The Changing Nature and Consequences of Public Company Financial Restatements

1997-2006

by Susan Scholz

Associate Professor of Accounting and Harper Faculty Fellow, University of Kansas School of Business

The Department of the Treasury

April 2008

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I. Executive Summary

The U.S. Treasury Department commissioned this study to investigate the increase in public company restatement activity over the decade from 1997 to 2006. The purpose is to understand characteristics and consequences of financial statement restatements for violations of U.S. Generally Accepted Accounting Principles (GAAP) over this decade. The study analyzes 6,633 restatements of financial results announced over this period. These are the broad findings:

- It is well-known that restatements increased in recent years; over the decade, they grew nearly eighteen-fold, from 90 in 1997 to 1,577 in 2006. However, the increase is largely driven by companies that do not trade on the major stock exchanges.[1] Non-exchange-listed companies account for only 23% of all restatements in 1997, but increase to 62% by 2006. (See Figure 1.)
- Restatement frequencies begin to accelerate in 2001—well in advance of the passage of the Sarbanes-Oxley Act of 2002 (SOX). This acceleration is likely due in part to the economic downturn about this time.
- The average market reaction to restatement announcements is negative throughout the study period. However, beginning in 2001, the magnitude of market reactions declines notably. This decline coincides with an increase in the number of restatements between 2001 and 2006. (See Figure 2.)
- In particular years, restatement frequencies and market reactions are associated with several disparate factors. These include overall market returns and volatility, regulatory activities, and changes in the mix of underlying accounting issues. Regarding the shift in accounting issues:
  - Restatements attributed to fraud and those affecting revenues tend to have more negative market reactions. However, the percentages of both fraud and revenue restatements decline over the decade. Fraud is a factor in 29% of all 1997 restatements, but only 2% of 2006 restatements.[2] The proportion of revenue restatements also decreases, from 41% in 1997 to 11% in 2006.
  - On the other hand, restatements related to accounting for non-operating expenses, non-recurring events and reclassifications typically do not have discernibly negative market reactions. Together, these groups represent about 24% of all 1997 restatements, increasing to nearly half at the end of the study period.
- Across the decade, the average restating company increases in size, but remains similar to a comparison group of non-restating companies.[3] Companies of differing sizes tend to restate different accounting issues, and several of the distinctions are consistent with expected variations in the activities of larger versus smaller companies.
- Finally, restating companies are typically unprofitable even before the restatement. In the year prior to announcing a restatement, more than half of restating companies report a net loss.

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1 Major exchanges are the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), or the NASDAQ National Market. Identification of major exchange (or exchange-listed) companies is based mainly on the availability of announcement date returns in the University of Chicago's *Center for Research in Security Prices* (CRSP) database, the market database most commonly used in academic studies (http://www.crsp.com/). It primarily tracks shares listed in those systems.

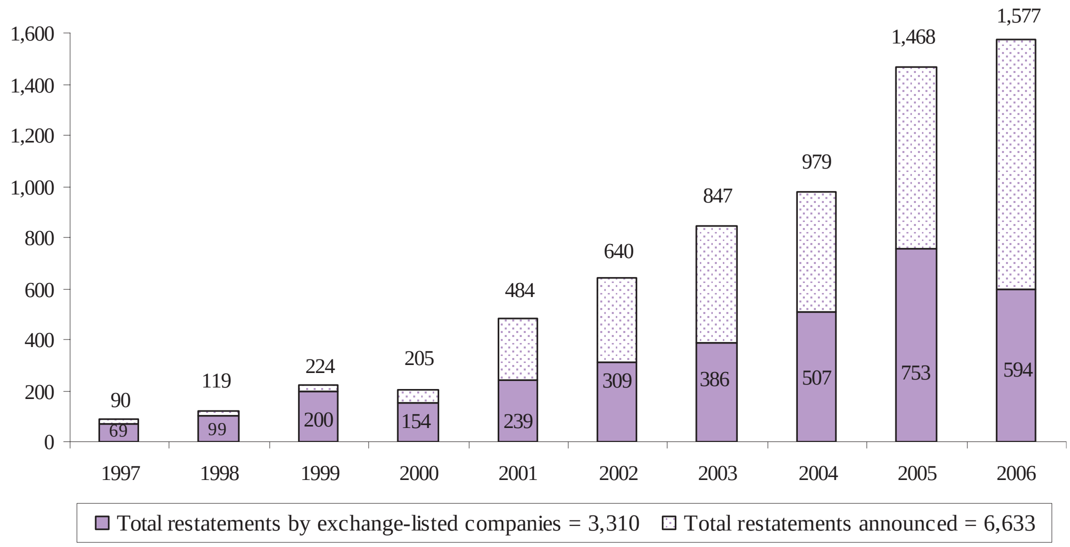
2 Identification of fraud relies in part on Securities and Exchange Commission (SEC) Accounting and Auditing Enforcement Releases (AAERs), so numbers may increase some for later years of the decade as the SEC's enforcement investigations conclude.

3 The comparison group is all U.S. companies included in Standard & Poor's Compustat database, the financial information database most commonly used in academic studies. On average, Compustat includes asset data for more than 9,000 companies each year.

A. Restatement Announcement Frequency

Over the decade, restatement frequency grew nearly eighteen-fold, from 90 in 1997 to 1,577 in 2006.[4] Figure 1 shows the total number of restatements reported each year, with the solid portion of each bar representing restatements by exchange-listed companies. Exchange-listed company restatements total 3,310, or slightly less than half of the 6,633 total restatements.

Figure 1 — **Number of Restatements: 1997 – 2006**



Restatements begin to accelerate in 2001—prior to the corporate accounting scandals and the passage of SOX.[5] The acceleration is particularly prevalent for companies that do not trade on major exchanges. For these firms, restatements increase 380% from 2000 to 2001, while exchange-listed company restatements increase only 55%.[6] Because the occurrence and/or disclosure of misstatements may be more likely for companies experiencing financial difficulties, increases in 2001 and 2002 are likely associated in part with the economic downturn beginning with the implosion of the technology bubble in March 2000.[7] Those resulting restatements would begin to appear in 2001.

Nonetheless, even as the overall market and economy improve in later years, restatement frequency continues to increase, due in part to regulatory changes. For example, the implementation of internal control reporting under SOX Section 404 appears to be associated with an increase in restatements beginning in 2003, particularly among large companies.[8] The size of restating companies appears to diminish in 2006, after larger companies implemented SOX Section 404.[9] Finally, two specific accounting issues, leases in 2005 and stock options backdating in 2006, contribute

4 Restatements in this study are defined as unique restatement events that correct accounting errors and irregularities made by companies reporting under U.S. GAAP. See Section II.A of the study for the definition of a restatement event and Section II.B for data sources.

5 See Section III.A for a timeline of restatement trends and related events.

6 From 1997 to 2006, restatement frequency for non-exchange-listed companies increases almost forty-five-fold. Restatements by major exchange-listed companies increase about eight-fold and actually decrease by 21% from 2005 to 2006.

7 See Mark L. Defond and Jere R. Francis, *Audit Research after Sarbanes-Oxley*, 24 AUDITING: A JOURNAL OF PRACTICE & THEORY 5 (2005) and Zoe-Vonna Palmrose, *Litigation and Independent Auditors: The Role of Business Failures and Management Fraud*, 6 AUDITING: A JOURNAL OF PRACTICE & THEORY 90 (1987).

8 See Appendix C for an analysis of the effects of SOX Section 404 reporting upon restatements.

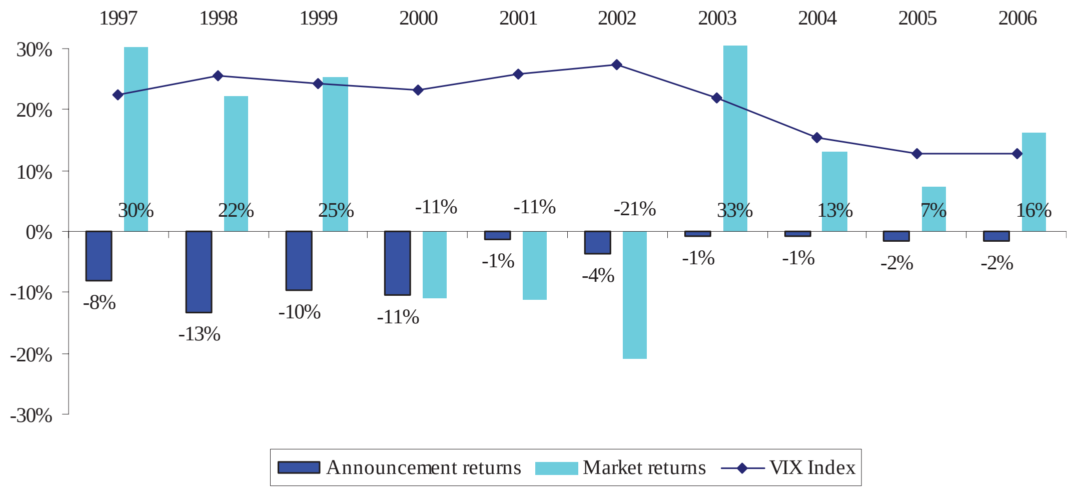
9 Median statistics for assets and revenues indicate statistically significant decreases to pre-2001 sizes. Average assets and revenues decline only slightly.

to higher numbers in later years. However, even after eliminating announcements for these two issues, the number of restatements is higher in 2005 and 2006 compared to 2004.

B. Market Reaction to Restatement Announcements

The market typically views restatements negatively, based on returns at the time of a restatement announcement.[10] However, there is a large difference in average reaction magnitudes between the years 1997-2000, when average announcement returns are -9.5%, and the years 2001-2006, when average announcement returns are -1.3%. This pattern is clear in Figure 2.[11] Thus, as the frequency of restatements increases beginning in 2001, the average reaction to restatement announcements lessens.[12]

Figure 2 — **Restatement Announcement Returns and Market Returns Over the Decade**



The generally down market beginning in March 2000 and continuing through 2002 coincides with this dampening.[13] However, returns continue to be muted even as the market recovers in later years. This appears to be associated with a reduction in market volatility, as shown by the VIX index in Figure 2, and a shift away from more severe restatements, such as restatements involving fraud and revenue accounts.

As shown in Figure 3, returns tend to be more negative when the restatement involves fraud or revenue accounting. Restatements involving fraud decrease as a proportion of all restatements from 29% in 1997 to 2% in 2006, while restatements affecting revenues decline from 41% in 1997 to 11% in 2006. This accounts for some of the reduction in the overall average market reaction. However, even reactions to fraud and revenue accounting are not as severe in the later part of the ten-year period under study.

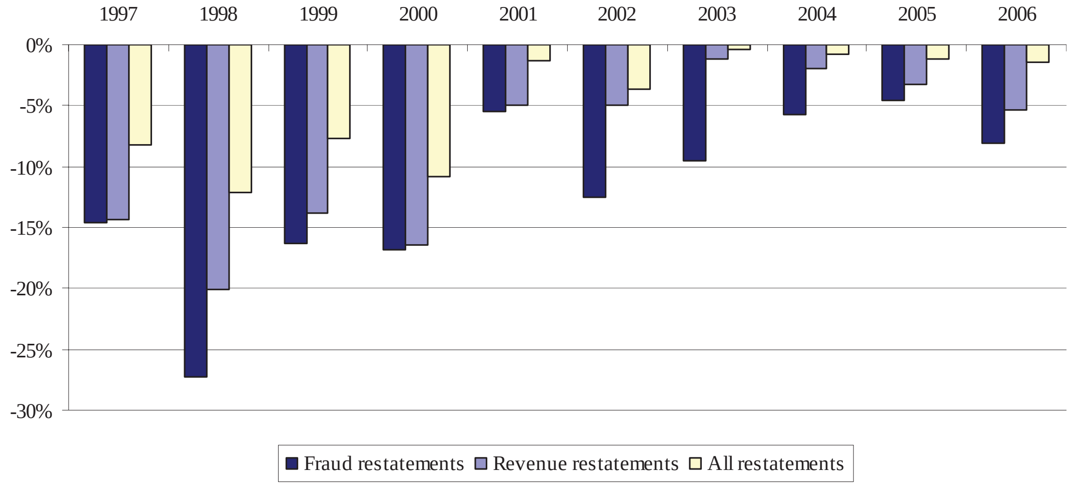
10 Following standard return analysis techniques, this study uses market-adjusted returns combined over a two-day return window beginning on the announcement date. These returns do not take into account any other news, good or bad, that accompanies the restatement announcement. A complete description of the calculation is in Section V.B.

11 The VIX index is the Chicago Board Options Exchange's volatility index. It is scaled to fit chart dimensions. Percentages on the axis do not apply to it.

12 The shift cannot be attributed to the increase in restatements by non-exchange-listed companies, because stock price data is available primarily for exchange-listed companies.

13 The overall return is similarly negative for 2000 and 2001, but in 2000 the downward trend does not begin until March. Restatements tend to be concentrated in the first three months of the year. In 2000, 37% of restatements are announced in the first quarter. Market returns are obtained from CRSP.

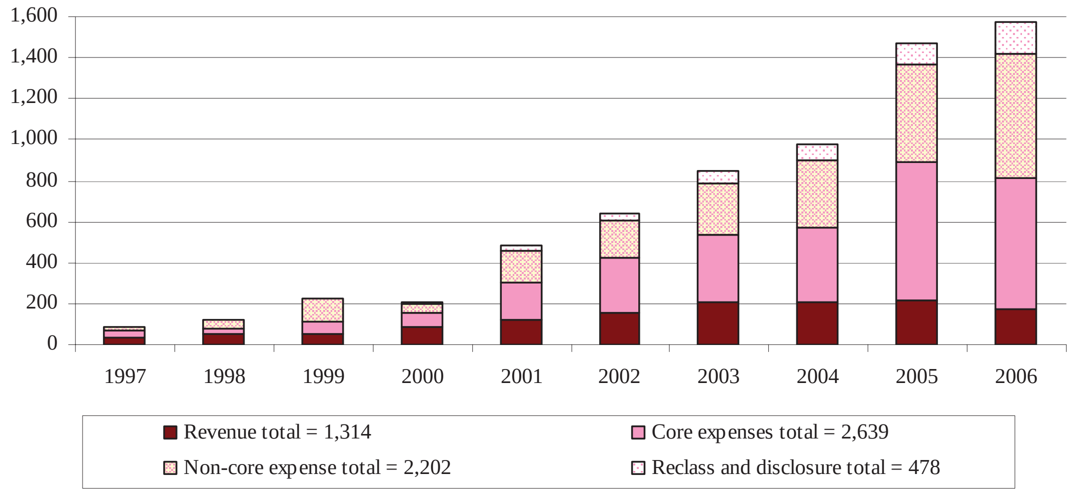
Figure 3 — **Average Returns for Fraud and Revenue Restatement Announcements**



C. Restatement Characteristics – Changes and Market Reactions

The percentages of restatements associated with other accounting issues increased as the proportion of revenue restatements decreased. Figure 4 shows the relative proportions of restatements related to four classifications of accounting issues across the decade. Definitions of the categories are in the following bullets.[14]

Figure 4 — **Accounting Issues Associated with Restatements**



In order of severity, based on market reactions, they are:

- Revenue – These are restatements involving revenue. The number of revenue restatements increases each year except 2006, but decreases as a proportion of overall restatements. The shift is most noticeable in

14 See Appendix A for complete descriptions and frequencies of accounting issues.

2001: the percentage of revenue restatements drops from 44% of all 2000 restatements to 25% of all 2001 restatements.[15] Revenue restatements are consistently associated with more negative market returns.

- Core Expenses – Restatements related to core expenses, i.e., on-going operating expenses, increase over twenty-fold across the decade: from about 30% of all restatements in early years to approximately 40% of all restatements in later years. Market reactions to core expense restatements are typically negative. However, there are two clusters of these restatements that do not elicit negative announcement returns:

  – Companies required to provide SOX Section 404 internal control reports (accelerated filers) and restating during the 2003-2005 SOX Section 404 implementation period.

  – Companies restating lease accounting in 2005.

  The lack of market response to these restatements may be due to anticipation of these restatements, or because they are viewed as arising from clarification of accounting principles or tightening of the financial reporting environment, rather than financial reporting lapses of individual companies.

- Non-Core Expenses – Restatements of non-core expenses, i.e., non-operating or non-recurring expenses, increase greatly in both number and proportion. Non-core expense restatements represent 20% of restatements in 1997 and nearly 40% at the end of the ten-year study period. Growth in this category is due to several accounting issues, including more misstatements of impairment charges, derivatives, taxes and convertible debt interest. There is not a significant market reaction to accounting issues in this category.

- Reclassifications and Disclosures – Restatements involving reclassification and disclosure issues also increase in number and proportion, but remain a relatively small percentage of all restatements, totaling 10% at the end of the study. Market reactions to these restatements tend to be less negative than the other types of restatements. These are particularly benign restatements since they typically do not affect previously reported income.

Other Restatement Characteristics and Consequences

The proportion of restatements that decrease reported income increases from about 80% to nearly 90% over the decade. Whether a restatement reduces income is generally not associated with negative announcement returns. Further, more than half of all restating companies report a net loss in the year prior to the restatement announcement.

The average number of fiscal years corrected by a restatement increases from about 1.25 years in 1997 to nearly 2.00 years in 2006. Concurrently, the proportion of restatements affecting annual, audited financial statements (rather than only quarterly, unaudited financial statements) increases from about 50% to 70%. The increase in restated periods is influenced by lease restatements, and larger company restatements during the SOX Section 404 implementation period. Both of these sets of restatements tend to correct relatively long time periods. Typically, returns are less negative when restatements correct longer time periods, even apart from these two groups. Perhaps, on average, misstatements of less recent financial statements are not as salient to current investors.

Subsequent to a restatement announcement, one-year market returns average -4%. (See Section V.C.) Average debt ratings also tend to be lower in the year following a restatement. Prior to a restatement, the median debt rating for a restating company is BB, slightly below the lowest investment grade of BBB. This median rating decreases to BB- in the year after an announcement. (See Appendix E.)

15 This is subsequent to the SEC's issuance of *Staff Accounting Bulletin: No. 101 – Revenue Recognition in Financial Statements* (Dec. 3, 1999), available at http://www.sec.gov/interps/account/sab101.htm.

D. Characteristics of Restating Companies

Restating companies' size increases steadily across the decade, except in 2006. However, it is typically similar to the average size of all companies in the Compustat database.[16]

Restatements by relatively larger companies tend to:[17]

- have a smaller market reaction;
- restate more years and decrease reported income;
- involve fraud and revenue recognition issues – although the latter is true only when size is measured using assets, not revenues;[18] and
- involve more complex accounting issues, such as derivatives, asset valuations, taxes, foreign subsidiaries and consolidations.

These last accounting issues are consistent with expected activities of larger companies. For example, larger companies are more likely to have complicated transactions involving foreign subsidiaries and consolidations.

On the other hand, restatements by relatively smaller firms are more likely to involve:

- on-going operating expenses;
- stock-based compensation; and
- debt-related problems—particularly imputed interest on convertible debt.

Again, these last two items are consistent with activities of smaller, growth-oriented organizations which are likely to rely heavily on stock-based compensation and convertible debt financing.

Industry representation among restating companies remains fairly consistent across the decade. The technology industry is an exception, as it announces fewer restatements in later years. The decline is most noticeable in 2001, following the end of the technology bubble.

16 Compustat is the main source of financial data used in this study. See note 3 for additional information.

17 "Larger companies" refers to an association with increasing company size, not companies of any particular size. There is no cut-off point or threshold for larger vs. smaller companies in the regression analyses from which these results are drawn. Recall, up to 50% of all restating companies are not available for some of these analyses because of unavailable data. These companies, without data, appear to be quite small. (See Section IV.A.).

18 Again, this association with fraud may be partly due to the way fraud is identified for this study.

II. Purpose and Scope

The U.S. Treasury Department commissioned this study to analyze public company financial restatements from 1997 to 2006. The purpose is to understand characteristics and consequences of financial statement restatements for violations of U.S. GAAP over this decade. An important focus is the change in restatement activity over this time. To do this, the study analyzes restatement characteristics, including the underlying accounting issues associated with restatements, in each year and over the ten-year period. It also describes the companies making restatements. In terms of consequences, the study examines the impact of the restatements on short and longer-term market returns, as well as changes in debt ratings surrounding the announcement year. The study is intended to provide an analysis of restatements, not to provide recommendations derived from the analysis.

A. Definition of a Restatement Event

This study focuses on the correction of errors and irregularities in public company financial statements filed with the Securities and Exchange Commission (SEC) in accordance with U.S. GAAP. Every attempt is made to include only restatements to correct misstated financial statements and to exclude other financial statement changes. For example, some companies use the term restatement when reporting events such as a pooling-of-interest merger before the elimination of the pooling option in 2001. Also, companies adopting new accounting standards sometimes provide restated results to enhance the consistency of their financial information. All data sources used in this study attempt to eliminate such restatements.

