The Cost to Firms of Cooking the Books

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Abstract

We examine the penalties imposed on the 585 firms targeted by SEC enforcement actions for financial misrepresentation from 1978–2002, which we track through November 15, 2005. The penalties imposed on firms through the legal system average only $23.5 million per firm. The penalties imposed by the market, in contrast, are huge. Our point estimate of the reputational penalty—which we define as the expected loss in the present value of future cash flows due to lower sales and higher contracting and financing costs—is over 7.5 times the sum of all penalties imposed through the legal and regulatory system. For each dollar that a firm misleadingly inflates its market value, on average, it loses this dollar when its misconduct is revealed, plus an additional $3.08. Of this additional loss, $0.36 is due to expected legal penalties and $2.71 is due to lost reputation. In firms that survive the enforcement process, lost reputation is even greater at $3.83. In the cross section, the reputation loss is positively related to measures of the firm's reliance on implicit contracts. This evidence belies a widespread belief that financial misrepresentation is disciplined lightly. To the contrary, reputation losses impose substantial penalties for cooking the books.

I. Introduction

What happens to firms when their managers cook the financial books? Too little, according to conventional wisdom. "Where are the Indictments?" asked *Forbes* magazine about firms that misreport earnings.[1] Paul Volcker and Arthur

[1]D. Ackman, "Where are the Indictments?" Forbes, http://www.forbes.com/2002/07/08/0708topnews.html.

Levitt, Jr., argue that a "breakdown in corporate checks and balances" requires stiffer penalties to deter financial misrepresentation (Volcker and Levitt (2004)). Echoing these sentiments, Senator John McCain cited "...a climate of lax regulation" as the primary motive for the Sarbanes-Oxley Act of 2002.[2]

The view that financial misconduct is punished lightly has a large effect on public policy. It has helped motivate new investigations into the investment banking and mutual fund industries, as well as potential changes in corporate voting rules and the regulation of hedge funds.[3] There is, however, little evidence on the penalties meted out for financial misconduct. This paper seeks to fill this gap by measuring the losses borne by shareholders of firms caught cooking the books. Along with a companion paper (Karpoff, Lee, and Martin (2008a)), we introduce a comprehensive data set of administrative, civil, and criminal penalties for all firms charged by the Securities and Exchange Commission with financial misrepresentation. This paper uses data from all 585 SEC enforcement actions initiated from 1978 through 2002, which we track through November 15, 2005.

We find that fines or civil settlements are imposed on firms in 231 of these 585 cases, and sometimes these penalties are large. But the largest monetary penalties are not imposed by regulators or courts. Rather, they are imposed by the market. On average, firms lose 38% of their market values when news of their misconduct is reported. We estimate that 24.5% of these losses reflects the market adjusting to a more accurate representation of firms' financial situations. This is the adjustment to the "true" firm value if managers had not cooked the firm's books. Another 8.8% reflects the expectation of legal penalties, including SEC and Department of Justice (DOJ) fines and settlements of securities class-action lawsuits. The remaining 66.6% is what Karpoff and Lott (1993) label lost reputation. This is the decrease in present value of the firm's cash flows as investors, customers, and suppliers are expected to change the terms of trade with which they do business with the firm. The reputation loss exceeds the legal penalty by over 7.5 times, and it exceeds the amount by which firm value was artificially inflated by more than 2.5 times.

To measure reputation loss, we use an empirical procedure similar to that pioneered by Peltzman (1981) and used in examinations of product recalls (Jarrell and Peltzman (1985)), defense procurement fraud (Karpoff, Lee, and Vendrzyk (1999)), and environmental violations (Karpoff, Lott, and Wehrly (2005)). But we adjust this procedure to provide an explicit measure of the loss in firm value that occurs when investors find out the firm's financial statements previously were inflated. That is, we avoid overstating the reputation loss by taking into account how news of financial misconduct forces a revaluation closer to the "true" value had the firm not cooked its books in the first place.

Our investigation is related to previous research on the share value impacts of news that firms were mentioned in Accounting and Auditing Enforcement Releases (AAERs), had to restate earnings, or were sued by investors.[4] It also is

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[2]*The New York Times*, July 8, 2002.

[3]For example, see http://www.sec.gov/rules/proposed/34-48626.htm.

[4]See Feroz, Park, and Pastena (1991), Dechow, Hutton, and, Sloan (1996), Gerety and Lehn (1997), Bonner, Palmrose, and Young (1998), Beneish (1999), Palmrose, Richardson, and Scholz (2004), DuCharme, Malatesta, and Sefcik (2004), and Gande and Lewis (2009).

related to research on the legal penalties imposed on firms for various types of misconduct (see Cohen (1992)). But, to our knowledge, this paper presents the first large sample examination of both market and legal penalties imposed on firms for financial reporting violations. Our sample differs from those used in prior research. AAERs, restatements, and class action lawsuits frequently serve as indicators of financial misrepresentation, but not always. Furthermore, not all misrepresentations trigger an AAER, restatement, or class action lawsuit. Below, we report that only 56% of the regulatory events in our sample have an associated AAER designation, and 39% of the enforcement actions have an associated class action lawsuit. Focusing on SEC and DOJ actions to discipline financial misrepresentation therefore yields a clean sample of cases in which firms misrepresented their financial statements. The large sample also allows us to examine the cross-sectional determinants of reputational penalties. Consistent with arguments made by Klein and Leffler (1981) and Landes and Posner (1987), the reputation loss is positively related to measures of a firm's reliance on implicit contracts. Weaker evidence indicates that the reputation loss is larger for firms in financial distress or that rely on debt financing.

These findings have several implications for business and public policy. They provide an empirical measure of one cost of overvalued equity. Jensen (2005) argues that managers sometimes engage in value-destroying activities to prop up overvalued shares. Our evidence documents that one such activity—cooking the books—can indeed be extremely costly. Shareholders of firms caught misrepresenting their financial records lose real value that far exceeds any temporary gain from the deception.

The scale of these shareholder losses could increase corporate directors' personal liability for their firms' financial malfeasance. Currently, directors of Delaware corporations can be held personally liable if their firms do not comply with the law because non-compliance exposes shareholders to large legal penalties.[5] Our evidence, however, indicates that legal penalties are only a small portion of the total cost. Including the reputation loss dramatically increases the measurable cost to shareholders if firms do not comply with financial reporting rules.

Our results also contribute to the debate over federal regulation of financial misconduct. On one hand, our results bolster criticism of the parts of the Sarbanes-Oxley Act of 2002 that increased legal penalties for financial misconduct.[6] This is because we document large penalties for financial misrepresentation even under pre-Sarbanes-Oxley rules. On the other hand, our results reflect only the penalties incurred by firms that are caught cooking their books. In Section II, we provide a rough measure of the probability of detection, but in the absence of solid information about the apprehension rate—information that to our knowledge does not exist—we cannot make strong assertions about the optimal sizes of

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[5]This standard was established in the 1995 Caremark case. See 698 A.2d 959 (Court of Chancery of Delaware, Caremark International Inc. derivative litigation consolidated civil action no. 13670). For an analysis of the Caremark decision, see Elson and Gyves (2004). Agrawal, Jaffe, and Karpoff (1999) and Helland (2006) find little evidence that directors bear reputation losses for being associated with a firm that is targeted by class-action suits for fraud, but Fich and Shivdasani (2006) conclude that outside directors in these firms lose seats at other firms.

[6]See, e.g., the Committee on Capital Markets Regulation Report, November 30, 2006, available at http://www.capmktsreg.org/index.html.

legal penalties for financial misrepresentation. The most important conclusion we can make from our results is that it is a mistake to consider only prospective legal penalties in making business decisions or setting public policy because most of the financial penalty for cooking the books comes from lost reputation.

This paper is organized as follows. Section II describes the universe of enforcement actions for financial misrepresentation from 1978 through 2002, and Section III describes the enforcement process. Section IV reports on the share value losses when firms are subject to enforcement actions. In Sections V through VII, we examine the portions of the loss that can be attributed to legal penalties, the adjustment to accurate financial information, and reputation loss. In Section VIII, we examine the cross section of reputation penalties. Section IX examines the robustness of our central results, and Section X concludes.

II. Data Description

Our sample consists of all enforcement actions initiated by the SEC and the DOJ from 1978 through December 2002 for violation of one or more of three provisions of the Securities and Exchange Act of 1934 as amended by the Foreign Corrupt Practices Act of 1977: i) 15 USC §§ 78m(b)(2)(A), which requires firms to keep and maintain books and records that accurately reflect all transactions, ii) 15 USC §§ 78m(b)(2)(B), which requires firms to devise and maintain a system of internal accounting controls, and iii) 15 USC §§ 78m(b)(5)), which establishes that no person shall knowingly circumvent or knowingly fail to implement a system of internal accounting controls or knowingly falsify any book, record, or account.[7]

Before 1978, federal powers to prosecute financial misrepresentation relied primarily on the anti-fraud provisions of the 1933 and 1934 Securities Acts. Enforcing these statutes proved difficult because they required proof of intent (scienter). The 1977 law bestowed the SEC with the power to prosecute financial misrepresentation without demonstrating intent, and all enforcement actions for financial misrepresentation since 1977 include charges under at least one of these three provisions. Therefore, our sample is the universe of federal enforcement actions for books and records and internal controls misrepresentation. Other possible screens to identify financial misrepresentation include the release of an AAER (see, e.g., Feroz, Park, and Pastena (1991), Bonner, Palmrose, and Young (1998)), and private class-action lawsuits (see, e.g., Gande and Lewis (2009)). Such screens capture some, but not all of the federal enforcement actions for financial misrepresentation. For example, 44% of the regulatory releases and 19% of the enforcement actions in our sample have no associated AAER.[8]

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[7]Several related provisions typically are violated at the same time, including two rules that were added to the Code of Federal Regulations to aid in enforcement of these provisions: 13b2-1 (17 CFR 240 13b2-1) and 13b2-2 (17 CFR 240 13b2-2). See Maher (1981) for a description of the 1977 law that introduced these provisions.

[8]An AAER is a secondary classification of an Administrative Release or a Litigation Release. The Commission announced the AAER series "to enable interested persons to easily distinguish enforcement releases involving accountants from other Commission releases" (Accounting and Auditing Enforcement Release No. AAER-1, 1982 SEC LEXIS 2565, May 17, 1982). While AAERs identify enforcement releases involving accountants, they neither identify enforcement releases in which ac-

Most (95%) of the enforcement actions in our sample incorporate other charges, including insider trading, civil and criminal fraud, racketeering, and tax evasion. We document all such charges, and also track all related class-action and derivative lawsuits connected with each enforcement action.

