars of shareholder value, through the November 15, 2004, requirement that all U.S. companies with market capitalizations over $75 million must comply with SOX Section 404, which deals with corporate internal controls over financial reporting We divided the Sarbanes-Oxley era into pre- and post-SOX periods, with the dividing line concurrent with the signing of the Sarbanes-Oxley Act into law on July 30, 2002. The comparison of pre- and post-SOX periods shows that post-SOX, the negative impact on companies announcing restatements is reduced 71 percent on average (as measured by the cumulative abnormal return on days 0 and +1) and the positive market response to announced restatements is reduced by 33 percent. This translates into a net reduction in lost market value of $207 million per restatement announcement or $74.4 billion in total market value for the two-day announcement event window. We also find that this reduction is not due to the diluting effects of the increased number of statistically insignificant post-SOX market reactions to restatement announcements. Finally, our results indicate that after SOX became law, post-announcement abnormal returns exhibit statistically significant lower volatility and the trend in statistically insignificant market responses to restatement announcements no longer declines, thus indicating less uncertainty on the part of investors regarding the announcements of restating companies, and perhaps because investors believe the disclosed information conveyed by the restated financials is timelier and of higher quality.

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I. Introduction

Confidence in the financial reporting of publicly-listed companies began to unravel with the announcement of the U.S. Department of Justice initiation of a criminal investigation into the collapse of Enron and its attendant loss of billions of dollars of shareholder value. After the Enron debacle, skepticism was further increased by a string of accounting scandals and restatements issued by companies such as WorldCom, Tyco, Global Crossings, and Qwest. As investors questioned the soundness of financial reporting, accounting and auditing, Congress initiated a wave of political and legislative responses in early 2002 aimed at reforming supervision and disclosure among public companies. The culmination of these events led to the Sarbanes-Oxley Act of 2002 (SOX), which was signed into law July 30, 2002.

This study examines the change in the market response to restatement announcements as a result of the spate of accounting scandals, SOX and other related events. While it is well documented that the number of announced restatements increased dramatically since SOX[1], their impact on market value remains to be determined, as does the impact on market efficiency and investor confidence. Announced restatements per se are not necessarily bad if they restore confidence in reported financial numbers and result in the financial information being more efficiently incorporated into share prices. By measuring the impact of restatement announcements on the share price of companies who have announced their intent to restate pre- and post-SOX, it is possible to quantify changes in investor reaction to such announcements and thus determine if investors react differently

[1] A Closer Look at Financial Statement Restatements: Analyzing the Reasons Behind the Trend, Lynn Turner and Thomas Weirich. (2006)

in an era of increased accountability for financial reporting and new oversight of the auditing profession.

We quantify market responses after separating stock price reactions, as measured by abnormal returns (as defined below), into 3 categories: statistically insignificant, statistically significant positive and statistically significant negative. In doing so, we find that the negative impact on the stock prices of companies announcing restatements post SOX is reduced 71 percent on average (as measured by the cumulative abnormal return on days 0 and +1) while the positive market response to favorable announcements is reduced 33 percent. This translates into the net reduction in lost market value of $207 million per announcement or $74.4 billion in total market cap for the two-day event windows of the restatement announcements. This reduction is not the result of the dilution of the large magnitude of the market reactions associated with many restatement announcements post-SOX. Additionally, there appears to be less uncertainty in the post-announcement period market prices after SOX compared to before SOX. This is based on the observation that post-SOX, the post-announcement abnormal returns exhibit remarkable stability (lower variance) compared to pre-SOX and that statistically insignificant market responses to restatement announcements are no longer trending downward.

In addition to examining the impact of SOX and other major accounting events on market responses to restatement announcements, this study expands upon previous research on the market effects of financial restatements in three areas. First, using a comprehensive restatement database consisting of companies listed on the NYSE and Nasdaq stock exchanges and controlling for clustered observations, we are able to provide more robust estimates of market reactions to restatement announcements. Second, we find that more

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than a third of all restatement announcements evoke a positive market reaction and that, therefore, there is value in performing separate analyses of positive and negative reactions. Third, we highlight the differences between market reactions that were statistically significant, and those that were statistically insignificant.

Like Palmrose et al. (2004) we find that during the period 1998 to 2005 no evidence of significant leakage of information occurs prior to the announcement day and only days 0 and +1 exhibit significant abnormal returns (ARs). We calculate the average two-day cumulative abnormal return (CAR) for days (0, +1) at -5.4 percent for all restatements in this period. However, separating announcements with a negative market response from those with a positive market response reveals that the decrease in the average abnormal return for negative market responses is approximately double the size of the average abnormal return increase, with two-day cumulative abnormal returns of -12.2 percent for negative restatements and +4.8 percent for positive restatements (both statistically significant). Not surprisingly, the size of average abnormal return nearly triples when statistically insignificant market reactions to announcements are excluded; the two-day CAR jumps to -18.6 percent for all restatements combined, -32.8 percent for negative reactions, and to +14.0 percent for positive reactions.

This paper is organized as follows. Section II provides background on announced restatements, the studied accounting events, and previous research. Section III describes the data and methodology employed in this study. Section IV discusses the results, and Section V concludes.

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II. Restatements, Accounting Events, and Related Studies

We define a 'restatement announcement' as the first public announcement, publication date, or filing date, that either: 1) captures a restatement, 2) reveals and intent to restate, 3) discusses a "concern" that correlates to a subsequent restatement announcement. The number of announced restatements due to accounting errors has increased dramatically in recent years[2]. We can observe a relatively steady increase starting in the 80s and 90s; however, the growth accelerated significantly in 1998 and thereafter. This time period includes major instances of accounting manipulations and fraud that when uncovered, resulted in large restatements and significant loss of market capital. Some of these included scandals such as Enron, WorldCom, and Tyco, which eventually led to the passage of the Sarbanes Oxley Act.

In this paper, we investigate whether a change occurred in the market response to restatement announcements over the course of these events and, if so, what implications does this have on market value, market efficiency, and price volatility. We did not seek to determine whether, or to what extent, SOX caused a change in market reaction to restatement-related announcements or whether the enactment of SOX merely coincided with other changes in disclosure practices that affected market reaction to restatement-related announcements. We are aware of no research to date, that has measured the effect these aforementioned events had on the response of investors to the announcement of restatements.

We select three distinct events around which we measure changes in market responses to restatement announcements. They include the Justice Department's January

[2] See "A Closer Look at Financial Statement Restatements: Analyzing the Reasons Behind the Trend." By Lynn E. Turner and Thomas Weirich. December 2006 CPA Journal.

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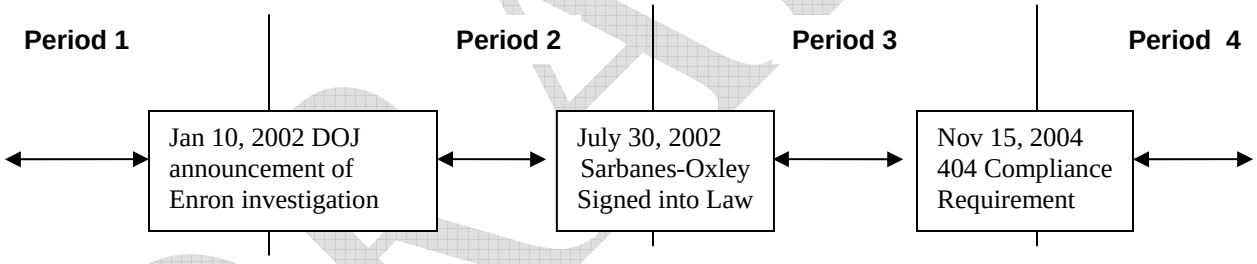
10th, 2002 confirmation that a criminal investigation into the collapse of Enron had been initiated, signing of the SOX into law by President Bush on July 30th 2002, and the requirement that all U.S. companies with market capitalization over $75 million[3] must comply with SOX 404 for their first fiscal year ending on or after November 15, 2004. We hypothesize that auditors, companies, and investors changed their behavior as each of these events unfolded. By separating our event study into four distinct periods (see Figure 1) we can capture the market response incrementally, thus avoiding any over- or under-statement of the impact by assuming that the impact of the legislation could be measured around a single event (the signing of SOX into law on July 30, 2002).

