Mary L. Shapiro
U.S. Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

Dear Chairman Shapiro:

Thank you for the opportunity to comment on the Final Report of the Advisory Committee on Improvements to Financial Reporting (CIFR). I have conducted two studies which I believe will be of interest to the SEC in deliberating the CIFR's recommendations. The CIFR notes that accounting restatements have increased sharply in recent years, and is concerned that many these restatements are prompted by inconsequential errors. Both the CIFR and former Treasury Secretary Henry Paulson have expressed concern that such restatements could be confusing to investors. In the study provided below entitled, "Are Investors Confused by Restatements after Sarbanes-Oxley?," I find that restatements have, in fact, become less egregious across a variety of dimensions, consistent with the CIFR's concerns about less consequential errors. However, using widely accepted techniques for assessing the rationality with which investors react to information, I find little evidence that investors are confused by the recent restatements. Investors appear to realize that the restatements are less consequential and react accordingly.

My second study was conducted in response to the CIFR's concerns that investors are deprived of information while firms undergo the restatement process. Co-authored with my Notre Dame colleague Brad Badertscher, the study is entitled, "Accounting Restatements and the Timeliness of Disclosures." I will submit it separately.

I appreciate this opportunity to share my work and hope the SEC finds it informative. Feel free to contact me with questions or comments.

Sincerely,

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Are Investors Confused by Restatements after Sarbanes-Oxley?

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Abstract

The United States Treasury Secretary and other regulators have expressed concern that investors are "confused" by the high volume and questionable materiality of accounting restatements since passage of the Sarbanes-Oxley Act (SOX). This study looks for evidence of investor confusion by examining stock returns and trading volume around and after restatement announcements. I find that stock returns around restatement announcements become significantly less negative after SOX, even after controlling for many restatement characteristics. To assess whether these less negative returns represent an underreaction, I test for subsequent negative drifts in stock prices. Little evidence of negative drifts unique to post-SOX restatements is found. In fact, unsigned price drifts tend to be smaller in the post-SOX period, suggesting that post-SOX restatements are more efficiently priced. Finally, I find no evidence of confusion in trading volume around post-SOX restatements. Thus, the findings provide little evidence that investors are confused by post-SOX restatements.

I. Introduction

The sharp increase in the number of accounting restatements in the years since passage of the Sarbanes-Oxley Act (SOX) has received much attention from regulators and the press. Some claim that the increase in restatements is due to more diligent reviews by managers, directors, and auditors, which has improved transparency and investor confidence (e.g., Turner and Weirich 2006). However, others question whether many of these restatements are necessary, fearing that they impose costs on investors and preparers without delivering useful information. United States Treasury Secretary Henry Paulson expressed concern that restatements of questionable materiality could "confuse" investors (Paulson 2007).[1] The Securities and Exchange Commission's Advisory Committee on Improvements in Financial Reporting (CIFR) reiterated Paulson's concern, noting that such restatements "may create confusion that reduces the efficiency of investor analysis" (CIFR 2008, 78). CIFR issued a series of recommendations designed to reduce the use of restatements as a means of correcting less material errors.[2] The recommendations are opposed by some investor groups who believe that investors are able to judge the importance of each restatement for themselves (Johnson 2008).

This study examines investor reaction to restatements after SOX for signs of confusion. I focus on four ways in which confusion among investors could manifest: systematic underreaction, systematic overreaction, inconsistent reactions, and low consensus reactions. Systematic underreaction would occur if the increased number of restatements strains the information processing capacity of investors, and they respond by ignoring or underweighting

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[1] In an op-ed piece for the *Financial Times*, Paulson stated, "Restatements pose significant costs on our capital markets. They have the potential to confuse investors and erode public confidence in financial reporting. Some of these restatements might not be material to investors, and others may simply reflect new accounting standards interpretations" (Paulson (2007), 15).

[2] For less material errors, CIFR favors catch-up adjustments to current earnings or equity rather than restatements of prior periods. CIFR's recommendations are discussed in section II.

the news. Alternatively, after witnessing the massive losses in shareholder wealth that accompanied several high-profile restatements before SOX, investors may overreact to the less material restatements of the post-SOX period. A third possibility is that investors do not react consistently to post-SOX restatements, overreacting to some and underreacting to others. A fourth possibility is that confusion over the restatement leads to disagreement among investors about the firm's value, causing an increase in trading volume with little corresponding movement in prices. This study tests for all four of these potential manifestations of investor confusion, and thus helps regulators decide whether to pursue policies that reduce the use of restatements as a means of correcting errors.

I test for systematic under or overreaction using two sets of tests. First, I compare announcement returns of post-SOX restatements to those of restatements before SOX, a time when restatements were less frequent and firms faced less pressure to restate for errors of questionable materiality. A more (less) negative reaction to restatements after SOX would be an initial indication of investor overreaction (underreaction). However, investor reaction could also change because restatement characteristics change after SOX. Although I control for many restatement characteristics, the model may not completely capture differences in the nature of pre- and post-SOX restatements. Therefore, my second set of tests analyzes long run stock performance after the initial market reaction. If post-SOX announcement returns are found to be less (more) negative, and they are followed by negative (positive) price drifts, this would be strong evidence that investors initially underreacted (overreacted) to the restatement announcements. I also test for price drifts in subsets of the sample in case investor confusion is confined to restatements having particular characteristics. A key subset is restatements that have

large residuals in the regression of announcement returns, as the initial reaction to these restatements deviates from that predicted by the model.

Confusion could also lead to inconsistent market reactions, with investors overreacting to some restatements and underreacting to others. Inconsistent reactions would cause subsequent downward price drifts for some stocks and upward price drifts for others, resulting in long run portfolio returns that do not significantly differ from zero. Therefore, I examine unsigned drifts in stock prices following restatements, comparing the unsigned price drifts following post-SOX restatements to those following pre-SOX restatements. If post-SOX restatements result in more initial mispricing in one direction or another compared to pre-SOX restatements, then unsigned drifts following post-SOX restatements will be higher.

Even in the absence of mispricing, confusion over post-SOX restatements could still spawn disagreements among investors that trigger costly trading activity. Therefore, the final set of tests compares trading volume around post-SOX restatement announcements to that of pre-SOX announcements. High volume would not result in strong price movements if the selling pressure from investors who react negatively to the restatement is offset by purchases from investors who do not believe that the restatement's implications for firm value are as negative.

High volume may result from unsophisticated investors trading with sophisticated investors around the restatement announcement. Many prior studies have attempted to proxy for the trading of unsophisticated investors using trade size, with small trades assumed to be those of individual investors and large trades assumed to be those of institutions (e.g., Bhattacharya, Black, Christensen, and Mergenthaler 2006; De Franco, Lu, and Vasvari 2007). I do not analyze trade sizes around restatements because the introduction of decimalized market quotes in 2001 caused institutional investors to break up trade sizes (Barber, Odean, and Zhu 2006; Kaniel,

Saar, and Titman 2008). This change in trading behavior occurs near the partitioning point of my pre- and post-SOX samples, likely confounding comparisons across periods. Although I do not directly examine the trading activity of sophisticated and unsophisticated investors, abnormal volume would be generated if the two groups are trading in opposite directions around restatement announcements. Thus, my analysis of abnormal volume indirectly tests for such activity.

I find that announcement returns for post-SOX restatements are significantly less negative than those of pre-SOX restatements, even after controlling for the egregiousness of restatements using an extensive set of proxies. Supplemental tests are conducted to identify the types of post-SOX restatements that are responsible for the less negative mean reaction. One possibility is that the proxies for restatement egregiousness do not fully capture the technical nature of errors discovered while preparing for SOX-related regulatory events like executive certification of financial statements or internal control reviews. However, I find that restatements prompted by these events are not a major reason for the less negative post-SOX announcement returns. Instead, I find that the less negative returns are explained by less negative reactions to restatements involving fraud, multiple errors, and delays in quantifying the earnings impact. Evidence suggests that the less negative reactions are rational because after SOX these types of restatements involve smaller dollar amounts and are less likely to involve core components of earnings.

To further assess the efficiency of investor reactions to restatement announcements, I examine long run returns after the initial reactions. There is no systematic drift in prices in the two years after the restatement announcements in the pre- or post-SOX periods. I also look for evidence of drift in subsamples of restatements that are more likely to be mispriced, but find

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little evidence of systematic mispricing. A few subsamples exhibit significant drifts, but the drifts tend not to be confined to post-SOX restatements. Further analysis suggests that these drifts are caused by delayed release of information about the restatements; much of the drifting occurs during the period when the firm has announced the need to restate but has not yet quantified the restatement's earnings impact. There is almost no evidence of systematic drifts for the sample as a whole or any subsample in either SOX period after the full earnings impact is disclosed. Tests of unsigned drifts also provide no evidence of more mispricing after SOX. In fact, the unsigned price drifts following post-SOX restatements tend to be smaller than those following pre-SOX restatements. Thus, it does not appear that confusion among investors over post-SOX restatements is leading to more systematic or unsystematic mispricing.

Finally I test whether confusion over post-SOX restatements triggers costly trading activity. I find no difference in trading volume around restatement announcements across the two SOX periods after controlling for the news content of the announcements. Thus, results of the pricing and volume tests do not support the notion that the increase in restatements after SOX has been marked by investor confusion.

II. Background

Post-SOX restatements

Studies conducted by the Government Accountability Office (GAO) of the period 1997 to 2005 show a marked increase in restatements beginning in 2002, the year SOX was passed (GAO-06-678 (2006), GAO-06-1053R (2007)). This increase is depicted in Figure 1 and discussed further in Section IV. Research firms such as Glass, Lewis, & Co. LLC report that the number of restatements has remained high in subsequent years (Taub 2008).

Another major finding of the GAO studies is that market reactions to post-SOX restatement announcements tend to be less negative. This finding is corroborated in studies by

Hranaiova and Byers (2007) and Scholz (2008). The GAO speculates that the market reactions could be less negative because of fewer cases of aggressive or abusive accounting practices and more cases when firms are restating to correct minor or technical deficiencies amid increased scrutiny after SOX. Consistent with these conjectures, other studies report that post-SOX restatements involve lower dollar amounts and are less likely to involve fraud and core income items (Burks 2008; Hennes, Leone, and Miller 2008; Plumlee and Yohn 2008a; Scholz 2008). My study tests whether the less negative market reactions can be completely explained by the changes in restatement characteristics after SOX. Any unexplained difference in the announcement returns of pre- and post-SOX restatements suggests either mispricing or an incomplete model of announcement returns. I conduct additional analysis to assess the completeness of the model and test for mispricing by examining long run stock performance after the restatement.

Controversy over the increase in restatements after SOX

The two major regulators of U.S. capital markets, the Department of the Treasury and the Securities and Exchange Commission (SEC), are concerned with the increase in restatements. Following Treasury Secretary Paulson's expression of concern, the Treasury Department commissioned a report issued in 2008 which detailed the changing nature of restatements (Scholz 2008). The SEC formed the Advisory Committee on Improvements in Financial Reporting (CIFR), which in its final report emphasized the need for more guidance on restatements (CIFR 2008). To reduce the number of restatements, the committee recommends that current materiality guidance be reinterpreted or revised so that more errors will be classified as immaterial. Under U.S. Generally Accepted Accounting Principles, immaterial errors do not require restatement of prior periods (Statement of Financial Accounting Standards No. 154).

CIFR believes that in some cases a quantitatively material error should be deemed immaterial if, for instance, the error relates to a business segment or one-time item that does not drive firm value or affect the appearance of key trends (CIFR 2008, 81). CIFR also recommends that prior periods should not be restated for errors that are not material to those periods, even if the cumulative error is material to the current period (CIFR 2008, 83).

These recommendations are controversial. Some market participants and investor groups do not want the SEC to curtail the practice of restating prior periods to correct errors. They believe that the CIFR's materiality recommendations grant too much discretion over disclosure to the preparers, and that investors are able to judge for themselves whether the restatements are relevant for valuation.[3] This study provides evidence on the efficiency with which investors make these judgments.

Studies of restatement returns

Several studies examine the determinants of restatement announcement returns. Palmrose, Richardson, and Scholz (2004) find that announcement returns are related to a variety of restatement characteristics such as the presence of fraud, the number of accounts involved, and the impact on earnings. I use largely the same set of characteristics, augmented by some measurement changes and additions based on subsequent studies (e.g. Gordon, Henry, Peytcheva, and Sun 2008; Hennes, Leone, and Miller 2008; Swanson, Tse, and Wynalda 2008).[4] The variables are discussed in the next section and in Appendices A and B. The main innovation that I introduce is tracking the date when each firm discloses the restatement's impact on

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[3] For example, at a public forum hosted by the CIFR, an analyst for the Capital Group Cos. stated, "Disclosure is a concern, and investors want to be their own decision-makers of which errors are unimportant in their investment theses" (Johnson 2008). In a comment letter to the CIFR, the CFA Institute stated, "…it is better to err on the side of providing too much disclosure rather than too little. We note that investors use a wide variety of investment approaches and models, so attempting to determine if certain changes might alter certain approaches could be problematic" (http://www.sec.gov/comments/265-24/26524-68.pdf).
[4] The only major proxy from Palmrose et al. (2004) that I do not use is the number of years restated. However, this variable is not significantly related to announcement returns in the multiple regression in their study.

earnings. Firms often do not disclose the full impact of the error on earnings at the initial announcement. The process of quantifying the errors can take several weeks or months. Prior studies focus on returns in a relatively short window around the initial announcement when investors often do not have complete information about the restatement. To better understand the efficiency with which investors react to restatements, I examine a short window around the initial announcement and a longer window from the initial announcement to the disclosure of the earnings impact.