The data come primarily from the Lexis-Nexis FEDSEC:SECREL database library, which contains public releases on all SEC securities enforcement actions. Since September 19, 1995, these enforcement actions also have been posted on the SEC's Web site at http://www.sec.gov. The DOJ provided additional enforcement data that we supplemented by searching Lexis-Nexis' FEDSEC:CASES. Releases issued by the target firms pertaining to the enforcement actions and related class-action and derivative lawsuits were gathered from EDGAR and Lexis-Nexis' Academic Business News, Legal Research, and General News categories.

The SEC and the DOJ initiated a total of 585 enforcement actions from 1978 through 2002. Table 1 reports the sample distribution by the year of the first administrative, civil, or criminal charges against the firm. The number of enforcement actions has grown with time from an average of 7.6 per year from 1978–1984, to 16.4 per year from 1985–1993, and to 38.6 per year from 1994–2002. The 2002 spike in enforcement actions does not reflect the new prosecutorial powers bestowed by the July 30, 2002 ratification of the Sarbanes-Oxley Act. We examined the records of all completed cases in the sample and determined that none of the cases has implemented Sarbanes-Oxley powers. The sample includes two open cases in which the violation periods extend beyond Sarbanes-Oxley's ratification. It appears unlikely that the new powers will be invoked for either case because the violation period overlaps the ratification date by only one day in one case and by one month in the other.

The sample consists of firms that were caught violating books and records or internal control provisions. We do not have information on the number of firms that violate these provisions and do not get caught. Nevertheless, to provide some reference, Table 1 reports the number of firms that are listed on the CRSP database for each year of the sample. On average, the annual number of enforcement actions represents 0.32% of all CRSP-listed firms.

Table 1 also reports on the yearly numbers of firms that restate their earnings or assets as reported by Wu (2006). Aggregating over all years, the number of enforcement actions equals 40.2% of the number of firms restating their financial statements. Suppose for the moment that a restatement is a necessary and sufficient indicator of misconduct. Then, ignoring the non-synchronicity between enforcement actions and restatements, the implied probability is 40.2% that a misrepresentation will be apprehended. If one-half of the restatements are for legitimate purposes the implied apprehension rate is 80.4%. These are very rough estimates because many firms targeted for enforcement actions do not survive the enforcement process long enough to file restatements. Those that survive often disregard SEC directions to restate their financials.[9] Nonetheless, these compar-

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countants are not involved, nor do they identify enforcement releases by the DOJ. Many AAERs also involve enforcement releases that do not involve financial misrepresentation.

[9]The SEC Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002 reports that only "135 issuers in the 227 enforcement matters filed restatements that were related to conduct investigated in the enforcement matters" considered in that report.

TABLE 1

SEC and DOJ Enforcement Actions (1978–2002)

Annual distribution of SEC and DOJ enforcement actions for financial misrepresentation under 15 USC §§ 78m(b)(2) and (5). This represents the universe of enforcement actions for books and records and internal controls financial reporting violations. The column labeled CRSP Firms reports the total number of firms listed on NYSE/AMEX/NASDAQ in CRSP. Firms with Restatements reports the number of accounting restatements reported by Wu (2006).

Year	Enforcement Actions	CRSP Firms	% of CRSP Firms	Firms with Restatements	% of Restatements
1978	2	4,822	0.04%	2	100.00%
1979	4	4,782	0.08%	1	400.00%
1980	4	4,925	0.08%	5	80.00%
1981	10	5,328	0.19%	3	333.33%
1982	8	5,459	0.15%	6	133.33%
1983	12	6,055	0.20%	14	85.71%
1984	13	6,269	0.21%	41	31.71%
1985	17	6,258	0.27%	27	62.96%
1986	16	6,548	0.24%	30	53.33%
1987	35	7,108	0.49%	26	134.62%
1988	20	6,917	0.29%	32	62.50%
1989	19	6,748	0.28%	34	55.88%
1990	20	6,675	0.30%	32	62.50%
1991	17	6,736	0.25%	48	35.42%
1992	20	6,870	0.29%	50	40.00%
1993	21	7,600	0.28%	32	65.63%
1994	35	8,128	0.43%	56	62.50%
1995	33	8,348	0.40%	47	70.21%
1996	54	8,960	0.60%	58	93.10%
1997	38	9,041	0.42%	59	64.41%
1998	23	8,634	0.27%	96	23.96%
1999	31	8,300	0.37%	204	15.20%
2000	34	8,102	0.42%	153	22.22%
2001	39	7,410	0.53%	153	25.49%
2002	60	6,994	0.86%	246	24.39%
Total	585			1,455	40.21%

isons indicate that the number of firms caught by the SEC is a sizeable fraction of all firms that restate earnings, suggesting that the probability of getting caught for financial misrepresentation is not negligible.

Table 2 groups the sample by industry and firm size. Manufacturing firms comprise 48% of the sample. An additional 19% are in the services industry and 10% are in finance, insurance, and real estate followed by wholesale firms (6%), retail firms (5%), and transportation, communication, and utility service firms (4%).

The decile of the smallest firms experienced the most (65) enforcement actions. However, there is no statistically discernable tendency for the enforcement actions to be concentrated in either large or small firms. The average market value of equity of firms in the smallest decile is $3.4 million (median $2.4 million). For the 46 firms in the largest decile, the average is $16.3 billion (median $5.8 billion).

III.   The Enforcement Process

Figure 1 depicts the typical sequence of events surrounding a federal securities enforcement action.[10]   Given our interest in the cost to firms of cooking the books, we adopt the term enforcement action to signify the full sequence of related news events for the firm whose books are suspect. Enforcement actions commonly include a mixture of proceedings that may implicate the firm itself,

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[10]For more information, see SEC (1973), Lucas (1997), or Cox, Thomas, and Kiku (2003).

TABLE 2

Distribution of Enforcement Actions by Industry and Firm Size

Distribution of the 585 firms targeted for financial reporting enforcement actions brought under the Securities Exchange Act's books and records and internal controls provisions (15 USC §§ 78m(b)(2) and (5)) from 1978–2002, partitioned by the SIC-based industry and size decile of the firm at which the violation occurred. SIC codes are taken first from Compustat if available then from CRSP in the fiscal year at the end of the violation period identified in SEC proceedings. Size deciles are created using all firms in the CRSP database.

| 2-Digit SIC Brackets | Industry | Total Firms | Sized-Based Deciles | | | | | | | | | | Not Listed[†] |
| | | | Larger Firms | | | | | | | | Smaller Firms | | |
			10	9	8	7	6	5	4	3	2	1	
01–09	Agriculture, Forestry, & Fishing	1	–	–	1	–	–	–	–	–	–	–	–
10–14	Mining	17	1	–	–	2	1	2	1	2	3	3	2
15–17	Construction	11	–	–	1	2	1	4	–	–	1	2	–
20–39	Manufacturing	283	14	9	15	32	16	21	26	32	19	26	73
40–49	Transportation, Communication, & Utility Services	24	5	3	1	3	1	3	2	2	–	3	1
50–51	Wholesale Trade	36	2	1	3	3	2	3	2	5	6	7	2
52–59	Retail Trade	31	3	1	4	–	6	3	4	2	4	4	–
60–67	Finance, Insurance, & Real Estate	59	12	8	6	5	7	1	1	3	3	13	–
70–89	Services	113	9	10	8	14	12	9	9	11	16	7	8
	Unclassified	10	–	–	–	–	–	–	–	–	–	–	10
	Total	585	46	32	39	61	46	46	45	57	52	65	96

[†]Not listed in the CRSP database.

other affiliated firms, or individuals associated with the firm. The SEC publicly discloses these proceedings by filing administrative or litigation releases.

FIGURE 1

Timeline of an Enforcement Action
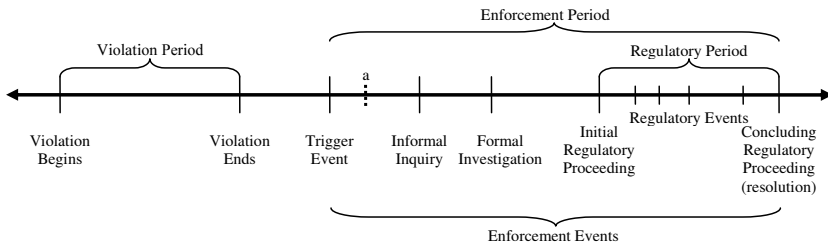
[a]The initial filing of a private lawsuit usually occurs soon after the trigger event.

Most enforcement actions follow a conspicuous announcement related to the firm that draws the SEC's scrutiny. Most such events, labeled trigger events, are firm-initiated disclosures of potential problems. Common trigger events include self-disclosures of malfeasance, restatements, auditor departures, and unusual trading. Investigations by other federal agencies such as the Department of Defense and the Environmental Protection Agency are other sources of trigger events along with delayed SEC filings, management departures, whistleblower charges, and routine reviews by the SEC. Our collection process backfills the trigger events based on references found in subsequent federal filings. Such filings identify specific trigger events and dates in 371, or 63.4%, of the enforcement actions.

Following a trigger event, the SEC gathers information through an informal inquiry that, if warranted, grows to a formal investigation. During the investigation period, the targeted firm may issue a press release indicating that it is the target of an SEC informal inquiry or formal investigation. We label such announcements as investigation events. There are 278 investigation events in our sample—80 informal inquiry announcements and 198 formal investigation announcements. Since some firms issue both types of announcements, the 278 investigation events cover 253 unique enforcement actions.