Figure 1 Events Study Period Segmentation



Previous research has focused on the effects that restatements have on the abnormal returns of restating companies. Min Wu (2002) finds a strong, negative short-term market reaction to restatement announcements and calculates a cumulative abnormal return of -11.16 percent over a three-day period (-1, 0, +1) surrounding the restatement announcement; with the largest losses among companies with changes in revenue, and those with fraudulent accounting practices. A similar study conducted by the Government Accountability Office (GAO) in 2002 calculates three-day cumulative abnormal returns for

[3] SOX does not make the distinction of this applying to only companies with over $75 million in market capitalization; rather, the SEC has given non-accelerated filers compliance extensions.

restating firms in January 1997 to June 2002 to be -10 percent. Palmrose, Richardson, and Scholz (2004) find that although the stock prices drift down long before the restatement disclosure and continue drifting days after (-120, +120 days), the significant price drop occurs on days 0 and +1. They estimate the average two-day cumulative abnormal return at -9.2 percent (median at -4.6 percent). However, one study using larger event windows encompassing days (-3, +3) estimates cumulative abnormal returns in the range of -3.7 percent (Anderson & Yohn 2002).

III. Data and Methodology

The database of restatement announcements used in this study spans years 1998-2005 and is compiled as a merger of two databases: one collected by Min Wu[4] with restatement data up to year 2002 and one assembled by the PCAOB[5] with data on restatements from 2002 through 2005[6]. The time period 1998 to 2005 includes significant events in the accounting and auditing professions whose impact we are able to study: accounting scandals at Enron, enactment of the Sarbanes-Oxley Act, and implementation of Section 404. The restatement announcements we study involve only those filed by companies that are traded on NYSE and NASDAQ; they are, on average, larger public companies that represent more than 95 percent of the total market capitalization of companies that did restate.

The database was compiled to capture all announced restatements of quarterly and annual financial statements. These include restatements filed through amended financial

[4] See Min Wu (2002) for the description of her database. For our analysis, we exclude the restating companies not traded on NYSE and NASDAQ. However, sensitivity analysis comparing results using all restating companies in Min Wu's database produces qualitatively identical results.
[5] Byers, S., Hranaiova, J. (2006) "Latent Observations and the 'Bads' Database: the Need for a Restatement Database." (Unpublished Working Paper)
[6] We also include 13 restatements made public in 2006.

statements as well as "stealth" restatements. The latter include companies that restated 1) without filing amended quarterly or annual reports 2) without first publicly announcing the restatement and 3) without citing the restatement as the reason for a late filing[7]. Anderson and Yohn (2002) capture only companies that restated via amended financial reports. Glass-Lewis (2006) however, reports that 45% of restatements in 2005 did not utilize amended reports to restate, thus they are "stealth restatements". We include "stealth" restatements in the database, as excluding them might seriously bias our results. The database includes restatements due to accounting irregularities that are in concert with those outlined in the Accounting Principles Board (APB) Opinion 20, Accounting Changes[8]. For example, these include restatements due to misapplication of accounting principles, arithmetical errors, oversight or misuse of facts known by the company at the time the financial statements were prepared, change from incorrect accounting principle to a correct principle. We exclude restatements due to changes in accounting principles, stock splits, mergers and acquisitions, issuance of stock dividends, and other regular business activities.

In all, we identify 1,728 companies that disclosed restatements for accounting errors during the eight-year period (1998 to 2005) and that eventually completed the restatement. We thus, exclude companies that ceased to exist (e.g. Enron and WorldCom). The sample is further reduced by 17 observations due to a lack of stock price data.

Unlike previous studies (Palmrose, Richardson, and Scholz 2004; Anderson and Yohn 2002) we allow for the possibility that there may be overlaps between restatement events of separate issuers which would violate the independently, identically distributed

[7] Glass-Lewis report: "Getting It Wrong the First Time." March 2, 2006.
[8] Accounting Principles Board (APB) Opinion 20, Accounting Changes, Paragraph 13.

(IID) assumption (Campbell & Wasley 1993, MacKinley 1997, Seiler 2000)[9]. We conduct the analysis on restatements whose announcement dates do not overlap, thus, rendering our results more robust compared to previous literature where the IID assumption was not addressed. The large number of observations in our sample enables us to carefully eliminate clustered restatement announcements without having to worry about substantial loss of data. The final sample contains 518 non-overlapping restatement announcements (see Table 1).

We use the event-study methodology detailed in numerous studies (MacKinley 1997; Wu 2002; Kothari & Warner 2004; Palmrose et. al. 2004; Anderson & Yohn 2002) to examine the impact of restatement announcements on company values. We define day 0 (the event date) as the day when the information about the restatement is made public for the first time, e.g., via a press release, 8-K, or other financial filing (10-K, 10-Q).[10] We define the event window to be the 40 days surrounding the announcement day 0; 20 days prior to the event and 20 days after the event. We measure abnormal returns during this window by subtracting the market-risk adjusted normal return for each company. The normal return is defined as the return that we would expect if the event did not take place. We estimate it via a market model over an estimation window (120-day period prior to the event window).

[9] In probability theory, a sequence or other collection of random variables is **independent and identically distributed (i.i.d.)** if each has the same probability distribution as the others and all are mutually independent.

[10] Searches for the first appearance of the restatement announcement were conducted utilizing Lexis-Nexis, Factiva and SEC filings.

Table 1 – Breakdown of Restatement Announcement Samples [a,b]

		Total	Positive	Negative
All Restatement Announcements	**Includes Overlapping Announcements**	1711	695 (41%)	1016 (59%)
	Excludes Overlapping Announcements	518	210 (41%)	308 (59%)
Statistically Significant Restatement Announcements	**Includes Overlapping Announcements**	325	90 (28%)	235 (72%)
	Excludes Overlapping Announcements	115	35 (30%)	80 (70%)

a) Restatement announcements with a statistically significant stock price reaction are determined using the J-stat calculated as $AverageAR/AverageVar_{AR}$. For details, see MacKinlay (1997).

b) Overlap refers to distinct companies announcing restatements on the same event date and not the same company announcing multiple restatements.

The actual returns are first regressed against the market returns during the estimation window. The company-specific parameters from the market model are used to calculate expected returns during the event window, which are then subtracted from the actual returns to obtain abnormal returns (ARs) for the event window. Cumulative abnormal returns (CARs) are then obtained by summing daily ARs.

We first concentrate on daily abnormal returns around the restatement announcement, day 0, spanning days -20 to +20. We allow for the possibility of information leakage prior to the restatement announcement, therefore we examine the days preceding the announcement day. A significant abnormal return on day +1 may indicate the presence of end-of-day restatement announcements, where the information is reflected in the market on the next day.