The analysis focuses on misapplication of U.S. GAAP, so restatements by companies that do not report primarily under U.S. GAAP are excluded. These are mainly identified by the type of SEC form that is amended by the restatement. In particular, restatements amending SEC Form 6-K and Form 20-F are not included.[19]

For purposes of this study, a restatement event begins with the announcement of an accounting problem or potential accounting problem and concludes with the filing of the amended results. The initial revelation of the problem may be included in a press release or on a Form 8-K (Current Report), Form 10-K (Annual Report), or Form 10-Q (Quarterly Report) that amends the originally filed results. The amended results are typically filed on Form 10-K/A or Form 10-Q/A.[20] Although not necessarily intended under SEC rules in place during the time of this study, some companies did not file amended financial statements to correct past results, but rather presented revised results on a current Form 10-K or Form 10-Q.

When there is a time lag between the initial announcement and an amended filing, the sequence of events between these dates varies greatly. It may include a lengthy investigation and a series of updates by company management, or simply a speedy filing of the amended results. In some cases, investigations expand the scope of the initially reported problems and extend the time periods to be restated. In these cases, this study attempts to combine all periods finally restated and all accounting issues involved to create one restatement event. Companies rarely discover additional misstatements *after* their revised results are filed with the SEC. A restatement of a re-filed report is considered a separate restatement event. However, if a company provides expected revision amounts that differ from final amended results filed on the 10-K/A or 10-Q/A, the additional changes are not considered a separate event.

19 Form 6-K is the current report of foreign private issuers and Form 20-F is the annual or transition report of foreign private issuers.

20 Companies sometimes file amended results on Form 8-K, or if registration statements are involved, on amended S-series forms.

B. Data Sources and Limitations

The analysis focuses on restatements announced from January 1, 1997 through December 31, 2006. The information used for this study is drawn from several sources. In earlier years (1997-2003), restatements are mainly identified through Lexis-Nexis key-word searches of press releases and Form 8-K filings. Additional restatements during this period are found by comparing the search results to restatements listed in the Government Accountability Office (GAO) study and Audit Analytics (AA) restatement database for relevant years (GAO for 1997-2002 and AA for 2001-2003).[21] Comparison of data sources for overlapping periods indicates that AA includes nearly all restatements captured in the GAO lists and Lexis-Nexis searches, and some that are not identified through these methods. Therefore, restatements in later years (2004-2006) are obtained only from AA. As noted above, restatements by foreign filers and restatements that are not due to misapplications of U.S. GAAP are eliminated from all sources.[22]

C. Sample and Data Availability

The initial analysis focuses on 6,633 restatements. Based on an analysis of SEC Central Index Key (CIK) codes, these 6,633 restatements are made by 4,786 unique filers, with 1,660 filers reported to have multiple restatements. The number of restatements for filers with multiple restatements ranges from two restatements for 1,066 filers, to eight restatements for six filers.

These 6,633 restatements are identified from a set of 7,398 possible restatements drawn from all sources noted above. The difference arises mainly because AA defines a restatement somewhat differently than this study. If the accounting issues underlying a restatement change from the initial announcement to the filing of amended results, AA may count both the announcement and the amended filing as a restatement. That is, AA focuses on announcements of accounts restated, while this study focuses on overall restatement events. To address this definitional difference, it is assumed that restatements with announcement dates within ninety days of each other are duplicate announcements of the same event. Deleting likely duplicate announcements does not eliminate any restating company from the analysis, it only reduces the number of times a company appears.

Based on a comparison of announcement dates, about 10% (765) of the 7,398 possible events are likely not unique restatements. That is, the announcement dates are within ninety days of each other.[23] Thus, there are 6,633 restatements (7,398 – 765) likely to be corrections of unique misstatements. These 6,633 restatements are used to analyze restatement trends across the sample period. They are also used to analyze restatement characteristics such as the underlying accounting issues and the presence of fraud.

Many restating companies are quite small, or otherwise unusual, and so do not appear in the financial and market databases used in this study. These restatements are eliminated from later analysis due to unavailable data. The second stage of the analysis focuses on characteristics of restating companies, such as size, profitability, and exchange membership. For this analysis, necessary data are available for 4,923 (74%) of the initial 6,633 restatements. The third stage studies stock market returns at the time of the restatement. Announcement returns are mainly available for companies listed on major exchanges[24], or 3,310 companies, (67% of 4,923 and 50% of 6,633). Subsequent sections provide additional information about data availability and eliminated restatements.

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21 The GAO list of restatements from 1997 to June 30, 2002 is available at http://www.gao.gov/new.items/d03395r.pdf. An updated GAO list is available at http://www.gao.gov/cgi-bin/getrpt?GAO-06-1079SP. AA is a commercial database. More information is available at http://www.auditanalytics.com.

22 In total, approximately 550 restatements provided by AA or the GAO are deleted in this initial step. Over half are eliminated because they are foreign filers; that is, they restated on Form 6-K or 20-F. The rest are eliminated because, upon closer examination, they do not appear to be restatements to correct U.S. GAAP misstatements.

23 If the window is expanded to 180 days, only another 135 possible duplicates are identified.

24 These major exchanges are the NYSE, the AMEX, and the NASDAQ National Market.

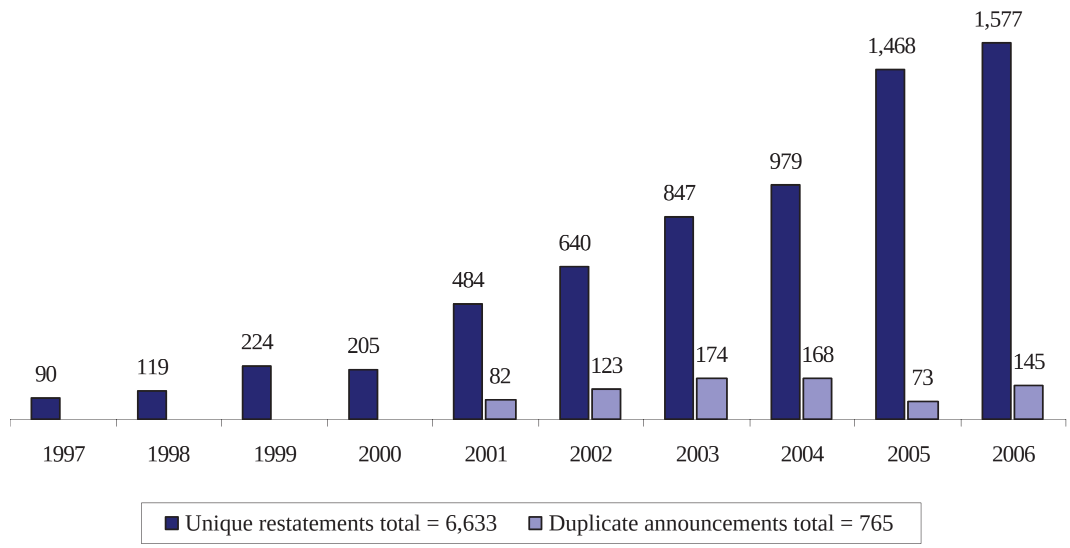
Three caveats apply to all analyses in this study. First, restatements deemed to be U.S. GAAP-compliant (e.g., a change from one acceptable method to another) are not included in this analysis. However, knowledgeable observers might disagree on a few of the distinctions between U.S. GAAP-compliant restatements and the correction of a misstatement. Second, it is possible that some restatement events with restatement dates outside the ninety-day window are also duplicates. Third, some restatements excluded by the ninety-day window may not be duplicates. All results should be considered with these possibilities in mind.

III. Restatement Trends and Characteristics

A. Restatement Trends and Related Events

The distributions of restatements and likely duplicates over the years of the study are shown in Figure 5 below:

Figure 5 — **Restatement Frequencies 1997-2006**



This figure clearly illustrates the oft-remarked increase in restatement activity, particularly in recent years. A brief history of financial reporting and market developments over this time provides context for understanding some of the trends.

- In August 1999, the SEC issued Staff Accounting Bulletin (SAB) 99. It emphasized that materiality considerations should include qualitative as well as quantitative factors.[25] To the degree SAB 99 expanded the number of misstatements deemed material, the number of restatements would have increased. Presumably, if these additional restatements were due to qualitative factors rather than the dollar amounts involved, there would have been an overall reduction in the impact of restatements on reported net income. However, the available data do not show income effects to be discernibly smaller in the year after SAB 99 was issued.[26]
- The SEC issued SAB 101 in December 1999. SAB 101 clarified a series of recurring revenue recognition issues, possibly reducing the number of revenue restatements in later years.[27]
- Much of the increase in restatements in 1999 is due to the SEC's identification of issues associated with determining amounts written off as acquired in-process research and development (IPR&D) costs.[28]

25 SEC, *Staff Accounting Bulletin: No. 99 – Materiality* (Aug. 12, 1999), available at http://www.sec.gov/interps/account/sab99.htm.

26 See Appendix F for further discussion and analysis of the limited data.

27 SEC, *Staff Accounting Bulletin: No. 101 – Revenue Recognition in Financial Statements* (Dec. 3, 1999), available at http://www.sec.gov/interps/account/sab101.htm.

28 The Chief Accountant of the SEC issued a letter on this topic to the American Institute of Certified Public Accountants SEC Regulations Committee. Discussion of SEC actions surrounding IPR&D are discussed in the *Letter from the Office of the Chief Accountant Regarding 1998-1999 Audit Risk Alerts* (Oct. 9, 1998), available at http://www.sec.gov/info/accountants/staffletters/aclr1009.htm.

This allocation and write-off is a typical step in accounting for acquisitions. Of the 224 restatements announced in 1999, 32% (71) were only to reduce the amount of purchased IPR&D written off, thereby increasing previously reported income. IPR&D also accounts for 9% of 1998 restatements. The total number of restatements decreased from 1999 to 2000, but excluding IPR&D-only restatements, they increased each year from 1997 to 2000 (20% from 1997 to 1998, 42% from 1998 to 1999, and 34% from 1999 to 2000).

- Restatements continue to increase after 2000. The following events occurred about this time.
  - There was a significant downturn in the American economy beginning in March 2000 with the end of the technology bubble. This was exacerbated in the third quarter of 2001 by 9/11. The major market indices did not begin to recover until early 2003. The occurrence and discovery of misstatements are associated with economic downturns.[29]
  - Enron announced its restatement in November 2001. This began a period of intense focus on accounting issues and turmoil in the accounting profession. Other well-known restatements around the time are Adelphia, in April 2002, and Worldcom, in June 2002.
  - The AA database commenced in 2001. AA's software crawls all Edgar filings, allowing more efficient identification of restatements filed without announcement on Form 8-K or in a press release, particularly restatements noted only on Form 10-K and Form 10-Q. While this would not lead to an increase in the number of restatements, it may lead to an increase in the number of restatements identified for analysis.
- The SOX was enacted July 30, 2002. This affected restatement activity in several ways.
  - SOX Section 302 required corporate officers to provide formal assurance that internal controls were adequate and financial statements were fairly presented. Combined with SOX Section 404 reporting, discussed below, the focus on internal control attestation and reporting appears to have increased restatements announced during 2003-2005.
  - Beginning with financial statements for fiscal years ending on or after November 15, 2004, SOX Section 404 regulations required U.S. accelerated filers to document, test and report on internal controls over financial reporting (ICFR). Auditors were also required to attest to management's ICFR assertions. Efforts to implement these requirements began as early as 2003, intensifying in 2004 and culminating in the first ICFR reports in early 2005.[30] Implementation of ICFR processes sometimes identified on-going misstatements. Additional detail regarding restatement activity and ICFR reporting is provided in Appendix C.
  - In addition to internal control provisions, other elements of SOX also increased the attention on financial reporting quality. This includes the establishment of the Public Company Accounting Oversight Board (PCAOB) as the public company auditor regulator with an inspection process and enforcement authority.
- The SEC's February 2, 2005 letter clarifying GAAP for lease accounting added to restatements announced in 2005. About 15% to 20% of restatements announced this year include lease issues.

29 See Mark L. DeFond and Jere R. Francis, *Audit Research after Sarbanes-Oxley*, 24 AUDITING: A JOURNAL OF PRACTICE & THEORY 5 (2005), and Zoe-Vonna Palmrose, *Litigation and Independent Auditors: The Role of Business Failures and Management Fraud*, 6 AUDITING: A JOURNAL OF PRACTICE & THEORY 90 (1987).

30 For example, Gullapalli reports that in 2003-2004, PricewaterhouseCoopers increased its Section 404 compliance staff by 20% to 8,000. See Diya Gullapalli, *Grasping 'Internal Controls'*, WALL STREET JOURNAL, Nov. 3, 2004, at C1.

- Restatements to correct stock options backdating are reported beginning in 2006, and are a factor in about 6% of that year's restatements.

B. Restatement Severity

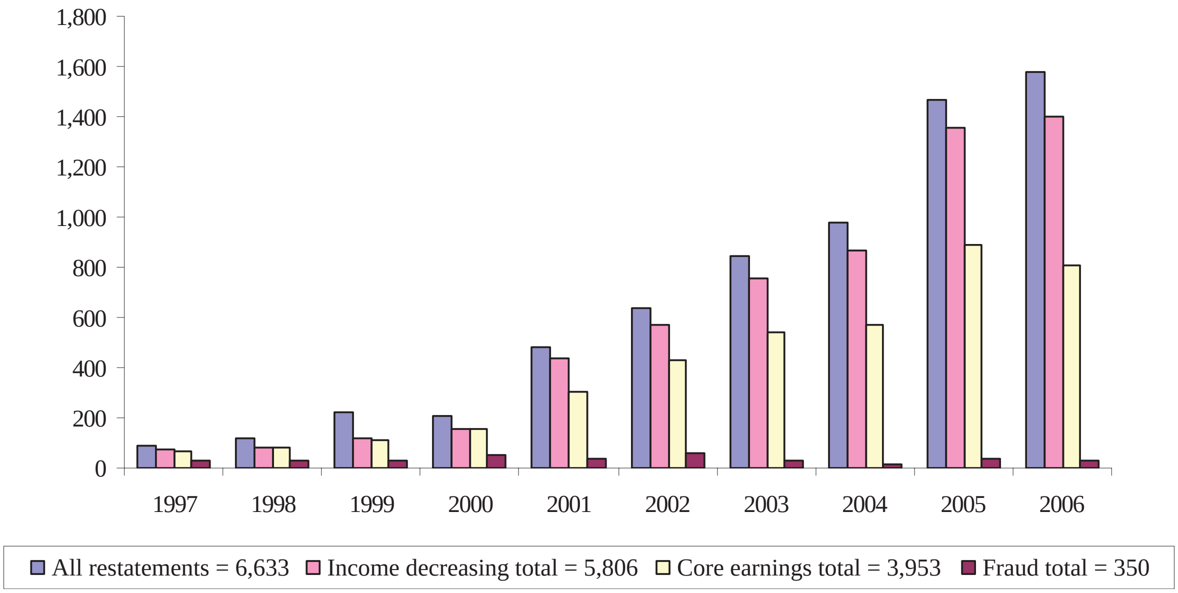
Past research suggests financial statement users react more negatively to restatements involving fraud, core earnings accounts (mainly revenue) and larger decreases in net income/increases in net losses.[31] Therefore, measures of these or similar characteristics are used in this study as indicators of restatement severity.

Fraudulent restatements are identified in three ways: 1) the SEC issues an Accounting and Auditing Enforcement Release (AAER), 2) the company admits to fraud or irregularities in its press releases or filings or 3) company officers are indicted.

Restatements of core earnings accounts include those that affect revenues or on-going operating expense items.[32] Measuring a restatement's dollar impact upon net income requires inspection of each restated report. If multiple periods are involved, it also requires calculation of the overall effect. Given the large number of restatements analyzed in this study, it is not feasible to obtain this information for analysis. Instead, an indicator for restatements that decrease previously reported income is used.[33]

Figure 6 and Table 1 compare the frequency of restatements with each of these severity measures to the overall number of restatements in each year.

Figure 6 — **Incidence of Restatements with Severe Characteristics**



31 See Zoe-Vonna Palmrose and Susan Scholz, *The Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements*, 21 CONTEMPORARY ACCOUNTING RESEARCH 139 (Spring 2004), Zoe-Vonna Palmrose, Vernon J. Richardson and Susan Scholz, *Determinants of Market Reactions to Restatement Announcements,* 37 JOURNAL OF ACCOUNTING AND ECONOMICS 59 (Feb. 2004), and Cristi A. Gleason, Nicole Thorne Jenkins and W. Bruce Johnson, *The Contagion Effects of Accounting Restatements*, 83 ACCOUNTING REV. 83 (Jan. 2008).

32 See additional detail on accounting issue categories and classifications in Section III.C and in Appendix A.

33 AA is working to expand their database to include net income effects. Preliminary data for companies trading on major exchanges are recently available for the last two years of this study. However these data were not available at the time these analyses were performed.

Table 1 — **Incidence of Restatements with Severe Characteristics**

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
All restatements:		90	119	224	205	484	640	847	979	1,468	1,577	6,633
Restatement characteristic:												
Income-decreasing	count	71	84	117	159	435	570	755	865	1,353	1,397	5,806
	percent	79%	71%	52%	78%	90%	89%	89%	88%	92%	89%	88%
Core earnings	count	68	79	110	158	304	426	540	570	889	809	3,953
	percent	76%	66%	49%	77%	63%	67%	64%	58%	61%	51%	60%
Fraud	count	26	30	33	50	39	59	28	18	36	31	350
	percent	29%	25%	15%	24%	8%	9%	3%	2%	2%	2%	5%
Any severe characteristic	count	78	95	139	185	465	614	818	922	1,405	1,491	6,212
	percent	87%	80%	62%	90%	96%	96%	97%	94%	96%	95%	94%
Core earnings or fraud	count	68	80	120	164	307	435	545	571	895	813	3,998
	percent	76%	67%	54%	80%	63%	68%	64%	58%	61%	52%	60%

Overall, 88% of restatements reduce income, the others either increase previously reported income or have no income effect. The latter includes reclassifications, footnote disclosures or EPS calculations. In early years of the study, more than 70% of restatements decrease income, except for a dip in 1999. Recall, restatements of improper IPR&D write-offs in this year increased reported income. Beginning in 2001, the percentage climbs to about 90% where it remains for the rest of the study period.[34]

Fraud restatements have an overall frequency of 5%. Although the number of frauds has remained fairly consistent across time, significant growth in the number of non-fraud restatements means that fraud restatements have declined as a percentage of all restatements across the study period. However, identification of fraudulent misstatements depends to some degree on SEC AAERs. So, it is likely that the number of known frauds will eventually increase for later years, as on-going enforcement actions are concluded. This is particularly true for restatements due to stock options backdating, which are mainly announced in 2006. Nonetheless, this may not have much effect on the overall percentage trend.[35]

Sixty percent of restatements affect core earnings accounts. The number of restatements involving core earnings has increased more than ten-fold over the decade; however, the percentage decreased in later years of the study, particularly in 2006. Accounting issues are addressed in greater detail in Section III.C and in Appendix A.

Since a high percentage of restatements decrease net income, the overall percentage of restatements with any one severe characteristic is 94%. This percentage is higher in later years of the study as the number of income-decreasing restatements increases. However, if only fraud and core earnings restatements are considered, the overall percentage with either one of

34 The frequency of income-decreasing restatements differs significantly across years, and is significantly lower from 1997-2000 than in later years, even excluding IPR&D restatements (Chi-square p-values < .001).

35 As of January 2008, the SEC web site lists less than twenty companies with AAERs related to stock options backdating. See http://www.sec.gov/spotlight/optionsbackdating.htm. A few of these do not appear to be related to restatements announced in 2006. In 2006, 100 restatements involved stock options backdating. Fraud frequency differs significantly across study years (Chi-square p-value < .001).

these items is 60%. Furthermore, this percentage has decreased significantly, although not consistently, over the years of the study. For example, in 1997, 76% of all restatements involved fraud or core earnings; by 2006, the percentage was only 52%.[36] This decrease in the relative number of restatements involving fraud and core earnings accounts suggests the frequency of severe restatements has declined even as the total number of restatements has increased.

C. Accounting Issues

Ascertaining the accounting issues underlying these restatements can be difficult. Some companies describe errors by account (e.g., revenue is overstated), others by the nature of the error (e.g., improper accounting for employee stock options). It is often unclear how the latter descriptions tie to specific financial statement elements, and thus it is not possible to consistently code by specific account. Also, most restatements correct multiple errors across several financial statement elements.[37] Finally, the 1997-2000 restatements are classified using a somewhat different scheme than that provided by AA. The following analysis should be considered with these caveats in mind.

Accounting Issue Classifications

Restatements are classified into four groups based on their relation to financial statement elements and expected significance to financial statement users. Appendix A provides greater detail on the categories and classifications used in the study. The groups, in order of expected significance to users, are:

- Revenue Recognition: These are restatements involving revenue. Revenue restatements are associated with more severe consequences in prior research, suggesting they are highly significant to financial statement users.[38]
- Core Expenses: Core expense restatements correct accounting related to companies' on-going operating expenses. These include restatements involving cost of sales, compensation (including stock-based), lease and depreciation costs, selling, general and administrative expenses, and research and development costs. Together, revenues and core expenses determine a company's core earnings, which are thought to be more relevant to users than non-core earnings.[39]
- Non-Core Expenses: Non-core expense restatements correct items that affect net income, but do not arise from on-going operating activities. They include accounting for interest, taxes and derivatives. This group also includes corrections of non-recurring transactions or special items. Examples are misstated impairments, contingencies, gains and losses. Restatements arising from consolidations, acquisitions, reorganizations and activities of foreign subsidiaries are also included here, if the specific accounts affected are not identified.[40]

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36 The frequency of restatements with any severe characteristic differs significantly across years, whether considering all three characteristics or just core earnings and fraud (Chi-square p-values < .001).