After an investigation, the SEC either drops the case or continues with administrative or civil litigation proceedings. Dropped cases are not reported and do not appear in the sample. Prior to filing civil litigation charges, the SEC sends the target a Wells Notice, indicating its intent to file charges and providing the target with a last chance to respond with a reason that civil charges should not be filed. If criminal behavior is suspected, the case may be referred to the DOJ. Some enforcement actions are resolved immediately upon the SEC's initial release of information about the case, but most actions unfold over multiple regulatory events. As indicated in Table 3, an average enforcement action involves 1.70 administrative releases, 2.06 filings of civil actions, and 0.56 filings of criminal actions. The total number of all administrative, civil, and criminal events is 2,532. Because some events occur on the same day, however, there are only 1,953 unique event days. Also as indicated in Table 3, 1,426 (56%) of the 2,532 regulatory releases receive secondary designations as AAERs. While 585 firms are targeted for cooked books in the sample, 199 additional affiliated companies (such as accounting firms and investment banks), and 2,381 individuals also are implicated. Administrative proceedings involve actions against 297 firms and 815 individuals. Civil proceedings named 429 firms and 1,730 individuals, and the DOJ brought 276 criminal proceedings implicating 41 firms and 558 individuals.[11]

Table 4 documents the complex nature of these enforcement actions. As described previously, there are three sections under which charges of financial misrepresentation can be brought. Section 13(b)(2)(A) (15 USC §§ 78m(b)(2)(A))—the books and records provision—requires companies subject to Exchange Act reporting requirements to keep books and records that accurately reflect corporate payments and transactions. Section 13(b)(2)(B) (15 USC §§ 78m(b)(2)(B))—the internal controls provision—requires firms to create and maintain internal controls that assure management's control over company assets. Most of the 585 enforcement actions (464) cite violations of both the books and records and the internal controls provisions. In addition, 186 enforcement actions cite violations of Section 13(b)(5) (15 USC §§ 78m(b)(5)), which requires that no person shall knowingly violate the other two provisions.

These financial reporting violations often are invoked in conjunction with other charges: 454 of the enforcement actions include fraud charges brought under the 1933 Securities Act or the 1934 Securities Exchange Act. Fraud is often linked to financial reporting violations because failure to keep accurate books and records frequently coincides with intent to deceive or manipulate, thus triggering charges of fraud. The targeted firm, or at least one related individual, faced civil

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[11]Karpoff, Lee, and Martin (2008a) document the legal penalties and labor market ramifications borne by individuals named as respondents in SEC and DOJ enforcement actions.

TABLE 3

Regulatory Events Stemming from Enforcement Actions

Description of the regulatory events for the 585 financial reporting enforcement actions under the Securities Exchange Act's books and records and internal controls provisions (15 USC §§ 78m(b)(2) and (5)). Administrative proceedings events refer to SEC actions through powers granted in several acts, most notably the 1933 and 1934 Securities Acts. Civil charge events refer to SEC filing of charges in federal district courts, and criminal charge events refer to DOJ filings of criminal charges in federal district or state courts. An SEC release receives a secondary designation as an AAER (Accounting and Auditing Enforcement Release) when the release involves an accountant. Many administrative proceedings, civil charge, and criminal charge events occur on the same days, so the 2,532 events occurred on 1,953 unique dates.

	N	Per Enforcement Action
Enforcement Actions	585	
Administrative proceedings/events	996	1.70
Civil charge events	1,208	2.06
Criminal charge events	328	0.56
Total regulatory events	2,532	4.33
AAERs issued	1,426	2.44
Other Affiliated Companies Implicated	199	0.34
Individuals Named	2,381	4.07
Respondents		
SEC administrative proceedings:		
Company	297	0.51
Individual	815	1.39
SEC litigation proceedings:		
Company	429	0.73
Individual	1,730	2.96
DOJ criminal proceedings:	276	0.47
Company	41	0.07
Individual defendants	558	0.95

fraud charges in 305 actions and 149 enforcement actions involved charges of criminal fraud. In 276 actions, fraud charges invoked sections 17(a) or (b) of the 1933 Securities Act and in 450 actions fraud charges invoked sections 10(a) or (b) of the 1934 Exchange Act.[12] Fraud charges under both the 1933 and 1934 Acts were invoked in 272 of the enforcement actions.

IV. Share Value Effects of Financial Misrepresentation Enforcement Actions

This section examines the valuation effects of financial reporting enforcement actions. In subsequent sections we use these results to investigate the composition of legal and reputational penalties imposed on firms for financial reporting violations.

A. Event Study Results

Table 5 reports the abnormal returns associated with the events illustrated in Figure 1, including the trigger, the investigation, and federal regulatory events. Investigation events are disclosures made by the firm, whereas regulatory events refer to actions taken by the SEC or the DOJ. Abnormal returns are calculated

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[12]Section 17 of the Securities Act prohibits fraudulent interstate transactions in connection with securities offerings. Section 10 of the Exchange Act prohibits the use of manipulative and deceptive devices to affect the purchase or sale in any security.

TABLE 4

Types of Charges in Financial Reporting Enforcement Actions

Incidence of the specific charges brought in the 585 enforcement actions for financial misrepresentation and accompanying fraud charges. Books and records charges are brought under powers enumerated in 15 USC §§ 78m(b)(2)(A) and 17 CFR 240 13b2-1. Internal controls charges are brought under 15 USC §§ 78m(b)(2)(B) and 17 CFR 240 13b2-2. Circumvention charges are brought under 15 USC §§ 78m(b)(5). Fraud charges are brought under 15 USC §§ 77q of the 1933 Securities Act and 15 USC §§ 78j the 1934 Securities Exchange Act.

Description	Count
Financial reporting provision cited:	
Books & records charges (no internal controls)	100
Internal controls charges (no books & records)	21
Both internal controls and books & records charges	464
Circumvention charges	186
Enforcement action categories:	
No fraud charges included	131
Fraud charges included	454
Civil fraud	305
Criminal fraud	149
Types of fraud charges brought under:	
1933 Securities Act	276
1934 Securities Exchange Act	450
1933 Securities Act only	4
1934 Securities Exchange Act only	178
Both Securities Acts	272

by subtracting the CRSP value-weighted index of all stocks from the raw return of the firm's equity. Parametric t-statistics for the mean abnormal returns are calculated from the cross-sectional standard error of abnormal returns. We report median abnormal returns as well as significance levels using the Mann-Whitney test.[13]

Some sample firms are never listed on CRSP and others are delisted during their enforcement period. Therefore, the number of returns is not uniform across all event dates. For the 585 enforcement actions, the first row in Panel A of Table 5 shows that we identified 371 trigger events and CRSP returns data are available for 328 of these firms. Similarly, the first row of Panel B shows that we identified 278 investigation events and 230 have returns data available. Row four of Panel B shows that the 585 enforcement actions prompted 1,953 unique dates with regulatory events and that 586 of these events have returns data available.

The sharp decline in the proportion of events with available returns reflects the sample's high delisting rate. As might be expected, the delisted firms tend to have the poorest stock performance during the whole enforcement period. Since we measure returns only on specific dates during the enforcement period and only for surviving firms, the estimates in Table 5 almost certainly understate the total valuation losses for an average firm in the sample. This is the first in a series of conservative measurement biases that serve to bolster our overall conclusion that the reputation loss is very large.

As reported in Panel A of Table 5, the mean abnormal one-day stock return for the 328 trigger events for which we have return data is −25.24%. Fully 98.5% of these abnormal returns are negative and both the t-statistic and the

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[13]Bhagat and Romano (2002a), (2002b) point out a number of advantages and potential problems in applying event study methods to legal procedures such as those in our analysis. Our application works well because we estimate abnormal returns for well-defined announcements on specific and well-defined dates.

TABLE 5

Abnormal Returns for Enforcement-Related Announcements

Average one-day market-adjusted returns for enforcement actions brought for financial misrepresentation. Announcement events are grouped by announcement type with abnormal returns calculated using the value-weighted CRSP index. Trigger events are identified in the federal proceedings. Informal inquiries are announcements made by a firm that a federal agency has requested information. Formal investigation announcements reveal that the firm has been notified that it is the target of a federal investigation of securities violations. Regulatory events are official administrative or litigation releases by the SEC or the DOJ. Resolution disclosures are releases that resolve the enforcement action. Class actions are separate announcements that refer to parallel private lawsuits. #Ann reports the number of unique announcement dates for each category; #w/Data is the number of announcement dates with returns data available on CRSP. %Neg is the percentage of negative abnormal returns. $P > |t|$ are p-values for parametric t-tests and $P > |s|$ are p-values for the rank sum test.

Type of Announcement	#Ann	#w/Data	%Neg	Mean	$P > |t|$	Median	$P > |s|$
Panel A. Trigger Events							
All Trigger Events	371	328	98.5%	−25.24%	<0.001	−17.57%	<0.001
Self-disclosures of accounting irregularity	194	179	98.3%	−25.52%	<0.001	−20.33%	<0.001
Restatements	53	47	100.0%	−23.88%	<0.001	−14.52%	<0.001
Auditor departures	33	23	100.0%	−34.24%	<0.001	−17.20%	<0.001
Unusual trading	6	5	100.0%	−41.20%	0.074	−33.17%	0.063
Other[a]	85	74	97.3%	−21.57%	<0.001	−11.90%	<0.001
Panel B. Combined Initial and Subsequent Announcements of Regulatory Involvement							
Investigation Events (announced by the firm)	278	230	97.4%	−14.41%	<0.001	−9.65%	<0.001
Informal inquiries	80	73	100.0%	−15.84%	<0.001	−8.80%	<0.001
Formal investigations	198	157	96.2%	−13.74%	<0.001	−10.65%	<0.001
All Regulatory Events	1,953	586	88.7%	−6.56%	<0.001	−2.76%	<0.001
Initial disclosures[b]	585	256	90.6%	−9.60%	<0.001	−3.43%	<0.001
Resolution disclosures[b]	525	194	85.1%	−4.90%	<0.001	−2.31%	<0.001
Resolution disclosure = initial disclosure	162	87	85.1%	−5.79%	0.002	−2.06%	<0.001
Resolution disclosure ≠ initial disclosure	363	107	85.1%	−4.18%	<0.001	−2.35%	<0.001
Class-Action Events	354	272	91.9%	−7.00%	<0.001	−4.14%	<0.001
Filings[c]	200	167	94.0%	−8.85%	<0.001	−5.27%	<0.001
Settlements[c]	154	105	88.6%	−4.04%	<0.001	−2.69%	<0.001
Panel C. Initial Announcements of Regulatory Involvement Only							
All Initial Announcements	585	323	96.0%	−13.09%	<0.001	−6.70%	<0.001
Initial announcement made by the firm (investigation events):							
Informal inquiries	80	73	100.0%	−15.84%	<0.001	−8.80%	<0.001
Formal investigations	173	133	96.2%	−13.20%	<0.001	−9.61%	<0.001
Initial announcement made through a federal regulatory event:							
Initial disclosure = resolution disclosure[d]	107	53	88.7%	−6.71%	0.023	−2.06%	<0.001
Initial disclosure ≠ resolution disclosure[d]	225	64	96.9%	−14.99%	0.002	−4.88%	<0.001

[a]Includes other federal investigations, delayed SEC filings, management departures, whistleblower events, periodic SEC reviews, revelation of false information, other specific accounting issues, and bribery.
[b]The means of −9.60% and −4.90% are significantly different at the 5% level.
[c]The means of −8.85% and −4.04% are significantly different at the 5% level.
[d]The means of −6.71% and −14.99% are significantly different at the 5% level.