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Previous research studying market reactions to restatement announcements (Palmrose et al. 2001, Anderson and Yohn, 2002) does not account for restatements that may have overlapping company announcement dates, possibly causing the standard errors to be underestimated and t-statistics to be inflated, thus, overstating the significance of abnormal returns. We investigate this implication and find that without deleting the overlapping restatements, significance measures are indeed overstated, mistakenly assigning significance to the average abnormal return on day -1 (see Appendix: Table A1). After deleting the observations with overlapping announcement days, only the average abnormal returns on days 0 and +1 remain significant. The deletion of these observations affects the magnitude of the average abnormal returns on days 0 and +1 as follows; day 0 average AR increases (in absolute value) by 33 percent from -2.4 percent to -3.2 percent and day +1 average AR from -1.9 percent to -3 percent, an increase in magnitude of 58 percent. Comparison of Table 2 and Table A1 shows that this increase can mainly be attributed to the deletion of announcements with smaller negative market reactions, while the average AR for positive market reactions has not changed significantly.

We next divide the announcements into those with negative market reactions and those with positive reactions. The question arises, which daily return, for day 0 or day +1, should we use to determine the sign of the market response. This is an issue for the companies whose abnormal returns on the two days are of opposite signs. We therefore use a 2-day cumulative abnormal return (CAR) for days 0 and +1 to determine the sign of the stock price movement. The CAR is calculated as the sum of ARs on days 0 and +1. Table 1 presents the number of positive and negative market reactions before and after deleting the restatements with overlapping announcement dates. The numbers show that positive

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market reactions occur in more than one-third of the announcements in our sample during 1998-2005. Thus, we believe a separate analysis of positive and negative market reactions is warranted.

To determine whether the outcome is merely the result of the large number of announcements post-SOX reducing the magnitude of the market reaction through the diluting impact of averaging, we eliminate the large number of statistically insignificant market reactions and repeat the pre- and post-SOX market reaction comparison.

We employ the non-parametric Wilcoxon Signed-Rank test to determine whether significant events in the accounting and auditing professions in 2002 and 2004 affected the magnitude and significance of the market reaction to announcements. We divide the announcements into two sub-samples, pre- and post-event, based on three different breakpoints (recall Figure 2): the launch of criminal investigation into Enron on January 10, 2002, the signing into law of the Sarbanes-Oxley Acton July 30, 2002, and the implementation of Section 404 of SOX on internal controls dating from November 15, 2004. The non-parametric tests used here do not require the restatements with overlapping announcement dates to be excluded, thus we conduct the analysis on all restatements. Nevertheless, sensitivity analysis using the sample with non-overlapping restatements provides similar results.

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IV. Results

Market Effects of Restatement Announcements for Period 1998-2005

Table 2 presents average daily abnormal returns (ARs) for the 40 days surrounding the announcement days for the sample of non-overlapping restatement announcements during 1998-2005. Results show that there is no evidence of information leakage prior to the announcement, as only days 0 and +1 have a statistically significant abnormal return. Overall we find a negative average AR of -2.6 percent (J-statistic[11] -9.3) on day 0 and -2.8 percent (J-statistic -9.9) on day +1, adding up to the two-day average cumulative abnormal return(s) (CAR) of -5.4 percent.

Investors are likely to be interested in disentangling this overall effect by considering announcements that depress the stock price separately from those that raise it. More than one third of announcements in our sample result in "positive" market reactions. The significance and the magnitude of the "negative" impact more than doubles when not diluted by the effect of positive market reactions to announcements. Average daily ARs for negative market reactions to announcements are -5.8 percent (J-statistic -14.4) and -6.4 percent (J-statistic -15.7) for days 0 and +1, respectively, summing up to a two-day average CAR of -12.2 percent.

[11] J-statistic is calculated as the average CAR divided by the average variance. See MacKinley (1997) for more details.

TABLE 2 - Market Effects of All[a] Non-Overlapping Restatements

Announcements, Measured by Daily Abnormal Returns (1998-2005)

	All		Negative		Positive	
DAY	AR[b]%	J-Stat[b]	AR%	J-Stat	AR%	J-Stat
-20	-0.50	-1.67	-0.40	-1.07	-0.50	-1.50
-19	-0.20	-0.60	-0.10	-0.23	-0.30	-0.84
-18	-0.60	-2.23	-0.70	-1.60	-0.60	-1.72
-17	0.00	-0.10	0.26	0.64	-0.50	-1.37
-16	-0.10	-0.23	0.00	-0.01	-0.20	-0.46
-15	0.19	0.69	0.33	0.81	0.00	-0.05
-14	0.29	1.05	0.56	1.36	-0.10	-0.30
-13	-0.60	-2.10	-0.30	-0.84	-0.90	-2.82
-12	-0.10	-0.38	-0.40	-0.87	0.26	0.78
-11	-0.10	-0.23	0.43	1.06	-0.80	-2.40
-10	0.00	-0.15	0.17	0.42	-0.40	-1.07
-9	-0.10	-0.19	0.39	0.96	-0.70	-2.13
-8	0.20	0.74	0.22	0.54	0.18	0.55
-7	-0.30	-1.13	-0.20	-0.45	-0.50	-1.52
-6	-0.10	-0.51	-0.10	-0.19	-0.20	-0.70
-5	0.23	0.83	0.33	0.82	0.08	0.24
-4	-0.40	-1.43	-0.30	-0.80	-0.50	-1.52
-3	-0.20	-0.84	-0.10	-0.22	-0.40	-1.34
-2	-0.30	-0.95	0.11	0.27	-0.80	-2.44
-1	-0.20	-0.84	-0.10	-0.14	-0.50	-1.48
0	-2.60	-9.31	-5.80	-14.35	2.22	6.72
1	-2.80	-9.94	-6.40	-15.72	2.61	7.90
2	0.05	0.19	0.00	0.01	0.13	0.38
3	0.17	0.60	0.28	0.70	0.00	-0.01
4	0.22	0.79	0.07	0.18	0.43	1.31
5	0.35	1.26	0.38	0.94	0.30	0.91
6	-0.10	-0.27	0.33	0.81	-0.70	-2.02
7	0.39	1.40	0.81	2.00	-0.20	-0.73
8	-0.10	-0.41	0.19	0.46	-0.60	-1.67
9	0.02	0.07	0.20	0.50	-0.30	-0.77
10	-0.10	-0.28	0.00	-0.02	-0.20	-0.53
11	-0.10	-0.37	-0.20	-0.39	0.00	-0.06
12	0.38	1.37	0.56	1.39	0.11	0.33
13	-0.20	-0.65	-0.20	-0.45	-0.20	-0.52
14	-0.30	-0.92	-0.60	-1.52	0.27	0.83
15	0.00	-0.07	0.42	1.02	-0.70	-2.00
16	-0.10	-0.22	-0.10	-0.34	0.05	0.16
17	-0.50	-1.69	0.00	-0.06	-1.10	-3.38
18	-0.10	-0.39	0.00	-0.01	-0.30	-0.80
19	-0.20	-0.81	0.08	0.20	-0.70	-2.05
20	-0.60	-2.32	-1.20	-2.86	0.12	0.38

Notes: a. All Restatement announcements include both statistically significant and insignificant restatements announcements in our database.

b. AR=daily abnormal returns. J-stat is calculated as AverageAR/AverageVar$_{AR}$. For details, see MacKinley (1997).