III. Research design

Announcement returns

The first set of tests compares the announcement returns of post-SOX restatements to those of pre-SOX restatements. The following model is used:

$$RETURN_i = \alpha + \beta_1 POSTSOX_i + \beta_2 RSTMT\ CONTROLS_i + \beta_3 GENERAL\ CONTROLS_i + \varepsilon_i \qquad (1)$$

RETURN is the stock return associated with the restatement of firm i and is measured in two ways. First, it is measured as the size-adjusted buy-and-hold return over days (-1, +1) relative to the initial announcement. Second, it is measured as the size-adjusted buy-and-hold return from one day before the initial restatement announcement to one day after the announcement of the earnings impact. I refer to this longer-window return as the episode return (RETURN_EP). The earnings impact is considered disclosed when the firm reveals the restatement's impact on past earnings, either cumulatively or by period. I require the disclosure to be definitive, not an estimate. The definitive earnings impact can be disclosed in a press release before the financial statements are actually amended in an SEC form 10-K or 10-Q.

The variable of interest is POSTSOX, a dummy capturing whether the restatement is announced in the month SOX was passed (July 2002) or after. Although prior studies have

documented lower announcement returns to post-SOX restatements, I do not predict the sign of POSTSOX because announcement returns could be higher, lower, or the same after controlling for the changes in restatement characteristics that occur after SOX.

For brevity, I leave detailed descriptions of the control variables to Appendices A and B. The restatement characteristics that serve as controls are the earnings impact of the restatement (MAG); the sign of the restatement's impact on earnings (POS); whether the restatement is the result of fraudulent actions at the corporate level (FRAUD) or lower (FRAUDSUB); whether the definitive earnings impact is announced at the time of the initial restatement announcement (MAG_UNKNOWN); whether the firm takes more than thirty days to disclose the earnings impact after the initial announcement (DELAY); whether the restatement is of quarterly periods only (QUARTERLY); and whether the restatement is prompted by management as opposed to the auditor or SEC (MGT).

To control for the types of items that are restated, each restatement is placed into one of twelve mutually exclusive categories. As in Palmrose et al. (2004), the main delineation is based on whether the item affects pre-tax operating income. Palmrose et al. label all items that affect pre-tax operating income as "core" items. In contrast, I subdivide core items into those whose initiation or reversal typically involves net operating cash flow (CORE_PRIMARY) and those whose initiation or reversal typically does not involve net operating cash flow (CORE_SECONDARY).[5] A third category of "core" items is created for the three types of errors involving operating leases that were announced by many firms in 2004 and 2005

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[5] Restatements classified as CORE_PRIMARY do not necessarily involve errors in previously reported operating cash flow. The restatements merely involve items that affect operating cash flow during a normal operating cycle. For example, a restatement correcting an overstatement of accounts receivable does not affect previously reported operating cash flow, but this restatement would be classified as CORE_PRIMARY because in a normal operating cycle the accrual for accounts receivable is reversed when cash is collected. The CORE_SECONDARY category is used for items that are not directly related to operating cash flows during the operating cycle, such as depreciation and amortization.

(LEASES).[6] The restatements that do not affect pre-tax operating income are categorized into TAXES, DERIVATIVES, valuation of noncurrent operating assets or liabilities (AL_VALUE), other special or non-operating items (NONCORE), off-balance-sheet treatment of liabilities (LEVERAGE), other financing activities (FIN_OTH), reclassifications involving the balance sheet or statement of cash flows (NONINC_RECLASS), and OTHER. The final category is used for restatements that involve errors in more than one category or involve three or more errors in the same category (MULTIPLE). CORE_PRIMARY and MULTIPLE restatements are expected to be negatively related to announcement returns. Signs for the other categories are not predicted.

I also control for general factors that may affect the market reaction to restatements: abnormal stock return in the 90 days preceding the announcement (PRE_RET); the mean value of the Chicago Board Options Exchange's volatility index during the return window (VIX); surprises for any earnings announcements made during the return window (ESURP or ESURP_EP); whether the earnings announcement meets or beats the consensus estimate (MBE); and firm SIZE.

The period around and after SOX contains four subperiods when auditors and managers were scrutinizing accounting practices especially closely. Thus, the four subperiods are likely to contain restatements that are more technical in nature, eliciting less negative market reactions. I use dummy variables to determine whether these subperiods are responsible for any observed changes in market reaction after SOX. The first dummy captures the time when clients were switching from Arthur Andersen to other auditors, and thus were undergoing re-audits that may have lead to technical restatements (AA). The other three subperiod dummy variables capture

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[6] The errors involve leases with rent escalation clauses, amortization of leasehold improvements, and landlord incentives related to leasehold improvements. See Acito, Burks, and Johnson (2008) for more information.

restatements that were likely discovered when preparing for an SEC-required executive certification of financial statements (CERT1), the certification of financial statements required under SOX Section 302 (CERT2), and the internal control assessments required under SOX Section 404 (SOX404).

Subsequent long run returns

In each SOX period I examine the stock performance of restatement firms over the two years following the restatement announcements. Positive or negative mean price drifts after restatements would be a sign that investors were systematically biased in their reaction to restatement announcements. Price drifts could also result from compensation for risk rather than mispricing. However, a risk-based explanation for price drifts would likely apply to both pre- and post-SOX restatements. Thus, comparing drift behavior across the two SOX periods helps untangle whether drifts are caused by risk or mispricing. Evidence of mispricing would be especially strong if the direction of the drift is consistent with the results of the announcement return tests. For example, if post-SOX announcement returns are found to be less negative than pre-SOX announcement returns, then one would expect a negative subsequent drift if the less negative announcement returns truly represent an inefficient underreaction by investors.

Barber and Lyon (1997) and Kothari and Warner (1997) find that tests of abnormal stock returns at long horizons are severely misspecified when abnormal returns are calculated using a reference portfolio such as a market index or size decile. Following the recommendation of Barber and Lyon (1997), I compute the abnormal return for each restatement firm by subtracting the return of a control firm that has a similar size and book-to-market ratio. To match firms, I choose the non-restatement firm closest in book-to-market ratio that also has a market

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capitalization between 70 and 130 percent of the restatement firm as of the year ended prior to the restatement. Matching is done without replacement.

In addition to testing for drifts following restatements in general, I also test for drifts following particular types of restatements. For example, I test for drifts following the most and least egregious restatements, and following restatements that have the most positive and negative residuals from the announcement return regressions. Restatements with large residuals are prime candidates for mispricing because investors' initial reaction to these restatements deviates from that predicted by the announcement return model.

In case confusion leads to mispricing that is not systematic, I examine unsigned price drifts following restatements. I take the absolute value of long run returns following restatement announcements and compare across SOX periods. If confusion surrounding post-SOX restatements leads to more mispricing in one direction or another, then unsigned returns will be higher following post-SOX restatements. I test for differences in unsigned returns across the pre- and post-SOX periods for the sample as a whole and for the same subsamples used in the signed price drift tests.

Abnormal volume

Even if no evidence of mispricing is found, confusion over the restatement might cause disagreements among investors that result in higher trading volume around restatement announcements. Bamber and Cheon (1995) and Kandel and Pearson (1995) find that significant trading occurs around information events even in the absence of price changes. Disagreement among investors over the event's impact on underlying firm value generates trading, but the lack of consensus hinders movements in price (Beaver 1968). To estimate whether trading volume is higher around restatements announced after SOX, I use the following model:

$$VOLUME_i = \alpha + \beta_1 POSTSOX_i + \beta_2 RSTMT\ CONTROLS_i + \beta_3 GENERAL\ CONTROLS_i + \varepsilon_i \qquad (2)$$

VOLUME is computed similarly to the method in Garfinkel and Sokobin (2006) which adjusts for market volume and the firm's normal volume. First I scale the firm's daily volume by shares outstanding to compute "turnover," or the percentage of shares outstanding traded that day. To control for macroeconomic news, I calculate a market-wide turnover measure using NYSE and AMEX common stocks, and subtract this from the firm's turnover. This measure of market-adjusted turnover is then averaged over the three-day window around the restatement announcement. The calculation of market-adjusted turnover (TO) is illustrated below:

$$TO_{restate\,,i} = \left\{ \Sigma_{t=-1}^{1} \left[\left(\frac{Vol_{i,t}}{Shs_{i,t}}\right)_{firm} - \left(\frac{Vol_t}{Shs_t}\right)_{mkt} \right] \right\}/3 \qquad (3)$$

where $Vol_{i,t}$ is firm i's volume on day t, and $Shs_{i,t}$ is firm i's shares outstanding on day t. To adjust for the firm's normal level of market-adjusted turnover, I compute the average market-adjusted turnover over trading days (-250, -31) relative to the restatement announcement (TO_{pre}). The measure of abnormal VOLUME used in the regression is then

$$VOLUME_i = TO_{restate\,,i} - TO_{pre\,,i}. \qquad (4)$$

The explanatory variable of interest is POSTSOX, which is expected to be positively related to volume because of the potential for post-SOX restatements to generate more disagreement among investors. To isolate the component of trading volume that is caused by disagreement, it is important to control for the amount of news in the restatement announcements. Restatements that are highly newsworthy can cause investors with different risk preferences to trade to adjust their portfolio allocations even in the absence of disagreement (Bamber, Barron, and Stober 1997). To control for the newsworthiness of the restatement, I use the absolute value of the restatement announcement return (AB_RET) and the restatement controls used in the tests of announcement returns. Absolute values of MAG, PRE_RET, and

ESURP are used because volume results from good or bad news. The variables are given the prefix "AB" to denote absolute value. AB_PRE_RET is expected to be negatively related to VOLUME because large unsigned returns before the restatement suggest news leakage that reduces the newsworthiness of the restatement announcement. Variables that worsen the news associated with a restatement are expected to be positively related to VOLUME (FRAUD, DELAY, etc.). Variables that lessen the bad news associated with the restatement are expected to be negatively related to volume (POS, MGT, and QUARTERLY).

IV. Sample selection

To form the sample, I use two reports from the GAO that identify restatements from 1997 to September 2005 (GAO-03-138 and GAO-06-678). This sample has the advantage of spanning several years before and after passage of SOX. Furthermore, it was compiled by a single data provider using consistent methods for identifying restatements, which enhances comparisons of pre- and post-SOX restatements.[7] Also, the GAO focuses on restatements of exchange-traded firms, which improves the chances that data needed for analysis will be available on CRSP, Compustat, and IBES.

Before handcollecting information about each restatement, I eliminate 323 of the 2,309 restatements because they lack basic data on CRSP and Compustat in the year of or year before the restatement. I eliminate another 513 restatements in the process of handcollecting, leaving 1,473. The most common reasons for elimination are that the error relates to an earnings release for the current period rather than to a prior period 10-K or 10-Q (114); the GAO captures more than one announcement for the same restatement (107); the restatement was due to the adoption

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[7] Although GAO restatements were compiled over two different reports issued several years apart, in the second report the GAO states: "To determine the number of and reasons for restatements since 2002, we employed substantially the same methodology used in our prior report, in which we analyzed the period from January 1997 through June 2002" (GAO 2006, 52).

of SEC Staff Accounting Bulletin No. 101 (72); and the restatement was due to adoption of a new standard rather than an error (65). I exclude restatements due to adoption of SEC Staff Accounting Bulletin No. 101 because of controversy over whether the bulletin represented new GAAP or was simply a reiteration of existing GAAP (Altamuro, Beatty, and Weber 2005). Other reasons for exclusion are listed in Table 1.

[Insert Table 1 here]

The GAO reports include the announcement date of each restatement. However, in many cases I find earlier disclosures mentioning the possibility of restatement. Earlier dates are found for 250 of the 1,473 restatements, with a mean (median) difference in days of 47 (22). Many of these differences arise because my criteria for identifying the announcement date differs from the GAO's. The GAO sample selection process requires companies to imply that a restatement is at least "likely" (GAO-06-678, 56), whereas I look for the first mention of possible accounting errors.[8] Using the earliest date mentioned allows me to more accurately capture the market reaction to the entire restatement episode, from the first mention of accounting problems to the date on which the restatement's impact on earnings is disclosed.

Figure 1 shows the number of restatements by year and compares to those reported for exchange-listed companies in Scholz (2008). Two differences are apparent. First, the GAO sample contains fewer restatements in each year. Differences in sample counts for the years 1997 to 2000 likely arise because Scholz supplements the GAO list for these years with her own Lexis-Nexis searches (Scholz 2008, 8). Beginning in 2001, Scholz switches to a database provided by Audit Analytics to identify restatements. Procedures used by Audit Analytics to identify restatements are more comprehensive than the GAO's. The large difference in 2005

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[8] Sometimes firms file a "notification of late filing" form NT10-Q or NT10-K with the SEC before they mention the possibility of restating. I do not consider the filing date of this form to be the restatement announcement date unless the form mentions potential errors or uncertainty about appropriate accounting treatments.

sample counts likely arises because the GAO ends its search in September of that year but Audit Analytics covers the entire year. The sample screens that I apply in Table 1 also likely account for some of the annual differences.