Mann-Whitney rank sum test statistic are significant at the 0.001 level. Thus, trigger announcements that attract federal enforcement actions are significant events for shareholders. This point can be illustrated with examples from our sample. First Merchants Acceptance Corp.'s shares fell 51% when irregularities in the company's financial statements were disclosed. The company fired the president, announced a pending restatement, and initiated an internal investigation to determine the underlying cause of the accounting irregularities. Platinum Software's shares fell 64% when it announced the departure of four top officers and its simultaneous need to restate previously issued financial results.

Similar to these examples, more than half of all trigger events are accounting irregularities disclosed by the firm. But the market reacts similarly to trigger events whether or not they are this type of self-disclosure. Table 5 reports the abnormal returns associated with other common trigger events, including restatements, auditor departures, and unusual trading activity. The abnormal return for each subgroup is significantly negative.

Panel B of Table 5 reports a mean abnormal return of -14.41% for the 230 investigation events with returns data. Most (97.4%) of these abnormal returns are negative and both test statistics are highly significant at the 0.001 level. There is no discernable difference between market responses to announcements by the targeted firm of informal inquiries versus formal investigations.

The mean abnormal return is -6.56% for the 586 regulatory events with returns data. Most (88.7%) of these abnormal returns also are negative, and both the t-statistic and the Mann-Whitney rank sum test statistic are significant at the 0.001 level. The market reaction to the initial federal disclosure of an enforcement action (-9.60%) is significantly more negative than the reaction to a federal proceeding that resolves the enforcement action (-4.90%). (The p-value for the difference in means is 0.0001.)

As indicated in Figure 1, many enforcement actions are accompanied by class-action lawsuits filed by investors. Many class actions are filed soon after their associated trigger announcements, while others are filed much later, even after the federal disclosure of a resolution. The mean abnormal return of the 272 class-action announcements for which we have returns data is -7.00% (91.9% are negative). These results are similar to those reported by Gande and Lewis (2009), who also examine class-action lawsuits. As might be expected, filing announcements result in significantly larger losses (-8.85%) than settlement announcements (-4.04%).

Panel C of Table 5 reports on the market reaction to the initial revelation of potential or actual federal involvement. Overall, the mean reaction to the initial announcement of federal involvement is -13.09%. Such announcements can come from the firm (investigation events) or from the initial proceeding in the enforcement action. The market reacts similarly to initial disclosures made by the firm whether the disclosure is of an informal inquiry (-15.84%) or of a formal investigation (-13.20%). When the initial disclosure comes from the SEC or the DOJ and the matter is not immediately resolved, the mean share value change is -14.99%. However, when the initial disclosure comes from the SEC or the DOJ and the announcement indicates that the case has been resolved, the abnormal change in share value is only -6.71%. It seems likely that initial regulatory events that also resolve enforcement actions involve infractions that are less serious in scope, or that they leave investors less uncertain about future repercussions.

B.   The Total Valuation Effect

The results in Table 5 indicate that large share value losses stem from public disclosures that trigger or reveal an investigation. Further share value losses occur upon follow-up announcements that relate to the charges levied against the firm and the resolution of those charges. Our goal is to examine the reasons for these declines in value. We begin by cumulating the abnormal returns for all enforcement events associated with a single enforcement action. For each enforcement action, j, the cumulative abnormal return (CAR_j) is defined as:

$$CAR_j = \sum_{e=1}^{n_j} AR_{je},$$

where AR_{je} is the abnormal return of common stock for enforcement action j on enforcement event date e. Here, $e = 1$ is the initial event date of the enforcement action j and $e = n_j$ is the final event date.

Our rationale for this measure follows Bhagat and Romano (2002a), (2002b). Enforcement events convey information to the market about the violation and its cost to the firm. The trigger event simultaneously reveals the unfavorable information contained in the announcement and increases the likelihood that the firm will become the target of an SEC or DOJ enforcement action. The investigation announcement generally confirms suspicions and frequently reveals additional information about the firm's past and future earnings, asset values, and management. Similarly, additional information regarding the firm and the costs imposed on the firm are revealed during federal proceedings. CAR_j reflects the combination of all of these valuation impacts.

News about the violation and enforcement action may leak to the market outside of our specific enforcement event dates, suggesting that we could cumulate abnormal returns over the entire enforcement period. For two reasons, however, we cumulate abnormal returns just over our specific announcement dates. First, the average enforcement period exceeds 50 months. Focusing on identifiable event dates improves the signal-to-noise ratio of the measured abnormal returns. Second, including the full enforcement period would result in nearly 100% shareholder losses for many firms in the sample as 34% of the firms file bankruptcy during the study period. Our approach therefore yields conservative estimates of the total loss in share value and of reputation loss.

Returns data are available for at least one event date for 424 of the 585 sample firms. As reported in Table 6, the mean CAR_j for these 424 enforcement actions is −50.86% and the median is −30.56%. We convert the valuation effect to dollars by multiplying each AR_{je} by the firm's market capitalization one day before the announcement date e, then summing over event dates e for each firm. In dollar terms, the mean dollar loss is \$380.50 million and, aggregating over all firms, the total dollar loss is \$161.33 billion.

TABLE 6

Cumulative Abnormal Returns and Total Dollar Losses

Size of the valuation effect for firms undergoing federal enforcement actions for financial misrepresentation (charges under 15 USC§§ 78m(b)(2) and (5)). Panel A includes all firms with return data on the 2004 CRSP database for at least one enforcement event date. Panel B includes the subset of the firms in Panel A that also have data available from Compustat. Panel C includes only those firms in Panel B that survived the enforcement process as independent entities. Cumulative abnormal returns are calculated over all days for which the target firm was subject to a regulatory event. To transform the abnormal returns into dollar terms, each abnormal return is multiplied by the firm's market capitalization one day before the event day. The Total Dollar Loss is the sum of all dollar losses summed over all event days for a given firm.

	Mean	Median	Aggregate
Panel A. 424 Firms with Available Returns Data			
Cumulative Abnormal Return	−50.86%	−30.56%	
Total Dollar Loss (\$millions)	380.50	20.16	161,330.84
Panel B. 384 Firms Listed on CRSP and Compustat			
Cumulative Abnormal Return	−38.06%	−29.61%	
Total Dollar Loss (\$millions)	397.24	21.49	152,539.00
Panel C. 194 Firms that Survived the Enforcement Period			
Cumulative Abnormal Return	−34.43%	−24.84%	
Total Dollar Loss (\$millions)	591.75	34.21	114,799.40

In the tests that follow, we partition the total loss into components, and rely on Compustat data on the firms' asset write-offs. Compustat data are available for 384 of the 424 firms listed in Panel A of Table 6. As reported in Panel B, the mean CAR_j for these 384 firms is −38.06% and the median is −29.61%. The mean dollar loss is $397.24 million and, aggregating over all firms, the total dollar loss is $152.54 billion.

Maksimovic and Titman (1991) argue that managers may commit fraud when their firms are in financial distress. This raises the possibility that the share value declines we measure are contaminated by news that some of the sample firms were not financially viable in the first place. Our empirical procedure largely avoids this problem by measuring abnormal returns only on dates related to specific enforcement activities, rather than over an extended holding period. But as a further sensitivity test we reestimate all of our results for the subsample of 194 firms that survive the enforcement process. As reported in Panel C of Table 6, the CAR_j for these 194 firms is −34.43% and the median is −24.84%. Firms that survive are, in general, larger than their non-surviving counterparts. So the mean dollar loss of $591.75 million is larger than in Panel B. Summing over all 194 firms that survived their enforcement periods, the aggregate dollar loss attributable to news of financial misrepresentation is $114.80 billion.

V.   Legal Penalties Imposed on Firms

Share values can decrease as investors anticipate that the targeted firm will receive non-monetary sanctions or will have to pay fines, penalties, and court settlements related to the charges of financial misconduct. To estimate the importance of such legal penalties, we collected data on all types of penalties imposed on firms by regulators or through class-action lawsuits through November 15, 2005, when 550 of the 585 sample enforcement actions were complete.[14]

Table 7 summarizes both the non-monetary and monetary legal penalties. Panel A shows that non-monetary sanctions are common. A total of 801 non-monetary sanctions were assessed against the 585 targeted firms. Most (90.6%) of the 801 non-monetary actions were cease-and-desist orders or permanent injunctions—actions that appear to impose extremely small penalties.

Monetary penalties are less common. Only 47, or 8%, of the 585 firms were assessed monetary penalties by regulatory agencies. The mean fine is $106.98 million, but this drops to $59.8 million if we exclude a $2.28 billion fine levied against WorldCom Inc. in July 2003 for overstating its income by a cumulative amount of $7.2 billion. (The WorldCom Inc. fine subsequently was reduced to $750 million.)

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[14]There is debate over whether legal penalties ever should be imposed on firms (i.e., shareholders), instead of solely on individual managers (see, e.g., Arlen and Carney (1992), Polinsky and Shavell (1993), Arlen (1994), Arlen and Kraakman (1997), and Mullin and Snyder (2005)). Penalizing shareholders for managers' actions can be economically efficient if corporate oversight monitors managers' activities at lower cost than through direct government oversight, or if firm-level penalties encourage cooperation with regulators' investigations. In this paper, we take an agnostic view toward this debate, and instead focus on documenting the legal penalties as a step toward inferring the sizes of the reputation penalties.

TABLE 7

Legal Sanctions for Financial Reporting Violations

Penalties imposed through federal sanctions and private civil class-action settlements relating to 585 enforcement actions for financial misrepresentation brought under 15 USC §§ 78m(b)(2) and (5). Administrative sanctions refer to cease-and-desist and remedial actions ordered by the SEC. Injunctive sanctions refer to court-ordered permanent injunctions against future violations. Trading suspensions are 10-day trading suspensions ordered by the SEC, and registration revocations refer to the permanent termination of registration as a publicly traded company. Monetary penalties include fines, disgorgement, and other forms of restitution. Class-action lawsuits are shareholder lawsuits against the firm, officers, directors, and other related parties as a result of the financial reporting related charges named in federal enforcement actions. Shareholder derivative lawsuits are brought on behalf of the firm against the officers and directors with settlements paid to the firm. Any amounts paid to firms as a result of derivative actions are netted out in the Monetary Penalties numbers. Only partial sanction and penalty information is presented for 35 actions whose proceedings were ongoing as of November 15, 2005.

