

# Long-term Market Underreaction to Accounting Restatements

By

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## **Long-term Market Underreaction to Accounting Restatements**

**Abstract:** Consistent with a long line of research since Ball and Brown (1968), there appears to be statistically significant post-earnings announcement drift following accounting restatements. Significant negative post-announcement abnormal returns are obvious for restatements that involve fraud, decrease reported income and affect core earnings. Because the amount of post-announcement drift is especially evident in the case of firms that report negative restatement information, these findings reported here are consistent with the investor underreaction hypothesis and with formal models of investor sentiment based upon psychological evidence.

**Key words:** Post-earnings announcement drift, financial statement restatements, information effects, behavioral finance.

**JEL Categories:** M41, G14.

## Long-term Market Underreaction to Accounting Restatements

### 1. Introduction

The number of companies restating their financial statements has increased dramatically. For example, Palmrose and Scholz (2004) find that the number of companies issuing restated financial statements more than quadrupled during the 1995-99 period. A report by the General Accounting Office (GAO, 2002) shows a similar rate of increase. Restatements occur when annual or quarterly reports filed with the Securities and Exchange Commission (SEC) are later found not to be in accordance with Generally Accepted Accounting Principles (GAAP). When such misstatements are discovered, companies must file amended (restated) financial statements that correct prior results. While financial restatements do not typically have immediate cash flow implications, the information value of accounting restatement decisions can lie in the role they play as a *signal* of important changes to come in the value of the firm's future earnings. Palmrose, Richardson and Scholz (2004) document that restatements produce a negative stock-price reaction of roughly 10% during the two days surrounding such announcements. As a result, financial restatements exact an enormous toll from the capitalized market valuation of announcing firms.

Several plausible explanations have been offered to explain why such harmful accounting restatements have become common. Some suggest that the widespread shift towards equity-based compensation during the 1990s, and legal changes that enabled management to simultaneously exercise options and sell the underlying security, may have played a role in undermining the accuracy of financial information. Richardson, Tuna, and Wu (2003) provide evidence consistent with the hypothesis that capital market pressures motivate companies to violate accounting standards, eventually leading to accounting restatements. They find that firms restating earnings have high market expectations for future earnings growth and relatively high levels of outstanding debt. Evidence also indicates that restating firms have been attempting to maintain a long-running string of consecutive positive earnings growth and consecutive positive quarterly earnings surprises. Richardson, Tuna, and Wu (2003) also report evidence consistent with the notion that a primary motivation for accounting earnings manipulation is management's desire to attract external financing at a lower cost.

Coffee (2003) argues that restatements reflect a failure on the part of "reputational intermediaries" on whom investors rely for verification and certification. Auditors, like security analysts, debt rating agencies and attorneys, provide a valuable monitoring function that keeps shareholders informed and helps moderate agency problems tied to the inherent conflicts between management and shareholders. Coffee (2003) contends that the recent surge stems, at least in part, from new legislation and judicial decisions that greatly reduced legal exposure for auditors and other reputational intermediaries during the 1990s. The increased potential for auditors to derive consulting income or other benefits from their clients may also have led auditors to take a more forgiving attitude towards increasingly aggressive accounting practices. However, Kinney, Palmrose and Scholz (2004) do not find consistent evidence of higher consulting fees for restatement clients.

The increasing frequency of financial restatements has also been attributed to an increasingly

activist SEC and disagreements or confusion over increasingly complex accounting standards. Palmrose and Scholz (2004) find that 19% of the restatements from 1995-99, mainly in the latter two years, are due to changes in accounting for in-process research and development (IPR&D) purchased in the course of acquisition activity. Most of the restatements of these technical accounting estimates were required by the SEC. However, the perception that restatements are largely attributable to management abuses and the ineptitude or complicity of auditors led to passage of the Sarbanes-Oxley Act of 2002.

This study investigates the economic consequences of restatements as captured by long-term effects on the market value of the firm. This paper seeks to build a bridge between this emerging body of research on financial restatements with the long but still developing literature on the stock market assessment of accounting earnings information. In the case of earnings information, prior studies suggest evidence of “post-announcement drift” consistent with the hypothesis that investors underreact to negative earnings information. This paper reports similar evidence of post-announcement drift tied to negative financial restatements. This finding is consistent with the hypothesis that investors underreact to negative accounting restatement information.

The paper is organized as follows: Section 2 shows how this paper is related to prior literature on the stock-market assessment of accounting earnings information. Methodology and data are the subject of section 3. In section 4, estimation results are presented and discussed. Conclusions and implications for future research are discussed in section 5.

## **2. Market Assessment of Earnings Information**

### *1.1 Underreaction Hypothesis*

The ability of current accounting earnings information to predict future abnormal returns in the stock market has been the subject of significant academic interest in accounting and financial economics since Ball and Brown (1968). Interest in the potential for investor overreaction or underreaction to provide at least a partial explanation has continued to grow since De Bondt and Thaler’s (1985, 1987) seminal finding of systematic price reversals for stocks that experience long-term gains and losses. To explain this anomalous result, De Bondt and Thaler (1990) studied the tendency of security analysts to make earnings forecasts that are too extreme given the predictive value of earnings information. Rational behavior by security analysts should result in an immediate unbiased reflection of earnings information in security analyst forecasts. According to De Bondt and Thaler (1990), however, analyst earnings forecasts obtained from the Institutional Brokers Estimate System depict the same pattern of overreaction found in previously studied naive predictions. In a related line of research, Abarbanell and Bernard (1992) found that while analyst forecasts underreact to recent earnings the amount of underreaction is only about half as large as necessary to explain the magnitude of the anomalous post-earnings-announcement drift” in stock prices. These results suggest that security analyst behavior is only a partial explanation for stock price underreaction to reported earnings. As a result, the post-earnings-announcement drift anomaly suggested by Ball and Brown (1968) and Bernard and Thomas (1990), among others, is sometimes characterized as somewhat broader than simple investor

overreaction or underreaction tied to problems with security analyst forecasts.

Several studies now document the tendency of security analysts and the overall market to systematically underreact to earnings information. Some suggest that the delayed assessment of earnings information by security analysts and the overall market may differ for negative versus positive news. Dreman and Berry (1995), for example, study earnings surprises within the context of contrarian investment strategies. Positive and negative earnings surprises appear to affect “best” and “worst” stocks in an asymmetric manner. Long-term reversion to the mean, in which worst stocks display above-market returns while best stocks show below-market results, regardless of the sign of the surprise, continues for at least 19 quarters following surprising earnings information. These results are consistent with Chan, Jegadeesh, and Lakonishok’s (1996) who discover that security analyst forecasts respond sluggishly to earnings news, especially in the case of stocks with the worst prior performance. An asymmetric response to negative versus positive earnings information is also reported by Easterwood and Nutt (1999) who detect that while security analysts generally underreact to earnings information, they tend to overreact to positive earnings information.

On an overall basis, prior research suggests that security analysts and the overall market may respond only gradually to new earnings information. A common appraisal is that while the stock market may be highly proficient in rapidly incorporating information that affects prices in the short run, the market may fail to efficiently process more complex and longer run earnings information. Indeed, Barberis, Schleifer, and Vishny (1998) provide an interesting explanation of persistent underreaction using a simple model of investor sentiment based upon psychological evidence. Still, such findings and their interpretation remain controversial. Many continue to regard evidence of investor underreaction or overreaction, and post-announcement drift, as anomalous. It will be interesting to learn if stock prices react in a similarly anomalous manner to accounting restatement information.