37 Often one issue triggers the restatement decision, and other misstatements are identified and corrected during the investigation. It may be that a portion of these subsequently identified corrections would not have individually warranted restatement. In fact, some companies explicitly state as much. However, it is often not possible to confidently identify the driving issue, and it certainly is not feasible for such a large number of restatements. For further analysis of underlying accounting issues during the later period of the study, see Marlene Plumlee and Teri Lombardi Yohn, *An Analysis of the Underlying Causes of Restatements*, (Working Paper Series, 2008), available at http://ssrn.com/abstract=1104189.

38 See Cristi A. Gleason, Nicole Thorne Jenkins and W. Bruce Johnson, *The Contagion Effects of Accounting Restatements*, 83 ACCOUNTING REV. 83 (Jan. 2008), Zoe-Vonna Palmrose and Susan Scholz, *The Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements*, 21 CONTEMPORARY ACCOUNTING RESEARCH 139 (Spring 2004), Zoe-Vonna Palmrose, Vernon J. Richardson and Susan Scholz, *Determinants of Market Reactions to Restatement Announcements*, 37 JOURNAL OF ACCOUNTING AND ECONOMICS 59 (Feb. 2004).

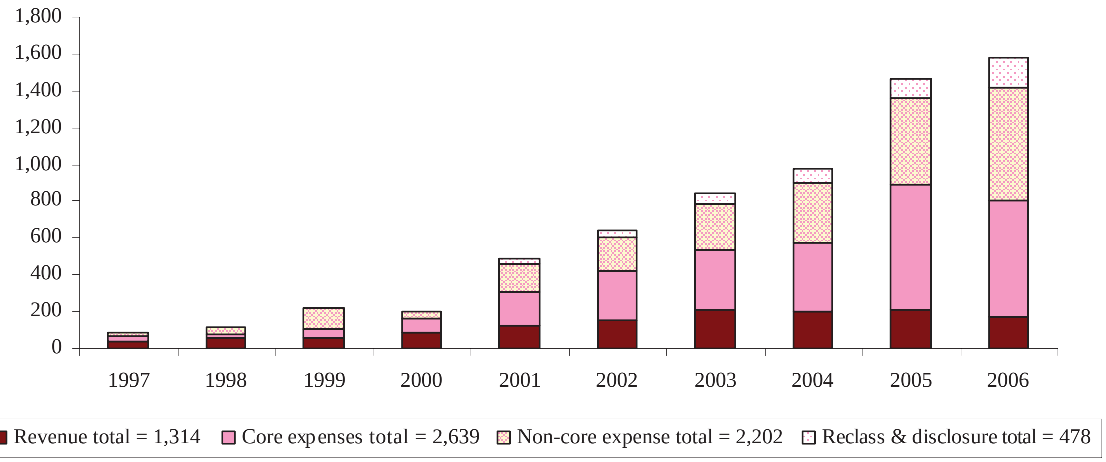
39 See Joseph H. Golec, Katsiaryna Salavei and John P. Harding, *Do Investors See Through Mistakes in Reported Earnings?* (Working Paper Series, 2008), available at http://ssrn.com/abstract=1092256.

40 Restating to correct the accounting for consolidations, acquisitions, reorganizations and activities of foreign subsidiaries may affect many accounts. However, no other accounting issue is identified for about 300 restatements attributed to one of these reasons.

- Reclassification and Disclosure Issues: Reclassification and disclosure restatements likely do not affect net income at all. They include restatements to reposition balance sheet, income or cash flow statement line items. This category includes reclassification of debt as long-term or current. Disclosure restatements typically revise footnote information. Corrections of earnings per share due to problems other than net income are also included here.

In Figure 7 and Table 2, each restatement is assigned to one of these four groups according to the most severe element of the misstatement. That is, any restatement involving revenue is classified as a revenue restatement whether or not any other accounts are affected. A restatement involving core expenses, but not revenue, is included with the core expense group, and so forth. Figure 7 shows the distribution of these four types of restatements across the study period.

Figure 7 — **Financial Statement Elements Affected by Restatements**



Numbers and percentages underlying Figure 7 are provided in Table 2, along with selected sub-groups. Sub-groups are restricted to restatements within each classification. That is, a lease restatement noted in this table may also affect other core expenses, but it cannot affect revenue. Percentages are based on total restatements reported in the bottom line of each column. Additional sub-groups are reported in Appendix A.

Table 2 — **Financial Statement Elements Affected by Restatements**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Revenue	37	56	56	90	123	154	208	204	213	173	1,314
Percent of total	41%	47%	25%	44%	25%	24%	25%	21%	15%	11%	20%
Core expenses	31	23	54	68	181	272	332	366	676	636	2,639
Percent of total	34%	19%	24%	33%	37%	43%	39%	37%	46%	40%	40%
Leases	0	2	3	1	23	47	83	80	293	86	618
Percent of total	0%	2%	1%	0%	5%	7%	10%	8%	20%	5%	9%
Employee options	5	0	4	4	48	67	85	94	159	254	720
Percent of total	6%	0%	2%	2%	10%	10%	10%	10%	11%	16%	11%
Non-core expenses	18	38	112	40	155	181	246	326	474	612	2,202
Percent of total	20%	32%	50%	20%	32%	28%	29%	33%	32%	39%	33%
Debt and interest	9	9	6	9	48	55	64	91	179	262	732
Percent of total	10%	8%	3%	4%	10%	9%	8%	9%	12%	17%	11%
Asset valuation	1	4	11	6	24	32	53	60	81	84	356
Percent of total	1%	3%	5%	3%	5%	5%	6%	6%	6%	5%	5%
Taxes	1	1	2	3	19	17	53	66	99	89	350
Percent of total	1%	1%	1%	1%	4%	3%	6%	7%	7%	6%	5%
Derivatives	0	0	0	0	14	19	10	18	37	49	147
Percent of total	0%	0%	0%	0%	3%	3%	1%	2%	3%	3%	2%
Reclass & Disclosure	4	2	2	7	25	33	61	83	105	156	478
Percent of total	4%	2%	1%	3%	5%	5%	7%	8%	7%	10%	7%
Balance sheet	0	1	1	3	13	20	30	36	36	46	186
Percent of total	0%	1%	0%	1%	3%	3%	4%	4%	2%	3%	3%
Cash flows	0	0	0	0	2	1	8	25	45	86	167
Percent of total	0%	0%	0%	0%	0%	0%	1%	3%	3%	5%	3%
Total restatements	90	119	224	205	484	640	847	979	1,468	1,577	6,633

Revenue

Revenue recognition is a factor in 20% of all restatements over the study period. However, the relative frequency of revenue restatements has declined from about 40% in the early years of the study to 15% in 2005 and 11% in 2006. Other than 1999, with its high percentage of IPR&D restatements, the most noticeable shift is from 2000 to 2001, when the percentage of revenue restatements drops from 44% to 25%. This is after the technology bubble ended, and not long after SAB 101 was issued in December 1999. As technology companies tend to disproportionally restate revenue, and SAB 101 clarified acceptable revenue recognition practices, it is likely that both played a role in the reduction.

Core Expenses

On the other hand, the frequency of restatements affecting core expenses has remained more consistent over the study period. The latter years of the period are fairly close to the overall average of 40%. But in absolute numbers, these restatements have increased dramatically, from 31 in the first year of the study to the mid-600s in both 2005 and 2006. Thus, a significant portion of the increase in overall restatements is due to corrections of these accounts.

As noted previously, some of the increase in 2005 and 2006 is due to two specific issues: accounting for leases and employee stock options. In 2005, roughly 20% of the core expense restatements involve lease accounting.[41] In 2006, 16% involve stock-based compensation. Of these 254 stock-based compensation restatements, only 72 (28%) are attributed solely to stock options backdating.

Non-Core Earnings Issues

Non-core expense restatements have an average frequency of 33% for the study period. Again, the absolute number in this group has increased dramatically in the last few years of the study. The sum of such restatements in 2005 and 2006 (1,086) is nearly equal to the sum over all the other eight years (1,116). The increase is attributable to several issues. Debt-related restatements grew to 12% of all 2005 restatements and 17% of all 2006 restatements.[42] Restatements involving asset valuation issues, including misstatements of impairments of goodwill, intangible and other assets, have also increased in recent years, as have restatements related to taxes. Each of these represents about 5% of all restatements. Derivative restatements are a recent development, and appear to account for a relatively low percentage of restatements overall.[43] However, some of the interest-related restatements noted above may involve derivative instruments.

Reclassifications and Disclosure

The incidence of reclassification and disclosure restatements began to increase in 2003. There is an additional jump in 2006, which appears to be related to an uptick in cash flow statement reclassifications.

Underlying Circumstances

Data also indicate if misstatements arise from a few specific underlying events or circumstances, including consolidations, acquisitions, reorganizations or activities of foreign subsidiaries. These restatements can affect numerous accounts, and where possible are classified with the affected financial statement elements. Therefore, they are not broken out separately in Table 2.

Acquisitions/reorganizations are noted as a factor in 17% (1,127) of all restatements over the study period. These issues tend to be found in the earlier years, particularly the IPR&D year of 1999. It appears that about 39% of these restatements affect core earnings (revenues or core expenses).

Consolidation errors are noted as a factor in 8% (514) of all restatements. Consolidation issues are more likely to be found in 2003-2005. This concentration is likely associated with misstatements associated with accounting for variable interest entities. Financial Accounting Standards Board (FASB) guidelines related to these entities became effective in 2003.[44] Following adoption, some companies did not apply these guidelines correctly. About 32% of restatements arising from problems with consolidation affect core earnings.[45]

AA data indicate that accounting for foreign subsidiaries is an underlying factor in 8% (509) of all restatements from 2001-2006. These issues are more equally divided between core and non-core items: 54% affect core earnings. This category is not available for 1997-2000 restatements, but it appears to be fairly evenly distributed across other years of the study.

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41 The frequency for lease restatements depends on how depreciation restatements are classified. As noted in Appendix A, AA specifies that many of the restatements it classifies as depreciation related are due to the depreciation effects of correcting lease accounting. The lower end of the range (14% of all 2005 restatements) assumes none in the depreciation category are lease related; the higher end, used here, assumes all are.

42 This does not include reclassifications of debt between current and long-term. It does include interest issues associated with beneficial features of convertible stock.

43 FASB Statement No. 133, *Accounting for Derivative Instruments and Hedging Activities*, finally became effective for fiscal quarters beginning after June 30, 2000, available at http://72.3.243.42/st/status/statpg133.shtml.

44 See FASB Interpretation No. 46, *Consolidation of Variable Interest Entities* (revised Dec. 2003), available at http://www.fasb.org/fin46r.pdf.

45 Frequencies differ significantly both across years and between core and non-core earnings items for consolidations and acquisition/reorganizations (Chi-square p-values < .001).

Accounting Issues Summary

The absolute number of all four financial statement elements (revenue, core expenses, non-core expenses and reclassification and disclosure issues) has increased over the study period. However, the increase is not evenly distributed. While the number of revenue restatements reported in 2006 is more than four times the number reported in 1997, the number of core expense restatements is more than twenty times higher, non-core expenses thirty-four times higher, and reclassification and disclosure issues are thirty-nine times higher, although only four such restatements were noted in 1997.

Thus, the proportion of accounting issues has shifted across the decade. Most noticeably, the proportion of revenue restatements decreased in recent years, while the proportion of non-core expense restatements has increased.[46] Again, these data are consistent with a shift to less severe restatements in later years of the study.

D. Number of Periods Restated

The period of time corrected by the restatements varies from one quarter to over sixteen years. The overall average is just under one year and three quarters, 1.71 years, where a quarter = .25. The median is one year. Table 3 shows the average number of years corrected in a restatement increased from less than 1.50 years through 2001 to more than 1.50 years from 2004 to 2006. The intervening years of 2002 and 2003 average approximately 1.50 misstated years.

The year with the longest average restated period is 2005, at 2.02 years. This is largely due to lease restatements, which tend to correct long-standing accounting practices, and so involve significantly more years than other accounting issues.[47]

Table 3 — **Years Restated per Restatement Event**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Number of restatements	90	119	224	205	484	640	847	979	1,468	1,577	6,633
Years restated:											
Average	1.35	1.43	1.40	1.26	1.28	1.47	1.52	1.67	2.02	1.92	1.71
Median	1.00	1.25	0.75	0.75	1.00	1.00	1.00	1.00	1.75	1.00	1.00
Quarterly-only financials:	44	46	118	109	179	213	260	281	306	461	2,017
Percent of total	49%	39%	53%	53%	37%	33%	31%	29%	21%	29%	30%

Overall, 30% of restatements affect less than one year. That is, only quarterly (interim) financial statements are affected. This is important because auditors review interim financial statements but do not audit them. As might be expected from the increase in restated periods noted above, the proportion of quarterly-only restatements has declined. It is about half of all restatements through 2000, and drops to about 30% by 2003. The lowest percentage is found in 2005 (21%). Again, this is due to the lease restatements in that year.

46 Frequencies differ significantly across years for all four classifications (Chi-square p-values < .001).

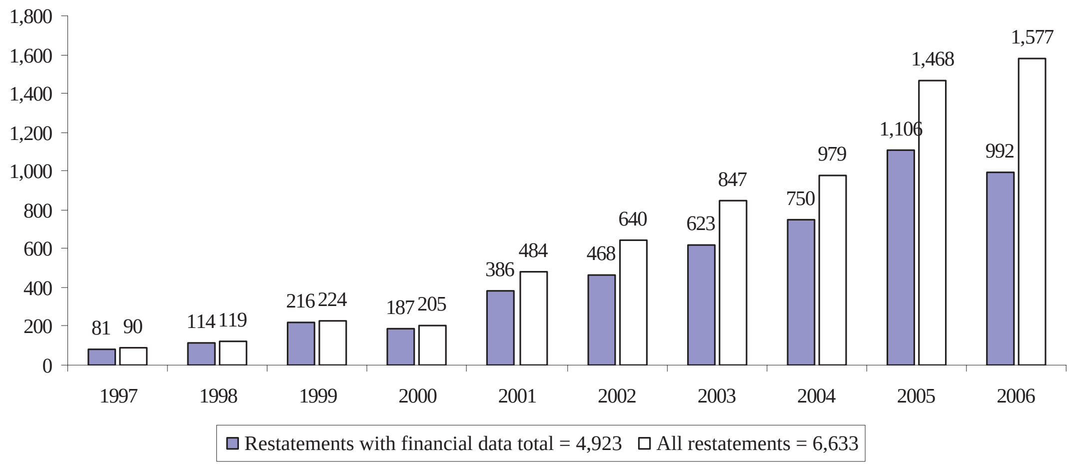
47 Mean differences across years are significant, and lease restatements affect significantly more periods than other types (t-test p-values < .001).

IV. Characteristics of Restating Companies

The next stage of the analysis requires information about the restating company including exchange, industry, and basic financial data (assets, revenue and net income) around the year of the restatement announcement. These data are obtained mainly from the Compustat database. AA also provides this information for many companies in its database (AA obtains its data from Edgar On-Line). Basic financial data are available for 4,923 (74%) of the initial 6,633 restatements studied in the first stage of the analysis.[48]

The distribution of companies with and without available financial data is shown in Figure 8. Most restatements lacking basic financial information are found in later years of the sample. Financial data are available for over 90% of restatements from 1997-2000, decreasing to 63% in 2006. The 4,923 restatements remaining in the analysis are made by 3,464 unique companies. The number of restatements per company ranges from one (2,427 companies) to seven (two companies).

Figure 8 — **Distribution of Restatements with Basic Data Across Study Years**



A. Profile of Restatements Lacking Financial Data

Exchange membership is unknown for 90% of the 1,710 restatements lacking sufficient data for further analysis, suggesting these companies may not have been publicly traded at the time of the restatement. This may be partly due to the nature of the entities; they include a number of limited liability corporations, limited partnerships, private equity holding companies, funds and trusts. Some of these restatements amended pre-effective date, or S-Series, forms.[49]

Companies that exit the analysis tend to be very small. For the limited number with asset data available, the median asset balance is only $2.2 million. These restatements tend to correct shorter periods and involve fewer revenue restatements than those remaining in the analysis.[50]

48 Compustat is a product of Standard & Poor's. It is the primary source of financial information for most research in accounting and finance. It includes over 20,000 public companies – both currently active companies and those no longer extant. On average, Compustat has asset information for over 9,000 U.S. companies over the years of the study. Companies not included in the Compustat database tend to be very small or otherwise unusual.

49 These are the SEC forms filed by companies prior to their initial public offering.

50 The study uses data available from either Compustat or AA. The median asset balance is based on 694 companies that exit the analysis due to unavailable exchange data. The mean restated period for companies with financial data is significantly longer, 1.82 years, compared to 1.38 years for those without (t-statistic p-value < .001). The frequency of revenue restatements is significantly higher for companies with data, 22%, compared to 13% for companies without (Chi-square p-value < .001).

B. Industry Membership

Focusing on the 4,923 companies with basic financial data, Figure 9 shows the proportion of restatements reported by each industry across the decade.[51] Figure 10 shows the accounting issue classifications for the five industries with the most restatements, plus all others. In Figure 10, non-core expenses and reclassification and disclosures issues are combined due to relatively low frequencies in the latter group.

Figure 9 — **Industry Membership of Restating Companies Across Study Years**

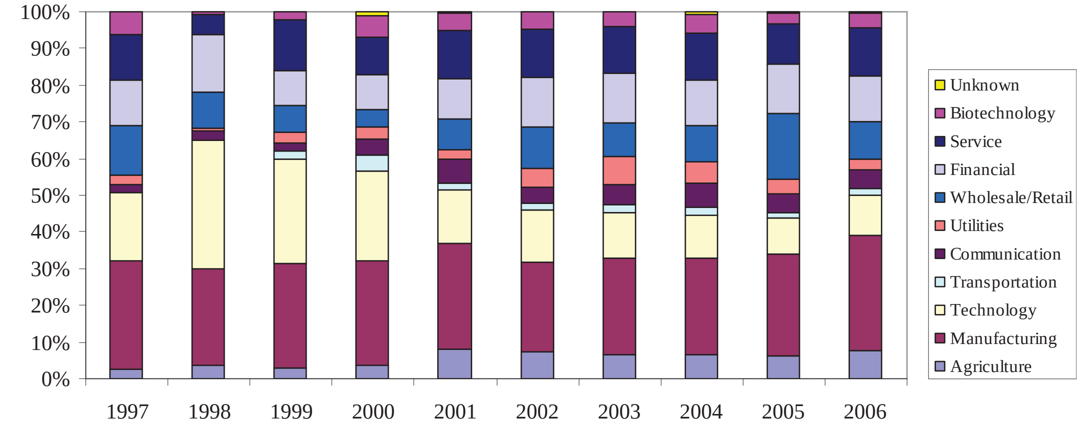


Figure 10 — **Accounting Issue Classification Frequency by Industry**

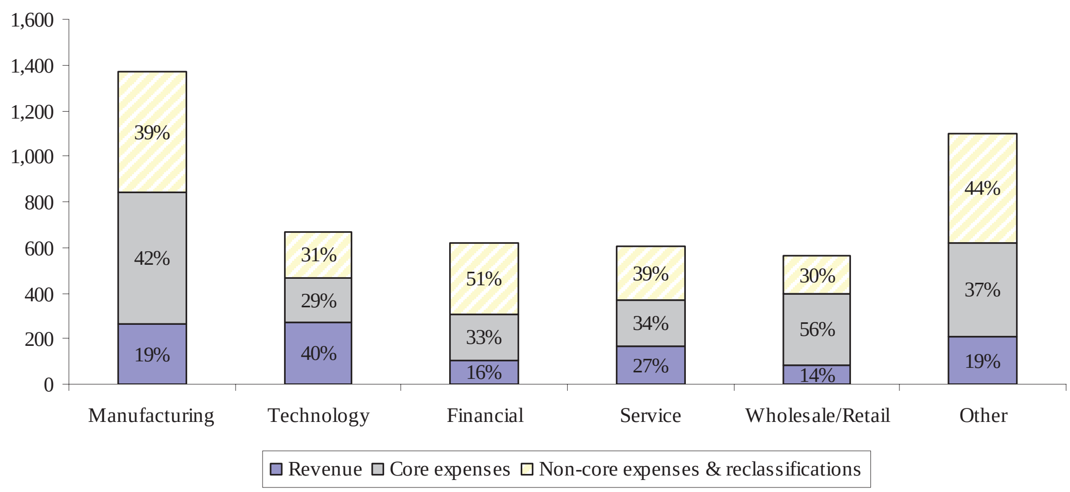


Figure 9 shows industry proportions tend to be fairly consistent across the study period. The technology industry is an exception, as it declines from 20%-30% of restatements in early years to around 10% in later years. As shown in Figure 10, the technology industry tends to have a higher proportion of revenue restatements, 40% compared to 22% overall. The decreases in both revenue and technology industry restatements in 2001 occur at the end of the technology bubble. This is also subsequent to the issuance of SAB 101, which was issued in December 1999 to clarify revenue reporting rules.