Panel A. Non-Monetary Sanctions (administrative and civil sanctions)

Number of SEC administrative sanctions (cease-and-desist orders)	297
Number of injunctive sanctions issued by civil courts	429
Trading suspensions	35
Registration revocations	40
Total number of non-monetary sanctions	801
Number of firms indicted on criminal charges	25

Panel B. Monetary Penalties

Number of fines imposed on firms	N	47
Penalties ($millions)	Total	5,028.16
	Mean	106.98
	Median	0.89
	Min	0.00
	Max	2,277.00[†]

Panel C. Class-Action/Derivative Lawsuits

Number of class-action/derivative lawsuits	N	231
Payments ($millions)	Total	8,697.07
	Mean	37.65
	Median	0.80
	Min	0.00
	Max	2,830.00[††]

[†] A $2.28B penalty assessed against WorldCom although a lesser amount was actually paid in bankruptcy.
[††] Class-action settlement of $2.83B paid by Cendant Corp. followed by AOL/Time Warner with $2.41B.

Monetary penalties result from shareholder class-action suits nearly five times as often as from regulatory actions. In a total of 231 class-action lawsuits, the mean settlement is $37.7 million, but this drops to $25.5 million if we exclude a $2.83 billion class-action settlement against Cendant Corp. involving 12 years of systematic accounting manipulation.[15]

Although legal penalties sometimes are large, they are on average far surpassed by the share value losses reported in Table 6. The mean legal penalty for all 585 firms, combining regulatory fines and class-action settlements, is only $23.3 million per firm. The total value of all fines imposed by regulators is $5.028 billion, explaining only 3.1% of the $161.3 billion aggregate total dollar loss reported in Table 6, Panel A. Total class-action settlements equal $8.697 billion or 5.4% of the aggregate total dollar loss. Together, these legal penalties equal only 8.5% of the total dollar loss associated with the enforcement actions.

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[15] See Litigation Release No. 16587 and AAER No. 1276 released June 14, 2000.

VI.   The Readjustment Effect

A.   The Theoretical Concept

The discovery of financial misrepresentation informs investors they were using inaccurate information to value the company. Share values should decrease as this misinformation is corrected—even in the absence of legal penalties or reputational effects. We call this the readjustment effect. It is the portion of the observed loss in share values that reflects an adjustment to the value the firm would have had if its financial statements had never been cooked. We remove the readjustment effect from the total share loss to estimate the reputation loss.

To define the readjustment effect, let V_{t-1} equal firm value before the misrepresentation is revealed. It reflects the information I available at $t-1$: $V_{t-1} = V(I_{t-1})$. Because of the firm's misleading financial statements, the observed V_{t-1} is based on incorrect information: $Observed\ V_{t-1} = V(I_{t-1}^{Incorrect})$. If investors had the correct information, firm value would have been: $Correct\ V_{t-1} = V(I_{t-1}^{Correct})$. The readjustment effect is the difference between the firm's observed value and its hypothetical value had investors based their values on accurate financial statements:

$$
\begin{aligned}
Readjustment\ Effect &= Observed\ V_{t-1} - Correct\ V_{t-1} \\
&= V(I_{t-1}^{Incorrect}) - V(I_{t-1}^{Correct}).
\end{aligned}
$$

The following numerical example provides an illustration of the readjustment effect. Consider an all-equity firm with a book value of assets of \$100 and a market-to-book ratio of 1.5. The full information market value of the firm's assets and shares is $V(I_{t-1}^{Correct}) = \$150$. Now suppose that company managers report information that erroneously increases the book value of assets by \$10 to \$110. Assuming the market-to-book ratio is unchanged, the share value will increase by \$15 to $V(I_{t-1}^{Incorrect}) = \$165$. When the misinformation is discovered, the book value of assets will be restated to \$100 and the share value will fall back to \$150. That is, the shares will drop in value from their inflated value of \$165 to their "correct" value of \$150. This decrease of \$15 is the readjustment effect.[16]

This example illustrates the readjustment effect using an inflated book value of firm assets and a (constant) market-to-book multiple. The same effect can be thought of in terms of earnings misstatements and earnings multiples. In our example, suppose annual earnings are \$10 and the price-to-earnings multiple is 15. Misinformation that inflates earnings to \$11 would (with a constant P/E multiple) increase firm value to \$165. The discovery of the misinformation would cause earnings to be restated and firm value would fall back to \$150.

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[16]Kedia and Philippon (2008) identify a potential real resource cost in the readjustment effect. In their model, a firm cooking its books also overinvests during its violation period. The revelation of financial misconduct therefore signals that the firm's optimal investment is lower than investors previously anticipated. This implies that the firm's market-to-book ratio could change in computing the "correct" firm value—even ignoring reputational effects on future sales and contracting costs. Sadka (2006) provides a model where managers underprice (as opposed to overinvest) to maintain appearances that coincide with the false impression they create when they cook their firm's books. In the sensitivity analyses discussed below, however, we find that our inferences are not substantially affected even if we assume that market-to-book ratios used to calculate the readjustment effect are adjusted by large amounts.

B.   Estimates of the Readjustment Effect

We use both asset restatement and earnings restatement approaches to produce alternate estimates of the readjustment effect. We also conduct robustness checks to probe the sensitivity of our overall conclusions to assumptions about whether the market-to-book or P/E multiple are constant as investors learn of the financial misstatements. Tables 8 and 9 display results based on the asset restatement approach. The Appendix extends the analysis to incorporate and compare our results to an earnings restatement approach similar to that used by Palmrose, Richardson, and Scholtz (2004). Regardless of the approach, our overall conclusions are qualitatively unaffected. We emphasize the asset-based approach because it excludes fewer firms due to data availability issues and it produces larger estimates of the readjustment effect, thus yielding the most conservative estimates of the reputation loss.

We estimate the readjustment effect by measuring the book value of assets that each firm writes off during each year of its enforcement period, from the end of the violation period through the resolution proceeding. We select the largest write-off from each firm's series of annual write-offs, reasoning that correcting previously misleading financial statements will generally result in larger than normal write-offs. The book value of the asset write-off is calculated as the sum of special items (Compustat item #17), accounting changes (item #183), and—for banks and financial services companies—net charge-offs (item #349). (Item #349 applies only to banks and financial services companies, which constitute 25% of the sample.) When net charge-offs include the monetary penalties imposed by regulators or through civil lawsuits, we subtract these amounts to avoid double counting.[17]

To convert the book value of the write-off to a market value estimate, we multiply it by the median market-to-book ratio for all firms listed in Compustat with the same two-digit SIC code for the year corresponding to the write-off. This recognizes that the correspondence between book values and market values varies across industries. Industry median market-to-book ratios in our sample range from 0.85 (for SIC 25 in 1980) to 3.82 (for SIC 73 in 1999). For the full sample, the mean market-to-book multiple used in our estimates is 1.35 and the median is 1.68. Using other approaches yields similar overall results. For example, the estimates of the readjustment effect are similar if we use the same market-wide average of the market-to-book ratio for all firms in the sample.

Information on the size of the readjustment effect is reported in Table 8. Panel A contains information from the 384 firms with return data on CRSP and accounting data on Compustat. These are the same firms described in Table 6, Panel B. Missing values for any of the items used to measure the book value of asset write-downs (Compustat items #17, #183, or #349) are set equal to zero. The mean asset write-down during these firms' enforcement periods is $71.99

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[17]Again, some readers may prefer an estimate of the adjustment effect based on the firms' *earnings* restatements using a P/E multiple and (possibly) changes in investors' expectations of the growth in earnings. Such estimates, which are described in the Appendix, lead to smaller estimates of the readjustment effect (and correspondingly larger estimates of the reputation effect). Our emphasis of the estimates reported here is one several choices that impart a conservative bias to our estimates of the reputation loss.

million and, cumulating over all 384 firms, the aggregate value of the asset write-downs is $27.6 billion. Multiplying each firm's write-down by its industry median market-to-book ratio, the mean readjustment effect is $97.43 million. Summing across firms, we estimate an aggregate effect of $37.4 billion, implying the extent to which these firms' market values were inflated by the financial deception.

TABLE 8

Summary of the Readjustment Effect

The mean and total values of the readjustment effect for firms undergoing federal enforcement actions for financial misrepresentation (i.e., violations of 15 USC §§ 78m(b)(2) and (5)). The book value of write-offs is determined from Compustat by taking the year with the largest accounting adjustments defined as (negative one times) the sum of special items, accounting charges, and charge-offs (items #17, #183, and #349) during the enforcement period. The readjustment effect is calculated by multiplying by each firm's book value of write-offs by its industry median market-to-book assets ratio using two-digit SIC codes. Panel A includes firms listed on both CRSP and Compustat. Panel B includes only firms that remained listed on CRSP and Compustat at the resolution of the enforcement action or as of November 15, 2005 for firms whose enforcement actions have not been concluded. Dollar amounts are in millions of dollars.

	Mean	Median	Aggregate
Panel A. 384 Firms Listed on CRSP and Compustat			
Book value of write-offs ($millions)	71.99	1.01	27,643.95
Weighted-average industry median market-to-book	1.35	1.68	
Readjustment effect ($millions)	97.43	1.70	37,413.32
Panel B. 194 Firms that Survived the Enforcement Period			
Book value of write-offs ($millions)	89.60	2.09	17,382.68
Weighted-average industry median market-to-book	1.23	1.79	
Readjustment effect ($millions)	112.72	3.74	21,867.42

In Panel B of Table 8, the readjustment effect is calculated for the 194 firms with returns available in CRSP through the entire enforcement period. The mean value of the readjustment effect for these firms is $112.72 million, and the aggregate effect is $21.87 billion.

To our knowledge, this is the first attempt to measure the extent to which the market values of individual firms were inflated because of their deceptive financial reports. Many write-offs are for legitimate purposes that are unrelated to the financial deception, for example, restructuring charges and losses on sales of subsidiaries. So the estimates in Table 8 most likely overstate the valuation corrections that result from the enforcement actions. Nonetheless, the readjustment effect still explains only a small portion of these firms' total share value losses.