## *2.2 Restatement announcements*

Palmrose, Richardson and Scholz (2004) examine a sample of 403 restatement announcements from 1995 to 1999. They find significantly negative average abnormal returns of 9.2% over a two-day announcement window, but note substantial variation in these abnormal returns. The most severe stock-price reactions appear to be related to indications of management fraud, as is consistent with the notion that such restatements directly call into question the competence and integrity of management. Restatements that involve revenues and reductions in core earnings also tend to have relatively adverse stock-price reactions, as do auditor-induced restatements. On the other hand, SEC-induced restatements are relatively benign. These adverse stock-price reactions tied to restatements reflect expected increases in monitoring costs and some general deterioration in future performance expectations.

In a related study, Anderson and Yohn (2002) examine market return and bid-ask spread effects of restatements of annual results. They find that negative market reactions are most pronounced for firms with revenue recognition issues, and that bid-ask spreads tend to widen for firms with revenue recognition problems. Anderson and Yohn (2002) also examine market returns and bid-ask spreads

during the period from the restatement announcement to the filing of the restated financial statements. Here again they find larger and more negative market reactions for firms with revenue recognition problems, but no change in bid-ask spreads. Interestingly, restatements also appear to influence earnings response coefficients during the post-restatement period. Anderson and Yohn (2002) find that the market reacts less to earnings after a restatement than to earnings before a restatement. Apparently, restatements can have effect of undermining investor confidence in the quality of earnings information in the post-restatement period.

Accounting restatement announcements may not just reflect problems with investor perceptions concerning prior performance, they can portend future problems for the firm and its management. For example, Jones and Weingram (1997) analyze the effects of five factors on the likelihood of a company being subject to a "Rule 10b-5" (securities fraud) action after a major single-day stock price decline: Insider trading, seasoned equity offerings, restatements, SEC enforcement actions, and fall-triggering announcements. After controlling for stock market characteristics that influence litigation risk, Jones and Weingram (1997) find that firms that restate prior financial statements are substantially more likely to be sued than other firms. Palmrose and Scholz (2004) find that 37.6% of restating companies are involved in litigation, and that their auditors are also named as defendants in 35.2% of these cases. Companies are significantly more likely to be sued over restatements that pertain to economic issues, especially revenue restatements, than restatements that concern mere technical issues. Other results from Palmrose and Scholz (2004) indicate that lawsuits are more likely when restatements involve fraud, have a more negative effect on previously reported income and when the market reaction to the announcement is more severe.

Another potential cost of misstating financial statements is the overpayment of income taxes. Erickson, Hanlon, and Maydew (2002) offer interesting evidence of the value placed by management on inflated accounting earnings by examining the extent to which firms pay income taxes on allegedly fraudulent earnings. Their sample consists of firms that restated financial statements in conjunction with Securities and Exchange Commission (SEC) allegations of accounting fraud over the 1996 to 2002 period. According to Erickson, Hanlon, and Maydew (2002), the typical firm admitting to large earnings overstatements sacrificed eleven cents in additional income taxes per dollar of inflated pre-tax earnings. In aggregate, firms studied by Erickson, Hanlon, and Maydew (2002) paid \$320 million in taxes on overstated earnings of about \$3.36 billion. These results illustrate the stark trade-off faced by firms and managers contemplating earnings manipulation. A choice must be made between increasing accounting earnings and the cash costs tied to income tax expenses.<sup>1</sup>

### 2.3 Underreaction to irregular accounting events

While the release of financial restatement information triggers a significant market reaction during the announcement period, evidence has been reported to suggest that the stock market may fail

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<sup>1</sup>. Palmrose and Scholz (2003) document that about 31.9% of all restatements are due to *understated* income, which likely would not incur the same costs.

to quickly and efficiently process the types of complex and long-run earnings information contained in such announcements. For example, Hirschey and Richardson, 2003 find statistically significant negative abnormal returns following the announcement of goodwill write-downs, another non-cash accounting event, where the average negative post-announcement period effect is roughly -11.02%.<sup>2</sup> Griffin, Grundfest and Perino (2000) study the market reaction to company announcements that precipitate federal class action securities fraud litigation, such as earnings surprises and restatements, and the later announcement that an issuer has been named as a defendant in such a lawsuit. Griffin, Grundfest and Perino (2000) document a statistically significant negative short-term price response to the litigation announcement along with a negative price response that persists for several weeks subsequently. The stock-price response over shorter and longer horizons is more pronounced for smaller firms and for firms with relatively less analyst coverage. Also, passage of the Private Securities Litigation Reform Act of 1995 reduced the cost of obtaining information about the initiation of these lawsuits and is correlated with a more rapid price response, particularly among smaller issuers and those with less analyst coverage. Griffin, Grundfest and Perino (2000) describe this security price pattern as consistent with a costly-information explanation of stock price formation that may yet be consistent with the efficient market hypothesis.

In another interesting paper, Fairfield and Whisenant (2001) document statistically significant deterioration in the accounting and stock-market performance for firms in the year following security analyst sell recommendations. The authors argue that negative abnormal returns in the post-sell-event period are consistent with the claims of fundamental analysts that they are able to identify firms that are successfully masking operational problems with aggressive accounting. Such results are also consistent with the hypothesis that investors slowly respond to allegations of accounting impropriety.

In sum, this evidence of negative post-announcement drift supports the hypothesis that the market tends to slowly respond to information regarding irregular noncash accounting charges. Based on prior research, there appears to be ample reason to question the market's ability to quickly and efficiently incorporate the long-run earnings information contained in accounting restatements. The purpose of this paper is to identify the market's long-run response to accounting restatement information, and to quantify any underreaction or overreaction, if present. In light of prior research, any post-restatement-announcement drift might be interpreted as consistent with DeBondt and Thaler's (1985, 1987) behavioral interpretation, or Griffin, Grundfest and Perino's (2000) costly-information explanation of stock price formation.

### **3. Methodology and Data**

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<sup>2</sup>. Additional studies documenting significant market reactions to non-cash accounting adjustments include Docketing, Hirschey and Jones (1997), who document a negative reaction to bank loan-loss reserve announcements, and Hirschey and Richardson (2003), who find statistically significant negative abnormal returns surrounding the announcement of goodwill write-offs.

### *3.1 The sample*

The overall sample consists of restatements to correct improper (non-GAAP) financial reporting by U.S. companies during the five-year period from 1995-99.<sup>3</sup> A comprehensive sample of accounting restatements was identified primarily using searches of Lexis-Nexis news wires and SEC Form 8-K filings. Key words used include: restate, error, adjust, revise. Searches were also performed for specific issues such as IPR&D restatements. A handful of additional restatements filed with the SEC but not announced separately were identified using industry sources. On an overall basis, our search identified 492 firms making accounting restatements during the sample period. Eighty-seven of these companies did not have announcement period return data available. On average, these companies are relatively small; their market capitalization at the fiscal year end prior to the accounting restatement announcement is \$685.2 million vs. \$1,466.7 million for those with data.

Of the remaining 405 companies for which market return data are available during the announcement period day -1 to day 1, or (-1,1), 365 also have data available for the complete pre-announcement period. One sample company, Vesta Insurance, is included in the post-announcement returns but not in the announcement returns data. Vesta closed at \$52.59 on the day prior to announcing a restatement, but did not trade on the announcement date. It subsequently reopened at \$27.75. A total of 259 sample companies survive throughout the complete post-announcement period, which runs 255 days past the accounting restatement announcement. Non-surviving sample companies tend to be smaller than surviving companies with an average market capitalization of \$445.6 million versus \$1,994.1 million for survivors.

