

## Who Blows the Whistle on Corporate Fraud?

ALEXANDER DYCK, ADAIR MORSE, and LUIGI ZINGALES\*

### ABSTRACT

To identify the most effective mechanisms for detecting corporate fraud, we study all reported fraud cases in large U.S. companies between 1996 and 2004. We find that fraud detection does not rely on standard corporate governance actors (investors, SEC, and auditors), but rather takes a village, including several nontraditional players (employees, media, and industry regulators). Differences in access to information, as well as monetary and reputational incentives, help to explain this pattern. In-depth analyses suggest that reputational incentives in general are weak, except for journalists in large cases. By contrast, monetary incentives help explain employee whistleblowing.

THE LARGE AND NUMEROUS corporate frauds that emerged in the United States at the onset of the new millennium provoked an immediate legislative response in the Sarbanes-Oxley Act (SOX). This law was predicated upon the idea that the existing institutions designed to uncover fraud had failed, and that their incentives as well as their monitoring should be increased. The political imperative to act quickly prevented any empirical analysis to substantiate the law's premises. Which actors bring corporate fraud to light? What motivates them? Did reforms target the right actors and change the situation? Can detection be improved in a more cost-effective way?

To answer these questions, we gather data on a comprehensive sample of alleged corporate frauds that took place in U.S. companies with more than 750 million dollars in assets between 1996 and 2004. After screening for frivolous suits, we end up with a sample of 216 cases of alleged corporate frauds, which include all of the high-profile cases such as Enron, HealthSouth, and WorldCom.

\*Dyck is at the University of Toronto; Morse is at the University of Chicago and NBER; and Zingales is at the University of Chicago, NBER, and CEPR. Alexander Dyck thanks the Connaught Fund of the University of Toronto and Luigi Zingales the Center for Research on Security Prices, the Stigler Center, and the Initiative on Global Financial Markets at the University of Chicago for financial support. We would like to thank Alexander Phung, Denrick Bayot, and Victor Xin for truly outstanding research assistantship. We thank John Donohue, Jay Hartzell, Jonathan Karpoff, Andrew Metrick, Shiva Rajgopal, Adriano Rampini, two anonymous referees, Editor, Campbell Harvey, and seminar participants at Harvard Business School, Harvard Law School, Michigan Law School, the University of Pennsylvania, the Duke-UNC Corporate Finance Conference, the NBER Summer Institute, the University of Texas Conference on Empirical Legal Studies, and the American Finance Association Meetings (2007) for helpful comments. We thank Nittai Bergman for sharing his data on employees' stock options.

Through an extensive reading of each fraud's history, we identify who is involved in the revelation of the fraud. To understand better why these fraud detectors are active, we study the sources of information detectors use and the incentives they face in bringing the fraud to light. To identify the role played by short sellers, we look for unusual levels of short positions before a fraud emerges. These data allow us to test the dominant views. While, the legal view claims fraud detection belongs to auditors and securities regulators, the private litigation view (Coffee (1986)) attributes it to law firms. Finally, the finance view (Fama (1990)) predicts that monitoring will be done by those with residual claims (equity and debt holders) and their agents (analysts and auditors).

We find no support for the legal view, since the SEC accounts for only 7% of the cases and auditors for 10%, nor for the private litigation view, which accounts for only 3% of the cases. We also find very weak support for the finance view. Debt holders are absent, and equity holders play only a trivial role, detecting just 3% of the cases. Equity holders' agents (auditors and analysts) collectively account for 24% of the cases revealed. Even using the most comprehensive and generous interpretation of this view, which might include short sellers, the finance view accounts for only 38% of the cases.

More surprising, we find that actors, who do not own any residual claim in the firms involved and are often not considered important players in the corporate governance arena, play a key role in fraud detection: employees (17% of the cases), non-financial-market regulators (13%), and the media (13%). These results remain true if we value-weight the cases by the sum of fines and settlements associated with the impropriety. Value-weighting creates only one change in the distribution: the media become much more important (24%), suggesting they mainly get involved in the biggest cases. These players do not appear in traditional discussions of corporate governance, but the data suggest they should.

What accounts for the differences between the traditional views and our findings? In the traditional views, two dimensions are missing. First, the traditional discussions focus on incentives arising from residual claims but ignore differences in the costs of identifying and gathering fraud-relevant information. Employees, industry regulators, and analysts gather a lot of relevant information as a byproduct of their normal work—as suggested by Hayek (1945)—and are in a much better position to identify fraud than short sellers, security regulators, or lawyers, for whom detecting fraud is like looking for a needle in a haystack. Thus, while an employee might gain much less than a short seller from revealing a fraud, he also faces a much lower cost (in fact, often no cost) in discovering it.

Second, there are incentives to uncover fraud that do not arise from a residual claim or a legal obligation. One such incentive is reputation. A journalist who uncovers a fraud receives national attention, which increases his career opportunities. A similar incentive is a monetary reward directly linked to the size of the fraud uncovered. Thanks to the Federal Civil False Claims Act (also known as the *qui tam* statute), when a fraud is committed against the

government (e.g., Medicare fraud), individuals who bring relevant information forward are entitled to between 15% and 30% of the money recovered by the government.