<center>[Insert Figure 1 here]</center>

The second major difference between the two samples is that the increase in restatement activity begins in 2002 for the GAO sample and 2001 for the Scholz sample. Scholz reports that the increase in her sample may be caused by the switch to Audit Analytics in 2001. Audit Analytics searches 10-Ks and 10-Qs in addition to the 8-Ks and press releases searched by Scholz from 1997 to 2000 (Scholz 2008, 11). Although fewer restatements are identified by the GAO, relying on a single data provider for the entire sample period reduces the risk that observed differences between pre- and post-SOX restatements are due to differences in data collection procedures across the two periods. Because the increase in restatements in the GAO sample begins in 2002, the year SOX was passed, I refer to the increase as a post-SOX phenomenon.

V. Results

Descriptive statistics

As shown in Table 1, data requirements for multiple regression tests further reduce the sample of restatements from 1,473 to 1,387. The pre-SOX (post-SOX) period contains 468 (919) restatements. Table 2 presents pre- and post-SOX comparisons of the variables used in multiple regression tests. The pre- and post-SOX means are shaded in gray if they significantly differ across the two periods at the five percent level or greater. To reduce the influence of outliers, MAG, PRE_RET, ESURP, and ESURP_EP are winsorized at one percent.

<center>[Insert Table 2 here]</center>

Restatement announcement returns are significantly negative in both periods, but are much less negative in the post-SOX period, consistent with prior research (GAO 2006; Scholz 2008). The mean RETURN in the pre-SOX period is -9.7 percent, compared to only -3.0 percent in the post-SOX period. Returns are even more negative, and the difference in returns between the two periods is even larger, when returns are measured over the entire restatement episode. Mean RETURN_EP is -13.5 percent in the pre-SOX period and -3.9 in the post-SOX period. To determine whether the negative drift in the episode window that occurs after the initial restatement announcement is significant, I measure returns over the same window as RETURN_EP except that the three days around the initial restatement announcement are excluded. Mean returns over this window are significantly negative for pre-SOX restatements (-9.7 percent) but not for post-SOX restatements (-1.5 percent), and the difference in means across the two periods is significant (untabulated).

Mean abnormal VOLUME in the three-day window around the restatement announcement is significantly positive in both periods. Abnormal VOLUME is significantly lower after SOX, even though investor disagreement surrounding the restatements would tend to generate more volume after SOX. Because post-SOX restatements are less newsworthy, as evidenced by the less negative announcement returns, it is not surprising that the univariate comparison of VOLUME shows a decline after SOX. Multiple regression will be used to test whether VOLUME is higher after SOX holding newsworthiness constant.

Consistent with the less negative returns observed after SOX, post-SOX restatements appear to be less egregious across many dimensions. Post-SOX restatements are less likely to involve fraud (19.6 percent post-SOX versus 31.4 percent pre-SOX) and more likely to be prompted by management (71.1 percent post-SOX versus 46.4 percent pre-SOX). Post-SOX

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restatements' mean impact on earnings is only about half that of pre-SOX restatements, with

mean MAG of -2.2 percent of assets in the post-SOX period compared to -4.1 percent in the pre-

SOX period. Furthermore, post-SOX restatements are less likely to involve core items whose

initiation or reversal affects operating cash flow (CORE_PRIMARY) (23.7 percent post-SOX

versus 39.3 percent pre-SOX). Multiple regression will be used to test whether the decline in the

egregiousness of restatements completely explains the less negative announcement returns

observed after SOX.

Two variables display trends that are not necessarily consistent with a decline in the

egregiousness of restatements after SOX. After SOX, firms are significantly less likely to

quantify the earnings impact in the initial restatement announcement (MAG_UNKNOWN). In

light of the many variables that suggest a decline in restatement egregiousness after SOX, the

trend in failing to quantify the earnings impact is likely explained by more timely disclosure of

the need to restate rather than more severe accounting problems that take time to resolve. The

second unexpected trend is that QUARTERLY restatements are less common after SOX (17.5

percent post-SOX versus 40.8 percent pre-SOX), which suggests that errors corrected in the

post-SOX period have been committed for a longer period of time. A possible explanation is

that after SOX firms began to correct longstanding errors that in past years had been deemed

immaterial. Given the potential for changes in disclosure policies, materiality assessments, or

other practices to affect the data-generating processes of control variables after SOX, in

supplemental tests I examine whether the relations between announcement returns and the

control variables change after SOX.

For further insight into investor reactions to the types of items restated, Panel B of Table

2 presents mean announcement returns by type of item restated. CORE_PRIMARY and

MULTIPLE-item restatements elicit the most negative returns (-8.0 and -8.8 percent, respectively). Significantly negative mean returns between -2.6 and -4.5 percent are observed for restatements involving the values of noncurrent operating assets and liabilities (AL_VALUE), core items that do not affect operating cash flow (CORE_SECONDARY), consolidation of off-balance-sheet items (LEVERAGE), special or non-core items (NONCORE), and OTHER. Mean returns are not significant and tend to be close to zero for restatements involving DERIVATIVES, TAXES, financing activities other than off-balance-sheet items (FIN_OTH), operating leases (LEASES), and reclassifications of the balance sheet or statement of cash flows (NONINC_RECLASS).

Announcement returns

Table 3 presents estimates of the announcement return model. The model is estimated using OLS with heteroscedasticity-consistent standard errors (White 1980). Model 1 regresses returns in the three-day window around the announcement on all the control variables except the post-SOX subperiod dummies, ESURP, and MBE. Post-SOX subperiods are initially omitted to determine whether there is a general post-SOX difference in investor reaction to restatements. ESURP and MBE are initially omitted because they come from IBES and are not available for over 10 percent of the sample.

[Insert Table 3 here]

MAG, FRAUD, MAG_UNKNOWN, and DELAY are significantly related to announcement returns in the predicted directions. QUARTERLY restatements are significantly associated with more negative announcement returns. Perhaps the market suspects that these restatements are the result of managers intentionally shifting earnings across quarters to smooth

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trends or beat forecasts. None of the dummies that capture the type of items restated are significant (OTHER is omitted to prevent perfect multicollinearity with the intercept).

The coefficient on POSTSOX is significantly positive, both statistically and economically, meaning that investors appear to react less negatively to restatements after SOX even after controlling for the decline in the egregiousness of restatements. The POSTSOX coefficient of .0458 suggests that the mean announcement return is 4.58 percentage points higher after SOX holding other factors constant. Given that the mean pre-SOX announcement return is -9.7 percent, this means that post-SOX restatement returns tend to be only about half as negative as pre-SOX returns even after controlling for the post-SOX decline in restatement egregiousness.

To determine whether the less negative post-SOX reaction is explained by technical errors discovered during key subperiods after SOX, I add the four SOX subperiod dummies to the model (column 2). To conserve degrees of freedom, I omit all the dummies for types of items restated except CORE_PRIMARY and MULTIPLE. These two categories were associated with the most negative mean returns in the univariate tests. Results for model 2 show that both CORE_PRIMARY and MULTIPLE are significantly associated with more negative announcement returns. Restatements arising from Arthur Andersen dismissals (AA) and the first SOX 404 assessments (SOX404) are significantly associated with less negative announcement returns, even incremental to other restatements in the post-SOX period. However, the coefficient on POSTSOX is still significantly positive, and its magnitude declines only slightly to .0420.

Model 3 adds to model 2 the surprises from concurrent earnings announcements (ESURP) and the meet-or-beat dummy (MBE), and is estimated on a reduced sample of firms that either do not have earnings announcements in the restatement window or have earnings announcements in the restatement window for which consensus forecasts and actuals are

available on IBES. MBE is significantly positive as expected, while ESURP is insignificant. The other control variables perform as they did in model 2 except that MULTIPLE and AA are no longer significant. The coefficient on POSTSOX continues to be highly positive and significant.

Because some information used in the model is not always available at the time of the initial restatement announcement (e.g., magnitude), I check the robustness of the inferences by measuring returns over the entire restatement episode, from the time of the initial restatement announcement to the time that the restatement's impact on earnings is disclosed. Results using episode returns as the dependent variable are shown in columns 4 and 5. Column 4 does not control for concurrent earnings announcements, while column 5 includes a version of ESURP that sums all of the earnings surprises during the entire restatement episode (ESURP_EP).[9] Results for models 4 and 5 are similar to those of the previous models. The main difference is the lack of significance exhibited by the post-SOX subperiod dummies. AA is insignificant in both models and SOX404 is significant only in model 4. Most importantly, the coefficient on POSTSOX maintains its magnitude and remains highly significant. The main message from Panel A of Table 3 is that the decline in restatement egregiousness indicated by commonly used proxies does not fully explain the less negative reaction to post-SOX restatements. Furthermore, the less negative reaction is not explained by technical restatements arising from Arthur Andersen dismissals or preparation for SOX-related reforms.

Changes in reaction to restatement characteristics

To better understand why post-SOX restatements garner less negative market reactions, I run the returns regression on each SOX period separately and test for differences in coefficients

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[9] Model 5 contains fewer observations than the other model that controls for earnings announcements (model 3) because of the longer return window. A restatement is excluded from model 5 unless IBES contains forecasts and actuals for all earnings announcements in the window.

across SOX periods.   As opposed to testing whether investors react differently to restatement events in general after SOX, this analysis tests whether investors react differently to specific restatement characteristics after SOX. Panel B of Table 3 shows the results of each SOX period regression. The pairs of coefficients that significantly differ across SOX periods at the five percent level or greater are shaded in gray.[10] The short-window returns regressions in columns 6a and 6b suggest that after SOX investors react less negatively to fraudulent (FRAUD) and MULTIPLE-item restatements. The regressions using episode returns in columns 7a and 7b suggest that after SOX investors react less negatively to restatements that have an episode length greater than 30 days (DELAY). The coefficient on SIZE also significantly differs across SOX periods in both the short-window and episode regressions.

To determine whether the less negative post-SOX reactions to these restatement characteristics explain the less negative mean reaction to post-SOX restatement events, I interact FRAUD, MULTIPLE, and DELAY with POSTSOX and re-estimate the model on the pooled sample.   I do not include a SIZE x POSTSOX interaction because SIZE is not a significant predictor of market reaction in either SOX period, making it unlikely that SIZE is driving the difference in investor reaction observed across SOX periods. Furthermore, adding a SIZE x POSTSOX term increases variance inflation factors dramatically.

Columns 8 and 9 present the results for short-window and episode returns, respectively. In both models, including the interactions renders POSTSOX insignificant and reduces the coefficient to near zero. The FRAUD x POSTSOX interaction is significant in both models, while DELAY x POSTSOX is significant only for episode returns and MULTIPLE x POSTSOX is significant only for short-window returns. Thus, investors' less negative reaction to post-SOX

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[10] The test statistic is the difference between the two coefficients divided by the square root of the sum of the two coefficients' estimated variances, which is asymptotically standard normal assuming independent pre- and post-SOX samples.

restatements can be attributed to their less negative reactions to fraudulent restatements, and perhaps to restatements involving delays and multiple errors.

Rationality of post-SOX reactions to restatement characteristics

To provide some evidence on whether investors' less negative reaction to these three types of restatements is rational, I examine the earnings magnitude and items involved for these types of restatements. Panel C of Table 3 shows that the mean magnitude of all three types of restatements decreases after SOX, although only delayed restatements exhibit a decrease that is statistically significant. Fraudulent and delayed restatements are also significantly less likely to involve CORE_PRIMARY items after SOX. No comparison of CORE_PRIMARY is made for multiple-item restatements because CORE_PRIMARY equals zero for all multiple-item restatements by construction. Overall, this analysis suggests that investors react less negatively to the three types of restatements after SOX because the restatements have less negative implications for underlying firm value. To more fully assess the rationality of investors' reactions, next I examine long run returns after restatement announcements.

Long-run returns

Figure 2 plots median stock performance for pre- and post-SOX restatement firms over trading days (2, 510) after the initial restatement announcement (approximately two years). Daily abnormal returns are computed by subtracting the restatement firm's return from that of a control firm matched on size and book-to-market. Buy-and-hold abnormal returns are then cumulated for each firm over the window and the daily cross-sectional medians are plotted.[11] For post-SOX restatements, cumulative abnormal returns hover around zero throughout the two-year period. For pre-SOX restatements, cumulative abnormal returns are slightly negative during

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[11] Medians are used to reduce the influence of outliers. The emphasis of these tests is whether restatements typically result in mispricing, not whether a trading strategy to exploit the mispricing is executable. Mean returns can be found in Table 4, along with medians.

most of the period, but revert to almost zero at the end. Panel A of Table 4 tests whether mean

and median cumulative returns are significantly different from zero at six months, one year, and

two years after the restatement. The sample is smaller than that used in the announcement return

tests because some firms are missing book values so could not be matched to control firms on

book-to-market. Neither median nor mean cumulative abnormal returns are significantly

different from zero at any of these horizons in either SOX period.

Although no mispricing is detected in the either SOX-period sample, mispricing could

exist in subsamples of each SOX period. Because the announcement return tests showed that

investors tend to react less negatively to fraudulent, delayed, and multiple-item restatements after

SOX, I test for price drifts after these types of restatements. Observing a negative drift for these

restatements after SOX would suggest that the less negative post-SOX announcement returns

represent an underreaction. I also rank restatements by egregiousness, announcement return, and

announcement return model residual, and test for mispricing in the top and bottom quartiles of

each variable. Restatement egregiousness is computed using a principle components analysis of

five restatement characteristics: MAG, FRAUD, MAG_UNKNOWN, DELAY, and a dummy

capturing whether the restatement involves CORE_PRIMARY or MULTIPLE items.[12] The

residuals for announcement returns come from model 1 in Table 3, Panel A.