<Insert Table 1 about here>

Sample descriptive statistics are shown in Table 1. Notice that in terms of size, the sample is comprised of fairly small firms. The sample average market capitalization of equity is \$1.4 billion, but the median market capitalization is only \$141 million. When measured by total assets, the average firms size is \$1.1 billion and the median is \$99.9 million. Estimation results are shown in remaining tables for all sample companies with available data

### *3.2 Estimation method*

Both critics and defenders of the efficient markets hypothesis have discussed how different weighting schemes and empirical methods can affect the measurement and durability of estimated abnormal returns. Loughran and Ritter (2000), for example, identify a range of problems that cause low power in value-weighted three-factor time series regressions when abnormal returns following managerial decisions are being estimated. More generally, Loughran and Ritter (2000) argue that multifactor models as currently used do not, and cannot, test market efficiency. While such a position may be

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<sup>3</sup>. The sample does not include companies adopting new accounting standards promulgated by entities such as the Financial Accounting Standards Board (FASB) the Emerging Issues Task Force (EITF) or the SEC. Such accounting changes do not require corrected reports to be filed, since the original reports were in accordance with GAAP at the time they were published.

somewhat extreme, it is clear that strong empirical support for a long-term abnormal return anomaly tied to accounting restatements requires that such returns be robust to alternative estimation techniques.

To test for robustness, three alternative equally-weighted estimates of abnormal stock returns (prediction errors) surrounding company accounting restatement announcements are obtained. First, market-adjusted abnormal returns are computed by subtracting the observed return on the equally-weighted *CRSP* market index from the rate of return on a given common stock on a given day. Second, market-model adjusted abnormal returns are estimated using the single factor market model. And third, abnormal returns are estimated using comparison period mean-adjusted returns using the arithmetic mean return of each common stock return over the estimation period.

In all instances, a one-year 255-day estimation period is used that begins 300 trading days before the start of the pre-announcement window, on day = -555, and ends 45 trading days before the pre-announcement window, on day = -300. The event date, day = 0, is the date the restatement was announced, typically via press release, but sometimes in an SEC filing. Daily abnormal returns are averaged over the sample of  $n$  firms to yield average abnormal returns, *AAR*, or prediction errors. Cumulative average abnormal returns, *CARs*, or cumulative prediction errors are then calculated over an event interval period of 3 days (-1, 1), the one-year pre-announcement period (-255, -2), and the one-year post-announcement period (2, 255). Following Haw, Pastena and Lilien (1990), among others, a  $t$ -test is applied to examine the hypothesis that the *CARs* are not significantly different from zero.

#### 4. Estimation results

##### 4.1 Abnormal returns for the overall sample

Figure 1 and Table 2 depicts cumulative average abnormal returns (*CARs*) during three announcement-related periods for all sample companies making accounting restatements during the five-year 1995-99 period. Estimation results for the equally-weighted market-adjusted approach are contrasted with those from alternate market-model and mean-adjusted returns methods.<sup>4</sup> The analysis focuses upon *CARs* for the three-day (-1,1) restatement announcement period, the one-year pre-announcement period (-255, -2), and the one-year post-announcement period (2, 255).<sup>5</sup> From an information perspective, negative and statistically significant stock-price effects tied to accounting restatement decisions can be seen as evidence that investors take these non-cash charges as useful indicators of a loss in future profit-generating capability.

<Insert Table 2 about here>

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<sup>4</sup> Each of these methods assumes time series independence in the stock-price reaction tied to accounting restatement announcements. Following Beatty, Chamberlain and Magliolo (1996) later announcements were tested for being as “important” as earlier announcements. No statistically significant difference related to time of announcement was found (results available on request).

<sup>5</sup> *CARs* were also calculated for various other pre-announcement windows [(-5, -2), (-11, -2), (-51, -2), (-255, -52)] and post-announcement windows [(2, 5), (2, 11), (2, 51), (52, 255)]. Estimation results confirm the appropriateness of focusing on the very long, 254-day pre-announcement and post-announcement windows described in Table 2 (results available on request).

<Insert Figure 1 about here>

Announcement-period results parallel findings reported earlier by Palmrose, Richardson and Scholz (2004). For the overall sample of 405 firms, accounting restatements lead to uniformly large and statistically significant stock-price reactions (event-period returns) during the announcement period of -10.06% ( $t$ -statistic = -10.95) using the market-adjusted approach, -10.01% ( $t$ -statistic = -10.96) using the market model-adjusted approach, and -9.95% ( $t$ -statistic = -10.80) using the mean-adjusted approach. It is clear that event-period *CARs* are generally large negative numbers that are statistically significant at the 1% level for the overall sample of accounting restatement announcements.

Notice that estimation results for three partitions of the overall sample are provided, including: all firms for which stock-price data is available, “survivors” with stock-price data for both pre-announcement and post-announcement periods, and “nonsurvivors” with stock price data available for the pre-announcement and/or announcement periods only. Negative announcement effects of -14.72% to -14.79% for nonsurviving firms are somewhat greater, on average, than the -7.20% to -7.38% announcement period abnormal returns experienced by surviving firms.

For the sample of 365 firms with complete data for the pre-announcement period (-255, -2), accounting restatements are associated with uniformly large and statistically significant stock-price declines during the pre-announcement period of -13.55% ( $t$ -statistic = -3.26) using the market-adjusted approach, -10.37% ( $t$ -statistic = -1.95) using the market model-adjusted approach, and -22.17% ( $t$ -statistic = -4.18) using the mean-adjusted approach. Pre-announcement effects of -22.04% to -27.11% for nonsurviving firms are somewhat more negative, on average, than the -5.59% to -20.14% announcement period abnormal returns experienced by surviving firms. These findings suggest that investors in companies making restatement announcements are aware of a meaningful deterioration in the firm’s profit-making potential before the restatement announcement is actually made.

This study focuses on the sample of 259 surviving firms with complete data for the post-announcement period (2, 255), negative stock-price effects during the post-announcement period appear to be modest and statistically insignificant using the market-adjusted, market model-adjusted, and mean-adjusted approaches. On an overall basis, there is no evidence of post-announcement drift in abnormal returns for restatement announcing firms. Nevertheless, as discussed below, post-announcement drift is apparent in the case of certain types of negative restatement announcements.

#### *4.2 Abnormal returns by industry and company characteristics*

Table 3 portrays market-adjusted cumulative average abnormal returns (*CARs*) during three announcement-related periods for sample companies according to industry, firm size, and company operating performance characteristics. The purpose of this analysis is to document the fact that abnormal returns tied to accounting restatements during all three announcement-related periods are only modestly influenced by such considerations. Consistent results were also obtained using market-model adjusted and mean adjusted estimation methods.

<Insert Table 3 about here>

For example, in Table 3, Panel A, it is clear that while industrial firms constitute an important part of the overall sample, broad representation from nonindustrial companies is also evident. There is

no evidence of meaningful differences in abnormal returns during the pre-announcement and announcement periods according to broad industry classifications. During the post-announcement period, however, some modest differences can be noted. For example, technology companies restatement announcements display some evidence of positive post-announcement drift in abnormal returns. Negative post-announcement drift is most obvious for firms found within the utilities, wholesale and retail trade, financial services, and services groups. Within this context it is worth noting that restatements by many technology companies involved IPR&D that did not affect core operating results and increased rather than decreased previously reported net income.