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TABLE 3 Market Effects of Non-Overlapping Statistically Significant Restatement Announcements, Measured by Daily Abnormal Returns (1998-2005)

	All		Negative		Positive	
DAY	AR[b]%	J-Stat[a]	AR%	J-Stat	AR%	J-Stat
-20	-0.10	-0.16	-0.30	-0.28	0.31	0.44
-19	-0.60	-0.74	-0.10	-0.11	-1.70	-2.37
-18	0.03	0.04	0.01	0.01	0.07	0.10
-17	0.13	0.16	0.10	0.09	0.20	0.28
-16	-0.30	-0.38	0.00	-0.02	-1.00	-1.34
-15	0.99	1.22	1.66	1.48	-0.50	-0.77
-14	-0.70	-0.91	-0.60	-0.52	-1.10	-1.54
-13	-0.70	-0.82	-0.70	-0.64	-0.50	-0.75
-12	-0.30	-0.31	-0.40	-0.37	0.13	0.19
-11	-0.30	-0.38	-0.10	-0.12	-0.70	-0.98
-10	-0.10	-0.14	0.28	0.25	-1.00	-1.44
-9	0.00	0.00	0.06	0.06	-0.10	-0.19
-8	0.21	0.26	0.24	0.22	0.14	0.19
-7	-0.10	-0.12	0.21	0.18	-0.80	-1.10
-6	-0.50	-0.61	-0.50	-0.48	-0.40	-0.55
-5	-0.50	-0.59	-0.50	-0.42	-0.50	-0.71
-4	-0.30	-0.42	-0.40	-0.39	-0.10	-0.18
-3	-0.80	-1.03	-0.50	-0.46	-1.60	-2.19
-2	-0.10	-0.16	-0.10	-0.07	-0.30	-0.38
-1	-0.70	-0.90	-0.50	-0.45	-1.30	-1.76
0	-10.20	-12.55	-18.00	-15.98	7.60	10.64
1	-8.40	-10.30	-14.80	-13.17	6.38	8.94
2	0.75	0.93	1.11	0.99	-0.10	-0.10
3	0.36	0.44	0.97	0.87	-1.00	-1.46
4	0.21	0.26	0.22	0.19	0.21	0.30
5	0.72	0.88	0.70	0.62	0.76	1.06
6	0.92	1.13	1.04	0.93	0.64	0.89
7	0.88	1.08	0.94	0.83	0.75	1.04
8	-0.10	-0.14	0.00	-0.03	-0.30	-0.44
9	-0.20	-0.30	0.12	0.11	-1.10	-1.51
10	0.12	0.14	-0.20	-0.16	0.80	1.12
11	0.30	0.37	0.33	0.29	0.23	0.32
12	0.67	0.82	1.14	1.01	-0.40	-0.58
13	0.24	0.30	0.65	0.58	-0.70	-0.95
14	0.37	0.46	0.21	0.19	0.74	1.03
15	0.20	0.25	0.27	0.24	0.04	0.05
16	-0.80	-0.95	-1.40	-1.27	0.73	1.02
17	-0.10	-0.12	-0.10	-0.09	-0.10	-0.12
18	0.14	0.17	0.50	0.45	-0.70	-0.98
19	0.80	0.98	1.01	0.90	0.31	0.43
20	-0.10	-0.16	-0.30	-0.28	0.31	0.44

Notes: a. AR=daily abnormal returns. J-stat is calculated as AverageAR/AverageVar$_{AR}$. For details, see MacKinley (1997).

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The market reacts less, but still significantly, to favorable restatement announcements, with a two-day average CAR of +4.8 percent.

We continue to refine the estimation of the market effects of restatement announcements by excluding statistically insignificant market reactions, and estimating the average CARs for only those market reactions that are statistically significant (Table 3). The results do not change qualitatively, but as expected, the market effects are more pronounced when only statistically significant market reactions are considered. ARs remain significant only for days 0 and +1, with the average two-day CAR of 18.6% for pooled statistically significant market reactions. Companies whose announcements result in statistically significant negative market reactions exhibit a cumulative average two-day abnormal price drop of 32.8 percent on days 0 and +1, those with statistically significant positive market reactions have an average two-day cumulative abnormal return increase of 14 percent.

Figure 2 indicates that markets are efficient and that most of the information from statistically significant restatement announcements is correctly incorporated in the prices on days 0 and +1. We arrive at this conclusion based on the observation that stock prices of companies with statistically insignificant market reactions to their restatement announcements remain relatively stable (albeit with a small downward drift) throughout the period, while the market efficiently incorporates the information about companies who experience statistically significant positive and negative market reactions to restatement announcements on days 0 and +1, with stock prices remaining relatively stable over the period 0, +20. The restatement announcements resulting in statistically significant market

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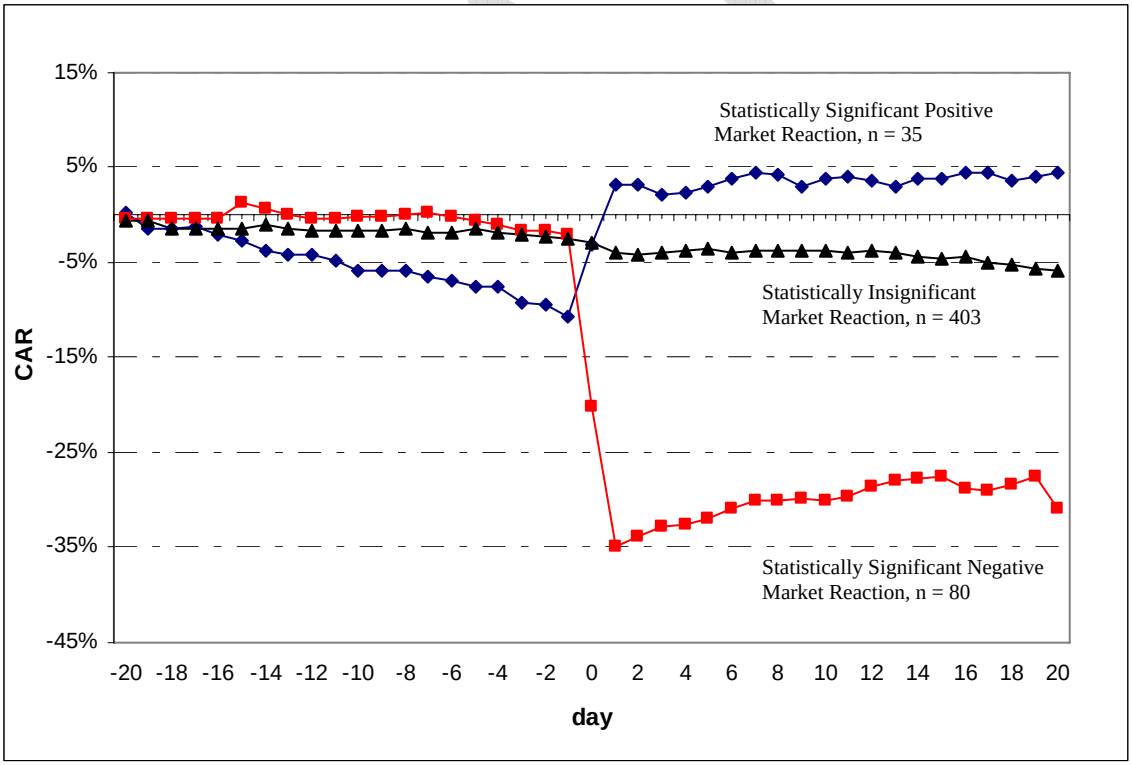
reactions experience, on average, abnormal returns of -28.8 percent for those that are negative and 15.2 percent for those that are positive.

Interestingly, the negative drift of ARs prior to the restatement disclosure seems to be more pronounced for companies whose disclosure resulted in positive market reactions; possibly the result of the markets having a negative view of the companies prior to the announcement only to be surprised by the new information contained in the announcement. The downward drift might be the result of information leakage prior to the formal announcement of restatements or a myriad of other possibilities. We leave it to the reader to speculate as to why this is happening.