Table 4 shows significantly negative drifts following fraudulent restatements,

restatements in the most egregious quartile, and restatements in the highest quartile of residuals.

There is major overlap between the fraudulent and most egregious subsamples, so it is not

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[12] The components load on a single factor using the Kaiser criterion, i.e. only the first factor has an eigenvalue
greater than one. The factor explains 45 percent of the total variation. The standardized scoring coefficients for
MAG, FRAUD, MAG_UNKNOWN, DELAY, and the CORE_PRIMARY or MULTIPLE dummy are -.194, .324,
.333, .363, .240, respectively.

surprising that these two subsamples perform similarly.[13] The drifts in these two subsamples are

significant only at the six-month horizon and are present in both the pre- and post-SOX periods.

The median drifts range from -9 to -15 percent. In the high residual quartile, the expected

direction of the drift is downward because the high residuals suggest that investors' initial

reaction to these restatements was not negative enough. Consistent with this expectation, the

drift in the high residual quartile is significantly negative at six- and twelve-month horizons.

Furthermore, the drift occurs only for post-SOX restatements, providing some initial evidence of

mispricing unique to the post-SOX period.

[Insert Table 4 here]

However, further analysis suggests that the drifts after restatement announcements are

caused by the slow release of information about the restatements rather than by investors'

confusion. In Panel B of Table 4, I begin the return cumulation period two days after the

definitive impact on earnings is disclosed. By this time, investors have more complete

information about the restatement. Because returns over the time horizons are not available on

CRSP for firms that announce restatements late in the sample period and then take extremely

long to disclose the earnings impact, I exclude all firms that take longer than a year to disclose

the earnings impact after the initial announcement. None of the subsamples that exhibited drifts

after the initial restatement announcement exhibit drifts after the impact on earnings is disclosed.

In fact, no significant median drifts are detected for the sample as a whole or for any subsample

when starting the return cumulation after the restatement impact is disclosed.

Even though investors do not systematically over or underreact to relatively complete

information about restatements, the possibility exists that confusion over the restatements could

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[13] 80 percent of fraudulent restatements are in the most egregious quartile, and 75 percent of restatements in the most egregious quartile are fraudulent.

cause investors to overreact in some cases and underreact in others. To test this possibility, I examine unsigned price drifts following restatements, comparing the drifts across SOX periods. Table 5 presents the mean and median unsigned price drifts for the sample as a whole and for the same subsamples used in Table 4. To test for significant differences in unsigned drift across SOX periods, I focus on the Wilcoxon two-sample test for differences in central tendency. This non-parametric test is used because the unsigned return distributions are right-skewed and thus do not meet the normality assumption underlying the difference-in-means t-test.

[Insert Table 5 here]

Inferences are the same whether the drift is measured from the initial restatement announcement (Panel A) or from the day the earnings impact is disclosed (Panel B). Median unsigned drifts tend to be smaller in the post-SOX period for the sample as a whole and the subsamples. In fact, whenever the Wilcoxon test statistic reveals a significant difference across SOX periods, the post-SOX period almost always has the lower unsigned drift. Thus, mispricing in one direction or another appears to be less of a problem in the post-SOX period.

Overall, the tests of signed and unsigned long run returns suggest that investors react at least as efficiently to post-SOX restatements as they do to pre-SOX restatements. In the post-SOX period, there is a negative price drift following restatements with the highest residuals from the return model. However, this drift appears to be caused by slow release of information about the restatement rather than investor bias or confusion because no drift is detected after investors receive more complete information about the restatement. Furthermore, unsigned price drifts tend to be smaller for post-SOX restatements.

Volume

Even in the absence of mispricing, investor confusion over post-SOX restatements could result in higher levels of trading volume. At the same time, post-SOX restatements are less newsworthy, which would lead to lower levels of trading volume. I use multiple regression to determine whether volume is higher around post-SOX restatement announcements holding newsworthiness constant. Table 6 shows the results of regressing abnormal VOLUME in the three days around the restatement announcement on POSTSOX and control variables. The main control for news is the unsigned stock return around the announcement (AB_RET). Model 1 uses all the control variables except the post-SOX subperiod dummies, AB_ESURP, and MBE. The coefficient on AB_RET is significantly positive, as are the coefficients for FRAUD, SIZE, CORE_PRIMARY, CORE_SECONDARY, and LEASES. Unexpectedly, the coefficient on FRAUDSUB is negative. The variable of interest, POSTSOX, is not significantly related to abnormal volume, providing no evidence of more investor disagreement after SOX.

[Insert Table 6 here]

To determine whether technical restatements related to Arthur Andersen dismissals, executive certifications, or SOX 404 reviews are associated with higher volume, I add the post-SOX subperiod dummies in model 2. To conserve degrees of freedom, the only restatement item dummies I retain are MULTIPLE and the dummies that were significant in model 1. Again the coefficient on POSTSOX is not significantly different from zero. The coefficients on CERT1 and CERT2 are significantly negative, suggesting that restatements related to executive certifications generate even less disagreement among investors than other post-SOX restatements do. Inferences are identical in model 3, which adds the absolute value of concurrent earnings

surprises (AB_ESURP) and MBE to the model. Thus, the abnormal volume tests yield no evidence of a post-SOX increase in disagreement over restatements among investors.

VI. Conclusion

Announcement returns, subsequent long run returns, and trading volume exhibit little sign that investors are confused by post-SOX restatements. Announcement returns for post-SOX restatements are less negative than those of pre-SOX restatements even after controlling for the post-SOX decline in restatement egregiousness. The less negative returns are concentrated in restatements involving fraud, multiple items, and delays in quantifying the earnings impact. However, these types of restatements are smaller and less likely to involve core items after SOX, so less negative reactions to them are not necessarily indicative of mispricing. Moreover, tests of long run returns after the initial market reactions generally reveal no evidence of mispricing unique to the post-SOX period, especially when investors have relatively complete information about the restatement. Finally, tests of trading volume around restatement announcements provide no evidence of a post-SOX increase in disagreement among investors about the implications of restatements.

These results suggest that investors are not confused by post-SOX restatements, alleviating one concern of regulators about the dramatic increase in restatements after SOX. This study's results do not provide a reason to curtail the practice of correcting errors by restating prior periods. However, there may be other reasons to curtail the practice, which further research can address. While this study focuses on the capital market consequences for the restating firms themselves, the flood of restatements after SOX could affect public confidence in the capital markets as a whole. Future studies could examine macro-level effects of restatements. Also, there is concern that the process of restating the prior period financial

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statements leads to "dark" periods during which the restating firm stops disclosing information

(CIFR 2008). Future studies could examine the extent to which these dark periods occur and

their effect on investors.

Appendix A. Variable Descriptions

The table below provides definitions for all of the variables except for the types of items restated, which are described in Appendix B. Following the table is a narrative elaborating on the control variables' measurement and role in the models.

AA	Equals 1 for former clients of Arthur Andersen that announce a restatement between the filing deadline for the last 10-K audited by Andersen and fifteen days after the filing deadline for the next 10-K, 0 otherwise.
AB_ESURP	Absolute value of ESURP.
AB_MAG	Absolute value of MAG.
AB_PRE_RET	Absolute value of PRE_RET.
AB_RET	Absolute value of RETURN.
CERT1	Equals 1 for firms with greater than $1.2 billion in annual revenue that announce a restatement between June 28, 2002 and fifteen days after the SEC's deadline for the pre-SOX 302 certification. Equals 0 otherwise or if CERT2 equals 1.
CERT2	Equals 1 if the restatement is announced between 45 days before quarter end and fifteen days after the quarter's filing deadline for the first quarter subject to executive certifications under SOX 302, 0 otherwise.
DELAY	Equals 1 if more than 30 days elapse between the initial restatement announcement and the announcement of the restatement's definitive earnings impact, 0 otherwise.
ESURP	If earnings are announced in the three-day window around the restatement announcement, then ESURP is the difference between actual earnings per share and the most recent consensus analyst forecast from IBES, scaled by stock price one day before the earnings announcement.

If earnings are not announced in the three-day window around the restatement announcement, then ESURP equals 0. |
ESURP_EP	The sum of all the individual ESURPs in the restatement episode window.
FRAUD	Equals 1 if the restatement is described as intentional or if investigations by a government entity, the board or directors, or audit committee are disclosed. Equals 0 otherwise or if the fraud was committed in lower levels of the organization.
FRAUDSUB	Equals 1 if a fraud or investigation pertains to errors committed in subsidiaries or lower levels of the organization, 0 otherwise.
MAG	Cumulative impact of the restatement on past earnings, scaled by total assets for the year ended prior to the restatement announcement.
MAG_UNKNOWN	Equals 1 if no definitive earnings impact is disclosed when the initial restatement announcement is made, 0 otherwise.
MBE	Equals 1 if earnings are announced in the three-day window around the

	restatement announcement and they meet or beat the most recent consensus analyst forecast on IBES, 0 otherwise.
MGT	Equals 1 if the GAO report identifies the company as the prompter of the restatement, 0 otherwise.
QUARTERLY	Equals 1 if the restatement involves only prior quarters of the current fiscal year, 0 otherwise.
POS	Equals 1 if cumulative restated earnings are greater than or equal to cumulative original earnings, 0 otherwise.
POSTSOX	Equals 1 if the restatement is announced in the month SOX was passed (July 2002) or after, 0 otherwise.
PRE_RET	Size-adjusted buy-and-hold stock return over days (-90, -2) relative to the initial restatement announcement.
RETURN	Size-adjusted buy-and-hold stock return over days (-1, +1) relative to the initial restatement announcement.
RETURN_EP	Size-adjusted buy-and-hold stock return from one day before the initial restatement announcement to one day after the announcement of the restatement's earnings impact.
SIZE	Natural log of the firm's market capitalization two days before the restatement announcement
SOX404	Equals 1 for accelerated filers that announce a restatement between 45 days before the end of the first fiscal year subject to SOX 404 and fifteen days after the filing deadline for that year, 0 otherwise.
VIX	Mean value of the Chicago Board Options Exchange's volatility index over the return window.
VOLUME	Abnormal volume in the three-day window around the restatement announcement, computed similarly to Garfinkel and Sokobin (2006)

Discussion of Control Variables for Restatement Announcement Returns

<u>Restatement controls</u>

When comparing restatement announcement returns across SOX periods, I control for a number of restatement characteristics, many of which are based on prior studies. I control for the magnitude of the restatement (denoted MAG) by scaling the cumulative earnings impact by total assets for the year ended prior to the restatement announcement as in Palmrose, Richardson, and Scholz (2004). I also allow a different intercept and slope for restatements that have a nonnegative cumulative impact on earnings (POS and MAG x POS). MAG and POS are expected to be positively related to announcement returns. The sign of the interaction between MAG and POS is expected to be negative because earnings-increasing restatements are not necessarily good news, so returns are not necessarily increasing in the size of the positive earnings impact. Large positive restatements could indicate weak internal controls or abuse of reserves.

Next I use a dummy variable to control for whether the accounting error is the result of fraudulent manipulation (FRAUD). Following Hennes, Leone, and Miller (2008), I classify a restatement as fraudulent if the firm describes the error as intentional in press releases or SEC

filings related to the restatement. Firms often use the word "irregularity" when attributing a restatement to an intentional misstatement or omission. Like Hennes et al., I also classify a restatement as fraudulent if the firm discloses investigations by a government entity, the board of directors, or audit committee. Hennes et al. argue that auditors or legal counsel are likely to insist that the board conduct an independent investigation when intent is suspected.[14] Because investors may not be as concerned about frauds that occur at lower levels of the organization, I use a separate dummy variable for frauds committed in subsidiaries or lower levels of the organization (FRAUDSUB).[15] Both FRAUD and FRAUDSUB are expected to be negatively related to announcement returns.

Several studies provide evidence that the way in which a restatement is disclosed affects the announcement return incremental to the underlying characteristics of the error (Gordon, Henry, Peytcheva, and Sun 2008; Plumlee and Yohn 2008b; Sharp 2007; Swanson, Tse, and Wynalda 2008). Swanson et al. find more negative reactions for restatements that are mentioned in the headline of a press release. However, Gordon et al. do not find evidence of a headline effect in their full model. Sharp (2007) and Plumlee and Yohn (2008b) find more negative reactions for restatements that are disclosed in SEC form 8-Ks rather than just in the footnotes of 10-K or 10-Q filings. Instead of explicitly controlling for how a restatement is disclosed, I rely on the episode returns that measure returns from the announcement date to the date that the full impact of the restatement is disclosed. Using this window ensures that investors have full information about the restatement and do not have to rely on the prominence the restatement is given in a press release or SEC filing to infer the restatement's importance. Indeed, Sharp (2007) finds that disclosure method is not significantly related to returns when the return window is extended to twenty days after the announcement.