From Table 3, Panel B, some evidence of firm size effects on the abnormal returns tied to accounting restatements is indicated. However, while Griffin, Grundfest and Perino (2000) suggest that the statistically significant negative short-term price response to litigation announcements is more pronounced for smaller firms, in this sample abnormal returns tied to accounting restatements tend to be less negative for smaller firms in the pre-announcement period. In the post-announcement period, larger firms display negative abnormal returns but smaller companies display positive abnormal returns. While perhaps surprising, these results clearly suggest that negative post-announcement drift in restatement abnormal returns cannot be attributed to liquidity effects that can be expected to be most prevalent among smaller companies.

Finally, Table 3, Panel C, gives some evidence about how abnormal returns tied to accounting restatements differ according to company performance. Using the accounting rate of return on total assets measured prior to the restatement announcement, valuation effects of accounting restatements are negative during the post-announcement period for highly profitable firms, but positive for firms with below-median profitability. This finding suggests that accounting restatements portend a most severe “reversal of fortune” for firms that historically displayed high profit rates. Similarly, there is some evidence that rapidly growing firms suffer more negative abnormal returns during the pre-announcement and announcement periods. Taken as a whole, these results provide some evidence to suggest that investors underreact to the bad news contained in accounting restatements by firms previously reporting high performance.

#### *4.3 Abnormal returns by restatement characteristics*

Whereas Table 3 portrays restatement abnormal returns according to industry, firm size, and company operating performance characteristics, Figure 2 and Table 4 shows restatement abnormal returns according to salient restatement characteristics. The purpose of this analysis is to document that abnormal returns during the post-announcement period are closely tied to the specific type of restatement announcement.

<Insert Table 4 about here>

<Insert Figure 2 about here>

In Table 4, Panel A, the sample is partitioned depending upon whether or not management fraud was an important root cause of the restatement. Because fraudulent intent is unobservable, two types of reports are used to classify observations as fraud or no-fraud cases. If the company admits to fraud either in the restatement press release or uses the terms “fraud” or “irregularities” in its amended

filings to the SEC, fraud is taken to be an important causal factor in the company's restatement. Fraud is also presumed to be important if the SEC issues an enforcement action against the company, related to the restatement. SEC enforcement actions are issued in Accounting and Auditing Enforcement Releases (AAERs).

While no fraud companies exhibit negative and statistically significant announcement effects of -7.73% ( $t$ -statistic = -8.68), they do not exhibit significant pre-announcement (-8.62%,  $t$ -statistic = 1.80) nor post-announcement returns (0.61%,  $t$ -statistic = 0.12). Restatement announcements tainted by fraud feature statistically significant negative returns during both the pre-announcement (-35.89%,  $t$ -statistic = -5.13) and announcement periods (-21.80%,  $t$ -statistic = -7.56), but negative returns of -14.12% ( $t$ -statistic = -1.32) are not statistically significant during the post-announcement period. Restatement returns are more negative for fraud firms than for no fraud firms during both the pre-announcement ( $t$ -statistic = -2.54) and announcement periods ( $t$ -statistic = -4.66), but not during the post-announcement period ( $t$ -statistic = -1.24).

The effects of fraud are also characterized based on the timing of the fraud information disclosure. For some companies, the fact of fraud as a motivating force is made clear at the time of the restatement announcement. For others, such information can be disclosed later during the restatement process. For example, Accounting and Auditing Enforcement Releases (AAERs) that govern audit information and methodology are sometimes issued several years after the initial restatement announcement. Table 4, Panel A, shows that restatement announcements tainted by fraud have similar valuation effects irrespective of the timing of the fraud disclosure. Negative pre-announcement (-29.27%,  $t$ -statistic = -2.62), announcement (-21.47%,  $t$ -statistic = -5.77), and post-announcement (-31.88%,  $t$ -statistic = -3.11) effects are noted when fraud is indicated at the time of restatement announcement. Similarly negative pre-announcement (-39.42%,  $t$ -statistic = -4.40), announcement (-22.01%,  $t$ -statistic = -5.29), and post-announcement (-3.02%,  $t$ -statistic = -0.19) effects are noted when fraud is disclosed subsequent to the restatement announcement.

Table 4, Panel B, and Figure 2 show that the valuation effects of restatement announcements are closely tied to the specific impact on reported income and core earnings. Restatements that reduce reported income have sharply negative effects during the pre-announcement (-25.69%,  $t$ -statistic = -4.89), announcement (-14.04%,  $t$ -statistic = -11.35), and post-announcement periods (-19.48%,  $t$ -statistic = -3.73). Moreover, these negative valuation effects are more negative than income increasing restatements in each window: pre-announcement ( $t$ -statistic = 4.08), announcement ( $t$ -statistic = 7.08), and post-announcement ( $t$ -statistic = 4.57).

A similar pattern is evident in the case of restatements that adversely affect core versus noncore earnings.<sup>6</sup> Restatements that affect core earnings have sharply negative effects during the pre-announcement (-25.45%,  $t$ -statistic = -5.27), announcement (-13.93%,  $t$ -statistic = -10.61), and post-announcement periods (-13.89%,  $t$ -statistic = -2.42). Moreover, these negative valuation effects

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<sup>6</sup>. Core earnings include adjustments to revenues, cost of sales, and on-going operating expenses. Non-core earnings include adjustments to merger-related items, one-time charges and non-operating expenses.

are more negative than restatements that only affect noncore earnings in each pre-announcement ( $t$ -statistic = -3.56), announcement ( $t$ -statistic = -5.82), and post-announcement period ( $t$ -statistic = -2.87).

On an overall basis, these results suggest some market underreaction to restatement announcements involving fraud, reductions reported income, and changes in core earnings. Because Palmrose, Richardson and Scholz (2004) show that such restatement characteristics are closely associated with one another, the next section explores a regression analysis of post-announcement period returns.

#### *4.4 Determinants of restatement post-announcement returns*

Table 5 presents an OLS model describing post-announcement returns, with indicator variables for restatements involving fraud (revealed initially), core earnings and decreased income. ROA is included to capture previously reported performance and  $\ln(\text{assets})$  to measure firm size effects. Fifteen observations are lost, primarily due to missing ROA data, so the model is estimated using 244 surviving companies. For comparison to the post-announcement results, Table 5 also presents results when the model is used to explain announcement effects for the same sub-sample of firms.

<Insert Table 5 about here>

On an overall basis, the announcement return model is significant ( $p < .01$ ), although the adjusted- $R^2$  is only 4.8% and the only significant variable is the income-decreasing indicator (negative).<sup>7</sup> Post-announcement return results are also highly significant ( $p < .01$ ), with an adjusted- $R^2$  of 13.7%. Again, the only significant restatement characteristic is the income-decreasing indicator, which has a negative association with returns. Both firm characteristics are significantly negative, suggesting that firms reporting a higher ROA prior to the restatement and larger firms are associated with more negative post-announcement drift.

As a sensitivity check, the signed change in net income, scaled by assets for the income-decreasing indicator variable, was also tested. This measure is positively associated with the post-announcement CARs, i.e. larger reductions in reported income are associated with more negative returns. In this model, the core earnings coefficient is negative and significant, while other results are similar. The natural log of the market value of equity for the log of assets was also used as a size measure. Like assets, equity is negative and significant and other results are essentially unchanged.