Figure 2 Average Cumulative Abnormal Returns for Non-Overlapping Restatements Announcements (1998 - 2005)



Market Reactions to Restatement Announcements pre- and post-Enron, Sarbanes-Oxley & Section 404.

Now we examine whether the market reaction to restatement announcements has changed following major events such as the Enron debacle, implementation of Sarbanes-Oxley (SOX) and Section 404. Tables 4 and 5 present results of testing for differences in CARs between pre- and post-event sub samples. We compare average daily ARs for days 0 and +1, two-day CARs (0, +1) and seven-day CARs (-3, +3). We choose CARs that represent short- to mid-term market effects examined in previous studies (Palmrose et al. 2004, Anderson and Yohn 2002).

Table 4 shows the results of the Wilcoxon Rank-Order test performed on all restatement announcements (including overlapping) as well as statistically significant negative and positive market reactions separately. Negative market reactions consistently exhibit significantly smaller market effects in the post-SOX era. 1-day, 2-day, 3-day and 7-day CARs all are 3 to 4 times larger (in absolute value) prior to SOX; all differences are highly significant (1% level). The results hold for all post-Enron periods.

The post-Sox and post-404 periods are subsets of the post-Enron period; therefore we examine the incremental effect of each post-Enron sub-period by comparing the pre- and post-SOX average CARs for the segments of time in which Enron and SOX occurred. In doing so, we observe a decline (in absolute value) of both pre and post average CARs during each event window. The average two-day post-period CAR decreases (in absolute value) by 12 percent, from -5.6 percent to -5.0 percent, when moving from the launch of criminal investigation into Enron, to the implementation of SOX. These events are approximately six months apart, a relatively short time, so we look to the period two years

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following SOX when Section 404 of the Act was first implemented. We find that following 404, average CARs further dampened the impact of statistically significant negative market reactions. The two-day average CAR decreases in absolute value from -5.0 percent to -4.0 percent. Thus, we can argue that the change in market response to restatement announcements changed incrementally over the entire study period and that the actual implementation of Sarbanes-Oxley further decreased the loss of market value due to negative market reactions.

The magnitude of the statistically significant positive market response to restatement announcements is reduced in the post-SOX case but to a lesser degree than that associated with negative market reactions. Only the day 0 and the day 1 CARs (0, +1) experience a significant decrease in the post-SOX period. The post-SOX positive market response is reduced by one third of the size of the pre-SOX CAR. All other CARs within the 40-day event window experience a change in their average size when moving chronologically from Enron to SOX and to 404.

Next, we address the claims purported in the press that the implementation of Sarbanes-Oxley in the aftermath of the accounting scandals and the collapse of Andersen triggered a flood of restatements, which, by the shear power of averaging, diluted the average market effect of restatement announcements. We conduct the same two-period tests on the sample of statistically significant announcements and present the results in Table 5. The previously-observed reduction in negative and positive market responses is still present even after removing the statistically insignificant restatement announcements, thus, giving credence to the notion that SOX and the related surrounding events are the cause.

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TABLE 4 Two-sample Wilcoxon Test for Differences in Abnormal Returns: All Restatement Announcements.[a]

All Restatement Announcements		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	-5.28%	-0.79%	-4.68%	-0.70%	-2.73%	-0.73%
	Z-Stat	-2.94		-3.23		0.69	
	One Tailed	0.0016		0.0006		0.2445	
	Two Tailed	0.0033		0.0012		0.4891	
Day 1 AR	Mean	-4.71%	-0.64%	-4.32%	-0.48%	-2.57%	-0.29%
	Z-Stat	-5.3519		-4.204		2.0839	
	One Tailed	0.0001		0.0001		0.0186	
	Two Tailed	0.0001		0.0001		0.0372	
Day (0,+1) CAR	Mean	-9.99%	-1.44%	-9.01%	-1.18%	-5.30%	-1.02%
	Z-Stat	-7.70		-6.81		3.67	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0002	
Day (-3,+3) CAR	Mean	-12.79%	-1.77%	-11.66%	-1.37%	-6.77%	-1.21%
	Z-Stat	-8.59		-8.32		3.96	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	

All Positive Restatement Announcements.[c]		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	3.14%	1.89%	2.94%	1.86%	2.89%	1.05%
	Z-Stat	3.45		2.85		-4.67	
	One Tailed	0.0003		0.0022		0.0001	
	Two Tailed	0.0006		0.0044		0.0001	
Day 1 AR	Mean	2.48%	2.28%	2.81%	2.12%	2.52%	2.01%
	Z-Stat	0.10		1.02		-0.86	
	One Tailed	0.4598		0.1532		0.195	
	Two Tailed	0.9196		0.3064		0.3899	
Day (0,+1) CAR	Mean	6.23%	4.33%	6.25%	4.14%	5.74%	3.22%
	Z-Stat	3.72		4.71		-5.58	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0002		0.0001		0.0001	
Day (-3,+3) CAR	Mean	3.24%	3.58%	2.91%	3.75%	3.37%	3.72%
	Z-Stat	0.22		-0.12		0.00	
	One Tailed	0.4111		0.4536		0.4998	
	Two Tailed	0.8222		0.9072		0.9995	

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Table 4 cont'd

All Negative Restatement Announcements.[c]		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	-9.91%	-2.77%	-9.22%	-2.56%	-6.46%	-2.01%
	Z-Stat	-5.59		-5.97		4.61	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	
Day 1 AR	Mean	-8.65%	-2.80%	-8.57%	-2.38%	-5.96%	-1.94%
	Z-Stat	-6.55		-6.12		3.93	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	
Day (0,+1) CAR	Mean	-18.15%	-5.62%	-17.47%	-5.00%	-12.28%	-4.05%
	Z-Stat	-12.17		-12.48		8.78	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	
Day (-3,+3) CAR	Mean	-20.86%	-5.65%	-19.74%	-5.04%	-13.17%	-4.72%
	Z-Stat	-10.38		-10.53		5.34	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	

Note: **a**) All restatement announcements include all restatement announcements in our sample regardless of their statistical significance as well as restatements with overlapping announcement days. **b)** AR = Daily Abnormal Return, CAR = Cumulative Abnormal Return. **c**) Positive and negative sub-groups were differentiated by calculating a 2-day CAR (0,1) and sorting according to sign. **d)** The sign of the Z-statistic depends on which subgroup has a smaller number of observations – if Z-stat is positive, H_0: the mean of the group with a smaller number of observations is greater than the mean of the group with the larger number of observations. H_A: the mean of the group with smaller number of observations is greater than the mean of the group with a larger number of observations. For negative Z-statistic, the direction of H_0 and H_A is reversed.