VII.   Reputation Loss

A.   The Size of the Reputation Loss

As discussed by Klein and Leffler (1981) and Jarrell and Peltzman (1985), the revelation of misconduct can have real effects on the firm's costs and operations. We refer to the present value of such effects as the firm's reputation loss. Reputation can be lost if customers change the terms on which they are willing to do business with the firm because of an increased probability of cheating or the perception that the firm cannot support warranties or supply compatible parts in the future. Diminished reputation also can reflect an increase in the firm's cost of capital or trade credit, as input suppliers change the terms with which they do

business with the firm.[18] In addition, the firm can suffer real losses as managers are required to divert resources to the investigation and away from company business. The revelation of financial reporting problems could also force the firm to implement new monitoring and control policies, increasing the cost of operations. We group all such real effects on firm value into the reputation loss.

To define the reputation loss, let $\Delta V_t = V_t - V_{t-1}$ be the change in firm value when news of the misconduct is revealed to investors. Previously, we noted that ΔV_t includes the expectation that legal penalties will be imposed on the firm and the readjustment effect. In addition, ΔV_t will include the present value of any expected changes in the firm's operations of cost of financing:

$$\Delta V_t \quad = \quad \textit{Fine Effect} + \textit{Class-Action Effect} \\ + \textit{Readjustment Effect} + \textit{Reputation Loss}.$$

Because reputational capital is not directly measurable, we refine the residual approach of Jarrell and Peltzman (1985) and Karpoff and Lott (1993). After estimating the total loss in share values, we subtract all fines, class-action settlements, and our multiple-adjusted estimate of the readjustment effect. Using a rational expectations assumption, the sizes of the actual fines, class-action settlements, and readjustments are unbiased estimates of investors' expectations of these amounts when news of the financial misconduct becomes public. By the same rational expectations assumption, the remaining unexplained portion of the overall loss in share values reflects investors' expectations of the additional losses in firm value from impaired operations or higher financing costs. It is our estimate of the reputation loss:

$$\textit{Reputation Loss} \quad = \quad \Delta V_t \\ - (\textit{Fine Effect} + \textit{Class-Action Effect} + \textit{Readjustment Effect}).$$

Table 9 summarizes the results of this estimation procedure. Panel A reports results including all 384 sample firms with return and Compustat data. As reported in Table 6, the aggregate loss in share values for the 384 firms is \$152.539 billion. The fine effect reflects the portion of share value loss attributable to investors' expectations of future monetary sanctions against the firm. The aggregate amount of all monetary fines, including penalties and disgorgement eventually levied against the 384 firms in Panel A because of the enforcement actions, is \$5.012 billion or 3.29% of the aggregate share value loss. The aggregate class-action award for the 384 firms is \$8.590 billion or 5.53% of the aggregate share value loss. Thus, 8.82% of the aggregate share value loss for the 384 firms can be attributed to investors' expectations of legal penalties, including fines and class-action lawsuits.

The readjustment effect equals \$37.413 billion or 24.53% of the share value loss. Combining this 24.53% with the 8.82% of the aggregate share value loss attributed to legal penalties means that one-third of the aggregate loss is attributable to legal penalties and the adjustment to more accurate financial information. This

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[18]Murphy, Shrieves, and Tibbs (2009) report that reputation losses for other types of corporate misconduct reflect both a decrease in subsequent earnings and an increase in the cost of capital.

leaves two-thirds, or $101.522 billion, of the aggregate share value loss as our estimate of the reputation loss. As significant as the legal penalties can be, they are dwarfed by the reputation loss. Using means, the reputation loss constitutes 66.56% of the total loss in share values. Using medians, the reputation loss constitutes 92.09% of the total loss.

TABLE 9

Sources of Firms' Losses for Financial Reporting Violations

Sources of the total impact on share values for firms undergoing federal enforcement actions for financial misrepresentation (i.e., violations of 15 USC§§ 78m(b)(2) and (5)). The Total Dollar Loss is the estimated change in market capitalization due to announcements related to the financial misconduct and related enforcement activities. Panel A includes firms listed on CRSP and Compustat. Panel B includes only firms that remained listed on CRSP and Compustat at the resolution of the enforcement action or as of November 15, 2005 for firms whose enforcement action was not then concluded. The Total Dollar Loss is partitioned into portions that can be attributed to fines, class-action settlements, the readjustment effect, and the reputation loss. The readjustment effect is calculated by adding special items, accounting charges, and charge-offs (items #17, #183, and #349) from Compustat, then multiplying by the industry median market-to-book assets ratio using two-digit SIC codes. The Reputation Loss is the residual of the Total Dollar Loss that remains after removing the fine, class-action, and readjustment effects.

Panel A. 384 Firms Listed on CRSP and Compustat

	Aggregate ($millions)	Mean	Median
Total Dollar Loss ($millions)	152,539.00	97.24	21.49
		% of Total Dollar Loss:	
Partitioned into:		Based on Means	Based on Medians
Legal Penalties			
Fine effect	5,012.47	3.29%	0%
Class-action effect	8,590.89	5.53%	0%
Readjustment Effect	37,413.32	24.53%	7.91%
Reputation Loss	101,522.30	66.56%	92.09%

Panel B. 194 Firms that Survived the Enforcement Period

	Aggregate ($millions)	Mean	Median
Total Dollar Loss ($millions)	114,799.40	591.75	34.20
		% of Total Dollar Loss:	
Partitioned into:		Based on Means	Based on Medians
Legal Penalties			
Fine effect	1,908.28	1.66%	0%
Class-action effect	7,376.82	6.43%	0%
Readjustment Effect	21,867.42	19.05%	10.94%
Reputation Loss	83,646.85	72.86%	89.06%

Despite the large size of these reputation loss estimates, they most likely underestimate the true magnitude of such losses. Of the 384 firms in Panel A of Table 9, 190 firms failed or delisted during their enforcement period. For these firms, our dollar loss estimate is understated because we cannot observe returns for enforcement events when the firms were not trading.

Panel B of Table 9 partitions the effects for the 194 firms that survived their enforcement periods. In aggregate, fines comprise $1.908 billion or 1.66% of the total dollar loss, class-action lawsuits comprise $7.377 billion or 6.43% of the total, and the readjustment effect accounts for $21.867 billion or 19.05% of the total. The share value loss attributed to lost reputation is $83.647 billion or 72.86% of the total. Using medians, the reputation loss constitutes 89.06% of the total dollar loss.

B.   Discussion

Our results show that reputation helps discipline financial misrepresentations—indeed, the evidence indicates that market-imposed reputation losses are of *primary* importance. One way to illustrate the importance of the reputation loss is to consider the average impact on a firm that inflates its market value by $1 through deceptive financial reporting practices. When the deception is uncovered, the point estimates from Panel A of Table 9 indicate that the firm loses this dollar, *plus* an additional $3.08 in expected legal penalties and lost reputation. (Since the readjustment effect equals 24.53% of the total dollar loss, a $1.00 readjustment implies a total dollar loss of $4.08 (= $1.00 ÷ 0.2453).) Of the additional loss, only $0.36 represents the expectation of legal penalties. The remaining $2.71 is the present value of the expected higher financing and contracting costs or reduced cash flows that result from the firm's misconduct. This is an empirical estimate of one portion of Jensen's (2005) agency cost of overvalued equity, namely, the reputational cost of cooking the books (and being apprehended).

Prior research indicates that reputation losses are important for some other types of corporate misconduct, including false advertising (Peltzman (1981)), product recalls (Jarrell and Peltzman (1985)), air safety disasters (Mitchell and Maloney (1989)), frauds of private parties (Karpoff and Lott (1993), Alexander (1999), and Murphy, Shrieves, and Tibbs (2009)), investigations of IPO underwriters (Beatty, Bunsis, and Hand (1998)), and defense procurement fraud (Karpoff, Lee, and Vendrzyk (1999)).[19] But our evidence indicates that reputation losses for financial misrepresentation are unusually large. This evidence is particularly compelling in light of the size and comprehensiveness of our sample and the associated legal penalties data relative to previous studies. In addition, we are the first to control for the readjustment effect. We infer that financial misrepresentation is a particularly costly activity because financial transparency is a particularly valuable asset. That is, a firm's sales and contracting costs are particularly sensitive to financial misrepresentation because it undermines the firm's credibility with customers, suppliers, and investors. Such a large reputational effect is illustrated anecdotally by the rapid meltdown of the Enron Corp. after revelation of financial problems in October 2001 (for a discussion, see Healy and Palepu (2003)). Our evidence indicates that large reputation losses for financial misrepresentation are the rule rather than the exception.

VIII.   Cross-Sectional Differences in Firms' Reputation Losses

This section examines possible determinants of reputation loss. We employ two measures of the loss: i) the reputation loss expressed as a percentage of the total dollar loss, and ii) the natural logarithm of the dollar amount of the reputation

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[19]Reputation losses are not important for all types of misconduct, however. See Karpoff, Lott, and Wehrly (2005) for an investigation of environmental violations and Murphy, Shrieves, and Tibbs (2009) for an analysis of other types of third-party violations. Karpoff and Lott (1993) argue that reputation losses will be small or negligible for such violations because the harmed parties do not do business with the firm.

loss. Some of the individual measures of reputation loss are negative. To avoid illogically treating these cases as reputation-enhancing events, these reputation losses are set to zero. As a result, we estimate Tobit regressions with left censoring set at zero.

Klein and Leffler (1981) and Landes and Posner (1987) propose that reputation is likely to be most important among businesses where explicit contracts are costly to write and enforce. This suggests that firms with R&D expenditures, large intangible assets, or growth opportunities are susceptible to larger reputation losses from financial misconduct than their counterparts that rely less on implicit contracts and reputation. We therefore include the following three regressors in the cross-sectional tests: i) research and development (R&D), a binary variable equaling one for firms with R&D expenses (Compustat item #46); ii) intangible assets, a binary variable equaling one if the ratio of the firm's intangible assets (item #33) to total assets (item #6) exceeds 25%; and iii) market-to-book ratio, which equals total assets (item #6) minus stockholders' equity (item #216) plus the market value of equity (item #25 times item #199), all divided by total assets. All three of these variables are expected to be positively related to the size of the reputation loss.