Also added were three additional variables previously found to be significant in explaining announcement returns: the number of account groups affected (another measure of severity) and two indicator variables attributing discovery of the restatement to either the auditor or company management. Palmrose, Richardson and Scholz (2004) find that each of these is negatively related to

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<sup>7</sup>. In contrast, Palmrose, Richardson and Scholz (2004) report that announcement effects for 403 restatements over a two-day announcement window (0,1) are significantly associated with fraud (-), the signed change in net income scaled by assets (+), the number of account groups affected (-) and attribution to the auditor (-) or management (-). Differences in these results are due to limiting the sample to survivor firms as well as model specification.

announcement returns. However, only management-attribution is significantly related to the post-announcement returns, and the relation is positive (coefficient = .226, t-statistic = 1.76), indicating more positive post-announcement returns for firms that self-identify restatements. Other results are substantially the same.

This evidence suggests that not all of the negative valuation effects tied to accounting restatement announcements are realized by the end of the announcement period. Some investor underreaction to accounting restatement announcements is apparent. Thus, investors need to be aware of the potential for value-reducing accounting restatement announcements, and that such announcements portend further losses in the post-announcement period.

However, this analysis of post-announcement returns is limited to the companies that survive a full 255 trading days subsequent to the announcement. The next section considers factors associated with the non-surviving companies.

### *3.5 Comparing surviving and non-surviving restatement companies*

In addition to considering companies that do not survive in the CRSP database, the analysis also evaluates companies that declare bankruptcy or are delisted from a major exchange subsequent to the restatement announcement. Both measures of distress are included because companies may continue to trade through Chapter 11 proceedings and because they can drop from the CRSP data set for reasons that may not indicate distress, such as acquisitions and mergers. Bankruptcy and delisting information is based on searches of the Lexis-Nexis news and SEC 8-K files for reports of bankruptcy filings and delistings for two years subsequent to the restatement, plus analysis of Compustat deletion codes.

<Insert Table 6 about here>

Table 6 shows that of the 405 companies with announcement returns, 81 (20.0%) had dropped from CRSP by day 51, and an additional 66, or 147 (36.3%) total are gone by day 255, about one year after the announcement. Within this year, 46 (11.4%) of these companies announced bankruptcy proceedings or delistings, with eight more joining them in the second year. Chi-squared analysis indicates that companies with relatively severe restatements involving fraud, core earnings and decreased income are generally more likely to become distressed.

Logistic regression is used to further assess factors associated with surviving vs. deleted or distressed firms. In these regressions, the dependent variable is coded one for deleted/distressed companies, zero for surviving firms. Thus, the consistently negative and significant coefficients for size indicate that larger companies are more likely to survive the post-announcement period. Other logit results indicate that companies with fraud and more negative announcement returns are more likely to experience distress (each variable is significant in three of the four regressions.)

## **5. Summary and Conclusions**

This study investigates the economic consequences of accounting restatements as captured by long-run effects on the market value of the firm. A sample of 405 companies announcing restatements of their financial statements from 1995 to 1999 form the basis for this investigation. The focus of our analysis is on the post-announcement returns of 259 of these companies with available return data for

approximately one year after the restatement is announced. The overall post-announcement abnormal returns for restatement companies are modestly negative depending on the estimation model, but these returns are not statistically significant. However, important post-announcement drift is noted when the overall sample is partitioned according to the specific nature of the accounting restatement information. Significant negative post-announcement abnormal returns are obvious for restatements that involve fraud, decrease reported income and affect core earnings. Regression analysis shows that restatement companies that are larger and reported higher pre-restatement profitability are associated with more negative post-announcement returns, as are companies whose restatements decreased reported income. The fact that more negative post-announcement returns are evident in the case of larger companies suggests that liquidity issues are not responsible for the negative post-announcement drift phenomenon discovered here.

These findings offer interesting additional perspective on the ability of current accounting earnings information to predict future abnormal returns in the stock market. Consistent with a long line of research since Ball and Brown (1968), there appears to be statistically significant post-earnings announcement drift following accounting restatements, a special type of earnings announcement. Also consistent with related research on the stock market assessment of irregular and negative earnings information, market underreaction to restatement information is most apparent in the case of unambiguously negative restatement information. Because the amount of post-announcement drift is especially evident in the case of firms that report negative restatement information, findings reported here are consistent with De Bondt and Thaler's (1985, 1987) investor underreaction hypothesis, and with formal models of investor sentiment based upon psychological evidence.

## References

- Abarbanell, J. S. and Bernard, V. L. 1992. "Tests of Analysts' Overreaction/Underreaction to Earnings Information as an Explanation for Anomalous Stock Price Behavior." *Journal of Finance* 47, (July): 1181-1207.
- American Institute of Certified Public Accountants. 1970. Accounting Principles Board (APB) Opinion No. 16, Business Combinations.
- American Institute of Certified Public Accountants. 1970. Accounting Principles Board (APB) Opinion No. 17, , Intangible Assets.
- Anderson, K. L. and Yohn, T. L. 2002. "The Effect of 10K Restatements on Firm Value, Information Asymmetries, and Investors' Reliance on Earnings." Georgetown University, George Emmett McDonough School of Business Working Paper, (October).
- Ball, R., and Brown, P. 1968. "An Empirical Evaluation of Accounting Income Numbers." *Journal of Accounting Research* 6, 159-178.
- Barberis, N., Schleifer, A., and Vishny, R. 1998. "A Model of Investor Sentiment." *Journal of Financial Economics* 49, (September): 307-343.
- Bartov, E., Lindahl, F. W., and Ricks, W.E. 1998. "Stock Price Behavior Around Announcements of Write-offs." *Review of Accounting Studies* 3, (December): 327-346.
- Beatty, A., Chamberlain, S., and Magliolo, J. 1996. "An Empirical Analysis of the Economic Implications of Fair Value Accounting for Investment Securities." *Journal of Accounting and Economics* 22, (August-December): 43-77.
- Chan, L. K. C., Jegadeesh, N., and Lakonishok, J. 1996. "Momentum Strategies." *Journal of Finance* 51, (December): 1681-1713.
- Coffee Jr., J. C. 2003. "What Caused Enron?: A Capsule Social and Economic History of the 1990's." Columbia University, Columbia Law and Economics Working Paper No. 214, (January).
- De Bondt, W. F. M. and Thaler, R. H. 1985. "Does the Stock Market Overreact?" *Journal of Finance* 40, (July): 793-805.

De Bondt, W. F. M. and Thaler, R. H.. 1987. "Further Evidence on Investor Overreaction and Stock Market Seasonality." *Journal of Finance* 42, (July): 557-581.

De Bondt, W. F. M. and Thaler, R. H. 1990. "Do Security Analysts Overreact?" *American Economic Review* 80, (May): 52-57.

Docking, D.S., Hirschey, M. and Jones, E. 1997. "Information and Contagion Effects of Bank Loan-loss Reserve Announcements." *Journal of Financial Economics* 43, (February): 219-239.

Dreman, D. N. and Berry, M. A. 1995. "Overreaction, Underreaction, and the Low-P/E Effect," *Financial Analysts Journal* 51, (July/August): 21-30.

Easterwood, J. C. and Nutt, S. R. 1999. "Inefficiency in Analysts' Earnings Forecasts: Systematic Misreaction or Systematic Optimism?" *Journal of Finance* 54, (October): 1777-1797.