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TABLE 5 Two-sample Wilcoxon Test for Differences in Abnormal Returns: Statistically Significant Restatement Announcements.[a]

All Restatement Announcements		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	-18.31%	-3.35%	-16.80%	-2.86%	-11.53%	-2.68%
	Z-Stat	-4.79		-4.78		2.01	
	One Tailed	0.0001		0.0001		0.022	
	Two Tailed	0.0001		0.0001		0.0441	
Day 1 AR	Mean	-12.59%	-3.05%	-12.86%	-1.83%	-9.06%	-0.86%
	Z-Stat	-3.41		-3.18		2.19	
	One Tailed	0.0003		0.0007		0.0141	
	Two Tailed	0.0006		0.0015		0.0283	
Day (0,+1) CAR	Mean	-30.90%	-6.40%	-29.66%	-4.69%	-20.59%	-3.54%
	Z-Stat	-7.87		-7.95		5.45	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	
Day (-3,+3) CAR	Mean	-32.41%	-6.32%	-30.78%	-4.73%	-21.74%	-2.60%
	Z-Stat	-7.33		-7.62		5.47	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	

All Positive Restatement Announcements[c]		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	7.68%	5.96%	7.61%	5.85%	7.33%	4.53%
	Z-Stat	0.68		0.74		-1.13	
	One Tailed	0.248		0.2296		0.1292	
	Two Tailed	0.4959		0.4593		0.2583	
Day 1 AR	Mean	8.73%	6.95%	8.75%	6.82%	7.67%	6.69%
	Z-Stat	1.18		1.37		-1.11	
	One Tailed	0.12		0.0855		0.1327	
	Two Tailed	0.2399		0.171		0.2655	
Day (0,+1) CAR	Mean	16.41%	12.91%	16.36%	12.67%	15.00%	11.22%
	Z-Stat	2.15		2.78		-1.95	
	One Tailed	0.0156		0.0027		0.0255	
	Two Tailed	0.0313		0.0054		0.0511	
Day (-3,+3) CAR	Mean	12.59%	10.63%	11.02%	11.02%	10.37%	12.15%
	Z-Stat	0.16		-0.36		0.17	
	One Tailed	0.4379		0.3591		0.4335	
	Two Tailed	0.8758		0.7183		0.867	

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Table 5 cont'd

All Negative Restatement Announcements[c]		Pre-Enron	Post-Enron	Pre-SOX	Post-SOX	Pre-404	Post-404
DAY 0 AR[b]	Mean	-22.99%	-8.31%	-21.69%	-7.73%	-17.97%	-6.18%
	Z-Stat	-3.87		-3.91		2.71	
	One Tailed	0.0001		0.0001		0.0034	
	Two Tailed	0.0001		0.0001		0.0068	
Day 1 AR	Mean	-16.43%	-8.38%	-17.18%	-6.65%	-14.77%	-4.53%
	Z-Stat	-2.38		-2.27		3.21	
	One Tailed	0.0086		0.0117		0.0007	
	Two Tailed	0.0173		0.0233		0.0013	
Day (0,+1) CAR	Mean	-39.41%	-16.69%	-38.87%	-14.38%	-32.74%	-10.70%
	Z-Stat	-8.22		-8.61		7.80	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	
Day (-3,+3) CAR	Mean	-40.51%	-15.35%	-39.14%	-13.52%	-32.69%	-9.76%
	Z-Stat	-7.13		-7.32		6.84	
	One Tailed	0.0001		0.0001		0.0001	
	Two Tailed	0.0001		0.0001		0.0001	

Note: **a**) All restatement announcements here include those with overlapping announcement days. **b)** AR = Daily Abnormal Return, CAR = Cumulative Abnormal Return **c**) Positive and negative sub-groups were differentiated by calculating a 2-day CAR (0,1) and sorting according to sign. **d)** The sign of the Z-statistic depends on which subgroup has a smaller number of observations – if Z-stat is positive, H_0: the mean of the group with a smaller number of observations is greater than the mean of the group with the larger number of observations. H_A: the mean of the group with smaller number of observations is greater than the mean of the group with a larger number of observations. For negative Z-statistic, the direction of H_0 and H_A is reversed.

The monetary impact associated with the changes in the market reaction to restatement announcements is shown in Tables 6 and 7. Overall, the negative impact on the market value is reduced by 71% on the two days of the announcement, from -17.5 percent to -5.0 percent, and for positive market reactions it is reduced by 33 percent, from 6.3 percent to 4.1 percent. This amounts to a reduction in the market value loss due to negative market reactions of $249.5 million per restatement announcement, and $59 billion in total on the two restatement announcement days. Although companies with statistically significant positive market reactions to their announced restatements on average gain less post-SOX ($42.2 million per announcement), the total market value gain is $16 billion

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larger, compared to the pre-SOX period, due to a higher number of positive market reactions post-SOX. Also, the smaller absolute gain for positive reactions post-SOX is a result of the different initial conditions on day 0. The pronounced negative drift pre-SOX causes the starting CAR on day 0 (20-day CAR) to be approximately -12 percent, whereas, post-SOX, a much smaller negative drift produces a starting CAR on day 0 of approximately – 3 percent. The ending positive CAR at the end of day +1 (22-day CAR) is actually higher post-SOX, thus, the markets appear to be less surprised by the restatement announcement. The net reduction[12] in the lost market value is $207 million per restatement announcement and $74 billion in total for the two restatement announcement days. These results hold also when statistically insignificant market reactions are removed (Table 7). The net reduction in the market value loss due to statistically significant market reactions, post-SOX, is $266 million on average and $47 billion in total.

Table 6 - Loss/Gain on Days 0 and +1 due to All Restatement Announcements by Direction of Market Reaction.

	Negative		**Positive**		**Net Reduction in Market Value Loss**
Loss/Gain	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**	
CAR (0,+1)	-17.47%	-5.00%	6.25%	4.14%	
Total Market Value (in Million)	-121,028	-62,388	24,811	40,549	$74,378
Average Market Value (in Million)	-341.9	-92.4	126	83.8	$207
No of restatements	355	675	197	484	

Note: The direction of market reaction was assigned based on the sign of the 2-day CAR (0,+1).

[12] The net reduction takes into account the impact of both the average negative and positive market reactions multiplied by the number of restatement announcements pre and post. ($-121,02 8M – (-$62,388M)) + ($24,811M - $40,549M) = -$74.378 B

Table 7 - Loss/Gain on Days 0 and +1 due to All Restatement Announcements by Direction and Statistical Significance of Market Reaction

	Statistically Significant Negative		Statistically Significant Positive		Statistically Insignificant	
Loss/Gain	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**
CAR (0,+1)	-38.86%	-14.40%	16.40%	12.70%	-2.12%	-0.05%
Total Market Value (Million)	-81,350	-37,459	6,269	9,197	-21,136	6,423
Average Market Value (Million)	-713.6	-312.2	272.6	137.3	-51.1	6.61
No of restatement announcements	115	120	23	67	414	972

Note: These restatement announcements include those with overlapping announcement dates. The statistical significance and direction of market reaction was assigned based on the t-statistic for the 2-day CAR (0,+1).

Although we cannot statistically show that the change in price around statistically insignificant restatement announcements is a result of company's actual restatement numbers (e.g. change in net income), we observe the following differences pre- and post-SOX for such companies. When compared to the pre-SOX statistically insignificant restatement announcement, as measured on the two announcement days 0 and +1, the post-SOX average and total market value loss of companies whose restatement announcements resulted in statistically insignificant market responses is lower on average by $57 million and $28 billion, respectively. The reduction in market value loss (savings) is even more apparent in Figure 3, which plots average cumulative abnormal returns for days -20 to +20 pre- and post-SOX. The abnormal returns for companies with statistically insignificant market reactions, pre-SOX, are trending downwards prior to the restatement announcements and continue trending downwards thereafter. This trend disappears post-SOX, resulting in a reduction of $124 billion in lost market value over the 21-day post-announcement window (0, +20) for companies whose restatement announcements resulted

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in statistically insignificant market reactions, or $290 million per announcement (see Table 8). Thus, restatement announcements post-SOX seem to convey information to the market that is timelier and of higher quality. The market correctly recognizes the information in the restatement announcement and retains this view in the longer-term.