In their full model, Gordon et al. find that the announcement return is affected by three other features of a firm's disclosure: whether the error is quantified in the announcement, the frequency of the firm's disclosures before announcing the restatement, and the tone of the firm's disclosures before announcing the restatement. I include a dummy variable capturing whether the definitive earnings impact is released at the time of the initial announcement (MAG_UNKNOWN), which is expected to be negatively related to announcement returns because of the uncertainty imposed on investors.[16] To control for the frequency of the firm's prior disclosures I use the logged market capitalization of the firm two days before the restatement announcement (SIZE). Gordon et al. report that firm size is highly correlated with their proxy for disclosure frequency and renders their proxy insignificant when both variables are included in the model. SIZE is expected to be positively related to announcement returns because greater levels of disclosure enhance the firm's credibility with investors. I do not control for the tone of the firm's prior disclosures because of computational intensity and the variable's modest contribution to the explanatory power of Gordon et al.'s model.

The next control is a dummy capturing whether more than thirty days elapse between the initial restatement announcement and disclosure of the earnings impact (DELAY). DELAY is expected to be negatively related to returns because disclosure delays suggest the accounting

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[14] When a firm identifies the investigator as "the company," I generally do not classify the restatement as fraudulent because it is unclear whether managers are involved in the investigation. Only investigations that are described as independent investigations of the board or a board committee are considered indications of fraud.

[15] Fraud is considered to have taken place in a lower level of the organization if the firm's disclosure implies that someone other than a corporate-level executive acted on his or her own.

[16] The Gordon et al. version of this variable is three-tiered, capturing whether no quantitative information is provided, an estimated amount is provided, or a definitive amount is provided.

problems have wide scope. I also proxy for the scope of the problems using a QUARTERLY dummy variable, which captures whether the errors involve prior fiscal years or only prior quarters of the current fiscal year.

Investors likely react less negatively if they perceive that an error was detected because of managers' efforts to improve financial reporting quality. These types of restatements may be more common after SOX (GAO 2006). Therefore, I include a dummy variable (denoted MGT) that captures restatements for which the GAO identifies the company as the prompter (as opposed to the auditor or the SEC), and expect MGT to be positively related to announcement returns.

General controls

To control for information leakage preceding the official restatement announcement, I include the size-adjusted buy-and-hold stock return over days (-90, -2) relative to the announcement (PRE_RET). Following Scholz (2008), I include the average value of the Chicago Board Options Exchange's volatility index (VIX) over the three-day announcement window. Reactions to bad news may be more pronounced when market volatility is high. When the dependent variable is the episode return, the average VIX value over this longer window is used.

Because restatements are often announced with quarterly earnings announcements, I control for quarterly earnings surprises. Earnings surprise (ESURP) is the difference between actual earnings per share and the most recent consensus analyst forecast from IBES, scaled by the stock price one day before the earnings announcement. If a firm does not announce earnings in the three-day window around the restatement announcement, then ESURP is set to zero. In the episode returns tests, I use a variable called ESURP_EP which sums all the individual ESURPs in the episode window.[17] In the short-window tests, I also include a dummy capturing whether the firm meets or beats earnings estimates (MBE). MBE is set to zero if no earnings are announced in the three-day window around the restatement. MBE is not included in the episode return tests because the window often contains more than one earnings announcement.

Post-SOX subperiods

To determine if any observed differences between pre- and post-SOX announcement returns are explained by particular regulatory developments around and after SOX, I use four dummy variables capturing restatements that were the likely result of these developments. Enron Corp.'s announcement of accounting problems in October 2001 began a series of events that caused Arthur Andersen to collapse in April 2002. The past financial statements of former Andersen clients had to be re-audited by the new auditors, often leading to restatements. To determine whether investor reaction to these restatements is different, I create a dummy that captures restatements announced by former Andersen clients between the filing deadline of the last 10-K audited by Arthur Andersen and fifteen days after the filing deadline of the next 10-K

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[17] To compute ESURP_EP, the consensus forecast for the first earnings announcement after the restatement announcement is taken immediately after the restatement announcement. The consensus forecasts for subsequent earnings announcements are taken immediately after the previous earnings announcement.

(AA).[18] I allow fifteen days after the deadline to accommodate delays associated with the re-audit and restatement.

The second subperiod begins on June 28, 2002 when the SEC finalized a rule requiring CEOs and CFOs to certify their financial statements. This rule applied only to firms with greater than $1.2 billion in annual revenue and preceded the certification required under SOX Section 302. Firms with calendar year-ends had to certify by August 14, 2002, and firms with non-calendar year-ends were required to certify by the time the next 10-Q for a period ended after August 14 became due (SEC 2002). I create a dummy called CERT1 that captures errors that were likely detected in the process of preparing for this certification. CERT1 equals 1 for restatements announced by any firm subject to the rule between June 28, 2002 and fifteen days after the certification deadline.

The third subperiod encompasses the first time that financial statements were certified under SOX 302. SOX 302 applies to any annual or quarterly report filed after August 29, 2002. To create a variable that captures errors that were likely detected in the process of preparing for this certification (CERT2), I identify the firm's first filing deadline after August 29. I then assign CERT2 a value of 1 for restatements announced between 45 days before the quarter end and fifteen days after the filing deadline. Because the SOX 302 certifications replaced the SEC's first certification requirement, if both CERT1 and CERT2 equal 1, then I change CERT1 to 0.

The fourth post-SOX subperiod that entailed more scrutiny of accounting practices is the assessment of internal controls required by SOX Section 404. During the sample period, the rule applied to accelerated filers' annual reports for fiscal years ended after November 15, 2004. To identify restatements likely caused by the initiation of SOX 404 procedures, I identify the end of the first fiscal year subject to SOX 404. Then I create a dummy variable called SOX404 that equals 1 for restatements announced between 45 days before the year-end date and 15 days after the annual report filing deadline.

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[18] Dates of filing deadlines for 10-Ks and 10-Qs are required to construct all four subperiod variables. I estimate filing deadlines using Compustat's month of fiscal year-end variable (FYR) and adding the appropriate number of days to the last day of the month. The appropriate number of days depends on the firm's status as an accelerated or non-accelerated filer and whether the filing is annual or quarterly. I proxy for filing status by whether the firm's market capitalization is at least $75 million, the main criterion used by the SEC. Filing deadlines for accelerated filers differ over the sample period, which I account for in constructing the variables.

Appendix B. Classification of the types of items restated

I classify each restatement into one of twelve mutually exclusive categories based on the description of the restated items in press releases and footnotes. A description of each category follows.

A. Core activities

1. CORE_PRIMARY – components of pre-tax operating income whose initiation or reversal typically affects net operating cash flow. CORE_PRIMARY restatements do not necessarily involve errors in previously reported operating cash flow. They simply involve items that are related to operating cash flow during a normal operating cycle. Examples include:
   - Revenue and accounts receivable
   - Inventory or cost of goods sold
   - Other operating expenses

2. CORE_SECONDARY – components of pre-tax operating income that are not directly related to net operating cash flow. Examples include:
   - Depreciation and amortization
   - Equity-based compensation
   - Issuance of equity to acquire goods and services from outside parties
   - Reclassification of revenues and expenses

3. LEASES – errors involving operating leases announced by many firms in 2004 and 2005. The errors involve:
   - Failing to accrue rent expense for leases with rent escalation clauses
   - Amortizing leasehold improvements too slowly
   - Misclassifying incentive consideration received from landlords

B. Other activities

1. TAXES – errors involving any type of tax (income, sales, excise, etc.). Errors arising from non-tax items that have a secondary effect on taxes are not included in this category.

2. AL_VALUE -- valuation of noncurrent operating assets or liabilities. Examples include:
   - Asset impairment
   - Asset retirement obligations
   - Estimating proved reserves

3. DERIVIATIVES – accounting for derivatives. Examples include:

- Hedge effectiveness
- Embedded derivatives

4. NONCORE – merger-related items and special items not included in other categories. Examples include:
   - Allocating the purchase price of an acquisition
   - Allocating between discontinued and continuing operations
   - Choosing between pooling-of-interest and purchase accounting for acquisitions
   - Choosing between equity method and consolidation
   - Minority interest
   - Post-retirement benefits
   - Self-funded insurance
   - Gain or loss on sale of assets
   - Classifying investment securities as trading, available-for-sale, or held-to-maturity
   - Valuing investment securities
   - Foreign currency translation

5. LEVERAGE – recognition of liabilities on the balance sheet. Examples include:
   - Classifying leases as operating or capital
   - Other off-balance-sheet liabilities

6. FIN_OTH – financing activities other than off-balance-sheet issues. Examples include:
   - Interest expense[19]
   - Capitalized interest
   - Beneficial conversion features of convertible securities
   - Gain or loss on retirement of debt
   - Costs associated with issuance of debt or equity

7. NONINC_RECLASS – reclassifications involving the balance sheet or statement of cash flows that do not affect the income statement. Examples include:
   - Classifying between cash, cash equivalents, and short-term investments
   - Classifying cash flows between operating, investing, and financing activities

8. MULTIPLE -- restatements that involve errors in more than one category, or involve three or more errors in the same category.

9. OTHER – unspecified errors or those not fitting the categories above

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[19] For financial institutions, errors involving interest expense or interest revenue are classified as CORE_PRIMARY activities.

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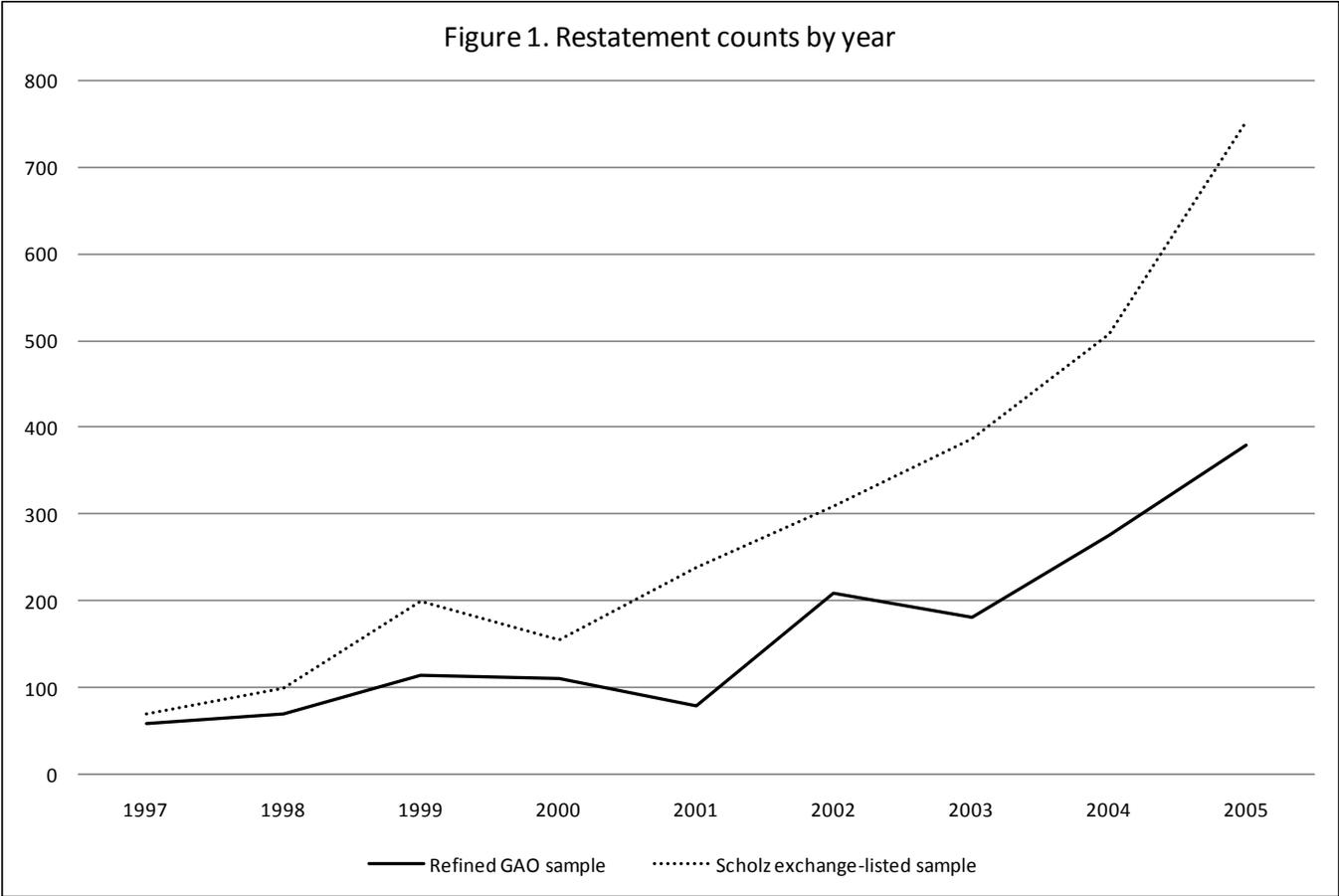
Figure 1 shows sample size by year for the GAO sample after the refinements described in Table 1 are applied. For comparison, sample counts for exchange-listed companies from Figure 1 of Scholz (2008) are shown.