51 Standard Industrial Classification (SIC) codes underlying these industry groups and tables reporting the counts and percentages underlying the figures are presented in Appendix B.

Another industry with inconsistent proportions is the wholesale/retail industry, whose restatements spiked in 2005 due to lease restatements. This is also reflected in the relatively high proportion of core expense restatements for wholesale/retail in Figure 10. Another distinction is found in the financial industry, which has a higher proportion of non-core expense/reclassification restatements. These are driven by derivative-related issues, most announced in the last two years of the study. Of course, it is possible that for financial industry companies, some of these derivatives pertain to core, rather than non-core, operations.

Considering other restatement characteristics, utilities, wholesale/retail and services tend to report more income-decreasing restatements, while technology companies report more income-increasing restatements than expected. IPR&D restatements are largely responsible for this association. Fraud also varies across industries. The technology industry tends to have more fraudulent restatements; the financial industry, fewer.[52]

C. Exchange, S&P 500 Membership and Accelerated Filer Status

Sixty percent of the restating companies with basic financial data trade on a major exchange, as shown in Table 4. This percentage is fairly consistent over the years. The years with highest percentages, 65% in 1999 and 66% in 2005, coincide with the IPR&D and lease restatement years. The higher percentage in 2005 is also associated with accelerated filers issuing initial ICFR reports.[53]

Table 4 — **Exchange and S&P 500 Membership of Restating Companies**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Overall
Total number of restatements	81	114	216	187	386	468	623	750	1,106	992	4,923
Exchange:											
NYSE	13	16	49	26	70	108	143	173	298	185	1,081
AMEX	5	4	4	5	20	21	45	56	79	77	316
NASDAQ Nat'l Mkt.	24	34	88	62	106	142	186	236	357	333	1,568
Total major exchange	42	54	141	93	196	271	374	465	734	595	2,965
% Major exchange	52%	47%	65%	50%	51%	58%	60%	62%	66%	60%	60%
OTC [54]	9	22	22	30	81	77	110	119	193	257	920
Other	30	38	53	64	109	120	139	166	179	140	1,038
Total non-major exchange	39	60	75	94	190	197	249	285	372	397	1,958
% Non-major exchange	48%	53%	35%	50%	49%	42%	40%	38%	34%	40%	40%
In S&P 500:	3	3	18	7	18	37	26	41	68	58	279
Percent of restating	4%	3%	8%	4%	5%	8%	4%	5%	6%	6%	6%
Percent of 500	1%	1%	4%	1%	4%	7%	5%	8%	14%	12%	n/a

52 Differences across industries between accounting issue categories, income increasing vs. income decreasing and fraud are all statistically significant (Chi-square p-values < .001).

53 Accelerated filers and companies restating lease accounting and correcting IPR&D write-offs are significantly more likely to trade on a major exchange than are other companies (all Chi-square p-values < .001).

54 Companies trading over the counter (OTC) include a total of 164 companies classified by AA as NASDAQ Small Cap. This category is not provided by Compustat. Regional exchanges are included in the "other" category.

As another indication of company size and influence, Table 4 indicates the number of restating companies that are members of the S&P 500. Overall, 6% are members. The highest percentages of restating S&P 500 companies are in 2005 (14%) and 2006 (12%). Higher numbers in 2005 appear to be partly due to restatements by accelerated filers implementing SOX Section 404 ICFR. The higher percentage in 2006 is related to companies restating for stock options backdating.[55]

Results for exchange and S&P membership suggests ICFR-accelerated filers alter the profile of restating companies during years they implement SOX Section 404 reporting. To assess the ICFR implementation effect, Table 5 compares the frequency of restatements announced by companies identified as accelerated filers during the ICFR era, 2003-2005, to the years before and after the ICFR implementation period. Fifty percent of all restatements in the analysis (2,479 of 4,923) are announced during the ICFR implementation period, and accelerated filers file nearly half of the restatements during the ICFR implementation period. By comparison, the companies that were later designated accelerated filers were responsible for only 33% of restatements prior to the ICFR implementation period, and 40% the year after the ICFR implementation period.[56] See Appendix C for additional analysis of the ICFR effects.

Table 5 — **Comparison of Accelerated Filer Restatement Rates**

	Pre-ICFR Implementation 1997-2002	ICFR Implementation 2003-2005	Post-ICFR Implementation 2006
All restatements announced	1,452	2,479	992
Accelerated filer in 2005	481	1,156	396
Percent of restatements by accelerated filers	33%	47%	40%

Overall, these data indicate that typically, very few of the companies that restate are members of the S&P 500, and about half do not trade on the major exchanges. The exceptions to these generalizations occur when there is a focus on a specific accounting issue (i.e., IPR&D and leases) or when larger companies are under particular scrutiny (i.e., ICFR implementation).

D. Size and Profitability

For restating companies, average assets are $5.25 billion. As shown in Figure 11, average assets for restating companies increase each year through 2005, leveling off in 2006. To provide context, average assets for all Compustat companies in each year of the study are also provided.[57] Restating companies are a little smaller than Compustat companies from 1996-2001; and a little larger than the average Compustat company each year thereafter. However, differences between restating and Compustat averages are not statistically significant in any year.[58]

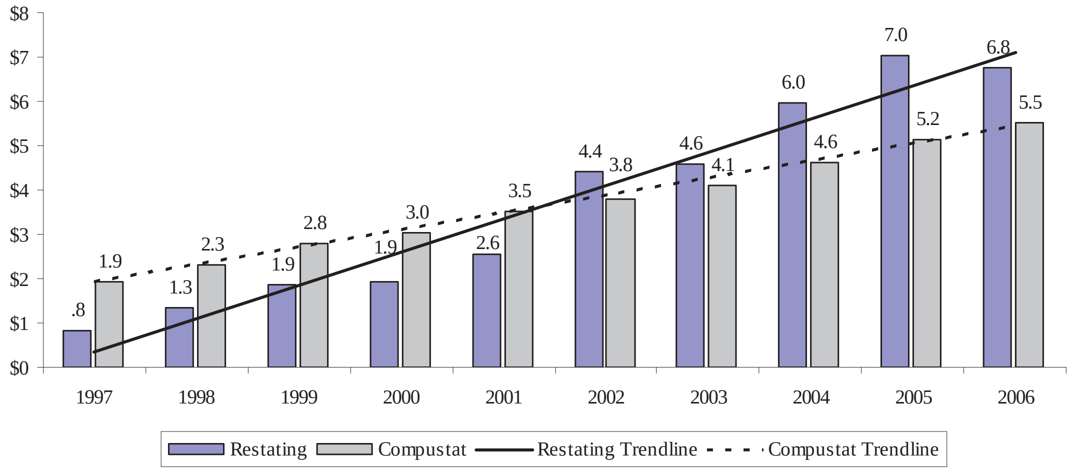
55 Accelerated filers and companies restating for stock options backdating are significantly more likely than other restating companies to be members of the S&P 500 (Chi-square p-values < .001). However, companies restating lease accounting are not.

56 Accelerated filer restatement rates during ICFR implementation are significantly higher than both before and after this period. (Chi-square p-values < .001.) See Appendix C for additional analysis of ICFR implementation effects.

57 When possible, assets are measured at the fiscal year end prior to the announcement, to provide the same perspective on the company that investors had at the time of the announcement. If this is not available, assets from the following year are substituted.

58 T-tests comparing average assets for Compustat and restating companies are not significant at the .10 p-value level. Slight changes in the composition of each group change the pattern in Figure 11. Compustat companies identified as American depositary receipts (ADRs) are not included in this comparison. If ADRs are added, average assets of restating companies are smaller than Compustat companies each year. Restating company averages are also smaller if the 694 restating companies for which assets are known, but other basic data are unavailable, are included.

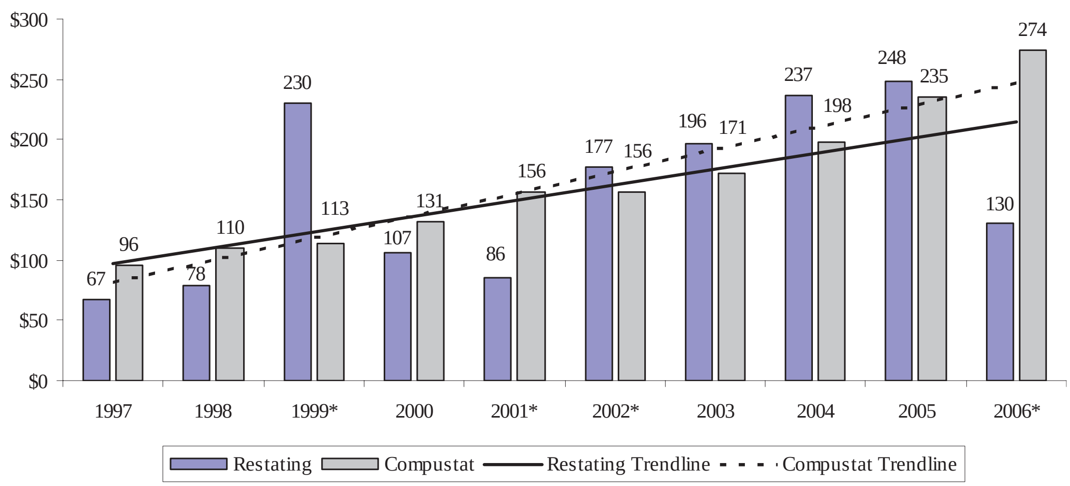
Figure 11 — **Average Assets for Restating and Compustat Companies ($B)**



Median assets for restating companies are $177 million. Trends across study years are shown in Figure 12. Years when the difference between the median restating and Compustat companies are statistically significant are indicated with an asterisk.[59]

Through 2001, restating companies are typically smaller than Compustat companies, except for the IPR&D year of 1999. Beginning with 2002, median assets of restating companies increase, and are similar to Compustat companies through 2005. This period of increasing restating company size begins the year of well-known accounting scandals, the enactment of SOX and intense focus on the accounting profession. It continues through the ICFR implementation period (2003-2005) and lease restatement year (2005), as companies involved in ICFR implementation and lease restatements tend to be relatively large. By 2006, restating companies' median assets drop to nearly pre-2002 levels, while Compustat assets continue to climb.

Figure 12 — **Median Assets for Restating and Compustat Companies ($M)**



59 Differences between restating and Compustat companies assets are statistically significant in 1999 and 2002, when restating companies are significantly larger, and in 2001 and 2006, when restating companies are significantly smaller. These results are based on non-parametric tests. Z-score p-values for significant years are < .001, except 2002 where the p-value is .06.

Average revenues for restating companies are $1.65 billion and median revenues for restating companies are $127 million. Patterns and inferences from revenue trends across the study period are similar to assets. (See Appendix D.) Like assets, median revenues for companies announcing restatements drop to pre-2002 levels in 2006.

Regression analyses are reported in Table 6. They test for significant associations between restating company assets (first column) or revenues (second column) and restatement characteristics.[60] Statistically significant restatement characteristics and their relation with restating company assets or revenues are noted in the "significant association" column with these symbols:

- As restating company size increases, the characteristic tends to increase or appear: +
- As restating company size decreases, the characteristic tends to decrease or disappear: -

If the restatement characteristic is not associated with differently sized companies, the cell is left blank. In considering these results, it is important to remember that nearly one-quarter of all restatements cannot be analyzed here because of unavailable data, and the companies lacking available data tend to be much smaller than those remaining in the analysis.

Table 6 — **Regression Analysis of Restating Company Size and Restatement Characteristics**

	Restating company assets				Restating company revenues			
	Significant association	Coef.	t-stat.	p-value	Significant association	Coef.	t-stat.	p-value
Fraud	+	.85	5.78	.00	+	.81	6.02	.00
Number of years restated	+	.38	16.71	.00	+	.35	16.94	.00
Income decreased	-	-.43	-4.13	.00	-	-.31	-3.30	.00
Revenue restated	+	.19	2.07	.04		.10	1.16	.24
Core expenses restated:								
Cost of sales		.04	.37	.71	+	.29	2.76	.01
Leases	+	.42	3.53	.00	+	.33	3.06	.00
Stock-based comp.	-	-.33	-2.90	.00	-	-.33	-3.28	.00
Other operating expenses	-	-.23	-3.06	.00	-	-.15	-2.21	.03
Non-core items restated								
Debt and interest	-	-1.70	-17.41	.00	-	-1.60	-18.02	.00
Derivatives	+	1.48	7.86	.00	+	1.16	6.78	.00
Asset valuation	+	.35	3.14	.00	+	.24	2.35	.02
Taxes	+	.63	5.35	.00	+	.57	5.34	.00
Reclass / disclosure	+	.36	4.13	.00	+	.27	3.47	.00
Underlying circumstances								
Acquisition / reorg.		-.12	-1.24	.22		-.13	-1.45	.15
Foreign subsidiaries	+	.36	2.76	.01	+	.40	3.43	.00
Consolidation	+	.35	2.58	.01	+	.28	2.33	.02

60 The natural log of assets and revenues measures is used in the regression, to better conform with data distribution assumptions of the OLS regression methodology. A constant and year and industry indicator variables are included in the model, but not reported in the table. Both models are significant: F-statistics > 50.0, p-values < .001. The adjusted-R^2 is .29 for assets and .21 for revenues. Statistical significance for regression coefficients is based on p-values < .10.

Whether company size is measured by assets or revenues, relatively larger restating companies are more likely to restate more years, and the restatement is less likely to reduce income. Larger restating companies also tend to have a higher incidence of fraud, at least as fraud is measured in this study.

Revenue restatements are associated with increasing size when size is measured by assets, but not when measured by revenues. On the other hand, cost of sales is associated with increasing size only when measured by revenues. Larger companies are also more likely to correct their accounting for:

- leases;
- derivatives;
- asset valuation;
- taxes; and
- reclassification and disclosure issues.

Finally, restatements by relatively large companies are more likely to arise from problems with foreign subsidiaries and consolidations. Several of these associations are consistent with expected activities of larger versus smaller companies. For example, larger companies are more likely to have complicated transactions involving derivatives, foreign subsidiaries and consolidations.

On the other hand, smaller companies are more likely to have problems involving other operating expenses, stock-based compensation and debt/interest. Again, this is consistent with the expected activities of smaller firms, as growth-oriented organizations are more likely to rely heavily on stock-based compensation and convertible debt financing.

Restating Company Profitability

Restating companies typically are not profitable, even prior to the restatement. Table 7 shows that more than half of all restating companies report net losses, rather than income in the year prior to the restatement announcement. This effect is particularly pronounced during 2001 and 2002, the years of economic downturn.

Table 7 — **Restating Companies Reporting Losses for the Year Prior to a Restatement Announcement**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
All restating companies	81	114	216	187	386	468	623	750	1,106	992	4,923
Net loss prior to restating	34	60	118	106	243	291	341	393	486	500	2,572
Percent reporting net loss	42%	53%	55%	57%	63%	62%	55%	52%	44%	50%	52%

As shown in Figures 13 and 14, restating companies typically report lower return on assets (ROA) than the average or median Compustat company. There is a steep decrease in ROA for restating companies beginning with the economic downturn in 2001. The average ROA is particularly low for companies restating in 2006. In Figure 14, the median Compustat company is profitable each year, but only companies restating in 1997 and 2005 (the lease restatement year) are profitable. In 2006, the median restating company breaks even despite the very negative average ROA.

Figure 13 — **Average Return on Assets for Restating and Compustat Companies**

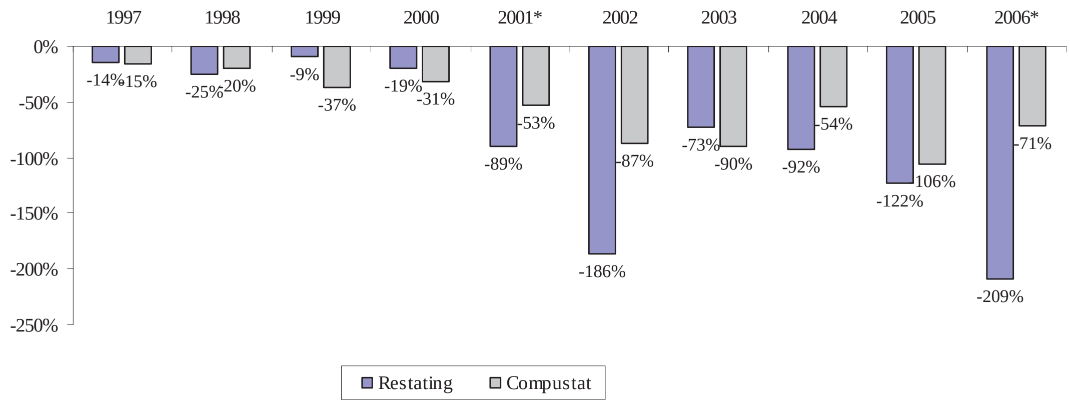
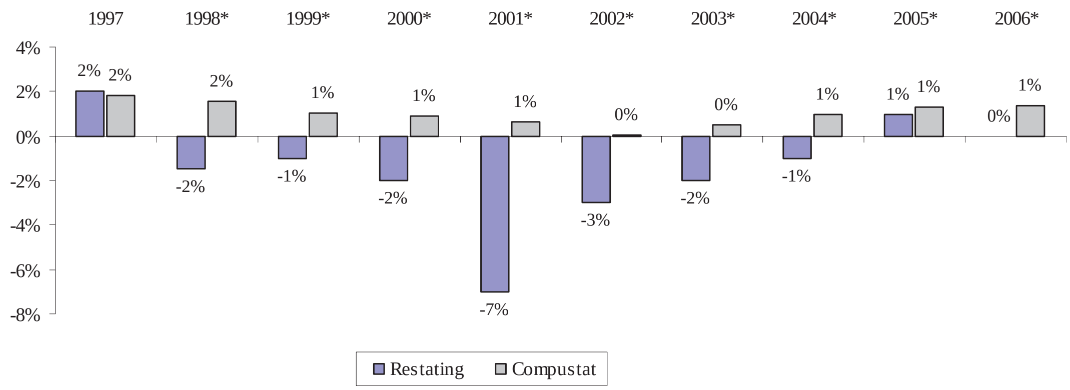


Figure 14 — **Median Return on Assets for Restating and Compustat Companies**



Regression analyses testing associations between profitability and restatement characteristics indicate that profitability is not consistently associated with most restatement characteristics.[61]

Summary of Size and Profitability Analysis

The average size of restating companies increases from 1997 through 2005. All measures suggest a leveling off or decrease in restating company size in 2006, relative to both prior years and Compustat companies. In most years, the average restating company is similar in size to the average Compustat company, whether measured by assets or revenue. Similar to the analysis of exchange membership and accelerated filer status, years when restating companies are significantly larger are characterized by specific restatement issues, IPR&D and leases, or the well-known accounting scandal year of 2002. However, by 2006, median results suggest restating company size has reverted to pre-2002 levels, and are much smaller than the median Compustat company.

Slightly more than half of all restating companies report a net loss in the year prior to the restatement announcement. Both average and median return on assets show restating companies tend to be less profitable than Compustat companies. Few restatement characteristics are associated with profitability.

61 The models test the restatement characteristics shown in Table 6. Two measures of profitability are considered: ROA, and net income versus net loss. Using ROA, no restatement characteristics are associated with profitability. Using a logisitic regression model and net loss vs. net income, income companies tend to restate more years, loss companies tend to restate operating expenses, debt/interest and asset valuations.

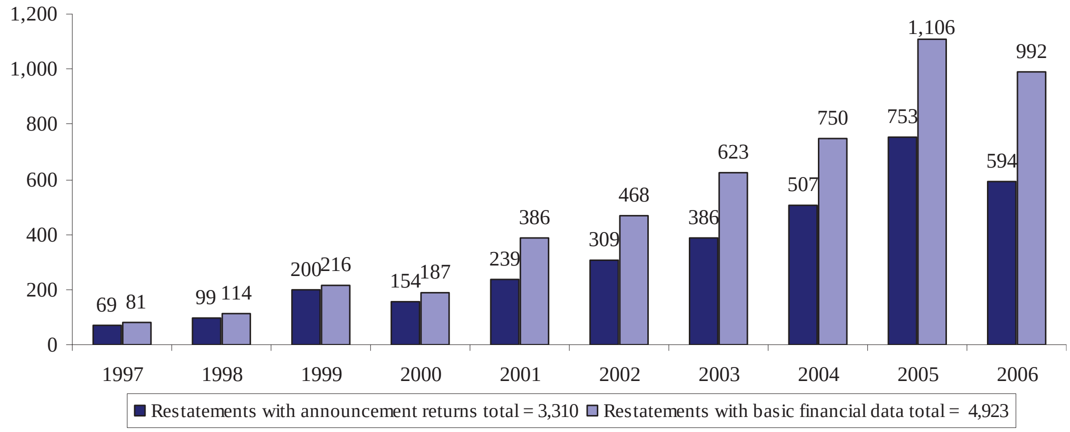
On the other hand, there are several regularities between the size measures and restatement characteristics. Larger restating companies are associated with fraudulent restatements and restatements of longer time periods. In addition, most accounting issues appear to be associated with company size, some with smaller companies and others with larger. This suggests that accounting challenges vary with different levels of complexity and scope.