The notion that post-SOX restatement announcements transfer information of higher quality to the market is also supported by the observation that the post-announcement CARs appear to be more stable in the post-SOX time period (see Figure 4). We test this proposition by comparing the post-announcement (days +2 to +20) volatility of ARs pre- and post-SOX. The test results shown in Table 9 confirm that the volatilities are significantly lower post-SOX for statistically significant negative and positive market reactions as well as the statistically insignificant market reactions. Thus, the market appears to be more efficient in incorporating restatement announcement information post-SOX.

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Table 8 Long-term Post-announcement Loss/Gain (days 0,+20) due to All Restatement Announcements by Direction and Statistical Significance of Market Reaction

	Statistically Significant Negative		Statistically Significant Positive		Insignificant	
Loss/Gain	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**
CAR (0,+20)	-39.3%	-13.4%	18.1%	11.6%	-7.4%	-0.02%
Total Market Value (Million)	-91,364	-35,413	8,144	7,585	-117,044	7,284
Average Market Value (Million)	-801.4	-295.1	354.1	113.2	-282.7	7.5
No of restatement announcements	115	120	23	67	414	972

Note: The statistical significance and direction of market reaction is assigned based on the t-statistic for the 2-day CAR (0,+1).

TABLE 9 Two-sample Wilcoxon Test for Differences in the Post-announcement Volatility of Abnormal Returns before and after SOX: By Direction and Statistical Significance [a]

		Statistically Significant Negative		Statistically Significant Positive		Insignificant	
Volatility		**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**
AR during days +2 to +20	Mean	6.14%	2.60%	3.39%	2.42%	6.00%	2.77%
	Z-Stat	8.09		2.65		15.30	
	One Tailed	0.0001		0.004		0.0001	
	Two Tailed	0.0001		0.008		0.0001	

a. Volatility is measured as the standard deviation of ARs during days +2 to +20. The statistical significance and direction of market reaction is assigned based on the t-statistic for the 2-day CAR (0,+1).

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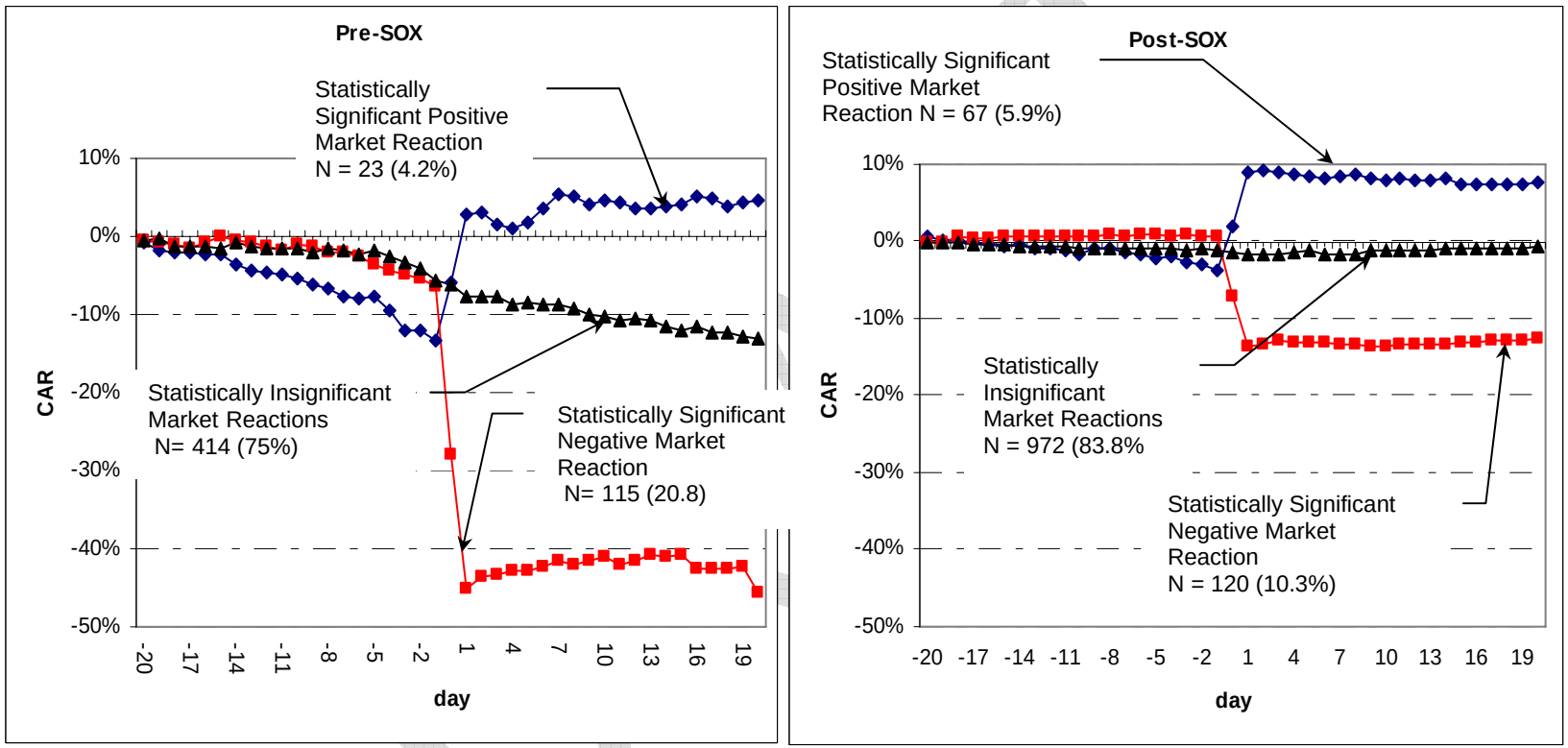
Figure 3 - Comparison of Average Cumulative Abnormal Returns for Restatement Announcements Pre- and Post-SOX



Conclusions

In this paper, we make a new assessment of the impact of announced restatements of financial statements and examine the effect of Sarbanes-Oxley and related events preceding and following its enactment, on the market response to these announcements.

For the entire study period, 1998 – 2005, we confirm previous findings that market reactions (as measured by abnormal returns) are only statistically significant on the days 0 and +1 of the restatement announcement. More importantly, we find that 19 percent of restatement announcements evoke statistically significant positive or negative market reactions while the rest are statistically insignificant; and separate consideration yields additional refinement of the results. Separating restatement announcements that have statistically significant positive and negative market reactions from each other, as well as from statistically insignificant restatement announcements, reveals that the negative two-day cumulative abnormal return is, on average, two and a half times larger (in absolute values) than the positive cumulative abnormal return. If investors were only concerned about announcements of restatements that produce statistically significant market reactions, they are looking at an average two-day share price drop of 33% due to negative market reactions and a share price increase of 14% due to positive market reactions on the two days (0, +1) of the restatement announcement.

The results of our comparative pre- and post-SOX analysis indicate that SOX and the events surrounding it significantly and beneficially impacted the market response to announced restatements. We also find evidence that since SOX, the market value loss from restatement announcements is smaller and post-announcement uncertainty about restating companies is reduced, which hints at increased investor confidence. The net

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reduction in the lost market value amounts to $207 million per restatement announcement and $74.4 billion in total for the two-day event window of the restatement announcement. We also find statistically significant evidence that in the post-SOX environment, abnormal returns following a restatement announcement are less volatile for both statistically significant negative and positive market reactions, as well as statistically insignificant market reactions to announcements. In addition, the abnormal returns for statistically insignificant market reactions to announced restatements are no longer declining in the longer term post-announcement window. This suggests to us that post-SOX, investors behave as if they believe the announcements convey timelier and higher quality information and leave them with less uncertainty about companies announcing restatements.