Figure 2. Median stock performance in the two years after restatement announcements
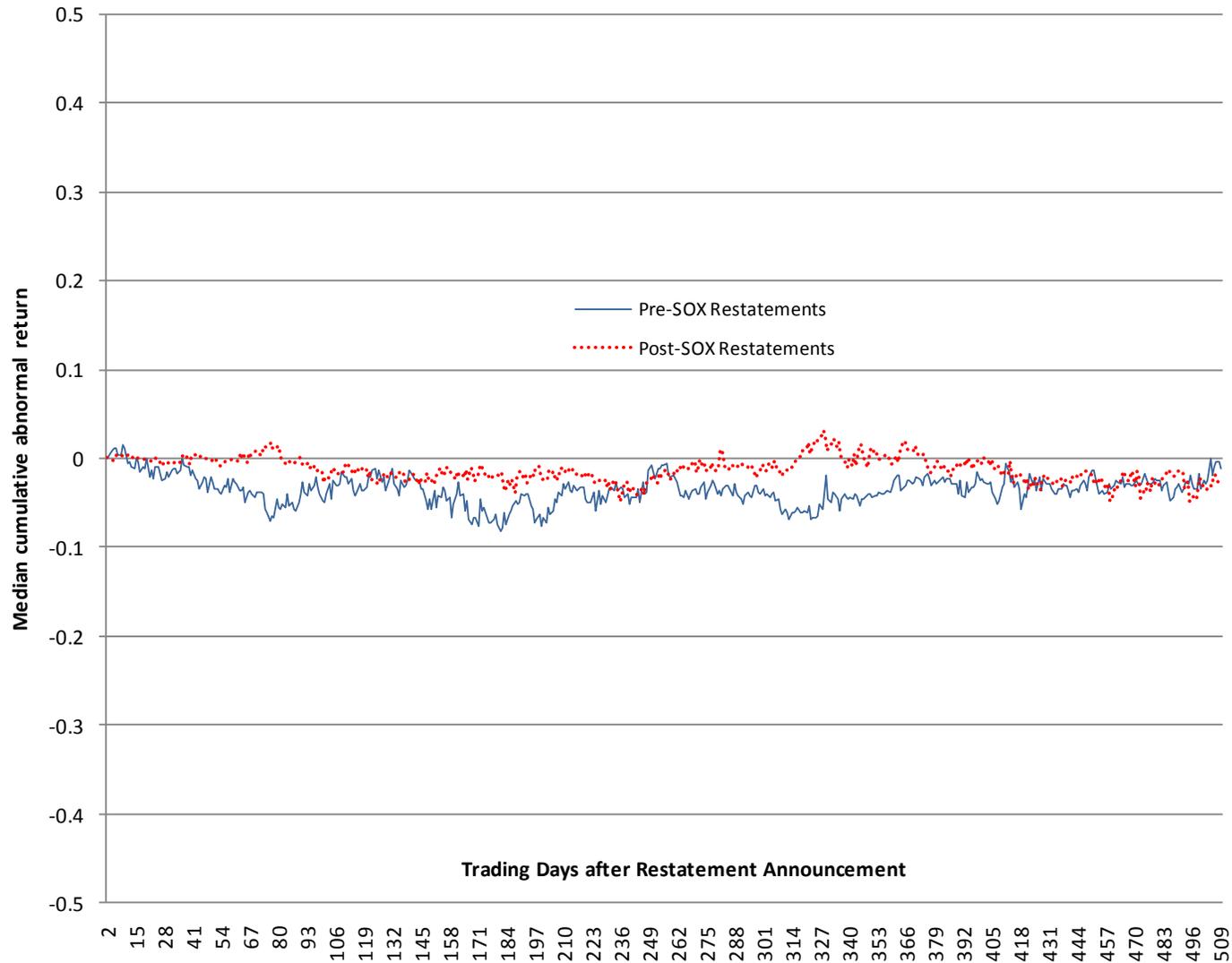
Trading Days after Restatement Announcement

(y-axis) Median cumulative abnormal return

Legend:
— Pre-SOX Restatements
····· Post-SOX Restatements

Figure 2 plots median stock performance for pre- and post-SOX restatement firms over trading days (2, 510) after the restatement announcement (approximately two years). Daily abnormal returns are computed by subtracting the restatement firm's return from that of a control firm matched on size and book-to-market. Buy-and-hold abnormal returns are then cumulated for each firm over the window and the daily cross-sectional medians are plotted.

Table 1. Sample Selection

Restatements identified by the GAO from 1997 to September 2005	2,309
1. Missing basic Compustat and CRSP data in year of or year before restatement	-323
2. Firm is amending an earnings release rather than a prior form 10-K or 10-Q	-114
3. Subsequent announcements related to the same restatement	-107
4. Adopting SAB 101	-72
5. Adopting a new standard	-65
6. Firm never files restated financials because of bankruptcy, acquisition, etc.	-33
7. Restatement impact is not released in US dollars	-25
8. Changing from one within-GAAP method to another	-24
9. Firm is not an SEC filer	-16
10. Firm decides not to restate after the initial announcement	-16
11. Other	-41
Subtotal	1,473
12. Missing data for returns or volume tests	-86
Final sample	1,387

Table 2. Descriptive Statistics

Panel A: Distributional statistics

		Mean		StdErr	Min	Q1	Median	Q3	Max	n
DELAY	Pre-SOX	0.323		0.468	0.000	0.000	0.000	1.000	1.000	468
	Post-SOX	0.360		0.480	0.000	0.000	0.000	1.000	1.000	919
ESURP	Pre-SOX	-0.002	**	0.013	-0.085	0.000	0.000	0.000	0.022	407
	Post-SOX	-0.001	**	0.010	-0.085	0.000	0.000	0.000	0.022	819
ESURP_EP	Pre-SOX	-0.019	**	0.070	-0.410	-0.005	0.000	0.000	0.036	352
	Post-SOX	-0.009	**	0.051	-0.410	-0.001	0.000	0.000	0.036	716
FRAUD	Pre-SOX	0.314		0.465	0.000	0.000	0.000	1.000	1.000	468
	Post-SOX	0.196		0.397	0.000	0.000	0.000	0.000	1.000	919
FRAUDSUB	Pre-SOX	0.068		0.253	0.000	0.000	0.000	0.000	1.000	468
	Post-SOX	0.038		0.192	0.000	0.000	0.000	0.000	1.000	919
MAG	Pre-SOX	-0.041	**	0.108	-0.525	-0.044	-0.011	-0.001	0.155	468
	Post-SOX	-0.022	**	0.071	-0.525	-0.016	-0.004	0.000	0.155	919
MAG_UNKNOWN	Pre-SOX	0.511		0.500	0.000	0.000	1.000	1.000	1.000	468
	Post-SOX	0.594		0.491	0.000	0.000	1.000	1.000	1.000	919
MBE	Pre-SOX	0.128		0.334	0.000	0.000	0.000	0.000	1.000	407
	Post-SOX	0.188		0.391	0.000	0.000	0.000	0.000	1.000	819
MGT	Pre-SOX	0.464		0.499	0.000	0.000	0.000	1.000	1.000	468
	Post-SOX	0.711		0.454	0.000	0.000	1.000	1.000	1.000	919
QUARTERLY	Pre-SOX	0.408		0.492	0.000	0.000	0.000	1.000	1.000	468
	Post-SOX	0.175		0.380	0.000	0.000	0.000	0.000	1.000	919
POS	Pre-SOX	0.212		0.409	0.000	0.000	0.000	0.000	1.000	468
	Post-SOX	0.285		0.452	0.000	0.000	0.000	1.000	1.000	919
PRE_RET	Pre-SOX	-0.108	**	0.320	-0.705	-0.327	-0.117	0.048	0.927	468
	Post-SOX	-0.013		0.231	-0.705	-0.142	-0.024	0.098	0.927	919
RETURN	Pre-SOX	-0.097	**	0.177	-0.806	-0.171	-0.056	0.003	0.518	468
	Post-SOX	-0.030	**	0.117	-0.572	-0.062	-0.015	0.016	1.419	919
RETURN_EP	Pre-SOX	-0.135	**	0.255	-0.937	-0.240	-0.066	0.008	1.271	468
	Post-SOX	-0.039	**	0.178	-0.957	-0.100	-0.014	0.033	1.290	919
SIZE	Pre-SOX	12.087		2.082	7.744	10.659	11.809	13.261	18.264	468
	Post-SOX	12.764		1.919	7.261	11.463	12.722	14.023	19.766	919
VIX	Pre-SOX	23.843		3.992	17.290	20.865	23.005	26.437	40.880	468
	Post-SOX	18.575		7.770	10.483	13.010	15.497	20.053	42.800	919
VOLUME	Pre-SOX	0.017	**	0.049	-0.100	-0.002	0.001	0.013	0.416	468
	Post-SOX	0.006	**	0.022	-0.215	-0.001	0.001	0.006	0.281	919

Table 2, Panel A continued

Types of items restated

		Mean	StdErr	Min	Q1	Median	Q3	Max	n
AL_VALUE	Pre-SOX	0.024	0.152	0	0	0	0	1	468
	Post-SOX	0.018	0.135	0	0	0	0	1	919
CORE_PRIMARY	Pre-SOX	0.393	0.489	0	0	0	1	1	468
	Post-SOX	0.237	0.426	0	0	0	0	1	919
CORE_SECONDARY	Pre-SOX	0.053	0.225	0	0	0	0	1	468
	Post-SOX	0.065	0.247	0	0	0	0	1	919
DERIVATIVES	Pre-SOX	0.011	0.103	0	0	0	0	1	468
	Post-SOX	0.029	0.169	0	0	0	0	1	919
FIN_OTH	Pre-SOX	0.032	0.176	0	0	0	0	1	468
	Post-SOX	0.045	0.207	0	0	0	0	1	919
LEASES	Pre-SOX	0.002	0.046	0	0	0	0	1	468
	Post-SOX	0.136	0.343	0	0	0	0	1	919
LEVERAGE	Pre-SOX	0.013	0.113	0	0	0	0	1	468
	Post-SOX	0.021	0.142	0	0	0	0	1	919
MULTIPLE	Pre-SOX	0.216	0.412	0	0	0	0	1	468
	Post-SOX	0.240	0.428	0	0	0	0	1	919
NONCORE	Pre-SOX	0.179	0.384	0	0	0	0	1	468
	Post-SOX	0.091	0.288	0	0	0	0	1	919
NONINC_RECLASS	Pre-SOX	0.000	0.000	0	0	0	0	0	468
	Post-SOX	0.023	0.150	0	0	0	0	1	919
OTHER	Pre-SOX	0.066	0.249	0	0	0	0	1	468
	Post-SOX	0.044	0.204	0	0	0	0	1	919
TAXES	Pre-SOX	0.011	0.103	0	0	0	0	1	468
	Post-SOX	0.050	0.218	0	0	0	0	1	919
Post-SOX subperiods									
AA	Pre-SOX	0.017	0.130	0	0	0	0	1	468
	Post-SOX	0.074	0.262	0	0	0	0	1	919
CERT1	Pre-SOX	0.000	0.000	0	0	0	0	0	468
	Post-SOX	0.020	0.139	0	0	0	0	1	919
CERT2	Pre-SOX	0.000	0.000	0	0	0	0	0	468
	Post-SOX	0.079	0.271	0	0	0	0	1	919
SOX404	Pre-SOX	0.000	0.000	0	0	0	0	0	468
	Post-SOX	0.221	0.415	0	0	0	0	1	919

Means are shaded in gray if they significantly differ across SOX periods at the 5 percent level or higher (two-tailed). For continuous variables, difference-in-means t-statistics are computed assuming unequal variances. For dichotomous variables, differences are assessed using chi-squared tests.

**, * denote that the mean significantly differs from zero at the 1 and 5 percent levels, respectively (two-tailed). Statistical significance is reported only when the null hypothesis is zero.

For descriptions of variables, see appendices A and B.

Table 2 continued

Panel B: Announcement returns by type of item restated

	Mean RETURN		n
AL_VALUE	-0.045	**	28
CORE_PRIMARY	-0.080	**	402
CORE_SECONDARY	-0.026	*	85
DERIVATIVES	-0.002		32
FIN_OTH	-0.007		56
LEASES	0.005		126
LEVERAGE	-0.032	*	25
MULTIPLE	-0.088	**	322
NONCORE	-0.028	**	168
NONINC_RECLASS	0.005		21
OTHER	-0.043	*	71
TAXES	-0.019		51
All types			**1,387**

**, * denote that the mean significantly differs from zero at the 1 and 5 percent levels, respectively (two-tailed).

For descriptions of restatement types, see Appendix B.