V. Analysis of Market Reactions to Restatements

This stage of the analysis focuses on the market reaction to the announcement of a restatement. The market return in the year following the announcement is analyzed later in this section. To be included in the return analysis, the company must appear in the CRSP database, and returns must be available at the restatement announcement date.[62] Only 3,310 restatement announcements have return data available, 67% of the 4,923 restatements with basic financial data and 50% of the initial sample of 6,633. The number of restatement announcements per company ranges from one (1,786 companies) to seven (one company).

The distribution of available returns and attrition across study years is shown in Figure 15. Again, most of the attrition is in later years of the study. Returns are available for more than 80% of restatements announced from 1997-2000, and for 60% to 70% for the remaining years.

Figure 15 — **Distribution of Restatements with Market Returns Across Study Period**



A. Profile of Restatements Lacking Return Data

Restating companies lacking announcement returns are significantly smaller than those remaining in the analysis, whether measured by assets or revenues. They also report smaller profits or greater losses prior to the restatement. Restatements lacking return data are less likely to involve fraud or affect revenue. However, they are more likely to decrease reported income.[63]

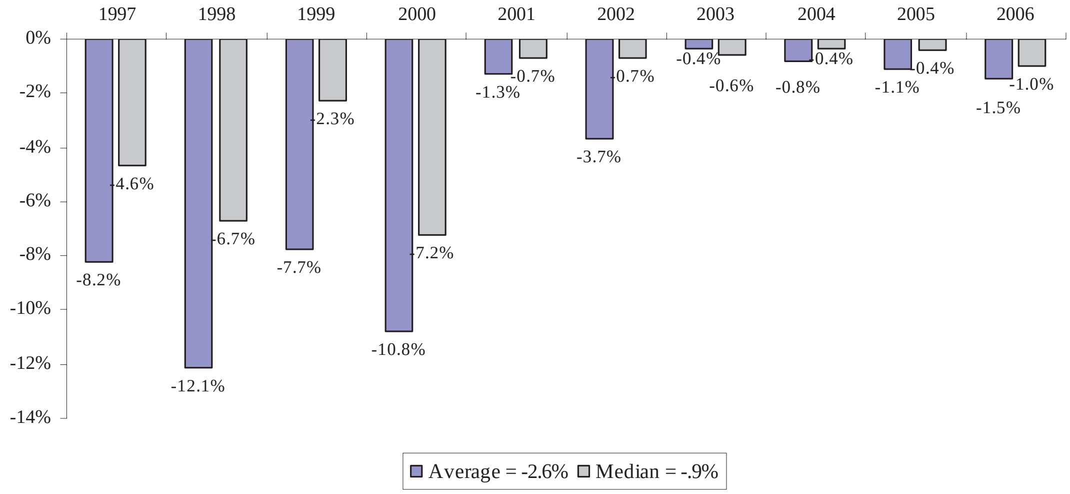
62 CRSP is a database of securities prices produced by the University of Chicago's Graduate School of Business. CRSP is the stock price database used in most accounting and finance research. It includes daily prices of all listed NYSE, AMEX and NASDAQ National Market common stocks. More information is available at http://www.crsp.com. Returns in this analysis are estimated using the Eventus program; see http://www.eventstudy.com.

63 Median assets (revenues) for restating companies without return data are $17.4 ($12.6) million. This compares to median assets (revenues) of $331.8 ($224.8) million for the remaining restating companies. All t-statistic and Chi-square p-values for comparisons noted between restating companies with and without return data are less than .001.

B. Stock Market Returns at Announcement

All returns analyzed in this study are market-adjusted returns estimated over a two-day announcement window, where the window is the announcement date and the following trading day. For simplicity, this measure is called "returns."[64] Figure 16 shows average and median announcement returns by year.

Figure 16 — **Average and Median Announcement Returns Across Study Period**



On average, returns are negative each year, statistically less than zero every year except 2003. However, returns are much *less* negative beginning in 2001. Average returns for restatements announced from 1997-2000 are -9.5%, but only -1.3% for those announced from 2001-2006.[65] To some degree, this may be attributable to relatively fewer restatements with severe characteristics, as noted in previous sections. However, Figure 17 shows the market reaction to fraud and income-decreasing restatements also attenuates in 2001. Still, returns are statistically negative for restatements involving fraud every year except 2004, and for income-decreasing restatements all years except 2001 and 2003.[66]

64 Cumulative abnormal returns (CARs) are calculated by subtracting an equally-weighted market return from the individual company's return on each day of the announcement window. This gives an estimate of the daily abnormal return for the company. The abnormal returns for the two days are summed to obtain the CAR for the announcement window. The window does not include the day prior to the announcement, because there appears to be relatively little reaction on this day, suggesting little news leakage prior to the announcement. The window does include the day after because announcements are often made after market close, so reactions are recorded in prices the following trading day. The window and methodology are consistent with prior research in this area. Raw returns and abnormal returns estimated using value-weighted market averages are similar to the CARs analyzed here.

65 T-tests for each year except 2003 indicate returns are significantly less than zero (p-values < .05). Returns from 1997-2000 announcements differ significantly from those announced from 2001-2006 (t-test p-value < .001).

66 T-tests indicate returns for fraud and income-decreasing restatements are significantly less than zero in all years except those noted above (one-tailed p-values < .10). Returns for fraud in 2006 include relatively few stock options backdating restatements. That is, to date there is no indictment, SEC AAER, or admission of fraud by the company for most of these restatements. If all 2006 stock options backdating restatements are assumed to be fraudulent, the average return for fraud restatements in 2006 is -3%; less severe than the -8% average shown here. This may be due to the market anticipating some of these restatements prior to announcement.

Figure 17 — **Average Returns for Fraud and Income-Decreasing Restatements**

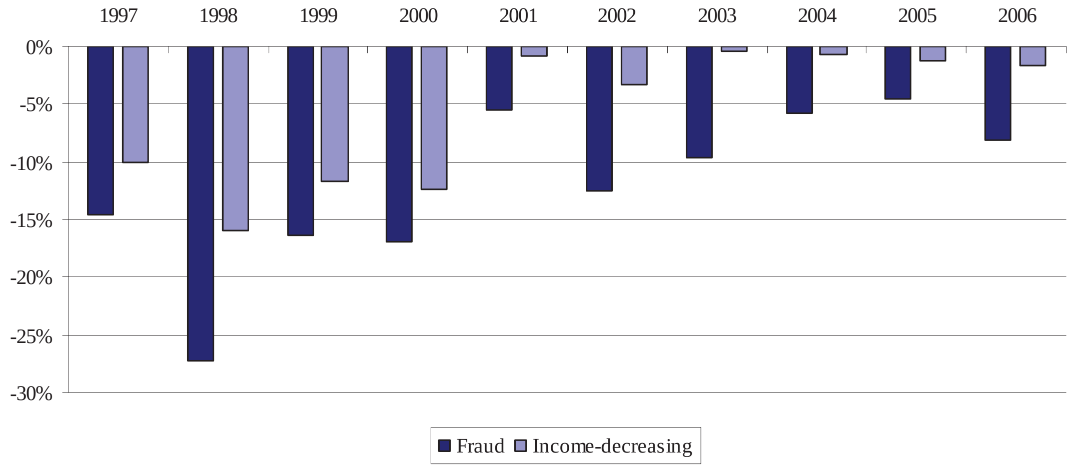


Figure 18 presents announcement returns for revenue, core expense and all other restatements. Non-core expenses and reclassification and disclosure issues are combined here, due to small numbers of restatements for the latter group in some years. The figure shows the market reaction to revenue and core expense restatements is less severe beginning in 2001. Smaller reactions continue through the end of the study period, although responses to revenue and fraud restatements appear to increase again in 2006.[67] Note that in Figures 16-18, the shift in the market response occurs prior to the well-known accounting scandals and the enactment of SOX in July 2002. This suggests the change may be attributable to overall economic and market conditions.

Figure 18 — **Average Announcement Returns for Accounting Issue Classifications**

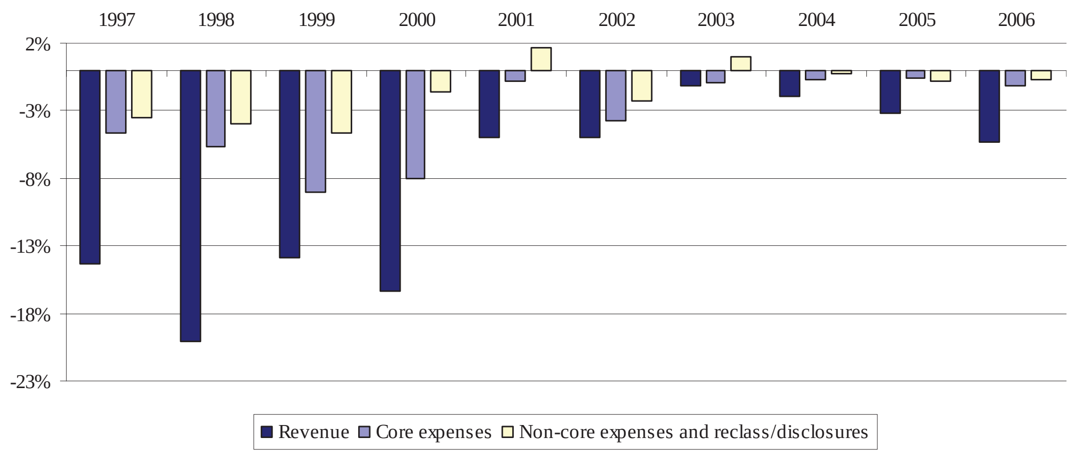


Table 8 provides detail behind the returns charted in Figures 16-18. It also provides the median return in each category. In nearly every year and category, median returns are less pronounced than averages. The most negative returns for each year and category are also given in Table 8. The restatement with the most negative return affected revenues and fraud in seven of the ten years, although the years are not the same for each. The overall most negative return, -93%, is the Worldcom fraud announced in 2002. Although a primary Worldcom problem was accounting for core expenses, the final restatement also decreased revenue. See more detail of restatements with the most negative announcement returns in each year in Appendix G.

67 The average abnormal return at announcement for lease restatements in 2005 is +.002%, which is not statistically different from zero. This may be partly due to market anticipation effects.

The final rows of the table show that for a minority of companies, returns are positive at the time of the restatement announcement. About one-third of the returns are positive from 1997-2000, while during the latter years of the study period, over 40% of the returns are positive. It is unlikely that a restatement is good news, so it is probable that these cases have some combination of other good news released at the same time and relatively benign restatement characteristics. Without these positive-return restatements, the average return is -8% overall, -16% from 1997-2000, and -6% from 2001-2006.

Table 8 — **Average, Median and Most Negative Returns for Restatement Characteristics Across Sample Period**

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Overall
All restatements with announcement returns												
	Number	69	99	200	154	239	309	386	507	753	594	3,310
	Average	-.08	-.12	-.08	-.11	-.01	-.04	.00	-.01	-.01	-.01	-.03
	Median	-.05	-.07	-.02	-.07	-.01	-.01	-.01	.00	.00	-.01	-.01
	Most negative	-.80	-.92	-.81	-.79	-.70	-.93	-.75	-.53	-.64	-.50	-.93
Fraud restatements:												
	Number	20	27	28	42	29	39	21	12	25	21	264
	Average	-.15	-.27	-.16	-.17	-.06	-.13	-.10	-.06	-.05	-.08	-.13
	Median	-.13	-.19	-.03	-.08	-.02	-.09	-.05	-.03	-.04	-.04	-.06
	Most negative	-.59	-.92	-.76	-.79	-.70	-.93	-.75	-.53	-.64	-.28	-.93
Income-decreasing restatements:												
	Number	53	72	98	122	220	274	338	429	684	499	2,789
	Average	-.10	-.16	-.12	-.12	-.01	-.03	.00	-.01	-.01	-.02	-.03
	Median	-.05	-.09	-.04	-.07	-.01	-.01	.00	.00	.00	-.01	-.01
	Most negative	-.80	-.92	-.81	-.79	-.70	-.93	-.75	-.53	-.64	-.50	-.93
Accounting issue classifications:												
Revenue												
	Number	27	48	45	75	76	98	118	125	130	72	814
	Average	-.14	-.20	-.14	-.16	-.05	-.05	-.01	-.02	-.03	-.05	-.06
	Median	-.14	-.15	-.05	-.12	-.02	-.01	.00	-.01	-.01	-.03	-.02
	Most negative	-.59	-.92	-.81	-.76	-.70	-.93	-.75	-.53	-.64	-.38	-.93
Core Expenses												
	Number	27	21	46	48	81	120	135	172	361	240	1,251
	Average	-.05	-.06	-.09	-.08	-.01	-.04	-.01	-.01	-.01	-.01	-.02
	Median	-.02	-.03	-.02	-.01	.00	-.01	-.01	-.01	.00	-.01	-.01
	Most negative	-.80	-.21	-.67	-.79	-.44	-.51	-.65	-.48	-.21	-.31	-.80
Non-core expenses and other												
	Number	15	30	109	31	82	91	133	210	262	282	1,245
	Average	-.04	-.04	-.05	-.02	.02	-.02	.01	.00	-.01	-.01	-.01
	Median	-.05	-.02	-.02	.00	.00	.00	-.01	.00	.00	-.01	-.01
	Most negative	-.24	-.52	-.41	-.35	-.23	-.55	-.57	-.26	-.41	-.50	-.57
Positive return at announcement												
	Number	19	22	66	44	108	132	170	224	321	231	1,337
	Percent	28%	22%	33%	29%	45%	43%	44%	44%	43%	39%	40%
	Average	.07	.06	.06	.07	.07	.06	.08	.05	.03	.04	.05
	Median	.05	.03	.05	.06	.03	.04	.03	.02	.02	.02	.03

Regression Analysis of Announcement Returns

Regression analysis assesses which restatement and company characteristics are associated with more negative announcement returns, while controlling for market trends. Restatement characteristics include fraud, whether reported income decreased, number of years restated, and which financial statement elements are affected. Company characteristics include size, measured by total assets, and profitability, measured by return on assets. Also, there is a variable that notes if a company's stock price was less than $5.00 the day prior to announcement.[68] This is to capture possible liquidity effects, as companies with small share prices are more likely to be thinly traded.

The model also includes a variable to identify companies that both issued ICFR reports and restated in 2003-2005 (SOX Section 404 accelerated filers). This is to assess market reaction to restatements that may be due to ICFR implementation.

Negative reactions may be less pronounced in down markets and more pronounced in periods of greater market volatility.[69] Figure 19 shows the NASDAQ began a sharp decline in March 2000, not leveling off until October 2002. The NYSE began a long decline about January 2001. Therefore, the model identifies NASDAQ companies announcing restatements from March 2000 through October 2002 and NYSE companies announcing restatements from January 2001 through February 2003.

Figure 19 — **NYSE and NASDAQ Indices**

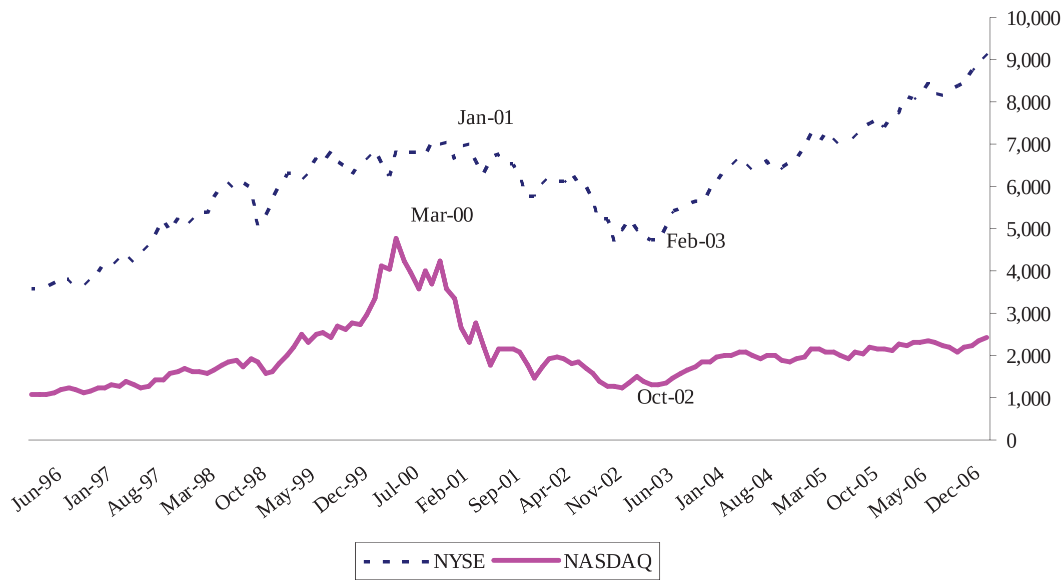


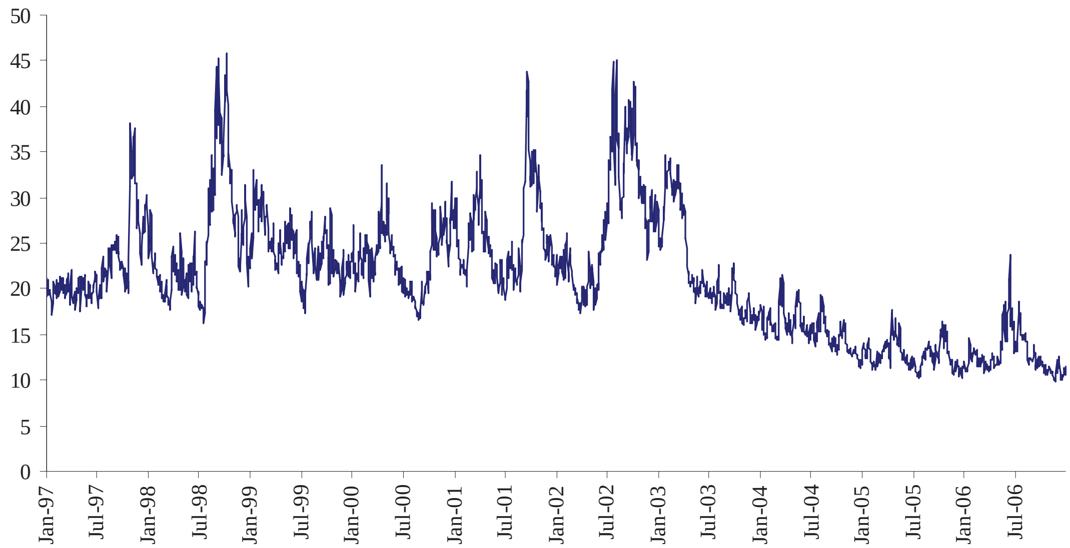
Figure 20 shows the Chicago Board Options Exchange's volatility index (VIX) over the study period. It indicates market volatility varied widely over the study period, and is also included in the model.

68 There are 1,047 restatements in this group (32% of 3,310). As might be expected, these companies are significantly smaller. The median price the day prior to the announcement is $2.24.

69 Negative returns may be attenuated in a down market because the returns studied here are adjusted for market returns.

There is no control for concurrent news. This approach is consistent with prior research, and is mainly due to problems with identifying and categorizing the wide variety of information that might or might not be included in a restatement announcement or in contemporaneous commentary.[70]

Figure 20 — **Chicago Board Options Exchange's Volatility Index (VIX) 1997-2006**



Results of the regression model are shown in Table 9. Statistically significant associations are indicated in the "significant associations" column with these symbols:

- Item is associated with more negative returns: -
- Item is associated with less negative returns: +

The cell is left blank if an item is not statistically associated with announcement returns.[71]

70 Market reactions to restatement announcements are fairly similar whether they were revealed in earnings announcements or not. See Zoe-Vonna Palmrose, Vernon J. Richardson and Susan Scholz, *Determinants of Market Reactions to Restatement Announcements*, 37 JOURNAL OF ACCOUNTING AND ECONOMICS 59 (Feb. 2004). For another study that specifically addresses the content of press announcements, see Elizabeth A. Gordon, Elaine Henry, Marietta Peytcheva and Lili Sun, *Disclosure Credibility and Market Reaction to Restatements* (Working Paper, 2007).

71 The model is highly significant (F-statistic = 25.7, p-value < .001. The adjusted R^2 is .089. A constant is included in the model; it is not significant. Results for the accounting issue categories are relative to restatements involving only reclassifications and disclosures, which are used as the baseline. Inferences are not changed by using raw returns, substituting company revenue (ln(revenue)) for assets, substituting a net loss indicator for ROA, or adding indicator variables for industry groups. None of the industry indicators is significant. If abnormal returns for the thirty days prior to the announcement are included, worse prior returns are associated with more severe announcement returns, but other results do not change.