Further study on market reactions to financial restatements is warranted. In particular, a determination as to whether or not there are characteristics among restatement announcements that might better predict whether the market reaction will be positive, negative, or statistically insignificant would provide useful information to investors, auditors, and regulators. In addition, the approach we employed in this study might be used in consideration of the materiality threshold for errors in financial statements.

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Appendix:

TABLE A1 Market Effects of All[a] Restatement Announcements Measured by Daily Abnormal Returns (1998-2006)

	All		Negative		Positive	
DAY	AR[b]%	J-Stat[b]	AR%	J-Stat	AR%	J-Stat
-20	-0.20	-1.45	-0.20	-0.98	-0.20	-1.13
-19	0.00	0.03	0.03	0.19	0.00	-0.20
-18	-0.20	-1.53	-0.30	-1.61	-0.10	-0.38
-17	-0.20	-1.25	-0.10	-0.62	-0.20	-1.28
-16	-0.10	-0.67	0.00	-0.11	-0.20	-1.00
-15	0.02	0.18	0.00	-0.06	0.08	0.40
-14	0.05	0.36	0.18	0.98	-0.10	-0.74
-13	-0.20	-1.56	0.00	-0.17	-0.50	-2.44
-12	-0.10	-0.45	-0.10	-0.37	0.00	-0.25
-11	-0.10	-1.07	0.08	0.42	-0.50	-2.42
-10	-0.10	-0.53	0.11	0.59	-0.30	-1.74
-9	-0.10	-0.80	0.08	0.45	-0.40	-2.00
-8	0.08	0.60	0.09	0.49	0.06	0.34
-7	-0.20	-1.43	-0.10	-0.57	-0.30	-1.66
-6	-0.10	-1.00	-0.20	-1.21	0.00	-0.02
-5	0.10	0.73	0.09	0.47	0.11	0.60
-4	-0.20	-1.65	-0.10	-0.69	-0.40	-1.87
-3	-0.40	-3.18	-0.30	-1.66	-0.60	-3.15
-2	-0.20	-1.68	0.09	0.48	-0.70	-3.54
-1	-0.50	-3.93	-0.40	-2.02	-0.70	-3.92
0	-2.00	-14.90	-4.80	-26.53	2.18	11.42
1	-1.70	-12.94	-4.50	-24.66	2.33	12.18
2	0.16	1.21	0.22	1.20	0.08	0.41
3	0.02	0.15	0.13	0.71	-0.10	-0.74
4	-0.20	-1.49	0.05	0.29	-0.60	-2.96
5	0.22	1.65	0.19	1.05	0.26	1.36
6	-0.20	-1.27	0.01	0.05	-0.40	-2.24
7	0.02	0.17	0.22	1.22	-0.30	-1.41
8	-0.10	-0.93	0.01	0.06	-0.30	-1.67
9	0.00	-0.05	0.37	2.03	-0.60	-2.91
10	0.00	-0.11	0.09	0.51	-0.20	-0.91
11	-0.20	-1.52	-0.20	-0.93	-0.30	-1.31
12	0.17	1.31	0.40	2.19	-0.20	-0.80
13	0.00	-0.16	0.02	0.13	-0.10	-0.46
14	-0.10	-0.80	-0.10	-0.72	-0.10	-0.37
15	-0.10	-0.75	0.17	0.94	-0.50	-2.60
16	0.00	-0.09	0.00	-0.24	0.03	0.17
17	-0.20	-1.29	-0.10	-0.62	-0.30	-1.34
18	0.01	0.04	0.00	-0.02	0.02	0.09
19	-0.10	-1.03	-0.10	-0.58	-0.20	-0.96
20	-0.20	-1.50	-0.40	-2.25	0.11	0.55

Notes: a. All Restatements include restatement announcements with overlapping announcement dates regardless of their materiality. b. AR=daily abnormal returns. J-stat is calculated as $AverageAR/AverageVar_{AR}$. For details, see MacKinley (1997).

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15%

5%

TABLE A2 Market Effects of All Statistically Significant[a] Restatement Announcements Measured by Daily Abnormal Returns (1998-2006)

	All		Negative		Positive	
DAY	AR[b]%	J-Stat[b]	AR%	J-Stat	AR%	J-Stat
-20	-0.20	-0.45	-0.30	-0.65	0.25	0.59
-19	-0.20	-0.58	0.00	-0.06	-0.70	-1.75
-18	0.21	0.53	0.29	0.57	0.00	-0.06
-17	-0.40	-0.97	-0.50	-0.90	-0.20	-0.39
-16	0.17	0.43	0.29	0.58	-0.20	-0.41
-15	0.34	0.87	0.55	1.08	-0.20	-0.55
-14	-0.20	-0.53	-0.20	-0.36	-0.30	-0.62
-13	-0.30	-0.76	-0.20	-0.38	-0.50	-1.31
-12	-0.10	-0.26	-0.20	-0.35	0.11	0.25
-11	-0.30	-0.81	-0.30	-0.54	-0.40	-0.99
-10	0.08	0.21	0.28	0.55	-0.50	-1.08
-9	0.05	0.13	-0.10	-0.15	0.39	0.92
-8	-0.20	-0.54	-0.20	-0.39	-0.20	-0.59
-7	-0.30	-0.70	-0.10	-0.24	-0.70	-1.57
-6	-0.20	-0.50	-0.20	-0.40	-0.20	-0.40
-5	-0.50	-1.30	-0.60	-1.11	-0.30	-0.79
-4	-0.30	-0.77	-0.30	-0.60	-0.30	-0.65
-3	-0.50	-1.23	-0.20	-0.34	-1.30	-3.03
-2	-0.30	-0.84	-0.40	-0.75	-0.20	-0.42
-1	-0.60	-1.49	-0.50	-0.91	-0.90	-2.07
0	-8.80	-22.62	-14.60	-28.42	6.30	15.02
1	-6.50	-16.78	-11.80	-23.05	7.31	17.41
2	0.77	1.98	0.93	1.81	0.35	0.83
3	0.12	0.30	0.40	0.78	-0.60	-1.48
4	0.09	0.24	0.22	0.43	-0.20	-0.58
5	0.02	0.04	0.02	0.03	0.01	0.03
6	0.11	0.28	0.07	0.14	0.20	0.49
7	0.43	1.11	0.38	0.74	0.56	1.34
8	-0.10	-0.28	-0.20	-0.38	0.11	0.26
9	-0.10	-0.15	0.15	0.29	-0.60	-1.43
10	0.08	0.22	0.09	0.18	0.07	0.16
11	-0.20	-0.57	-0.30	-0.57	0.00	-0.06
12	0.15	0.38	0.33	0.65	-0.30	-0.78
13	0.10	0.27	0.21	0.41	-0.20	-0.42
14	0.07	0.18	-0.10	-0.10	0.39	0.92
15	0.04	0.10	0.29	0.57	-0.60	-1.50
16	-0.50	-1.32	-0.90	-1.72	0.45	1.08
17	0.06	0.16	0.10	0.20	0.00	-0.10
18	-0.10	-0.14	0.05	0.10	-0.30	-0.79
19	0.05	0.12	0.04	0.08	0.06	0.14
20	-1.00	-2.58	-1.50	-3.00	0.40	0.95

Notes: a. All Statistically Significant Restatement Announcements include restatements with overlapping announcement dates that have material market reaction. b. AR=daily abnormal returns. J-stat is calculated as AverageAR/AverageVar$_{AR}$. For details, see MacKinley (1997).

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