Erickson, M., Hanlon, M., Maydew, L. 2002. "How Much Will Firms Pay for Earnings That Do Not Exist? Evidence of Taxes Paid on Allegedly Fraudulent Earnings." University of Chicago Working paper, (December).

Fairfield, P. and Whisenant, J. S. 2001. "Using Fundamental Analysis to Assess Earnings Quality: Evidence from the Center for Financial Research and Analysis." *Journal of Accounting, Auditing & Finance* 16, (Fall): 273-295.

Financial Accounting Standards Board (FASB). 2001. Statement No. 141, Business Combinations. Financial Accounting Foundation. (June)

Financial Accounting Standards Board (FASB). 2001. Statement No. 142, Goodwill and Other Intangible Assets. Financial Accounting Foundation. (June)

Griffin, P. A. 2002. "A League of Their Own? Financial Analysts' Responses to Restatements and Corrective Disclosures." University of California, Davis, Graduate School of Management Working Paper, (October).

Griffin, P. A. , Grundfest, J. Perino, M. A. 2000. "Stock Price Response to News of Securities Fraud Litigation: Market Efficiency and the Slow Diffusion of Costly Information." Stanford Law and Economics Olin Working Paper No. 208 (November).

Haw, I., Pastena, V. S., and Lilien, S.B. 1990. "Market Manifestation of Nonpublic Information Prior to Mergers: The Effect of Capital Structure." *Accounting Review* 65, (April): 432-451.

- Hirschey, M. and Weygandt, J. J. 1985. "Amortization Policy for Advertising and Research and Development." *Journal of Accounting Research* 23, (Spring): 326-335.
- Hirschey, M., and Richardson, V. J. 2003. "Investor Underreaction to Goodwill Write-offs." *Financial Analysts Journal*, 59 (November/December): 75-84.
- Jennings, R., LeClere, M. and Thompson, R. B. II 2001. "Goodwill Amortization and the Usefulness of Earnings." *Financial Analysts Journal* 57, (September/October): 20-28.
- Jones, C. L. and Weingram, E. 1997. "The Effects of Insider Trading, Seasoned Equity Offerings, Corporate Announcements, Accounting Restatements, and SEC Enforcement Actions on 10b-5 Litigation Risk." Stanford University, Graduate School of Business Working Paper Series, (February).
- Kinney, W. R. Jr., Palmrose, Z-V. and Scholz, S. 2004. "Auditor Independence, Non-audit Services and Restatements: Was the Government Right?" *Journal of Accounting Research* 42, (June): 561-588.
- Loughran, T., and Ritter, J. R. 1996. "Long-term Market Overreaction: The Effect of Low-priced Stocks." *Journal of Finance* 51, (December):1959-1970.
- Loughran, T., and Ritter, J. R 2000. "Uniformly Least Powerful Tests of Market Efficiency." *Journal of Financial Economics* 55, (March): 361-389.
- Palmrose, Z-V, Richardson, V. J., and Scholz, S. 2004. "Determinants of Market Reactions to Restatement Announcements." *Journal Accounting and Economics* 37, (February): 59-89.
- Palmrose, Z-V., and Scholz, S. 2004. "The Accounting Causes and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements." *Contemporary Accounting Research* 21, (Spring): 139-180.
- Press, E. G. and Dowdell, T. D. 2001. "Restatement of In-Process Research and Development Write-Offs: The Impact of SEC Scrutiny." Temple University, Department of Accounting Working Paper Series, (September).
- Richardson, S. A., Tuna, A. I. and Wu, M. 2003. "Predicting Earnings Management: The Case of Earnings Restatements." University of Pennsylvania, Wharton Working Paper Series, (January).

Table 1

Sample attrition and descriptive statistics for restatement companies<sup>1</sup>

Panel A: Sample attrition and mean values for selected variables <sup>2</sup>		Book	Market	Return		
	<i>n</i>	Value of <u>Assets</u>	Value of <u>Equity</u>	on Book <u>Assets</u>		
Restatement announcements	492	1,075.4	1,371.3	-7.6%		
Observations missing return data	(87)	806.8	685.2	-17.8%		
Companies with announcement returns	405	1,130.5	1,466.7	-5.7%		
Surviving company with announcement halt	1					
Non-surviving companies	(147)	374.1	445.6	-9.8%		
Surviving companies	259	1,561.4	1,994.1	-3.4%		
Panel B: Descriptive statistics for restatement companies <sup>3</sup>						
	<i>n</i>	<u>Mean</u>	<u>Median</u>	<u>Minimum</u>	<u>Maximum</u>	<u>St</u> <u>Devi</u>
Market value of equity	381	1,419.1	141.0	1.7	97,535.5	6,0
Book value of assets	419	1,099.4	99.9	2.4	52,468.3	4,1
Revenues	415	769.4	81.8	0.2	27,037.0	2,6
Net income	395	26.9	1.7	(530.0)	3,527.0	2,
Sales growth	411	164.4%	28.3%	-467.9%	28,152.6%	1,47
Tobin's Q	380	2.77	1.82	0.23	22.14	:
	395	-5.7%	2.1%	-232.8%	46.3%	2,

Return on book assets	361	-3.2%	1.6%	-175.9%	21.7%	16
Return on market equity						

<sup>1</sup> Measured at fiscal year end prior to restatement announcement. Financial variables are in millions of dollars.

<sup>2</sup> Summary statistics based on a reduced number of observations with available data.

<sup>3</sup> Descriptive statistics include all available data for any restatement company with return data available for any of the three windows. N's are noted in the first column.

Table 2

Sample CARs surrounding restatement announcements using market adjusted, market-model adjusted and mean adjusted estimation methods.

Panel A: CARs for pre-, post- and announcement windows. Results provided for all restatement announcements, surviving and non-surviving subsets.

		Return Windows		
		Pre- announcement	Announcement	Post- announcement
		<u>(-255, -2)</u>	<u>(-1, 1)</u>	<u>(2, 255)</u>
<i>A. Market adjusted results</i>				
All available	<i>n</i>	365	405	259
	CAR	-13.55%	-10.06%	-1.61%
	<i>(t-statistic)</i>	<i>(-3.26)</i>	<i>(-10.95)</i>	<i>(-0.34)</i>
Survivors	<i>n</i>	259	258	259
	CAR	-8.73%	-7.38%	-1.61%
	<i>(t-statistic)</i>	<i>(-1.88)</i>	<i>(-7.43)</i>	<i>(-0.34)</i>
Non-survivors	<i>n</i>	106	147	n/a
	CAR	-25.33%	-14.75%	n/a
	<i>(t-statistic)</i>	<i>(-2.91)</i>	<i>(-8.31)</i>	n/a

*B. Market-model adjusted results*

All available	<i>n</i>	365	405	259
	CAR	-10.37%	-10.01%	-3.70%
	<i>(t-statistic)</i>	<i>(-1.95)</i>	<i>(-10.96)</i>	<i>(-0.58)</i>
Survivors	<i>n</i>	259	258	259
	CAR	-5.59%	-7.33%	-3.70%
	<i>(t-statistic)</i>	<i>(-1.95)</i>	<i>(-10.96)</i>	<i>(-0.58)</i>
Non-survivors	<i>n</i>	106	147	n/a
	CAR	-22.04%	-14.72%	n/a
	<i>(t-statistic)</i>	<i>(-2.04)</i>	<i>(-8.39)</i>	n/a

*C. Mean adjusted results*

All available	<i>n</i>	365	405	259
	CAR	-22.17%	-9.95%	-3.69%
	<i>(t-statistic)</i>	<i>(-4.18)</i>	<i>(-10.80)</i>	<i>(-0.56)</i>
Survivors	<i>n</i>	259	258	259
	CAR	-20.14%	-7.20%	-3.69%
	<i>(t-statistic)</i>	<i>(-3.30)</i>	<i>(-7.19)</i>	<i>(-0.56)</i>
Non-survivors	<i>n</i>	106	147	n/a
	CAR	-27.11%	-14.79%	n/a
	<i>(t-statistic)</i>	<i>(-2.57)</i>	<i>(-8.37)</i>	n/a

Table 3

CARs for company characteristics. Market-adjusted returns for event windows before, at and after restatement announcement dates. All available returns included.