Table 3. Tests of Announcement Returns

Panel A: Basic models

Return window	Predicted Sign	Short			Episode	
		(1)	(2)	(3)	(4)	(5)
Intercept	?	0.0075	0.0052	-0.0175	0.0378	0.0376
		(0.0336)	(0.0330)	(0.0364)	(0.0456)	(0.0526)
POSTSOX	**?**	**0.0458** **	**0.0420** **	**0.0516** **	**0.0490** **	**0.0489** **
		(0.0097)	**(0.0103)**	**(0.0117)**	**(0.0157)**	**(0.0171)**
MAG	+	0.1896 **	0.1918 **	0.1697 **	0.3548 **	0.3971 **
		(0.0668)	(0.0668)	(0.0707)	(0.0915)	(0.1114)
POS	+	0.0073	0.0057	0.0077	-0.0013	-0.0076
		(0.0079)	(0.0072)	(0.0075)	(0.0106)	(0.0104)
MAG x POS	-	-0.1032	-0.0759	0.0063	-0.2820	-0.3088
		(0.1829)	(0.1831)	(0.2144)	(0.3076)	(0.3997)
FRAUD	-	-0.0632 **	-0.0609 **	-0.0554 **	-0.1003 **	-0.0746 **
		(0.0115)	(0.0111)	(0.0114)	(0.0184)	(0.0197)
FRAUDSUB	-	-0.0148	-0.0111	-0.0075	-0.0018	0.0044
		(0.0177)	(0.0172)	(0.0175)	(0.0275)	(0.0288)
MAG_UNKNOWN	-	-0.0272 **	-0.0277 **	-0.0251 **	-0.0352 **	-0.0436 **
		(0.0103)	(0.0100)	(0.0104)	(0.0111)	(0.0111)
DELAY	-	-0.0228 *	-0.0229 *	-0.0261 *	-0.0503 **	-0.0351 *
		(0.0116)	(0.0114)	(0.0115)	(0.0162)	(0.0165)
SIZE	+	-0.0008	-0.0011	-0.0018	-0.0014	-0.0009
		(0.0020)	(0.0020)	(0.0022)	(0.0028)	(0.0031)
QUARTERLY	+	-0.0382 **	-0.0396 **	-0.0402 **	-0.0493 **	-0.0586 **
		(0.0091)	(0.0090)	(0.0099)	(0.0113)	(0.0127)
MGT	+	-0.0053	-0.0069	-0.0075	-0.0030	-0.0051
		(0.0077)	(0.0075)	(0.0081)	(0.0112)	(0.0122)
CORE_PRIMARY	-	-0.0282	-0.0208 **	-0.0190 *	-0.0144	-0.0200
		(0.0190)	(0.0088)	(0.0095)	(0.0118)	(0.0135)
CORE_SECONDARY	?	-0.0162				
		(0.0211)				
AL_VALUE	?	-0.0077				
		(0.0211)				
TAXES	?	-0.0267				
		(0.0221)				
LEASES	?	0.0056				
		(0.0196)				
NONCORE	?	-0.0040				
		(0.0194)				
LEVERAGE	?	-0.0145				
		(0.0228)				
FIN_OTH	?	0.0003				
		(0.0225)				
DERIVATIVES	?	0.0067				
		(0.0222)				
NONINC_RECLASS	?	-0.0162				
		(0.0223)				

Table 3, Panel A continued

Return window	Predicted Sign	Short			Episode	
		(1)	(2)	(3)	(4)	(5)
MULTIPLE	-	-0.0210	-0.0170 *	-0.0156	-0.0167	-0.0236
		(0.0198)	(0.0102)	(0.0112)	(0.0166)	(0.0170)
PRE_RET	-	-0.0091	-0.0071	-0.0100	0.0075	-0.0196
		(0.0173)	(0.0173)	(0.0193)	(0.0242)	(0.0299)
VIX	-	-0.0005	-0.0004	0.0004	-0.0017	-0.0016
		(0.0006)	(0.0009)	(0.0010)	(0.0011)	(0.0012)
AA	+		0.0474 *	0.0368	0.0276	0.0223
			(0.0244)	(0.0269)	(0.0305)	(0.0277)
CERT1	+		-0.0245	-0.0362	0.0694	0.0962
			(0.0309)	(0.0336)	(0.0644)	(0.0689)
CERT2	+		-0.0170	-0.0292	0.0181	0.0377
			(0.0210)	(0.0231)	(0.0314)	(0.0344)
SOX404	+		0.0192 **	0.0226 **	0.0216 *	0.0173
			(0.0079)	(0.0080)	(0.0130)	(0.0136)
ESURP	+			0.2109		
				(0.3330)		
ESURP_EP	+					0.4637 **
						(0.1758)
MBE	+			0.0340 **		
				(0.0089)		
Adj. R-square		17.1%	17.9%	18.6%	18.7%	20.3%
n		1,387	1,387	1,226	1,387	1,068

**, * denote significance at the 1 and 5 percent levels, respectively (one-tailed if sign is in the predicted direction, two-tailed otherwise). Models are estimated using OLS with heteroscedasticity-consistent standard errors (White 1980). Standard errors are presented in parentheses below coefficient estimates. The dependent variable is abnormal stock returns measured over either a "short" or "episode" window around the restatement announcement. The short return window is days (-1, +1) relative to the initial restatement announcement. The episode return window begins one day before the restatement announcement and ends one day after the announcement of the restatement's impact on earnings. See Appendices A and B for variable descriptions.

Table 3 continued

Panel B: Exploratory analysis

SOX period Return window	Predicted Sign	Pre-SOX Short (6a)	Post-Sox Short (6b)	Pre-SOX Episode (7a)	Post-SOX Episode (7b)	Combined Short (8)	Combined Episode (9)
Intercept	?	0.0809	-0.0015	0.1245	-0.0262	0.0312	0.0388
		(0.0709)	(0.0331)	(0.0848)	(0.0472)	(0.0331)	(0.0450)
POSTSOX	**?**					**0.0065**	**0.0017**
						(0.0114)	**(0.0145)**
MAG	+	0.2256 *	0.1535 *	0.3318 **	0.3470 **	0.1926 **	0.3417 **
		(0.1086)	(0.0728)	(0.1380)	(0.1187)	(0.0665)	(0.0918)
POS	+	0.0174	0.0048	0.0332	-0.0040	0.0094	0.0057
		(0.0174)	(0.0077)	(0.0311)	(0.0099)	(0.0071)	(0.0103)
MAG x POS	-	-0.3892	0.1266	-0.6261	-0.2649	-0.1806	-0.4034
		(0.2738)	(0.2011)	(0.4269)	(0.4584)	(0.1832)	(0.3057)
FRAUD	-	-0.0868 **	-0.0456 **	-0.1322 **	-0.0759 **	-0.0911 **	-0.1428 **
		(0.0210)	(0.0120)	(0.0318)	(0.0220)	(0.0197)	(0.0298)
FRAUDSUB	-	0.0159	-0.0297	-0.0040	-0.0036	-0.0071	-0.0034
		(0.0268)	(0.0213)	(0.0422)	(0.0339)	(0.0169)	(0.0266)
MAG_UNKNOWN	-	-0.0319	-0.0194 *	-0.0449 *	-0.0187	-0.0243 **	-0.0288 **
		(0.0215)	(0.0111)	(0.0248)	(0.0115)	(0.0100)	(0.0110)
DELAY	-	-0.0316	-0.0210	-0.0986 **	-0.0329 *	-0.0402 *	-0.1083 **
		(0.0236)	(0.0130)	(0.0345)	(0.0171)	(0.0197)	(0.0315)
SIZE	+	-0.0056	0.0019	-0.0074	0.0039	-0.0012	-0.0012
		(0.0035)	(0.0025)	(0.0051)	(0.0033)	(0.0020)	(0.0028)
QUARTERLY	+	-0.0379 *	-0.0391 **	-0.0593 **	-0.0431 **	-0.0405 **	-0.0528 **
		(0.0152)	(0.0100)	(0.0198)	(0.0117)	(0.0089)	(0.0110)
MGT	+	-0.0136	0.0013	0.0022	0.0034	-0.0039	0.0013
		(0.0164)	(0.0078)	(0.0241)	(0.0120)	(0.0075)	(0.0112)
CORE_PRIMARY	-	-0.0330 *	-0.0209 **	-0.0429 *	-0.0077	-0.0230 **	-0.0173
		(0.0184)	(0.0088)	(0.0248)	(0.0120)	(0.0087)	(0.0118)
MULTIPLE	-	-0.0649 **	-0.0015	-0.0539	-0.0112	-0.0592 **	-0.0442
		(0.0216)	(0.0124)	(0.0363)	(0.0177)	(0.0203)	(0.0322)
PRE_RET	-	-0.0262	0.0102	-0.0122	0.0153	-0.0100	0.0024
		(0.0282)	(0.0201)	(0.0354)	(0.0321)	(0.0170)	(0.0236)
VIX	-	-0.0001	-0.0006	-0.0005	-0.0003	-0.0006	-0.0004
		(0.0023)	(0.0006)	(0.0026)	(0.0009)	(0.0008)	(0.0012)
AA	+					0.0469 *	0.0186
						(0.0237)	(0.0302)
CERT1	+					-0.0308	0.0405
						(0.0301)	(0.0626)
CERT2	+					-0.0180	0.0011
						(0.0209)	(0.0302)
SOX404	+					0.0211 **	0.0283 *
						(0.0077)	(0.0128)
FRAUD x POSTSOX	+					0.0509 *	0.0765 *
						(0.0227)	(0.0362)
DELAY x POSTSOX	+					0.0199	0.0777 *
						(0.0207)	(0.0337)
MULTIPLE x POSTSOX	+					0.0570 *	0.0299
						(0.0236)	(0.0355)
Adj. R-square		18.1%	10.8%	22.8%	9.8%	19.6%	20.5%
n		468	919	468	919	1,387	1,387

Table 3 continued

**, * denote significance at the 1 and 5 percent levels, respectively (one-tailed if sign is in the predicted direction, two-tailed otherwise). Models are estimated using OLS with heteroscedasticity-consistent standard errors (White 1980). Standard errors are presented in parentheses below coefficient estimates.   Coefficients are shaded in gray if they significantly differ across SOX periods at the 5 percent level or higher (two-tailed). The test statistic is the difference between the two coefficients divided by the square root of the sum of the two coefficients' estimated variances, which is asymptotically standard normal assuming independent pre- and post-SOX samples.

The dependent variable is abnormal stock returns measured over either a "short" or "episode" window around the restatement announcement. The short return window is days (-1, +1) relative to the initial restatement announcement. The episode return window begins one day before the restatement announcement and ends one day after the announcement of the restatement's impact on earnings. See Appendices A and B for variable descriptions.

Panel C: Characteristics of fraudulent, multiple-item, and delayed restatements across SOX periods

	Mean MAGNITUDE		Percentage involving CORE_PRIMARY items	
	Pre-SOX	Post-SOX	Pre-SOX	Post-SOX
FRAUD=1 restatements	-0.074	-0.063	51.0%	25.6%
DELAY=1 restatements	-0.075	-0.043	33.8%	21.1%
MULTIPLE=1 restatements	-0.060	-0.048	NA	NA

Values are shaded in gray if they significantly differ across SOX periods at the 5 percent level or higher (two-tailed). For continuous variables, difference-in-means t-statistics are computed assuming unequal variances. For dichotomous variables, differences in proportions are assessed using chi-squared tests. For descriptions of variables, see appendices A and B.

Table 4. Tests of Signed Long Run Returns

<u>**Panel A: Return cumulation starts two days after the initial restatement announcement**</u>

Full sample	Mean Return		Median Return	
Horizon	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**
6 months	-4.19%	-1.74%	-2.03%	-2.10%
1 year	-3.18%	0.85%	-0.79%	-1.98%
2 years	2.26%	6.53%	-1.06%	-3.44%
n	414	700	414	700
Sample partitions				
Fraudulent				
6 months	-19.87% **	-9.62% *	-13.27% **	-9.80% **
1 year	-14.94%	-4.16%	-5.59%	-8.47%
2 years	-3.23%	1.11%	-3.29%	-11.82%
n	129	131	129	131
Non-fraudulent				
6 months	2.91%	0.07%	3.24%	0.29%
1 year	2.14%	2.01%	1.01%	-1.05%
2 years	4.75%	7.78%	0.81%	-2.06%
n	285	569	285	569
Delayed				
6 months	-9.39%	-4.10%	-8.37% *	-3.84%
1 year	-7.94%	-1.48%	0.26%	-4.44%
2 years	-5.72%	4.62%	2.09%	-10.64%
n	130	251	130	251
Multiple items				
6 months	-10.57%	-2.21%	-13.27% *	-1.83%
1 year	-10.24%	2.63%	-4.28%	1.94%
2 years	-1.95%	12.98%	-4.43%	3.23%
n	91	168	91	168
Announcement returns -- most positive quartile				
6 months	1.82%	-1.17%	-1.95%	-2.03%
1 year	3.51%	-3.19%	5.97%	-0.68%
2 years	39.45%	2.66%	-1.94%	-8.38%
n	83	190	83	190
Announcement returns -- most negative quartile				
6 months	-10.48% *	5.58%	-9.86% *	-5.00%
1 year	-8.91%	13.77%	-10.01%	-2.04%
2 years	-5.00%	22.37%	-3.00%	-2.26%
n	169	127	169	127
Restatement egregiousness factor -- least egregious quartile				
6 months	1.27%	-8.02% *	5.22%	-3.99%
1 year	17.21%	-7.82%	13.54%	-1.13%
2 years	3.80%	1.57%	2.23%	-8.38%
n	94	180	94	180
Restatement egregiousness factor -- most egregious quartile				
6 months	-17.19% **	-9.84% *	-14.38% **	-9.29% **
1 year	-13.89%	-3.15%	-6.03%	-4.47%
2 years	-9.76%	6.56%	2.11%	-8.66%
n	119	152	119	152
Announcement return residual -- lowest quartile (more negative reactions than predicted)				
6 months	-10.49%	0.62%	-6.88%	-2.20%
1 year	-10.37%	9.54%	-8.18%	1.53%
2 years	-1.24%	17.01%	0.61%	-0.34%
n	122	169	122	169
Announcement return residual -- highest quartile (less negative reactions than predicted)				
6 months	-1.50%	-9.61% *	-3.86%	-9.24% *
1 year	5.62%	-15.01% *	6.06%	-10.32% *
2 years	22.03%	-13.12%	1.00%	-17.15%
n	138	132	138	132