Titman (1984) argues that financial distress can undermine a firm's incentives to honor implicit contracts and decrease individuals' willingness to conduct business with the firm. Maksimovic and Titman (1991) extend this analysis to show that debt can erode incentives to maintain reputation even in the absence of financial distress. This argument implies that financial distress, or even the heavy use of debt, can affect the reputation loss. The direction of effect, however, is ambiguous. On one hand, firms in financial distress or with substantial debt may have little reputational capital at stake, implying a small loss when financial misrepresentation is discovered. On the other hand, such firms may *lose* substantial reputational capital when financial misrepresentation is discovered. To the extent that these firms rely heavily on outside capital, they also may face higher financing costs if their financial statements are discovered to be inaccurate. To test for the net effect of financial distress and debt on the reputation loss, we use the following two measures: i) financial distress, a binary variable equaling one for firms that filed bankruptcy during the violation or enforcement period; and ii) leverage, defined as the ratio of total liabilities (item #181) to total assets (item #6).

In addition, we include several control variables to measure the firm's size, age, and cash flow, the severity of the misrepresentation, and whether the regulatory action was completed or remains pending. These include: i) firm size, measured as the natural logarithm of the market value of common equity at the close of trade one day before the firm's first enforcement event; ii) firm age, measured as the natural logarithm of the number of months the firm was listed on CRSP at the firm's first enforcement event; iii) free cash flow, measured as the sum of income before extraordinary items (item #18) and depreciation and amortization (item #14) divided by total assets (item #6); iv) a binary variable equaling one if the company's chairman, CEO, or president is named in the enforcement action; v) a binary variable equaling one if the enforcement action includes fraud charges against the firm or any of its agents; vi) a binary variable equaling one if the firm is named in the enforcement action; vii) the natural logarithm of one

plus the monetary penalties imposed on individuals through regulatory sanctions or private class-action lawsuits; viii) the length of the enforcement period in days; ix) the stock price run-up during the period in which the firm misrepresented its financial information; and x) a dummy variable equaling one if the enforcement action remains pending as of November 15, 2005.

Table 10 reports the results of these cross-sectional tests. The dependent variable in Model 1 is the reputation loss expressed as a fraction of the total loss in share value, and the dependent variable in Model 2 is the natural log of the dollar value of the reputation loss. The χ^2 goodness of fit test indicates that a significant portion of the cross-sectional variation is captured in both models. In addition, several of the individual coefficients are statistically significant. For example, in Model 1 the reputation loss is positively related to R&D expenditure and the intangible assets dummy. This implies that reputation loss increases with a firm's reliance on implicit contracting. The coefficients for the financial distress dummy and leverage ratio also are positive and significant at the 5% level, indicating that reputation loss is larger for firms with substantial debt. This suggests that these firms' costs of financing increase once their financial statements have been shown to be misleading.

Among the control variables, the coefficients for the amount of individual penalties and the stock price run-up during the violation period are positive and significant at the 5% level. This suggests that the reputation loss increases with these measures of the severity of the misrepresentation. Free cash flow also is positively related to reputation loss. This result runs contrary to the view that free cash flow lowers reputation loss because it decreases a firm's reliance on external finance and future financing costs. On possibility is that free cash flow proxies for the firm's reputational capital at risk.

The results are similar in Model 2, although only R&D expenditure, free cash flow, and the leverage ratio remain significant at the 10% level. The coefficient on firm size is positive and significant, indicating that the absolute size of the reputation loss increases with firm size. Sensitivity tests using alternate model specifications yield results that are consistent with those in Table 10. In general, reputation loss is related to measures of asset intangibility and financial distress.

IX. Robustness Checks

We conducted several sensitivity tests to probe the robustness of the results reported in this paper. For example, we recalculated the readjustment effect by assuming that the market-to-book ratio is the same for all firms, and by including all write-offs for the full length of the firm's enforcement period. The principal finding that the reputational penalty for cooking the books is very large is not, however, sensitive to the specific test design.

In theory, the estimated reputation loss is sensitive to the readjustment effect. But in our application the reputation loss is so large that even large changes to the readjustment effect do not eliminate it. As shown in the Appendix, using an alternate method to estimate the readjustment effect results in *larger* estimates of the reputation loss. Even if we arbitrarily inflate our estimate of the readjustment effect, the estimate of the reputation loss dwarfs the size of the legal penalties.

TABLE 10

Determinants of the Reputation Effect

Cross-sectional Tobit regressions to estimate the determinants of the reputation loss for firms undergoing federal enforcement actions for financial misrepresentation (i.e., violations of 15 USC§§ 78m(b)(2) and (5)). In Model 1, the dependent variable is the firm's Reputation Loss divided by its Total Dollar Loss (both terms are defined in Table 9). In Model 2, the dependent variable is the natural logarithm of the Reputation Loss (in $millions). The sample includes all 384 sample firms listed on CRSP and Compustat. p-values are in parentheses.

Variables	Model 1 Reputation %	Model 2 Ln(Reputation $)
Contracting Environment		
R&D flag	0.2502	2.2121
(R&D > 0)	(0.071)	(0.021)
High intangible assets flag	0.4261	1.3955
(intangibles/assets > 0.25)	(0.063)	(0.379)
Log of market-to-book ratio	0.0929	0.4387
	(0.352)	(0.527)
Financial Condition		
Financial distress flag	0.3110	0.3393
(bankruptcy)	(0.045)	(0.751)
Leverage ratio	0.2578	1.4584
(liabilities/assets)	(0.035)	(0.082)
Control Variables		
Log of market capitalization	−0.0389	0.8817
	(0.284)	(0.000)
Log of firm age	−0.1005	−1.2708
(years)	(0.146)	(0.008)
Free cash flow	0.3594	2.0066
(NI + depreciation/assets)	(0.014)	(0.046)
Top executive named flag	0.0287	1.5101
(CHM, CEO, or PRES)	(0.863)	(0.187)
Fraud flag	−0.0878	1.1494
	(0.614)	(0.336)
Company named in action flag	0.2262	0.8133
	(0.139)	(0.439)
Log of individual penalties	0.0207	0.0979
	(0.041)	(0.160)
# Days in enforcement period	−0.0001	−0.0005
	(0.136)	(0.321)
Violation period cumulative abnormal return	0.1182	0.4643
	(0.009)	(0.140)
Incomplete enforcement action flag	0.2858	−1.0911
	(0.237)	(0.512)
Constant	1.1674	−7.5804
	(0.151)	(0.175)
Sigma	1.1623	8.1267
	(0.000)	(0.000)
N	384	384
# left censored	78	78
Log likelihood	−545.32	−1169.89
χ^2	40.28	8.54
Prob > χ^2	(0.000)	(0.000)

For example, if we arbitrarily assume that the market-to-book ratio is 50% larger than historical averages in estimating the readjustment effect, the reputation loss still is more than five times the size of the combined legal penalties.

Karpoff and Lott (1993) point out that the reputation loss could be overstated if announcements of the misconduct indicate that the firm will incur large costs to defend itself from this or future enforcement actions. We emphasize that our data on the legal costs include fines and settlements from *all* regulatory and private actions related to the misconduct. Even if unreported defense costs are extremely

large—say, equal to the total fines and settlements—the estimated reputation loss is still more than half of the total share value loss and more than 6.5 times the sum of all legal penalties. The share value losses also are unlikely to represent expectations of future enforcement actions for financial misrepresentation, as recidivism in our sample is rare.

If anything, our empirical procedures tend to understate the magnitude of reputation loss. For example, in calculating the size of the legal penalties we ignore the fact that the after-tax costs of many settlements are lower than their nominal amounts. We do not discount the nominal penalty figures despite an average interval between the initial and concluding regulatory announcements of more than two years. And while our data track the actual legal penalties assessed, the legal penalties eventually paid are often reduced through subsequent proceedings, bankruptcy, and any unreported reimbursements through director and officer insurance. Any of these adjustments would reduce our estimate of the fine and class-action effects, thereby increasing the estimate of the reputation loss.

We also understate the size of the share value losses associated with violations for cooking the books. Many firms delist during the enforcement process. We measure share value losses, however, only on the dates of specific enforcement activities and only when returns data are available. Given our findings that nearly all regulatory events have negative share value impacts, it is highly likely that the valuation impacts of the announcements we do not measure are negative. Likewise, 55 of the 585 enforcement actions in our sample were unresolved as of December 31, 2004, which is the last date in the 2004 CRSP data. Through November 15, 2005, these unresolved actions were the subjects of 146 proceedings events. Preliminary estimates indicate that the share value losses for the subset of these 146 events on which returns data are available were negative and large in magnitude.

It is possible that firms that delist were financially unviable in the first place, in which case our estimates may attribute too much of the share value losses to lost reputation. We tested this conjecture by restricting the sample to firms that survive the enforcement process. As reported in Panel B of Table 9, however, it turns out that the size of the reputation loss is even larger among the surviving firms, supporting our contention that we underestimate the share value losses for firms that delist during their enforcement periods.

X.   Conclusions

Scandals involving Enron, WorldCom, and other corporations have helped create a widespread presumption that firms face very small penalties for financial misrepresentation. We examine this presumption by measuring the penalties imposed on firms for all 585 enforcement actions initiated by the SEC and the DOJ for financial misrepresentation from 1978 through 2002, which we track through November 15, 2005. At first glance, the presumption that penalties are small and infrequent appears warranted. Only 47 firms have been fined directly by regulators with a median fine of $890,000. Thirty-five firms had 10-day trading suspensions imposed on their stock, and 40 corporations had their registrations

revoked. A larger number of firms, 231, were subject to class-action lawsuits. But the average settlement amount for these lawsuits is only $37.7 million.

The legal penalties, however, turn out to be only a small part of the total losses experienced by these firms. The initial announcement of an enforcement action by federal regulators is associated with a 9.6% average decline in the firm's market value. This augments a 25% decrease from an earlier announcement that triggered the investigation. Fines and class-action settlements explain a small portion—an average of 8.8%—of firms' loss in market value. Another portion of the loss in share values can be attributed to investors correcting their perceptions of company value in light of the information that previous valuations were based on faulty financial information. Our intentionally liberal estimate of the average size of this portion—the readjustment effect—equals 24.5% of the loss in share value. When combined, these two portions account for only 33.3% of the market value loss. The remaining two-thirds reflects investors' expectations of impaired operations, lower future earnings, and/or higher financing costs. This is our estimate of the average reputation loss.

Stated differently, for every dollar of inflated value when a firm's books are cooked, firm value decreases by that dollar when the misrepresentation is revealed; in addition, firm value declines $0.36 more due to fines and class-action settlements and $2.71 due to lost reputation. For firms that survive the enforcement process as independent entities, the estimate of lost reputation is even greater at $3.83 per dollar of artificially inflated value.

These results support the argument that financial reporting violations carry large market penalties because they change the terms of contract with which customers, suppliers, and investors are willing to trade with the firm. Consistent with this argument, we find that, in the cross section, the reputation loss is positively related to the firm's reliance on implicit contracts in its operations. Weaker results suggest that reputation loss also is larger for firms in financial distress or with substantial debt.