		Pre- announcement		Announcement		Post- announcement
<i>A. Industry effects</i>	<i>n</i>	<u>(-255, -2)</u>	<i>n</i>	<u>(-1, 1)</u>	<i>n</i>	<u>(2, 255)</u>
Ag., mining and const.	9	-13.71%	11	-10.61%	5	9.85%
Manufacturing	120	-23.13%	129	-9.20%	91	8.61%
Technology	91	3.87%	104	-11.38%	65	26.81%
Transportation	4	-27.96%	7	-7.45%	3	0.49%
Communication	8	-19.11%	11	-8.70%	6	-5.71%
Utilities	5	-31.34%	6	-8.49%	3	-36.23%
Wholesale and retail	35	-24.05%	41	-10.14%	26	-40.98%
Financial services	45	-17.26%	47	-7.40%	30	-36.08%
Services	48	-7.48%	49	-12.70%	30	-23.40%
Total	365		405		259	
<i>F-statistic</i>				0.37		
		0.94				3.60
 <i>B. Firm size effects</i>						
Market value of equity						
Above median	172	-17.55%	183	-9.53%	122	-5.45%
<i>t-statistic (null = 0)</i>		-3.12		-7.49		-0.76
Below median	171	-7.56%	184	-10.09%	121	3.26%
<i>t-statistic (null = 0)</i>		-1.15		-6.92		0.48
<i>t-statistic (null: groups equal)</i>		1.15		-0.29		3.72
 Book value of assets						
Above median	183	-18.66%	203	-9.14%	130	-18.86%
<i>t-statistic (null = 0)</i>		-3.12		-7.86		-3.13
Below median	182	-8.40%	202	-10.98%	129	15.78%

<i>t</i> -statistic ( <i>null</i> = 0)	-1.46	-7.71	2.22
<i>t</i> -statistic ( <i>null</i> : groups equal)	1.23	-1.00	3.72

### *C. Firm profitability effects*

#### Return on assets

Above median	173	-22.51%	191	-10.79%	123	-16.83%
<i>t</i> -statistic ( <i>null</i> = 0)		-5.29		-8.09		-2.61
Below median	172	-8.41%	190	-9.74%	122	11.11%
<i>t</i> -statistic ( <i>null</i> = 0)		-1.15		-7.64		1.62
<i>t</i> -statistic ( <i>null</i> : groups equal)		1.67		0.57		2.97

Table 3 (continued)

CARs for company characteristics. Market-adjusted returns for event windows before, at and after restatement announcement dates. All available returns included.

		Pre- announcement		Announcement		Post- announcement
<i>C. Firm profitability effects</i>	<i>n</i>	<i>(-255, -2)</i>	<i>n</i>	<i>(-1, 1)</i>	<i>n</i>	<i>(2, 255)</i>
<i>Sales growth</i>						
Above median	180	-24.12%	199	-13.68%	128	-6.08%
<i>t-statistic (null = 0)</i>		<i>-4.12</i>		<i>-9.75</i>		<i>-0.88</i>
Below median	180	-2.61%	198	-6.53%	128	2.92%
<i>t-statistic (null = 0)</i>		<i>-0.45</i>		<i>-5.57</i>		<i>0.44</i>
<i>t-statistic (null: groups equal)</i>		<i>2.60</i>		<i>3.91</i>		<i>0.93</i>
<i>Tobin's Q</i>						
Above median	171	-10.01%	183	-10.62%	121	5.86%
<i>t-statistic (null = 0)</i>		<i>-1.65</i>		<i>-7.75</i>		<i>0.80</i>
Below median	171	-15.14%	183	-9.03%	121	-7.77%
<i>t-statistic (null = 0)</i>		<i>-2.43</i>		<i>-6.60</i>		<i>-1.18</i>
<i>t-statistic (null: groups equal)</i>		<i>-0.59</i>		<i>0.82</i>		<i>-1.38</i>

Table 4

Mean CARs for restatement characteristics. Market-adjusted returns for event windows before, at and after restatement announcement dates. All available returns included.

	Return Windows		
	Pre- announcement <u>(-255, -2)</u>	Announcement <u>(-1 to 1)</u>	Post- announcement <u>(2, 255)</u>
<i>A. Fraud effects</i>			
No fraud involved			
<i>n</i>	299	338	220
CAR	-8.62%	-7.73%	0.61%
<i>t</i> -statistic ( <i>null = 0</i> )	-1.80	-8.68	0.12
Fraud involved			
<i>n</i>	66	67	39
CAR	-35.89%	-21.80%	-14.12%
<i>t</i> -statistic ( <i>null = 0</i> )	-5.13	-7.56	-1.32

<i>t</i> -statistic (null: no fraud = fraud))	-2.54	-4.66	-1.24
Fraud announced initially			
<i>n</i>	23	27	15
CAR	-29.27%	-21.47%	-31.88%
<i>t</i> -statistic (null = 0)	-2.62	-5.77	-3.11
Fraud announced subsequently			
<i>n</i>	43	40	24
CAR	-39.42%	-22.01%	-3.02%
<i>t</i> -statistic (null = 0)	-4.40	-5.29	-0.19
<i>F</i> -Statistic (null: initial = subsequent = no fraud)	3.35	17.51	1.27
 <i>B. Income effects</i>			
Restatement decreased reported income			
<i>n</i>	238	263	156
CAR	-25.69%	-14.04%	-19.48%
<i>t</i> -statistic (null = 0)	-4.89	-11.35	-3.73

Table 4 (continued)

Mean CARs for restatement characteristics. Market-adjusted returns for event windows before, at and after restatement announcement dates. All available returns included.