Table 9 — **Restatement and Company Characteristics Associated with Returns**

	Significant associations	Coefficient	t-statistic	p-value
Restatement characteristics				
Fraud involved	-	-.096	-12.05	.00
Income-decreasing		-.003	-.54	.59
Years restated	+	.003	2.48	.01
Revenue restated	-	-.050	-5.84	.00
Core expenses restated	-	-.017	-2.07	.04
Non-core expenses restated		-.012	-1.47	.14
Company characteristics				
Company assets (ln)	+	.002	1.79	.07
Company ROA		.001	.28	.78
Stock price less than $5.00	+	.017	3.18	.00
SOX Section 404 accelerated filers	+	.024	4.79	.00
Timing effects				
NYSE down market	+	.023	2.25	.02
NASDAQ down market	+	.022	2.58	.01
Volatility Index (VIX)	-	-.001	-2.46	.01

The model confirms returns are more severe when the restatement involves fraud. Restatements of revenue or core expenses are more negative, relative to the baseline group of reclassification and disclosure restatements, but restatements of non-core expenses are not significantly different.

Larger companies typically experience less negative reactions, particularly accelerated filers announcing restatements during the ICFR implementation period. However, companies with quite small share prices, and presumably less liquidity, also have less severe reactions.

Interestingly, restatements of longer time periods tend to have *less* of a reaction. Both lease restatements and ICFR restatements tend to affect longer time periods and have less negative reactions. However, longer time periods still tend to have less negative reactions even if these two groups are excluded from the analysis. It may be that the reversing nature of accrual accounting causes smaller net income effects over more time. It may also be that errors that persist for a long period before being detected and corrected are relatively small in any one of the restated periods, and therefore of less concern to current investors at the restatement announcement.

Finally, the market variables confirm that reactions tend to be less negative during down markets and more negative in periods of greater volatility. The remaining factors in the model (whether the restatement decreases income and company profitability) are not associated with announcement returns.[72]

72 The model is also estimated using announcements partitioned into two groups: pre-2001 and 2001 and beyond. In the earlier time period, fraud and income-decreasing restatements are negatively associated with returns. Indicators for accelerated filers and the NYSE down market are not applicable during this period. In the later period, fraud and the accounting issue indicators are associated with more negative returns, and accelerated filers are associated with less negative returns. Although ROA is not associated with returns in Table 9, in the pre-2001 period, less profitable companies tend to have *less* negative returns, while in the later period, less profitable companies tend to have *more* negative returns. The earlier effect may be associated with the technology bubble, as profitability was not emphasized during that period. In contrast, post-2000, investors seem to have less tolerance for misstatements by unprofitable companies.

Announcement Returns and Specific Accounting Issues

Table 10 provides more detail about the relationship between various accounting issues and returns. These results are a summary based on a series of iterations of the regression model in Table 9. As there are a variety of ways to break out sub-groups of components, this table aggregates results for eight regressions with different combinations of accounting issue groups and sub-groups.[73] Statistically significant associations are indicated in the "association with returns" column with these symbols:

- Item is associated with more negative returns: -
- Item is associated with less negative returns: +

To give an indication of how consistent the statistical relations are, the percentage of times the item is statistically significant when included in one of the eight regressions is noted in the last column.

The cell in the first column is left blank if an item is not statistically associated with announcement returns in any of the regressions.

Table 10 — **Summary of Regression Results for Various Accounting Issues**

		Association with returns	Percent significant
Revenue recognition		-	100%
Core earnings components:			
	Cost of sales	-	67%
	Reserve and accrual failures	-	100%
	Expense capitalization	-	100%
	Lease expenses (includes depreciation)	+	67%
	Other expense recording issues		0%
	Stock-based and deferred compensation		0%
Non-core earnings components:			
	Debt, interest and equity issues	-	80%
	Intercompany/investment in subsidiaries	-	80%
	Legal, contingency and commitment	+	40%
	Financial derivatives		0%
	Asset valuation or impairment		0%
	Gain or loss recognition		0%
	Tax issues		0%
	Other	-	40%
Classification and disclosure issues:			
	Balance sheet classifications		0%
	Income statement classifications & EPS		0%
	Cash flow statement classifications	+	75%
	Disclosures		0%

73 Results for other variables in the model are consistently similar to Table 9. See Appendix A for additional explanation of the categories.

Revenue restatements are consistently associated with negative returns. Several components of core expenses are also associated with more negative announcement returns: cost of sales, reserve and accrual failures and capitalization issues. However, reactions to lease restatements tend to be less negative. There is no association between returns and stock-based compensation restatements.

Among non-core earnings components, only debt and intercompany investment and "other" restatements tend to have more negative returns,[74] while problems with contingencies and commitments tend to have less negative returns. Two issues attracting recent attention, taxes and derivatives, are not associated with returns. Finally, among classification and footnote disclosure problems, cash flow statement reclassifications tend to have less negative returns.[75]

Overall, it appears that in general, the market views restatements of core earnings accounts negatively, except for clusters of specific accounting issues that are corrected within a condensed period of time. On the other hand, corrections of non-core earnings generally do not appear to elicit negative market returns.

C. Post-Restatement Returns

The post-announcement period is measured from trading day +2 to +250, representing approximately one calendar year. This analysis focuses on the years from 1997-2005, because returns for a full year following the 2006 restatement announcements are not available at the time this study was conducted.[76]

Attrition

From 1997-2005, there are 2,714 restatements with announcement returns. One-year returns are available for 2,287, or 84%. The 427 companies without one-year returns are significantly smaller and less profitable than those with available returns.[77] Their restatements are more likely to involve fraud and revenue accounts, and the average announcement return is -7%, compared to -2% for the 2,287 restatements with one-year returns.

Compustat provides some information about the eventual outcomes for about half of these 427 companies. At least 39% appear to be acquired or merge with another company. This is particularly likely for restatements announced in 1999 and 2005. Another 7% are noted as entering bankruptcy or liquidation. These are more frequent in early years of the sample. Two percent went private and nearly all of the privatizations are associated with 2004 restatements. The remaining 52% are either attributed to "other" reasons, or no indication is provided. As a caveat, specific dates for the events noted above are not given, and so they do not necessarily occur during the year following the restatement announcement.

There are no post-announcement returns at all for 22 of these 427 companies. The remaining 405 have some post-announcement returns which cease at some point during the year. On average, companies in the latter group have return information for 119 days, a little less than half a year. The average return for these available days is -24% (median is -25%), not including any delisting return.

74 Debt includes issues such as beneficial conversion features of convertible debt. It does not include long-term/current debt classification issues. They are included with balance sheet classification issues.

75 None of the underlying issues – consolidation, foreign subsidiaries or acquisition – is associated with returns in either direction. However, in early years of the study, changes from pooling to purchase accounting for acquisitions tend to have negative returns.

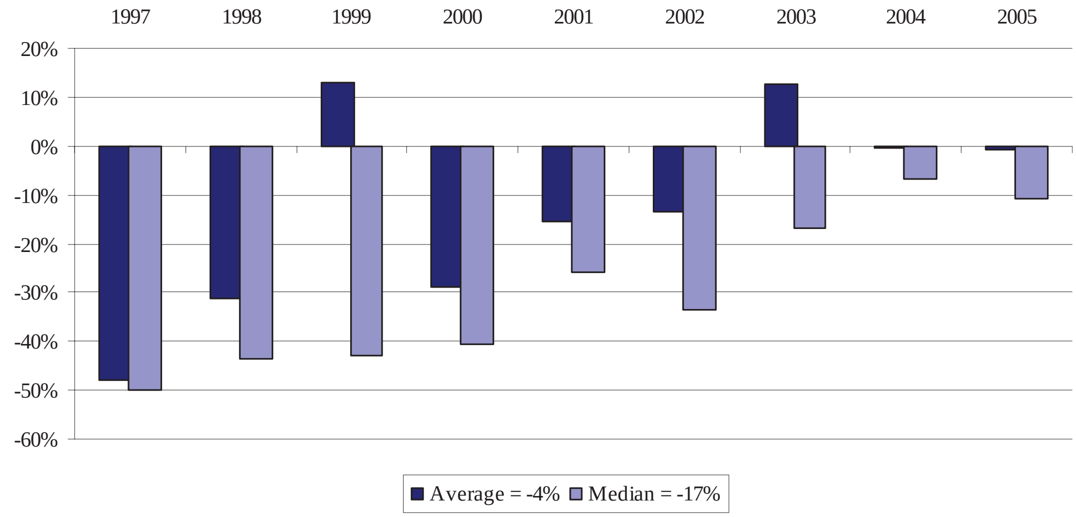
76 All of the 2006 restating companies have at least some return data for the post-announcement period. The number of returns available range from 3 to 249 days, the average is 138 days. These returns range from -.89% to 2.80%, with an average of -1% and a median of -3%. On average, these returns are not significantly different from zero (t-statistic p-value = .37).

77 Median assets for restating companies without one-year returns are $131 million, compared to $376 million for restating companies with one-year returns. Median net loss for restating companies without one-year returns is $5.48 million, with 66% reporting losses. This compares to net income of $2.55 million reported by companies with one-year returns, and only 41% reporting losses.

One-Year Post-Announcement Returns

Figure 21 shows average and median one-year returns for restating companies. The average one-year return is -4%, and the median is -17%.[78] Median returns are negative each year. Average one-year returns are positive for restatements announced in 1999 and 2003.

Figure 21 — **Average and Median Returns for the Year After a Restatement Announcement**



A regression model for the one-year returns is reported in Table 11. This model is the same as the model in Table 9, except it also includes announcement returns. This is to assess the association between announcement and subsequent returns. Again, statistically significant associations are indicated in the "significant associations" column with these symbols:

- Item is associated with more negative one-year returns: -
- Item is associated with less negative one-year returns: +

The cell is left blank if an item is not statistically associated with one-year returns.[79]

78 Both average and median returns are statistically negative with p-values < .001.

79 The overall model is significant (F-statistic = 4.99, p-value < .001, adjusted-R^2 = .03). The model also includes a constant (negative) and variables noting the year of the restatement announcement. Year indicators are to control for prevailing economic conditions. Indicators are significantly positive for companies announcing restatements in 1999 and 2001-2005, relative to the baseline year of 1997. Significance for model variables is based on two-tail p-values < .10.

Table 11 — **Restatement and Company Characteristics Associated with Subsequent Returns**

	Significant associations	Coefficient	t-statistic	p-value
More negative announcement return	-	0.365	2.003	.05
Restatement characteristics				
Fraud-involved		0.014	0.178	.86
Income-decreasing	-	-0.126	-2.175	.03
Years restated		0.014	0.964	.34
Revenue restated		-0.033	-0.396	.69
Core expenses restated		-0.066	-0.833	.40
Non-core expenses		-0.006	-0.069	.95
Company characteristics				
Company assets (ln)		-0.010	-0.889	.37
Company ROA		0.000	-0.002	1.00
Stock price less than $5.00	+	0.250	4.912	.00
SOX Section 404 accelerated filer	+	0.130	2.244	.02

When a restatement triggers a more negative return, the company tends to continue to have more negative returns in the following year. Accounting issues are not directly associated with one-year returns. In particular, neither fraud nor revenue restatements are directly associated with one-year returns, despite their consistent association with more negative announcement returns.[80] However, restatements that decrease reported income do tend to have more negative one-year returns. This is interesting, since income-decreasing restatements are not associated with announcement returns.

Companies likely to be restating due to SOX Section 404 ICFR implementation have less negative one-year returns. This is consistent with the benign effects noted for these restatements throughout the study. Companies with stock prices less than $5.00 at announcement also tend to have less negative one-year returns, although the reason for this is unclear. Overall, it appears that the announcement return captures the market effect of restatement and restating company characteristics rather than future returns. This result is not as obvious as it may seem, since all information about a restatement is not always released on the announcement date. For example, fraud is often formally revealed after a company or SEC investigation. Nonetheless, the market reaction to these restatement characteristics appears to occur mainly at announcement, rather than later dates.

80 Using more detailed accounting issues, reclassifications and IPR&D write-offs have less negative one-year returns. No other group is significant.

VI. Appendices

Appendix A: Accounting Issues Taxonomy

Accounting issues are classified into four groups, based on the classification scheme developed by Palmrose and Scholz (2004).[81] The groups are:

- Revenue Recognition: These are restatements involving revenue. Revenue restatements are considered separately because they are consistently associated with more serious outcomes in prior research.[82]
- Core Expenses: These are restatements of companies' on-going operating expenses. They include cost of sales, compensation expense (including stock-based), lease and depreciation costs, selling, general and administrative expenses, and research and development costs.
- Non-Core Expenses: These are restatements of items that typically affect net income, but do not arise from on-going operating activities. The group includes accounting for interest, taxes and derivatives. It also includes misstatements arising from accounting for non-recurring events or special items.
- Reclassifications and Disclosures: These likely do not affect net income at all. They include restatements to reposition balance sheet, income, cash flow statement line items or changes in earnings per share. Disclosure restatements typically revise footnote information.

Specific issues included in each of the four classifications are listed below. The descriptions are lightly edited from information provided by AA. The table also provides the total number and percentage of restatements identified with each issue.[83] Because companies usually restate multiple issues, the sum of the sub-classification frequencies exceeds both classification and overall totals.[84] The table also provides an indication of the association between each issue and market returns at announcement and in the subsequent year. These codes are used:

- The category is associated with a less negative market return: +
- The category is associated with a more negative market return: -
- The category is not associated with market returns: none.[85]

81 See Zoe-Vonna Palmrose and Susan Scholz, *The Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements*, 21 CONTEMPORARY ACCOUNTING RESEARCH 139 (Spring 2004).

82 For example, see Cristi A. Gleason, Nicole Thorne Jenkins and W. Bruce Johnson, *The Contagion Effects of Accounting Restatements*, 83 ACCOUNTING REV.83 (Jan. 2008), in addition to Palmrose and Scholz (2004), noted above.

83 Coding for 1997-2000 restatements is based on categories identified by Palmrose and Scholz (2004), citation above. Coding for 2001-2006 is based primarily on AA's identification of issues. The two schemes are similar, but not identical. All earlier classifications are matched with an AA group, but a few categories include only restatements from later years of the study. Both AA and Palmrose and Scholz (2004) define each category to include all errors, irregularities or omissions in the accounting area described.

84 These frequencies differ from those in Section III.C because the counts in this table include all restatements identified with each issue. That is, restatements with multiple issues are included multiple times. The classification counts in Section III.C limit each restatement to its most serious classification.

85 As market returns are available for only about half of the 6,633 restatements, the association tests are based on a smaller sample. An association ('+' or '-') is noted only if the category is significantly associated with returns when included in the regression model in Section V. That is, they are included if they are incrementally significant after controlling for other restatement and restating company characteristics such as fraud. Statistical significance is based on p-values < .10.

Classification / Category		Description	Count	Percent of 6,633	Association with returns: Announce.	One-year
Revenue recognition		Any restatement involving revenue. Includes timing of, and fictitious revenue recognition. May originate from a failure to properly interpret sales contracts for hidden rebate, return, barter or resale clauses. May relate to sales returns, credits and allowances.	1,314	20%	-	None
Core expenses		Any restatement involving correction of on-going operating expenses.	3,316	50%	-	None
	Cost of sales (inventory, vendor)	Transactions affecting inventory, vendors (including rebates) and/or cost of sales. Such errors primarily are related to inventory capitalization or the calculation of balances at year end.	625	9%	-	None
	Expense recording (payroll, SG&A, other)	Expensing assets or understatement of liabilities. These issues include failure to record certain expenses, reconcile certain accounts or record certain payables on a timely basis. Issues with payroll expenses or SG&A expenses are identified with this category.	948	14%	None	None
	Liabilities, payables, reserves and accrual estimate failures	Accrual or identification of liabilities on the balance sheet. These could range from failures to record pension obligations, to problems with establishing the correct amount of liabilities for leases, capital leases and other. This category could also include failures to record deferred revenue obligations or normal accruals.	942	14%	-	None
	Capitalization of expenditures	Capitalized expenditures related to leases, inventory, construction, intangible assets, R&D, product development and other purposes.	467	7%	-	None
	Deferred, share-based and/or executive compensation	Recording of deferred, share-based or executive compensation. The majority of these errors are associated with the valuation of options or similar derivative securities or rights granted to key executives. Stock options backdating is included here.	793	12%	None	None
	Lease, leasehold and FASB 13 and 98	Lease-related issues.	360	5%	+	None
	Depreciation, depletion or amortization errors	Depreciation of assets, amortization of assets and/or amortization of debt premiums or discounts. A significant number of these items can be attributed to the recalculation of depreciation associated with revised leasehold improvements and the revised lease accounting rules.	515	8%	(see Lease, leasehold and FASB 13 and 98)	(see Lease, leasehold and FASB 13 and 98)
Non-core expenses		Any restatement including correction of expense (or income) items that arise from accounting for non-operating or non-recurring activities.	3,111	47%	None	None
	Debt, quasi-debt, warrants & equity security issues (including beneficial conversion features)	These restatements are often due to errors in the calculation of balances arising from debt, equity or quasi-debt instruments with conversion options (including beneficial conversion features). In addition, certain debt instruments may be erroneously valued.	1,280	19%	-	None
	Derivatives / hedging (FAS 133)	Valuation of financial instruments such as hedges on currency swings, interest rate swaps, purchases of foreign goods, guarantees on future sales and many other examples.	231	3%	None	None
	Gain or loss recognition	Recording sales of assets, interests, entities or liabilities. Errors in these areas often result from calculating an inappropriate basis for items that were sold, or the proper sales amount from barters.	321	5%	None	None
	Inter-company / investment in subsidiaries and affiliates.	These restatements often arise when inter-company balances are not recognized or income figures are misstated by affiliates (foreign or U.S. based). Also includes investment valuations or transactions.	88	1%	-	None
	Legal, contingency and commitments	Issues associated with the disclosure or accrual of legal exposures.	149	2%	+	None

Classification / Category	Description	Count	Percent of 6,633	Association with returns Announce.	One-year
PPE or intangible asset valuation or impairment	Recording of assets that are required to be valued or assessed for diminution in value on a periodic basis. Examples include: intangible assets, goodwill, buildings, securities, investments, leasehold improvements, etc. The IPR&D restatements (95) are included here.	874	13%	None	None
Tax expense / benefit / deferral / other FAS 109 issues	Accounting for tax obligations or benefits. Many of these restatements relate to foreign tax, specialty taxes or tax planning issues. Some deal with failures to identify appropriate differences between tax and book adjustments.	585	9%	None	None
Unspecified adjustments (Other)	The company does not identify what areas of accounting or financial reporting the actual restatements affect.	92	1%	None	None
Reclassification and disclosure	Any restatement including reclassification or disclosure issues. These typically do not affect reported income.	1,502	23%	+	+
Accounts/loans receivable, investments & cash	Includes investments, allowance for bad debts, notes receivables and/or related reserves. These mistakes often manifest themselves in balance sheet and income statement errors or misclassifications.	480	7%	None	+
Balance sheet classification of assets	This includes how assets were classified as short term/long term, how they were described or whether they should have been netted against some other liability.	438	7%	None	+
EPS, ratio and classification of income statement issues	Disclosure of financial/operational ratios or margins and earnings per share calculation issues. Also income statement item misclassification, often between COS and SG&A.	273	4%	None	None
Cash flow statement classification	These misclassifications can affect cash flow from operations, financing, non-cash and other.	360	5%	+	None
Footnote & segment disclosures issues	Financial statement, footnote and/or segment reporting information.	111	2%	None	None
Underlying events	Circumstances underlying some misstatements				
Accounting for acquisitions, mergers, disposals and re-organizations	Mergers, acquisitions, disposals, reorganizations or discontinued operation accounting issues. Restatements in this category can be varied but they all arise from a company's failure to properly record an acquisition (such as valuation issues) or a failure to properly record a disposal (such as discontinued operations) or reorganization (such as in bankruptcy). It can also include failures to properly revalue assets and liabilities associated with fresh start rules.	1127	17%	None	None
Consolidation issues (including Fin 46 variable interest & off-balance sheet entities)	This can include mistakes in how joint ventures, off-balance sheet entities or minority interests are recorded or manifested. It can also include issues associated with foreign currency translations of foreign affiliates.	514	8%	None	None
Foreign, related party, affiliated, or subsidiary issues	The most prevalent issues in this category arise from problems with foreign affiliates and their related accounting or financial reporting. They include disclosures about related, alliance, affiliated and/or subsidiary entities.	509	8%	None	None

Appendix B: Industry Membership Tables

Industry membership is defined by SIC code as follows:

Industry	SIC Codes
Agriculture, construction, mining	0000 – 1999
Manufacturing	2000 – 3999 (except Technology and Biotechnology)
Biotechnology	2834 – 2836
Technology	3570 – 3579 & 7370 – 7379
Transportation	4000 – 4799
Communication	4800 – 4899
Utilities	4900 – 4999
Wholesale/Retail	5000 – 5999
Financial	6000 – 6999
Services	7000 – 8999 (except Technology)

These tables show restatement activity by industry across study years. See Section IV.B., Figure 9 in the main text, for a discussion of this restatement activity. These frequencies and percentages are based on the 4,923 companies with basic financial data.