Our results raise a number of questions for future research. We focus on the penalties imposed on firm shareholders rather than individual managers. We do not examine how individual and firm penalties combine to penalize financial misconduct, nor do we address the debate over whether penalties optimally should be assessed upon firms or individuals or on some combination of both. Our results also raise the question of whether the reputation losses we document subsequently show up as lower earnings or higher financing costs for the firms involved. Along these lines, Murphy, Shrieves, and Tibbs (2009) report that reputation losses for other types of corporate misconduct reflect both a decrease in subsequent earnings and an increase in the cost of capital. Finally, we do not examine the penalties imposed on the managers who perpetrate the financial misconduct. We refer the reader to a related paper (Karpoff, Lee, and Martin (2008a)) that shows that the individual penalties for corporate misconduct also are substantial.

Overall, our evidence indicates that penalties for cooking the books historically have been substantial, even before the implementation of Sarbanes-Oxley provisions. A focus on purely legal penalties would miss this point since most of the penalty comes from lost reputation. To the extent that regulators such as the Public Company Accounting Oversight Board and the SEC ignore the importance

of reputational penalties, they will establish suboptimal legal rules and penalties for financial misconduct (see, e.g., Drawbaugh (2005)).[20] And to the extent that managers and directors do not appreciate the large size of these reputation losses, they will devote too few resources to assure the accuracy of their financial reports and to protect their reputational capital.

Appendix. Alternative Estimates of the Readjustment Effect and Reputation Loss

This Appendix examines alternate ways to measure the readjustment effect and the sensitivity of the estimated reputation loss to these alternatives.

Conceptually, reputation loss is the present value of the higher costs of financing and/or the diminished cash flows from operations that result when lenders, investors, customers, and suppliers alter the terms of exchange with a firm that has been discovered cooking its books. We measure reputation loss as a residual:

$$\textit{Reputation Loss} \;=\; \Delta V_t - (\textit{Fine Effect} + \textit{Class-Action Effect} + \textit{Readjustment Effect}),$$

where ΔV_t is the abnormal loss in firm value. Our estimates of the fine effect and class-action effect are the sums of all monetary fines and class-action settlements imposed on the firm net of any proceeds from derivative lawsuits and director and officer liability insurance. These estimates are unlikely to be controversial. Estimating the readjustment effect, however, is more complicated.

Asset-based estimates of the readjustment effect are reported in Tables 8 and 9 of the paper. We determine the book value of assets that each firm writes off during every year of the enforcement period, from the last year of the violation period through the resolution proceeding, and select the largest single year write-off. Then we multiply this write-off by the industry's median market-to-book ratio for the year (using two-digit SIC codes for all non-sample firms in Compustat). This is an estimate of the amount that the firm's market value was inflated during the violation period because of the financial misrepresentation.

An alternative is to measure the amount by which each firm restates its earnings to correct for the misrepresentation, then multiply that amount by an industry-based price-to-earnings multiple. In theory, asset- and earnings-based approaches should yield identical estimates of the readjustment effect since "a direct link exists between earnings and amounts reported as assets" according to the fundamental accounting identity.[21] In practice, however, considerable discrepancies often result between the asset- and earnings-based approaches.

Restatements are evenly divided between asset- and earnings-based problems.[22] As a practical matter, however, an asset-based approach to estimating the readjustment effect has distinct advantages over an earnings-based approach. This is because firms utilize diverse, often irresolvable restatement methods because current SEC policy stipulates no clear format for financial restatements.[23] Many firms ignore SEC guidance on filing re-

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[20]Karpoff, Lee, and Martin (2008b) provide an integrated analysis of the complex mix of private and regulatory penalties for financial misrepresentation. These penalties include private class-action awards, monetary penalties imposed by the SEC and the DOJ, and such non-monetary sanctions as censures, trading suspensions, and jail time.

[21]See Mulford and Comiskey (2004), p. 238.

[22]The SEC Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002 reports that 126 of 227 enforcement matters (55.5%) involved earnings-related items. (See Table 12, p. 32 of the "Fraudulent Financial Reporting: 1987–1997—An Analysis of U.S. Public Companies," Committee for Sponsoring Organizations of the Treadway Commission (COSO).) Glass Lewis & Co. report that earnings-related issues account for approximately 46% of the restatements in 2003 (see p. 9 of "Restatements—Traversing Shaky Ground: An Analysis for Investors," May 31, 2005).

[23]See SAB No. 108 (www.sec.gov/interps/account/sab108.pdf) regarding the strategic application of "rollover" versus "iron curtain" restatement techniques.

statements following an investigation.[24] Even when firms do restate, managers often file "stealth restatements" to avoid investor notice.[25]

Nonetheless, we check the robustness of our results by replicating the approach of Palmrose, Richardson, and Scholz (2004) who "subtract restated net income from originally reported income (summed over all restated periods)" (p. 65). To produce the market value estimates required for the readjustment effect, we multiply these restated earnings estimates by the median industry P/E ratio (the fiscal year-end share price (item #199) divided by earnings per share (item #58) for all Compustat-listed firms in the restating firm's two-digit SIC code.

We restrict our examination to enforcement actions whose violation period begins after May 6, 1996 (the final phase-in date for EDGAR) to assure access to all relevant SEC filings. This restriction leaves 117 enforcement actions of which we delete 61 firms whose enforcement actions were not complete as of November 15, 2005, because firms often issue restatements at the conclusion of the enforcement action. Including data on these 61 firms therefore would understate any restated amounts and overstate the estimate of the reputation loss. Nine of the remaining 56 firms are not listed on CRSP or Compustat (a requirement to compare the earnings-based estimates with the asset-based estimates). This leaves a test sample of 47 enforcement actions and target firms.

For each firm in this sample, all 10-K, 10-Q, and 8-K filings were examined to determine if a restatement or correction was made from a prior period that is related to the firm's financial misrepresentation. To do this, we compare the stated reasons for the restatements to the causes and circumstances for the enforcement action that are revealed in the related SEC and DOJ releases and the associated court filings. This allows us to eliminate restatements not related to the enforcement action. The original and restated earnings are recorded for every period from the beginning of the violation period through the fiscal year-end of the last enforcement action proceeding. This laborious process eliminates potential biases in alternative methods, such as searching Lexis-Nexis for terms such as "restatement" or related phrases.

Of the 47 firms, 37 have enforcement-related earnings restatements and 10 firms have no earnings restatements. Of these 10, two firms filed bankruptcy or deregistered without restating and the eight remaining firms either were not required to restate or the scale of their restatement was inconsequential. Of the 37 firms restating earnings, 13 restated quarterly reports only. For these 13 firms, the number of periods restated range from one to six with a mean of two quarters and median of one quarter. The other 24 firms restated either annual reports or a combination of quarterly and annual reports ranging from one to three years with a mean and median of two years.

Table A1 displays summary statistics for the two estimation methods of the readjustment effect side by side for comparison. For the 47 firms with available earnings data, the mean and median earnings-based estimates of the readjustment effect, $192.91 million and $4.35 million, are roughly half the mean and median of the asset-based estimates, $369.94 million and $9.14 million. This difference is significant at the 10% level according to a Wilcoxon rank-sum test. Therefore, the corresponding estimate of reputation loss using our asset-based approach is more conservative than would result from the earnings-based approach. (For this subset of 47 firms, the reputation loss averages 47% of the total share value loss using the asset-based approach, compared to 72% using the earnings-based approach.)

In summation, we do not contend that the asset-based approach is conceptually better than the earnings-based approach. (Although Lie and Lie (2002) demonstrate that market-

[24]The SEC Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002 reports that only "135 issuers in the 227 enforcement matters filed restatements that were related to conduct investigated in the enforcement matters" considered in that report.

[25]Glass Lewis & Co. "applied the stealth label to companies that did not amend previous financial statements to reflect a restatement, failed to announce the restatement in a standard SEC filing known as an 8-K, and did not mention a looming restatement in a notice to investors that it would be late filing annual or quarterly results with regulators. See D. Reilly, "Sarbanes-Oxley Changes Take Root," *The Wall Street Journal*, March 3, 2006.

TABLE A1

Comparison of Readjustment Effect Estimates Using Earnings Restatements versus Estimates Using Asset Adjustments

Under the earnings-based method, the readjustment effect is calculated as the sum over all years of the violation and enforcement period of the product of the firm's earnings change times the median price-to-earnings multiple of the industry. The earnings change is calculated from restatements of net earnings, or from any data revealed in the regulatory proceedings in cases where the firm did not restate its earnings. The price-to-earnings multiple is the median contemporaneous industry price-to-earnings ratio of all non-violating firms in the sample firm's two-digit SIC codes for the year of the violation.

Under the asset-based method, the readjustment effect is the product of the firm's book value of assets written off and the median market-to-book multiple of the industry. The book value of the asset write-off is calculated as the sum of special items (Compustat item #17), accounting changes (item #183), and—for banks and financial services companies—net charge-offs (item #349). (Item #349 applies only to banks and financial services companies, which constitute 25% of the sample.) Net charge-offs that include the monetary penalties imposed by regulators or through civil lawsuits are removed to avoid double counting. The market-to-book multiple is calculated as the median contemporaneous industry market-to-book ratio of all non-violating firms using two-digit SIC codes.

Our need for CRSP and Compustat coverage and EDGAR access to all relevant SEC filings constrains the sample to 47 firms whose violations began after May 6, 1996 and whose regulatory actions ended before November 15, 2005. All figures are expressed in $millions.

	Mean	Median	Minimum	Maximum
Earnings-Based Method	192.91	4.35	−271.15	3,865.68
Asset-Based Method	369.94	9.14	−695.13	8,147.36

to-book multiples provide consistently superior valuation estimates than price-to-earnings multiples, thus lending support to the asset-based approach.) In our sample, the asset-based approach produces more aggressive estimates of the readjustment effect—resulting in more conservative estimates of reputation loss—than the earnings-based approach that is similar to that used by Palmrose, Richardson, and Scholz (2004). Our emphasis on the asset-based estimates reported in Tables 8 and 9 is one of several choices (others are discussed in the paper) that bias downward our reported estimate of the reputation loss. As stated in Section IX, we infer that our main conclusion—that reputation loss is a dominating portion of a firm's total loss when it is the subject of an enforcement action for financial misrepresentation—is robust to alternative estimation procedures.

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