Table 4 continued

Panel B: Return cumulation starts two days after the restatement's impact on earnings is announced

Full sample	Mean Return		Median Return	
Horizon	Pre-SOX	Post-SOX	Pre-SOX	Post-SOX
6 months	0.84%	1.77%	3.25%	-0.18%
1 year	2.08%	7.02%	1.98%	-0.25%
2 years	9.35%	9.58%	2.20%	-1.91%
n	408	675	408	675
Sample partitions				
Fraudulent				
6 months	-7.07%	5.70%	-9.58%	-3.98%
1 year	-1.23%	26.42%	-3.97%	-0.84%
2 years	17.52%	28.26%	6.86%	0.25%
n	123	110	123	110
Non-fraudulent				
6 months	4.25%	1.00%	6.96%	0.50%
1 year	3.51%	3.24%	4.59%	0.03%
2 years	5.83%	5.94%	0.58%	-2.15%
n	285	565	285	565
Delayed				
6 months	6.03%	5.65%	3.38%	-0.43%
1 year	13.08%	16.97%	12.64%	0.61%
2 years	17.55%	13.79%	8.00%	-3.60%
n	124	226	124	226
Multiple items				
6 months	-1.16%	5.50%	-4.72%	3.97%
1 year	3.41%	15.07% *	2.81%	6.23%
2 years	14.75%	28.23% *	5.71%	11.15%
n	90	145	90	145
Announcement returns -- most positive quartile				
6 months	4.82%	-1.31%	4.32%	-1.30%
1 year	5.97%	2.29%	4.35%	-1.02%
2 years	43.23%	6.82%	-3.64%	-8.28%
n	81	188	81	188
Announcement returns -- most negative quartile				
6 months	-3.48%	12.78%	-4.80%	-2.51%
1 year	-0.46%	30.83%	-6.56%	1.13%
2 years	2.19%	27.55%	5.06%	1.64%
n	165	117	165	117
Restatement egregiousness factor -- least egregious quartile				
6 months	1.15%	-7.55%	4.72%	-3.72%
1 year	17.13%	-7.82%	13.54%	-1.13%
2 years	3.58%	1.51%	2.23%	-8.38%
n	94	180	94	180
Restatement egregiousness factor -- most egregious quartile				
6 months	-3.22%	6.34%	-5.58%	-4.19%
1 year	0.17%	25.67%	4.14%	1.13%
2 years	13.85%	25.96%	8.08%	0.47%
n	113	129	113	129
Announcement return residual -- lowest quartile (more negative reactions than predicted)				
6 months	-3.90%	7.26%	-3.39%	-0.36%
1 year	-0.15%	21.50%	-1.07%	1.53%
2 years	6.64%	20.52%	5.73%	1.64%
n	119	163	119	163
Announcement return residual -- highest quartile (less negative reactions than predicted)				
6 months	5.17%	-5.44%	4.17%	-0.84%
1 year	11.19%	-0.85%	6.50%	-3.65%
2 years	33.50%	0.28%	1.23%	-10.91%
n	136	124	136	124

Daily abnormal returns are computed by subtracting the restatement firm's return from that of a control firm matched on size and book-to-market. Buy-and-hold abnormal returns are then cumulated for each firm over six-month, one-year, and two-year windows.

**, * denote that the value differs from zero at the 1 and 5 percent levels, respectively (two-tailed). T-tests are used for means and Wilcoxon signed rank tests are used for medians.

For descriptions of variables, see appendices A and B.

Table 5. Tests of Unsigned Long Run Returns

<u>**Panel A: Return cumulation starts two days after the initial restatement announcement**</u>

Full sample	Mean Unsigned Return		Median Unsigned Return	
Horizon	**Pre-SOX**	**Post-SOX**	**Pre-SOX**	**Post-SOX**
6 months	49.00%	37.97% **	33.19%	25.89% **
1 year	71.10%	60.45%	46.50%	38.50% *
2 years	100.94%	91.86%	59.53%	56.14%
n	414	700	414	700
Sample partitions				
Fraudulent				
6 months	45.79%	37.51%	36.68%	31.38%
1 year	58.72%	60.90%	43.25%	44.13%
2 years	91.43%	92.08%	56.25%	67.72%
n	129	131	129	131
Non-fraudulent				
6 months	50.45%	38.08% *	32.70%	25.06% **
1 year	76.71%	60.34% *	48.88%	37.80% **
2 years	105.25%	91.80%	60.68%	54.98%
n	285	569	285	569
Delayed				
6 months	45.18%	37.13%	31.19%	25.90%
1 year	63.85%	57.14%	40.99%	37.91%
2 years	80.41%	92.58%	53.33%	61.16%
n	130	251	130	251
Multiple items				
6 months	46.33%	36.80%	32.07%	28.56%
1 year	69.53%	54.89%	49.63%	41.61%
2 years	96.03%	98.81%	50.28%	68.22%
n	91	168	91	168
Announcement returns -- most positive quartile				
6 months	58.23%	35.34% **	34.69%	24.40% **
1 year	79.61%	60.12%	43.91%	35.13%
2 years	132.61%	100.97%	61.68%	59.46%
n	83	190	83	190
Announcement returns -- most negative quartile				
6 months	49.35%	49.04%	38.21%	35.11%
1 year	68.96%	69.24%	54.94%	46.48%
2 years	90.31%	101.43%	59.62%	70.68%
n	169	127	169	127
Restatement egregiousness factor -- least egregious quartile				
6 months	48.12%	36.38%	30.02%	24.98%
1 year	66.35%	54.58%	45.52%	34.29%
2 years	85.14%	83.48%	61.73%	46.30%
n	94	180	94	180
Restatement egregiousness factor -- most egregious quartile				
6 months	44.82%	39.08%	32.28%	31.07%
1 year	56.48%	58.18%	40.99%	41.23%
2 years	82.13%	98.73%	53.72%	67.77%
n	119	152	119	152
Announcement return residual -- lowest quartile (more negative reactions than predicted)				
6 months	49.53%	48.23%	35.74%	35.90%
1 year	69.84%	70.59%	53.81%	48.35%
2 years	92.45%	91.40%	59.88%	55.65%
n	122	169	122	169
Announcement return residual -- highest quartile (less negative reactions than predicted)				
6 months	53.39%	36.43% **	36.12%	26.68% *
1 year	69.47%	57.29%	42.37%	40.71%
2 years	111.99%	102.21%	51.04%	65.74% *
n	138	132	138	132

Table 5 continued

Panel B: Return cumulation starts two days after the restatement's impact on earnings is announced

Full sample	Mean Unsigned Return		Median Unsigned Return	
Horizon	Pre-SOX	Post-SOX	Pre-SOX	Post-SOX
1 month				
6 months	52.20%	39.92% **	34.02%	26.67% **
1 year	75.15%	63.93%	49.49%	38.54% **
2 years	103.46%	92.22%	60.85%	55.60%
n	408	675	408	675

Sample partitions

Fraudulent

1 month				
6 months	46.38%	49.20%	33.64%	27.86%
1 year	67.22%	78.47%	48.21%	37.11%
2 years	99.63%	104.54%	57.42%	56.78%
n	123	110	123	110

Non-fraudulent

1 month				
6 months	54.71%	38.12% **	34.37%	26.30% **
1 year	78.57%	61.10% *	49.72%	38.59% **
2 years	105.11%	89.82%	61.81%	55.35%
n	285	565	285	565

Delayed

1 month				
6 months	52.63%	41.88%	33.65%	26.58% **
1 year	73.56%	66.08%	51.75%	35.97% *
2 years	89.04%	92.94%	56.94%	56.78%
n	124	226	124	226

Multiple items

1 month				
6 months	52.45%	37.90% *	32.07%	28.21%
1 year	72.32%	56.84%	53.87%	36.85%
2 years	103.62%	94.62%	52.67%	64.13%
n	90	145	90	145

Announcement returns -- most positive quartile

6 months	57.05%	34.53% **	34.90%	21.61% **
1 year	79.97%	66.43%	46.64%	35.67%
2 years	134.71%	104.23%	64.00%	63.04%
n	81	188	81	188

Announcement returns -- most negative quartile

6 months	53.79%	55.77%	39.55%	36.48%
1 year	76.20%	78.76%	61.20%	40.00% *
2 years	91.80%	102.84%	58.48%	55.45%
n	165	117	165	117

Restatement egregiousness factor -- least egregious quartile

6 months	48.10%	36.41%	30.02%	24.98%
1 year	66.43%	54.59%	46.22%	34.29%
2 years	85.36%	83.43%	61.73%	46.30%
n	94	180	94	180

Restatement egregiousness factor -- most egregious quartile

6 months	45.23%	49.10%	32.07%	28.30%
1 year	69.10%	74.59%	51.18%	33.63%
2 years	93.37%	106.23%	54.01%	57.56%
n	113	129	113	129

Announcement return residual -- lowest quartile (more negative reactions than predicted)

6 months	54.50%	53.12%	37.45%	35.90%
1 year	78.29%	74.22%	60.02%	43.23% *
2 years	95.81%	90.29%	57.32%	47.07%
n	119	163	119	163

Announcement return residual -- highest quartile (less negative reactions than predicted)

6 months	52.91%	37.80% *	36.36%	27.73% **
1 year	74.43%	64.38%	44.96%	43.55%
2 years	118.04%	106.82%	52.27%	64.34%
n	136	124	136	124

Daily abnormal returns are computed by subtracting the restatement firm's return from that of a control firm matched on size and book-to-market. Buy-and-hold abnormal returns are then cumulated for each firm over six-month, one-year, and two-year windows. Then absolute values are taken.

**, * denote that the pre- and post-SOX values differ at the 1 and 5 percent levels, respectively (two-tailed). T-tests are used for means and Wilcoxon two-sample tests are used for medians.

For descriptions of variables, see appendices A and B.

Table 6. Tests of Volume around Restatement Announcements

	Predicted Sign	(1)	(2)	(3)
Intercept	?	-0.0452 **	-0.0453 **	-0.0488 **
		(0.0079)	(0.0076)	(0.0088)
POSTSOX	**+**	**-0.0029**	**-0.0017**	**-0.0022**
		(0.0019)	**(0.0020)**	**(0.0023)**
AB_RET	+	0.1341 **	0.1350 **	0.1387 **
		(0.0212)	(0.0215)	(0.0234)
AB_MAG	+	0.0109	0.0099	0.0173
		(0.0156)	(0.0154)	(0.0172)
POS	-	0.0020	0.0021	0.0024
		(0.0020)	(0.0019)	(0.0022)
FRAUD	+	0.0074 **	0.0072 **	0.0082 **
		(0.0029)	(0.0029)	(0.0030)
FRAUDSUB	+	-0.0080 **	-0.0080 **	-0.0080 **
		(0.0023)	(0.0023)	(0.0025)
MAG_UNKNOWN	+	0.0014	0.0012	0.0019
		(0.0018)	(0.0018)	(0.0020)
DELAY	+	-0.0007	-0.0005	-0.0017
		(0.0028)	(0.0028)	(0.0029)
SIZE	?	0.0029 **	0.0030 **	0.0032 **
		(0.0005)	(0.0005)	(0.0005)
QUARTERLY	-	0.0010	0.0011	0.0016
		(0.0023)	(0.0024)	(0.0027)
MGT	-	-0.0013	-0.0012	-0.0010
		(0.0017)	(0.0017)	(0.0019)
CORE_PRIMARY	+	0.0067 **	0.0053 **	0.0053 *
		(0.0027)	(0.0020)	(0.0023)
CORE_SECONDARY	?	0.0058 *	0.0044 *	0.0060 **
		(0.0025)	(0.0020)	(0.0022)
AL_VALUE	?	0.0041		
		(0.0042)		
TAXES	?	0.0044		
		(0.0067)		
LEASES	?	0.0070 *	0.0051 *	0.0053 *
		(0.0028)	(0.0020)	(0.0022)
NONCORE	?	0.0006		
		(0.0023)		
LEVERAGE	?	0.0043		
		(0.0027)		
FIN_OTH	?	0.0009		
		(0.0026)		
DERIVATIVES	?	0.0004		
		(0.0028)		
NONINC_RECLASS	?	0.0049		
		(0.0033)		

Table 6 continued

	Predicted Sign	(1)	(2)	(3)
MULTIPLE	+	0.0042	0.0030	0.0035
		(0.0027)	(0.0023)	(0.0025)
AB_PRE_RET	-	0.0051	0.0058	0.0039
		(0.0066)	(0.0066)	(0.0077)
AA	?		0.0000	0.0008
			(0.0038)	(0.0043)
CERT1	?		-0.0101 **	-0.0107 *
			(0.0038)	(0.0043)
CERT2	?		-0.0066 **	-0.0069 *
			(0.0024)	(0.0028)
SOX404	?		-0.0007	0.0001
			(0.0015)	(0.0016)
AB_ESURP	+			0.0270
				(0.0569)
MBE	?			0.0010
				(0.0021)
Adj. R-square		28.5%	28.9%	28.7%
n		1,387	1,387	1,226

**, * denote significance at the 1 and 5 percent levels, respectively (one-tailed if sign is in the predicted direction, two-tailed otherwise). Models are estimated using OLS with heteroscedasticity-consistent standard errors (White 1980). Standard errors are presented in parentheses below coefficient estimates. The dependent variable is abnormal volume over days (-1, +1) relative to the restatement announcement. See Appendices A and B for variable descriptions.