Restatement activity by industry											
Count per year	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**
Agriculture	2	4	6	7	31	34	41	50	69	75	319
Manufacturing	24	30	62	53	111	114	163	197	307	311	1,372
Technology	15	40	61	46	57	67	77	86	109	110	668
Transportation	0	0	5	8	7	9	15	17	17	19	97
Communication	2	3	5	8	25	21	34	50	55	48	251
Utilities	2	1	6	6	10	23	48	43	46	29	214
Wholesale/Retail	11	11	16	9	33	53	57	74	197	104	565
Financial	10	18	20	18	41	63	83	93	147	124	617
Service	10	6	30	19	51	61	80	95	121	130	603
Biotechnology	5	1	5	11	18	23	24	39	34	39	199
Unknown	0	0	0	2	2	0	1	6	4	3	18
Total	81	114	216	187	386	468	623	750	1,106	992	4,923
Percent per year	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**
Agriculture	2%	4%	3%	4%	8%	7%	7%	7%	6%	8%	6%
Manufacturing	30%	26%	29%	28%	29%	24%	26%	26%	28%	31%	28%
Technology	19%	35%	28%	25%	15%	14%	12%	11%	10%	11%	14%
Transportation	0%	0%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Communication	2%	3%	2%	4%	6%	4%	5%	7%	5%	5%	5%
Utilities	2%	1%	3%	3%	3%	5%	8%	6%	4%	3%	4%
Wholesale/Retail	14%	10%	7%	5%	9%	11%	9%	10%	18%	10%	11%
Financial	12%	16%	9%	10%	11%	13%	13%	12%	13%	13%	13%
Service	12%	5%	14%	10%	13%	13%	13%	13%	11%	13%	12%
Biotechnology	6%	1%	2%	6%	5%	5%	4%	5%	3%	4%	4%
Unknown	>1%	>1%	>1%	1%	1%	>1%	>1%	1%	>1%	>1%	>1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

This table of accounting issues by industry provides the frequencies and percentages underlying Section IV.B., Figure 10 in the main text. Industries with statistically higher proportions of each accounting issue are shown in bold.

Accounting issue classifications by industry

	Revenue	%	Core Expenses	%	Non-core & Reclass.	%	Total
Manufacturing	261	19%	583	42%	528	39%	1,372
Technology	**271**	**40%**	192	29%	205	31%	668
Financial	101	16%	203	33%	**313**	**51%**	**617**
Service	164	27%	207	34%	232	39%	603
Wholesale/Retail	82	14%	**314**	**56%**	169	30%	565
Other	208	19%	411	37%	479	44%	1,098
Overall	1,087	22%	1,910	39%	1,926	39%	4,923

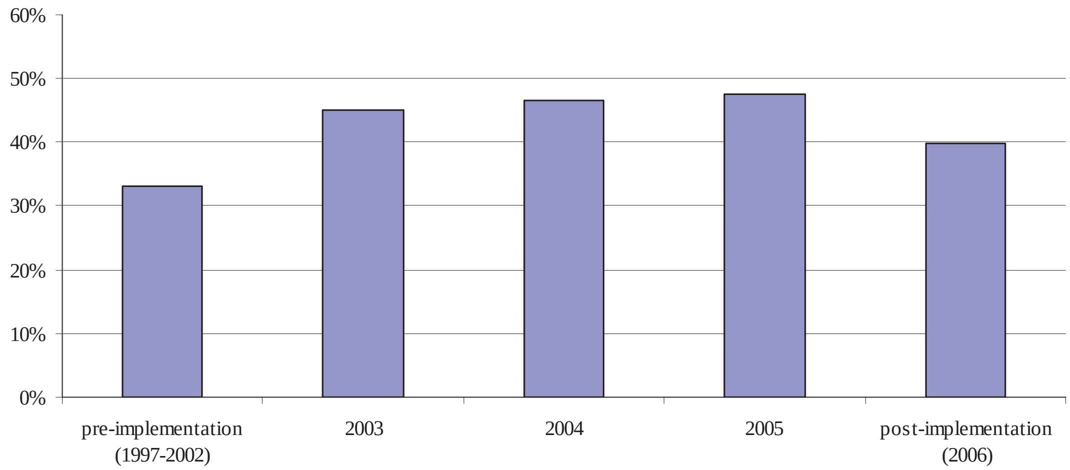
Appendix C: Restatements and SOX Section 404 Internal Control Reporting

Section 404 of the Sarbanes-Oxley Act (SOX) requires companies to report on the effectiveness of their internal controls over financial reporting (ICFR). Briefly, management is required to assess the company's internal controls and report whether they believe the controls are effective or ineffective in preventing material misstatements. The company's auditor is required to attest to management's assertion. SOX Section 404 reporting was mandated in July 2002, and the initial ICFR reports for accelerated filers were required for fiscal years ending on or after November 15, 2004. These reports would typically be filed beginning in early 2005. However, due to documentation and testing required under SOX Section 404, most accelerated filers began ICFR implementation fairly soon after the enactment of SOX.[86] Thus, misstatements attributable to ICFR implementation are most likely to be identified in 2003-2005.

During the study period, ICFR implementation is required only for companies meeting accelerated filer criteria. A primary criterion for accelerated filer status is related to market capitalization ($75 million and greater), so accelerated filers are typically larger companies. AA provides data indicating which companies asserted their controls were effective or ineffective at the first fiscal year of ICFR reporting. These reports were typically issued in early 2005, and report on controls in place at the end of the 2004 fiscal year. For this analysis, companies noted by AA as providing either type of assertion in 2005 are identified as accelerated filers, and this status is assumed to be constant for the entire study period.

The chart and table below show the percentage of restatements announced by accelerated filers in the pre-implementation, implementation and post-implementation periods.

Percentage of Restatements Announced by Accelerated Filers



	Pre-ICFR Implementation 1997-2002	ICFR Implementation 2003-2005	Post-ICFR Implementation 2006
All restatements announced	1,452	2,479	992
Company filed ICFR report in 2005	481	1,156	396
Percent of restatements by 2005 ICFR companies	33%	47%	40%

86 For example, see Diya Gullapalli, *Grasping 'Internal Controls'*, WALL STREET J., Nov. 3, 2004, at C1, C3.

There is a significant increase in restatements by 2005 accelerated filers during the 2003-2005 ICFR implementation period. During this time, accelerated filers announce 47% of restatements. In contrast, in the pre-2003 period, companies destined to be classified as accelerated filers for 2005 are responsible for 33% of all restatements. The percentage drops to 40% in 2006.[87]

Although surely some accelerated filers would have announced restatements absent ICFR implementation, nearly a quarter of all 4,923 restatements (1997-2006) are made by 2005 accelerated filers during ICFR implementation (2003-2005). Further, if pre-implementation ratios between non-accelerated and accelerated filers had held steady through 2003-2005, about 500 fewer restatements by the 2005 accelerated filers would have been expected during this period.[88]

AA data indicates about 3,700 companies issued ICFR reports in the first year of required reporting. This suggests approximately 31% (1,156 of 3,700) of accelerated filers restated their financial reports over the three-year period.

Not all restating accelerated filers reported ineffective controls. Of the 349 accelerated filers restating in 2004, only 137 (39%) reported ineffective controls in their initial report for fiscal year end 2004, typically filed in early 2005. Of the 527 companies announcing restatements in 2005, 263 (50%) initially reported ineffective controls. This count was later revised upward, presumably because companies later discovered misstatements. Thus, the final percentage of accelerated filers both restating in 2005 and reporting ineffective controls is 59% (309 of 527). Of the 396 restatements by accelerated filers announced in 2006, only 93 (23%) reported ineffective controls in their 2005 report.

Restatement Characteristics of Accelerated vs. Non-Accelerated Filers

Logistic regression analysis is used to compare restatements announced by accelerated and non-accelerated filers during the ICFR implementation period. It indicates accelerated filers are more likely to restate accounting issues involving:

- revenues;
- leases;
- stock-based compensation;
- expense capitalization; and
- cash flow statement reclassifications.

Upon further examination, the higher frequency of revenue restatements is mainly due to the sub-set of accelerated filers both restating and reporting ineffective ICFR. No other restatement characteristics differ between the two groups.

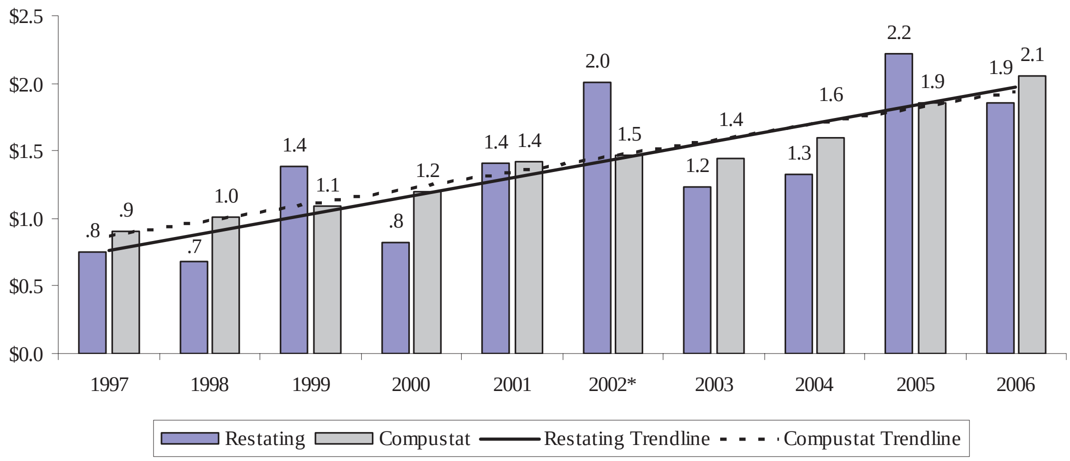
87 Comparisons between accelerated filer announcement frequencies during ICFR implementation, pre-ICFR implementation and post-ICFR implementation periods are statistically significant (p-values < .001).

88 Based on a ratio of nearly 2:1 non-accelerated to accelerated filer restatements in the pre-implementation period, the 1,323 restatements by non-accelerated filers during 2003-2005 suggests about 654 total restatements expected for accelerated filers, compared to the 1,156 announced. However, this period also includes the lease restatements, which disproportionately involved accelerated filers, so the number would likely have been higher than the 654 otherwise expected.

Appendix D: Restating Company Revenues

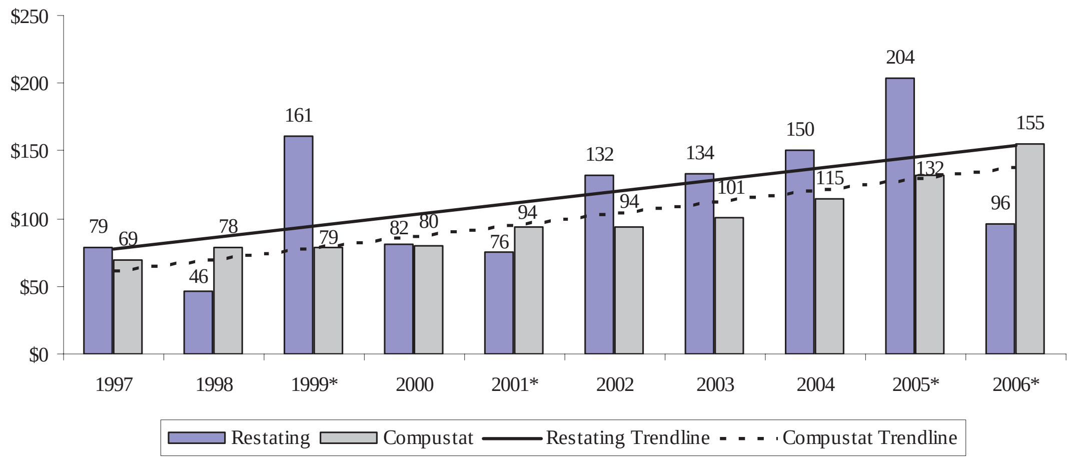
Average revenues for the 4,923 restating companies with basic data are $1.65 billion. Restating companies report lower revenues than the Compustat average except in 1999 (IPR&D restatements), 2002 (accounting scandals and the enactment of SOX) and 2005 (lease restatements). The only significant difference in the averages of restating and Compustat companies is in 2002, noted with an asterisk in the figures below.[89]

Average Revenue for Restating and Compustat Companies ($B)



Median revenues for restating companies are $127 million. Similar to previously noted patterns, median revenues are significantly higher for restating than Compustat companies in 1999 (IPR&D), and 2005 (lease restatements). Again, restating companies' median revenues drop dramatically in 2006, both in absolute dollars and relative to the Compustat median.

Median Revenues for Restating and Compustat Companies ($M)



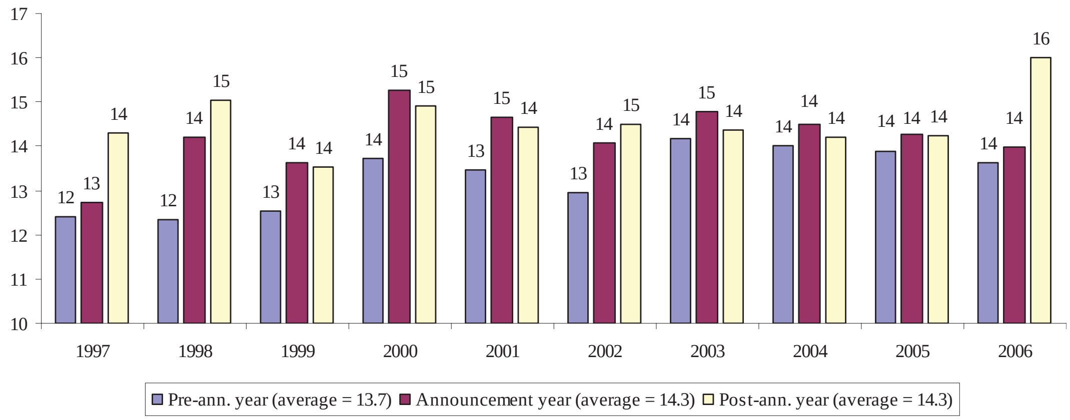
89 Statistical significance for averages is based on t-tests. Median significance is based on non-parametric Z-scores. Statistical significance is indicated for p-values < .10.

Appendix E: Restatements and Debt Ratings

Compustat's debt ratings are based on the Standard & Poor's rating system, which assigns lower numbers to companies assessed as better credit risks. The highest ranking, AAA, is coded "2" by Compustat. The lowest ranking, D, is coded "27." This is applied when payment is in default. Rankings of BBB and better are considered investment grade. BBB corresponds with an "11" in the Compustat ratings code.

For restating companies with financial data, analyzed in Section IV, announcement year debt rankings are available for 1,283 restating companies (26% of 4,923). Of these, ratings are available for 1,188 the year before the announcement and 957 the year after the announcement. The average rating for the year prior to, of and after the restatement announcement is shown across the study years in the figure below. Median, highest and lowest ratings for each year are provided in the table.

Average debt ratings in years surrounding restatements



Debt ratings around restatement years											
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Overall
Announcement year											
Number	12	24	61	39	85	133	174	224	316	218	1,286
Highest rating	AA	A+	AAA	A	AA-	AAA	AAA	AAA	AAA	AA-	AAA
Lowest rating	CCC	D	D	D	D	D	D	D	D	D	D
Average debt rating for years surrounding restatement											
Pre-announcement	12.4	12.4	12.5	13.7	13.5	13.0	14.2	14.0	13.9	13.6	13.7
Announcement year	12.7	14.2	13.6	15.3	14.7	14.1	14.8	14.5	14.3	14.0	14.3
Post-announcement	14.3	15.1	13.5	14.9	14.4	14.5	14.4	14.2	14.3	16.0	14.3
Median debt rating for years surrounding restatement											
Pre-announcement	13	12	12	14	14	14	14	15	15	15	14
Announcement	14	15	15	15	14	14	15	15	15	15	15
Post-announcement	14	15	15	15	14	15	15	15	15	16	15

Debt ratings for restating companies range from AAA to D. However for nearly half of the years, the highest rating for restating companies is only AA (5) to A (8). The lowest rating for restating companies every year except 1997 is D. Average and median debt ratings are in the BBB- (12) to B+ (16) range, below investment grade.

Debt ratings decline significantly around the time of a restatement announcement whether the change is measured between the pre-announcement and announcement years or the pre-announcement to post-announcement years. The average rating decreases .59 from the pre-announcement to the announcement year, a little more than half a rating category. The average rating decreases .79 between the pre-announcement and post-announcement years.[90]

In regression analysis, debt ratings are more likely to be lowered from the pre-announcement to post-announcement years if the restatement:

- involves fraud;
- affects a shorter time period;
- affects revenue or core expenses; and
- generates a negative announcement return.

Results are similar if rating changes are measured from the pre-restatement announcement to the end of the announcement year, except the length of the restated period and core expenses are not associated with lowered ratings.

For restating company characteristics, rating reductions are associated with:

- large companies;
- less profitable companies; and
- companies with share prices less than $5.00.[91]

In summary, debt ratings worsen around the time of a restatement. As many restating companies are otherwise troubled and often unprofitable, it is not clear that a restatement itself is a reason for a downgrade. However, downgrades are associated with restatement characteristics that are also often associated with more negative stock returns; this suggests that the ratings agencies may be sensitive to similar issues.[92]

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90 Paired t-tests require data for both years. These results are based on 1,188 and 896 pairs, respectively (t-statistic p-values < .001.) Market-based regression model variables are available for some companies, and post-announcement year ratings are not yet available for 2006 announcements. Therefore, regression results are based on samples of 909 and 692 observations.

91 Both models are significant (F-statistic > 5.0, p-values < .001, adjusted-R^2 > .14). The models include year indicators to control for economic conditions. Adding industry variables does not change these results.

92 This analysis focuses on restatement effects on public debt ratings. For a study of restatement effects on private loans during the early years of this study, see John R. Graham, Si Li and Jiaping Qui, *Corporate Misreporting and Bank Loan Contracting*, JOURNAL OF FINANCIAL ECONOMICS (forthcoming).

Appendix F: Limited Analysis of SEC Staff Accounting Bulletin No. 99: Materiality and Net Income Effects

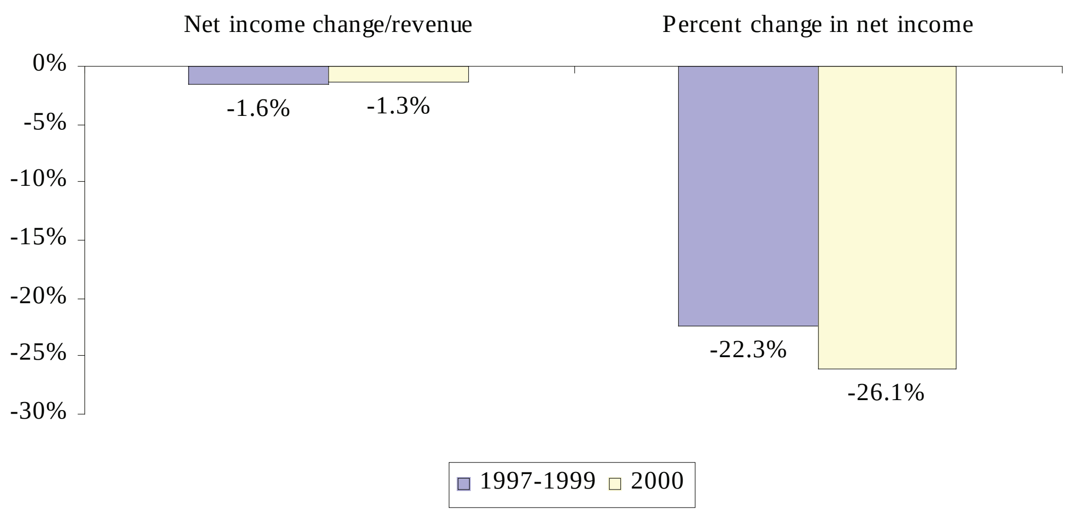
The SEC issued Staff Accounting Bulletin 99 (SAB 99) in August 1999, which emphasized that materiality considerations should include qualitative as well as quantitative factors.[93] SAB 99 may have led to an increase in restatements if it caused companies and auditors to begin formally restating errors that otherwise did not meet assessed quantitative materiality thresholds. That is, to the degree SAB 99 expanded the number of misstatements deemed to be material, because of qualitative characteristics, the number of restatements would have increased. If these additional qualitative-based restatements affected reported income relatively less, the overall magnitude of income effects would likely decrease. Comparing changes from original to reported income pre- and post-SAB 99 provides some evidence regarding possible shifts in the magnitude of restatement income effects.

Information about the effect of restatements on net income is unavailable for a meaningful percentage of restatements past 2000, but data from 1997-2000 is presented here to provide a limited analysis. Pre-SAB 99 (1997-1999), the change from originally reported to restated net income is available for 340 restating companies. For 2000, it is available for 185 restating companies.[94]

Two measures of the change in reported income are compared pre- and post-SAB 99 in the figure below. The first measure is the change from original to restated net income divided by company revenue (change in profit margin). The second is the percentage change in net income. Medians of both these measures are shown.

In the pre-SAB 99 period, the median restatement effect on profit margin is -1.6%. This is slightly reduced in 2000, when the median is -1.3%. On the other hand, the median effect on the percentage change in net income became larger in 2000, as the median increased from -22% to -26%.

Median Changes in Net Income Pre- and Post-SAB 99



93 SEC, *Staff Accounting Bulletin: No. 99 – Materiality* (Aug. 12, 1999), available at http://www.sec.gov/interps/account/sab99.htm.