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	Pre- announcement <u>(-255, -2)</u>	Return Windows Announcement <u>(-1 to 1)</u>	Post- announcement <u>(2, 255)</u>
<i>B. Income effects (continued)</i>			
Restatement increased net income/no change			
<i>N</i>	127	142	103
CAR	9.21%	-2.69%	25.47%
<i>t</i> -statistic ( <i>null</i> = 0)	1.45	-2.63	3.05
<i>t</i> -statistic ( <i>null</i> : groups equal)	4.08	7.08	4.57
Restatement affected core earnings			
<i>n</i>	219	243	144
CAR	-25.45%	-13.93%	-13.89%
<i>t</i> -statistic ( <i>null</i> = 0)	-5.27	-10.61	-2.42
Restatement affected only non-core earnings			
<i>n</i>	146	162	115
CAR	4.30%	-4.24%	13.78%
<i>t</i> -statistic ( <i>null</i> = 0)	0.59	-4.13	1.78
<i>t</i> -statistic ( <i>null</i> : groups equal)	-3.56	-5.82	-2.87
<i>C. All observations</i>			
<i>N</i>	365	405	259
CAR	-13.55%	-10.06%	-1.61%
<i>t</i> -statistic ( <i>null</i> = 0)	-3.26	-10.95	-0.34

Table 5  
 OLS Regressions explaining announcement and post-announcement returns

Dependent variable:	Announce CARs (-1, 1)		Post-announce CARs (2, 255)	
	<u>coefficient</u>	<u>t-</u> <u>statistic</u>	<u>coefficient</u>	<u>t-</u> <u>statistic</u>
Announcement CAR (-1, 1)			-0.35	-1.18
Pre-announcement CAR (-255, - 2)	0.00	-0.05	-0.01	-0.18
Fraud at announcement	-0.04	-1.00	-0.07	-0.38
Core earnings affected	-0.02	-0.81	-0.06	-0.52
Income-decreasing	-0.06	-2.43	-0.44	-3.71
ROA reported prior	-0.03	-0.82	-0.46	-2.61
Ln (assets)	0.00	0.04	-0.08	-3.24
Constant	-0.03	-0.79	0.67	4.19
<i>Model F-statistic</i>	3.04		6.49	
Adjusted R <sup>2</sup>	4.8%		13.7%	
<i>n</i>	244		244	

Table 6

Descriptive statistics and logistic regressions of restatement characteristics on various measures of firm survival.

	Deleted from CRSP <u>by day 51</u>		Deleted from CRSP <u>by day 255</u>		Bankrupt or Delisted <u>within 1 year</u>		Bankrupt or Delisted <u>within 2 years</u>	
Announcement return sample	405		405		405		405	
Number/percent deleted/distressed	81	20%	147	36%	46	11%	54	13
Fraud								
Overall count/percent	27	7%	27	7%	27	7%	27	7

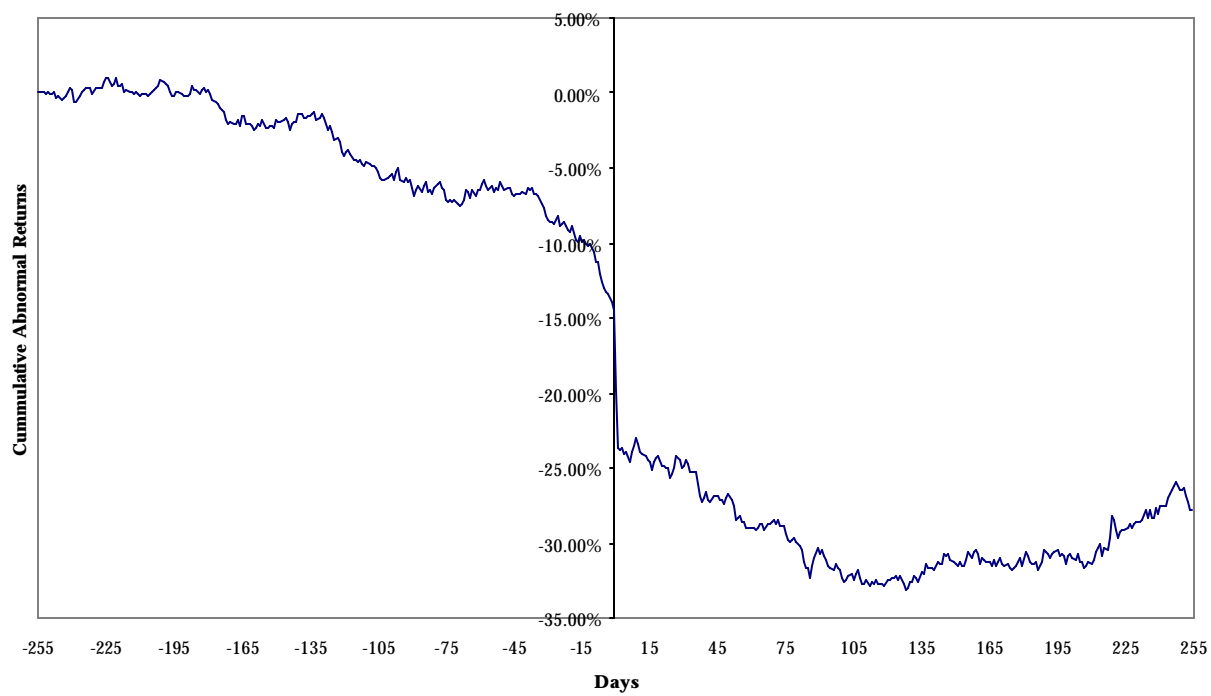
Fraud & deleted count/percent	9	11%	12	8%	9	20%	10	19
<i>Pearson Chi-square/p- value</i>	<i>3.21</i>	<i>0.07</i>	<i>0.83</i>	<i>0.36</i>	<i>13.88</i>	<i>0.00</i>	<i>14.07</i>	<i>0.00</i>
Core earnings restated Overall count/percent	243	60%	243	60%	243	60%	243	60%
Core & deleted count/percent	56	69%	100	68%	41	89%	48	89%
<i>Pearson Chi-square/p- value</i>	<i>3.52</i>	<i>0.06</i>	<i>6.20</i>	<i>0.01</i>	<i>18.35</i>	<i>0.00</i>	<i>21.67</i>	<i>0.00</i>
Income-decreasing Overall count/percent	263	65%	263	65%	263	65%	263	65%
Income decreasing & deleted count/percent	58.00	72%	108	73%	42	91%	50	93%
<i>Pearson Chi-square/p- value</i>	<i>1.98</i>	<i>0.16</i>	<i>7.38</i>	<i>0.01</i>	<i>15.84</i>	<i>0.00</i>	<i>20.93</i>	<i>0.00</i>

## Panel B: Logit analysis

	Deleted from CRSP <u>by day 51</u>		Deleted from CRSP <u>by day 255</u>		Bankrupt or Delisted <u>within 1 year</u>		Bankrupt or Delisted <u>within 2 years</u>	
<i>n</i>	381		381		381		381	
dependent variable = 1	76	20%	137	36%	44	12%	52	14%
	<u>coef</u>	<u>p-value</u>	<u>coef</u>	<u>p-value</u>	<u>coef</u>	<u>p-value</u>	<u>coef</u>	<u>p-value</u>
Announcement return	-1.15	.120	-1.88	.004	-2.01	.017	-2.41	.00
Fraud at announcement	0.97	.052	0.36	.433	1.24	.011	1.20	.00
Core earnings restated	0.39	.333	0.20	.539	0.83	.161	0.71	.19
Income-decreasing	-0.56	.172	-0.01	.983	0.80	.221	1.05	.10
Return on Assets	0.12	.778	-0.24	.553	-0.72	.156	-0.57	.24
Ln (assets)	-0.52	.000	-0.35	.000	-0.18	.093	-0.24	.00
Constant	0.84	.101	0.71	.088	-2.96	.000	-2.65	.00

Model Chi-square	45.89	.000	48.88	.000	41.27	.000	53.49	.01
Nagelkerke Psuedo R <sup>2</sup>		18%		17%		20%		24

**Figure 1: Market-adjusted Cummulative Abnormal Returns for Pre-announcement and Post-announcement Periods**



**Figure 2: Market-adjusted Cumulative Abnormal Returns For Pre-announcement and Post-announcement Periods: Core Earnings, Earnings Decrease and Fraud Restatements**