94 These include only non-IPR&D restatements. As discussed previously, a number of 1999 restatements were to reduce amounts previously written off as IPR&D allocations. These restatements uniformly *increased* previously reported income. If IPR&D restatements are included, the pre-SAB 99 percentage change in net income is -12% instead of -22%.

Medians are presented in the figure because the influence of extreme values on the averages makes medians a preferable statistic for evaluating these effects. However, averages for both of the income change measures are also provided in the table below. Showing patterns opposite to the analysis of medians, the average profit margin change grows much larger post-SAB 99, but the average percent change in net income is smaller. However, none of these differences is statistically significant.

Changes in restatement effects on net income pre- to post-SAB 99

	Change in net income / revenues		Percent change in net income	
	Median	Average	Median	Average
1997-1999	-1.6%	-17%	-22%	-191%
2000	-1.3%	-128%	-26%	-102%

Overall, this limited analysis does not indicate any consistent effect of SAB 99 on the magnitude of the income effects of restatements in the year following SAB 99's issuance.

Appendix G: Restatements with Most Negative Announcement Returns in Each Year

	Restatement facts:										*Share prices and returns:*				*Other:*			
	Industry Group	No. of Restates	Date Ann.	Years Restated	Original NI ($M)	Restated NI ($M)	Percent Change	Income to loss	Discovered by	Acct'ing Issues	Price Day -1 ($)	Mkt-adj Ann Return	Price Day +5 ($)	Mkt-adj Longer Returns	Fraud	Litigate	Ch.11/ Delist	Other News
1997																		
Health Management, Inc.	Whls/Retl	1	17-Mar	.50	-10.2	-12.8	-26%			2	0.97	-80%	0.34	-45%		yes		1 2
Unison Healthcare	Service	1	11-Mar	.75	0.1	-10.7	<-1,000%	yes	auditor	1 2 3	9.63	-59%	3.75	-136%	yes	yes*	yes	2
First Merchants Acceptance	Finance	1	16-Apr	1.00	10.5	4.0	-62%		company	1 2	7.00	-56%	3.00	-22%	yes	yes*	yes	1 2 3
NUKO Information System	Manuf	2	20-May	.75	-8.0	-9.0	-12%		auditor	2	6.63	-39%	4.44	-112%		yes	yes	
Pegasystems	Tech	4	29-Oct	.25	2.2	-0.9	-139%	yes	auditor	1	28.00	-35%	20.13	-44%		yes		2
Fine Host	Whls/Retl	1	12-Dec	3.75	11.1	-16.4	-248%	yes	company	1 2 3	15.50	-34%	.	-55%	yes	yes*	yes	
Insignia Solutions	Tech	1	27-Feb	.50	2.2	0.3	-84%			1	3.88	-30%	2.38	-79%	yes	yes		1
Craig Consumer Electronics	Manuf	1	10-Mar	1.50	0.8	-0.3	-138%	yes	auditor	2	3.38	-26%	1.38	-90%	yes	yes*	yes	1
Photran Corporation	Manuf	2	24-Mar	.75	0.4	-1.0	-358%	yes		1 2 3	2.63	-25%	2.25	102%	yes	yes*	yes	3
Universal Seismic	Ag, Constr	2	16-May	.50	0.7	-0.1	-108%	yes	company	1 2	2.63	-24%	1.75	-68%		yes	yes	1
1998																		
CyberGuard	Tech	3	24-Aug	1.75	-18.4	-27.2	-48%		auditor	1 2	6.19	-92%	1.13	27%	yes	yes	yes	3 4 5
Physician Computer	Tech	1	3-Mar	3.75	26.9	-34.1	-227%	yes	auditor	1 2 3	4.25	-72%	1.47	21%	yes	yes*	yes	1 3
Digital Lightwave	Tech	2	22-Jan	.50	2.1	-4.5	-310%	yes	company	1	13.00	-70%	3.88	-47%	yes	yes		1
Telxon	Tech	1	11-Dec	3.50	10.9	-6.5	-160%	yes	auditor	1 2 3	27.25	-54%	12.75	-21%	yes	yes*		1
Data Systems Network	Tech	1	24-Feb	1.75	2.1	-4.1	-293%	yes	company	1 2	13.13	-53%	6.06	-67%	yes	yes	yes	1 5
Texfi	Manuf	1	16-Jun	1.25	0.4	-4.1	<-1,000%	yes	regulator	3	2.19	-52%	1.31	-74%			yes	
Vesta Insurance	Finance	2	1-Jun	3.25	109.7	86.8	-21%		company	1 2	52.00	-46%	.	.	yes	yes*		3
Raster Graphics	Tech	1	3-Feb	.75	3.2	-6.7	-311%	yes	auditor	1 2	4.56	-45%	2.88	-72%	yes	yes		1
Smartalk Teleservices	Comm	2	10-Aug	1.50	-63.1	-67.3	-7%		auditor	1	15.00	-43%	8.25	-90%	yes	yes*	yes	2
Norland Medical System	Manuf	1	16-Mar	1.75	-11.8	-14.0	-19%		company	1	7.06	-42%	3.75	-69%		yes	yes	
1999																		
Smartalk Teleservices	Comm	2	7-Jan	.25	-22.5	-28.3	-26%		company	1 2	3.25	-81%	2.41	68%		yes*	yes	5
Inso Corp (EBT International)	Tech	1	1-Feb	.75	5.6	2.5	-56%		company	1	25.00	-76%	8.38	-3%	yes	yes	yes	1
Pacific Research and Engineering	Manuf	1	29-Mar	2.75	0.3	-2.6	<-1,000%	yes		1 2	1.56	-74%	0.75	257%				1 5
American Bank Note Holographic	Manuf	1	19-Jan	2.75	19.2	10.3	-46%		auditor	1	15.06	-70%	1.81	-67%	yes	yes*		
Navigant Consulting	Service	1	22-Nov	.75	43.8	26.5	-39%		auditor	2 3	26.00	-67%	10.63	-77%		yes		5
Total Renal Care	Service	2	17-Feb	3.75	53.3	39.4	-26%		regulator	2 3	20.63	-55%	8.63	-120%		yes		1
NutraMax Products	Manuf	1	18-Aug	1.00	-2.9	*	.		auditor	2	4.75	-55%	2.03	-37%		yes*	yes	2
McKesson/HBOC	Whls/Retl	1	28-Apr	2.75	232.9	73.9	-68%		auditor	1	65.75	-52%	35.44	-88%	yes	yes*		1
Engineering Animation	Tech	2	1-Oct	.25	-9.8	-13.9	-42%		company	1	15.81	-41%	10.44	14%	yes	yes		1 3
Plains All American Pipeline	Trans	2	29-Nov	1.75	46.7	73.3	-257%	yes	company	3	19.50	-41%	11.81	82%		yes		1 5
2000																		
Rent-Way, Inc.	Service	2	30-Oct	2.75	12.8	-6.6	-151%	yes	company	2 3	23.44	-79%	5.69	17%	yes	yes*		1 3
MicroStrategy	Tech	1	20-Mar	2.75	15.2	-19.7	-230%	yes	auditor	1	226.75	-76%	113.00	-83%	yes	yes*		
HomeSeekers.com, Inc.	Tech	2	6-Oct	.50	-10.1	-10.5	-4%			1	2.13	-72%	1.00	-2%			yes	
Stone & Webster	Service	1	30-Apr	1.00	-28.8	-48.1	-67%		company	2	13.19	-60%	3.38	-17%		yes*	yes	1 5
Nhancement Technologies	Tech	2	19-Dec	.75	-3.1	-5.3	-70%		auditor	1 2 3	9.91	-56%	4.44	-86%				1
Aurora Foods	Manuf	2	18-Feb	1.75	-18.4	-68.6	-272%		auditor	1 2	7.31	-53%	3.00	21%	yes	yes		
Interspeed, Inc.	Tech	1	6-Oct	.75	-8.6	-12.0	-40%		company	1	3.84	-52%	1.34	-68%	yes	yes	yes	1 3
Quintus Corporation	Tech	1	15-Nov	1.25	-27.1	.	.		auditor	1	6.00	-51%	.	.	yes	yes*	yes	1 2
Legato	Tech	1	19-Jan	.75	16.1	3.1	-81%		company	1	54.63	-48%	28.44	-53%	yes	yes		1
FLIR Systems	Manuf	2	6-Mar	1.75	9.1	-10.0	-210%	yes		1 2	17.13	-45%	10.00	-7%	yes	yes*		1 3
2001																		
Critical Path	Tech	1	2-Feb	.25	-131.4	-139.4	-6%			1 2	10.06	-70%	.	-87%	yes	yes*		1
Sagent Technology	Tech	1	14-Nov	.50	-16.8	-17.5	-4%		company	1 2	1.39	-47%	0.81	-62%		yes*		
Jore Corporation	Manuf	1	1-Mar	1.75	3.3	-2.1	-164%	yes	company	2 3	3.63	-44%	2.06	-95%			yes	1
Covad Communications	Comm	2	16-Feb	.75	-433.6	-535.6	-24%		company	1 2	3.01	-39%	1.84	-72%		yes		1
Dollar General	Whls/Retl	2	30-Apr	2.75	536.0	440.4	-18%		auditor	2	23.88	-37%	16.10	-20%	yes	yes*		2
SRI Surgical Express	Service	1	27-Nov	.25	1.8	1.5	-15%		company	1	23.50	-34%	15.35	-68%	yes	yes		
NCI Building System	Manuf	1	12-Apr	2.25	101.8	91.8	-10%			2	18.09	-32%	9.89	53%	yes	yes		1
Infospace	Tech	1	13-Feb	1.75	-266.2	-262.5	2%			1 2 3	5.00	-27%	3.44	-70%		yes*		1
Lecroy	Manuf	1	15-May	1.50	-2.5	-2.5	0%		regulator	4	18.68	-23%	16.65	-20%				
Pre-Paid Legal Services, Inc.	Finance	1	16-May	3.00	112.8	44.8	-60%		regulator	1	19.00	-22%	16.51	50%		yes*		

			Restatement facts:								*Share prices and returns:*				*Other:*			
2002	Industry Group	No. of Restates	Date Ann.	Years Restated	Original NI ($M)	Restated NI ($M)	Percent Change	Income to loss	Discovered by	Acct'ing Issues	Price Day -1 ($)	Mkt-adj Ann Return	Price Day +5 ($)	Mkt-adj Longer Returns	Fraud	Litigate	Ch.11/ Delist	Other News
Worldcom	Comm	3	25-Jun	2.25	5,709.0	-64,979.0	-1000%	yes	company	1 2 3 4	0.83	-93%	0.09	.	yes	yes*	yes	
Metawave Communications	Manuf	1	14-Mar	.75	-58.6	-60.7	-4%		company	1 2 3 4	1.20	-80%	0.38	-92%		yes	yes	6
Peregrine Systems	Tech	2	6-May	2.75	-1,555.0	-2,318.8	-49%		auditor	1 2	2.57	-69%	1.58	-29%	yes	yes*	yes	
Enterasys Network	Tech	2	1-Feb	1.50	-954.6	-1,188.9	-25%		regulator	1 2 3	11.02	-61%	4.63	-58%	yes	yes		1 2 8
Annuity and Life Re	Finance	2	25-Jul	2.25	9.5	9.0	-6%		regulator	3	13.40	-55%	7.13	-144%		yes*		1
Corrpro Companies	Service	2	20-Mar	1.75	-3.0	-8.3	-174%		company	1 2 3	2.30	-52%	1.15	-47%	yes	yes		
Dynegy	Ag, Mine, Constr	2	25-Apr	3.00	1,301.0	1,033.0	-21%		regulator	2 3 4	27.30	-51%	15.08	-76%	yes	yes*		1
Gemstar-TV Guide International	Manuf	2	1-Apr	3.25	-939.4	-1,012.9	-8%			1 2 3	14.79	-40%	10.65	-60%	yes	yes*		1
Nicor	Util	2	18-Jul	.25	39.9	35.5	-11%			3	38.44	-38%	23.74	13%		yes		1
Pharmaceutical Resources	Biotech	2	19-Feb	4.00	11.7	16.4	40%		regulator	1 3	25.84	-38%	17.15	112%				
2003																		
ClearOne Communications	Manuf	2	15-Jan	2.25	13.7	-7.4	-154%	yes	regulator	1 2 3	3.96	-75%	.	.	yes	yes*	yes	3 7 8
Fleming Companies	Whls/Retl	1	28-Mar	1.75	29.3	-57.7	-297%	yes	regulator	2	1.14	-65%	.	.	yes	yes*	yes	1 3
BAM! Entertainment	Tech	1	29-Sep	.25	-13.4	-13.4	0%		company	4	2.24	-57%	1.51	-95%			yes	
Topaz Group	Manuf	1	20-Aug	.25	-0.4	-0.6	-42%		company	2	0.82	-44%	0.57	-39%		yes	yes	
Singing Machine Company	Manuf	1	27-Jun	.25	12.2	10.0	-18%			3	5.40	-40%	3.20	-128%				1 2
Aerosonic Corp	Manuf	2	17-Mar	4.75	2.4	1.0	-60%		company	1 2	15.12	-39%	10.01	-120%	yes	yes*		
Sportsline.Com	Tech	1	26-Sep	2.50	-131.6	-145.3	10%		auditor	1 2 3 4	1.76	-28%	1.25	12%		yes		1
AFC Enterprises	Whls/Retl	2	24-Mar	2.5	77.7	50.3	35%		company	1 2 3	18.04	-26%	13.46	-44%		yes*		
Elite Pharmaceuticals	Biotech	1	15-Jul	2.00	-15.7	-15.7	0%			4	3.60	-26%	2.43	-48%				
BearingPoint	Service	2	14-Aug	.75	44.0	31.0	-29%			1 2 3	10.31	-26%	8.48	-23%		yes		1
2004																		
Tripath Technology, Inc	Manuf	1	22-Oct	.25	-1.9	-2.6	-40%		auditor	1	1.58	-53%	1.29	-50%	yes	yes	yes	4
Global Crossing	Comm	3	27-Apr	1.00	-107.0	-174.0	63%		company	2	18.20	-48%	7.93	-14%		yes		
AaiPharma	Service	2	1-Mar	1.75	41.4	4.7	-89%		company	1 2	15.28	-36%	10.00	-92%		yes*	yes	
Intelligroup	Tech	2	24-Sep	3.25	-27.2	-34.1	-26%		company	1 2 3 4	1.73	-35%	1.78	-13%		yes	yes	5
OmniVision Technologies	Manuf	1	9-Jun	.75	35.2	37.9	8%		company	1	25.47	-33%	15.31	-22%		yes		1
StonePath Group	Trans	4	21-Sep	1.50	-8.2	-24.9	-204%		company	1 2	1.59	-29%	0.86	-21%		yes		
Asconi Corporation	Manuf	1	23-Mar	1.75	3.0	-37.7	>1000%	yes	regulator	3	6.64	-26%	.	-65%		yes	yes	8
Autobytel	Tech	1	21-Oct	2.50	-10.0	-13.1	-31%			1 2 3 4	8.75	-23%	6.65	-48%		yes		1
Sourcecorp	Tech	1	27-Oct	3.50	82.9	67.3	-19%		company	1 2	22.21	-23%	17.09	15%		yes		
Quality Distribution	Trans	1	30-Apr	5.75	-109.4	-124.4	-14%		company	2	19.98	-22%	15.01	-60%	yes	yes		1
2005																		
Orthodontic Centers of America	Service	2	7-Jun	.75	-68.7	^	.		company	1 2 3 4	4.03	-64%	1.44	-52%	yes	yes	yes	2 3 5
Anchor Glass Container	Manuf	2	5-Aug	4.25	-179.5	-188.9^	-5%			1	0.45	-48%	0.16	-45%		yes*	yes	9
Napster	Tech	2	11-May	.25	12.8	12.8	0%			4	6.35	-41%	3.88	-27%				1
Aaipharma	Service	2	15-Apr	.25	-33.8	-36.0	-6%		company	1	0.63	-38%	.	.		yes*	yes	9
America Service Group	Service	2	24-Oct	4.50	-5.2	-7.2	-40%			1 2	18.16	-32%	15.43	2%	yes	yes		
City Network	Service	1	28-Sep	.50	-1.1	-1.1	0%		auditor	4	0.21	-32%	0.18	-26%			yes	
Collins & Aikman	Manuf	3	17-Mar	.75	-108.6	-120.6^	11%		company	1 2	1.63	-31%	1.36	-28%	yes	yes*	yes	1
Continucare	Service	1	13-May	1.50	9.7	8.3	15%			1 2	3.14	-26%	2.40	-12%				1
ParmaNet Development Group	Service	1	3-Nov	.50	12.6	12.1	-4%			1	37.89	-25%	30.70	-45%				
Hi Shear Technology	Manuf	1	14-Apr	.50	1.2	0.9	-27%			3	4.85	-21%	3.51	69%				
2006																		
Sea Containers Ltd.	Trans	1	24-Mar	.75	-58.5	-65.2^	-11%			3	12.06	-50%	7.21	-82%		yes	yes	5 6
Simclar	Manuf	1	15-Aug	1.25	2.0	1.5	-26%			1 2	8.92	-38%	5.31	-9%				2
Astea International	Tech	1	31-Mar	.75	2.7	2.5	-9%		company	2	16.50	-31%	9.78	-49%		yes		1
Caraustar Industries	Manuf	1	3-Nov	.50	72.4	64.021	-12%			3	10.11	-30%	7.19	7%				
Vitesse Semiconductor	Manuf	1	26-Apr	3.25	-341.1	^	.			1 2	2.53	-28%	1.84	-26%	yes	yes*	yes	
Par Pharmaceutical	Biotech	2	5-Jul	5.25	285.3	231.8	-19%		company	1 2 3 4	18.75	-28%	14.32	55%		yes		
GMH Communities Trust	Finance	1	13-Mar	.75	5.1	2.2	-56%		company	1 2 3	16.83	-28%	11.55	-23%		yes		1 5
Tag It Pacific	Manuf	1	3-Apr	.50	-23.3	-24.4	-5%			1	0.81	-25%	0.62	59%			yes	
Infosonics	Comm	2	9-Jun	.25	1.7	1.2	-32%			3	23.60	-24%	15.49	-58%		yes		
WJ communications	Manuf	1	2-Nov	.50	-3.8	-4.3	-15%			2	2.33	-22%	1.96	-.20%				6

Notes and definitions:

Industry group	See Appendix B for industry definitions.
No. of restates	Total number of restatements announced by the company during the study period.
Date Ann.	Date restatement is announced.
Years restated	Number of years restated, where one quarter = .25.
Original NI	Originally reported net income summed over all restated periods.
Restated NI	Restated net income summed over all restated periods. * indicates company did not file amended reports; if an amount is provided, it is estimated from press announcements.
Percent change	Percent change from originally reported to restated net income. Truncated at -1,000%.
Income to loss	"Yes" means originally reported net income changed to a restated net loss. Blank means it did not.
Discovered by	"Auditor" means the misstatement/need for a restatement is discovered by the auditor in press releases or filings. Company means company management.Regulator usually means the SEC.
Acc'ting Issues	Revenue affected = 1, core expenses = 2, non-core expenses = 3, reclassifications and disclosure = 4. See Appendix A for further detail.
Price Day -1	Stock price at close of trading on the day prior to restatement announcement.
Mkt-adj ann return	Market-adjusted return summed over announcement day and day following announcement.
Price Day +5	Stock price at close of trading five days after announcement.
Mkt-adj longer returns	Buy and hold market-adjusted returns for the year following the announcement, or until delisting.
Fraud	"Yes" means an AAER was issued, the company admitted to fraud or irregularities or officers were indicted. Blank means none of these were found.
Litigate	"Yes" means the company was sued over this restatements. "*" means the auditor was sued too. Blank if no litigation.
Ch.11/Delist	"Yes" means the company either filed for bankruptcy or was delisted in the following year or two. Blank if not.
Other news	News announced on the same day as the restatement:1: earnings-related information, 2: filing delayed, 3: executives terminated or suspended, 4: auditor resigned dismissed, 5: financing needed/covenant violations, 6: restructuring, 7: going concern likely 8: SEC investigating, 9: Bankruptcy or delisting.

Additional 2001-2002 notes:

Enron return at November 8 restatement announcement date is -5%.
Adelphia return at April 16 restatement announcement date is -6%.
Global Crossing in Chapter 11 by restatement announcement on October 21.

^ Company had not filed amended results at the time of this study. Any amount is estimated from press releases or 8-K reports.

VII. ACKNOWLEDGMENTS

These colleagues provided careful critiques and thoughtful comments on the analyses and exposition of this study. I appreciate their considerable time and efforts greatly. In particular, Bill Kinney commented on several drafts. Any remaining errors and infelicities are my own.

Joseph V. Carcello, Ph.D., CPA, CMA, CIA
Ernst & Young Professor and Director of Research - Corporate Governance Center
College of Business Administration
University of Tennessee

Mark DeFond
Joseph A. DeBell Professor of Business Administration
Leventhal School of Accounting
Marshall School of Business
University of Southern California

William Kinney
Charles & Elizabeth Prothro Regents Chair in Business and Price Waterhouse Fellow in Auditing
McCombs School of Business
University of Texas

Mark Nelson
Eleanora and George Landew Professor of Management and Professor of Accounting
Johnson Graduate School of Management
Cornell University