We find that all these aspects matter. When we distinguish actors on the basis of their information sources (inside information, regulatory discovery, and public information), we find that access to information is important. Having access to inside information rather than relying solely on public information increases an actor's probability of detecting fraud by 15 percentage points. However, this effect becomes statistically indistinguishable from zero when we value-weight the cases. This evidence suggests that the cost of gathering information is an important barrier only in smaller cases and becomes irrelevant when the stakes are higher.

Reputational incentives also appear to be important, especially if we weight the cases by the magnitude of their settlement. This is reasonable, since a journalist or an analyst will not become famous by uncovering a minor accounting irregularity in a small unknown company.

Monetary incentives for fraud revelation appear to play a role regardless of the severity of the fraud. In particular, we find that in health care (an industry where suits are more likely to provide a financial reward for whistleblowers because government's procurements account for a significant percentage of revenues) 41% of frauds are brought to light by employees. This contrasts with only 14% of cases being detected by employees in all other industries. This difference is statistically significant at the 1% level, and the effect is robust to controls for differences in industry characteristics. Hence, a strong monetary incentive to blow the whistle does motivate people with information to come forward.

To shed some light on these incentives not coming from residual claims, we undertake an in-depth analysis of the cost-benefit trade-offs faced by actual whistleblowers. Any analysis of these whistleblowers' incentives will overstate the benefits and/or understate the costs, since these are people who, after assessing their respective costs and benefits, chose to come forward. In spite of this bias, we find a clear cost for auditors that blow the whistle. The auditor of a company involved with fraud is more likely to lose the client if it blows the whistle than if it does not, while there is no significance evidence that bringing the fraud to light pays off in terms of a greater number of accounts.

Career incentives work a bit better for analysts. While analysts who blow the whistle are no more likely to be promoted than similar analysts following the same company who do not blow the whistle, we find that they are less likely to be demoted. The picture is even more encouraging for journalists. Journalists who break a story about a company's fraud are more likely to find a better job than a comparable journalist writing for the same newspaper/magazine at the same time.

The story for employee whistleblowers is more mixed. On the one hand, on occasion, employees can gain from whistleblowing. When employees can bring a *qui tam* suit that the company has defrauded the government, whistleblowers stand to win big time: on average our sample of successful *qui tam*

whistleblowers collect \$46.7 million. For many employee whistleblowers the more important benefit is avoiding the potential legal liability that arises from being involved in a fraud. On the other hand, employee whistleblowers face significant costs. In 45% of the cases, the employee blowing the whistle does not identify him or herself individually to avoid the penalties associated with bringing bad news to light. In 82% of cases with named employees, the individual alleges that they were fired, quit under duress, or had significantly altered responsibilities as a result of bringing the fraud to light. Many of the individuals are quoted as saying, "If I had to do it over again, I wouldn't."

Overall, this web of monitors, so critical to fraud detection, seems to work with relatively low monetary and reputational incentives. To gain insight on what regulatory or market-based initiative can improve these incentives, we split the sample period and exploit the changes in the regulatory environment that occurred after the Enron and WorldCom scandals. Consistent with the enhanced responsibility attributed to accountants by the Statement on Auditing Standards (SAS) No. 99 (approved in October 2002), we find that the percentage of frauds brought to light by auditors jumps from 6% to 24%. On a smaller scale, the SEC also becomes more active, moving from 5% to 10%. By contrast, we do not find any evidence that the protection offered to employees by Section 303 of SOX has any effect.

Our work is related to a large literature in accounting and finance that looks at the characteristics of firms involved in fraud (e.g., Richardson, Tuna, and Wu (2002), Burns and Kedia (2006), Efendi, Srivastava, and Swanson (2007)), the impact of fraudulent financial reporting on firm value (e.g., Palmrose and Scholz (2004)), and the role of specific whistleblower types including the press (Miller (2006)) and employee whistleblowers (Bowen, Call, and Rajgopal (2007)). We differ in our focus on comparing the relative importance of different sources of detection. We also differ in the broadness of our sample, as it includes both accounting-related and non-accounting-related frauds.

Our work is also related to a significant literature in law and economics. As in Choi (2007), Griffin, Grundfest, and Perino (2001), and Thompson and Sale (2003), we use federal securities class actions to construct the sample of frauds. The focus of these papers, however, is on the frequency and the cost imposed by fraud, not on the alternative mechanisms of detection. In this respect, our work is closer to Black (2001) and Coffee (2001), who discuss the best mechanisms to protect investors from fraud and raise questions about whether specific actors are reputation intermediaries or whether they simply attend to the concerns of their clients. Our paper provides data that shed light on these questions. Our work is also complementary to two recent papers by Karpoff, Lee, and Martin (2008a, 2008b). Whereas they focus on the costs borne by firms and managers when fraud is revealed, we analyze the mechanism that leads to the detection of fraud and the cost and benefits of whistleblowing.

Finally, our work is related to the debate started by La Porta, Lopez-de-Silanes, and Shleifer (2006) on what works in securities regulation. They focus on the importance of private enforcement as opposed to public enforcement.

As our analysis illustrates, both private and public enforcement function in the context of a broader web of actors. The involvement of these actors, their comparative advantage in terms of access to information, and their incentives need to be considered when considering governance reforms in the United States and abroad.

The remainder of the paper proceeds as follows. Section I of the paper describes the data and presents the distribution of fraud detectors. In Section II, we compare competing theories of fraud detection. Section III concludes.

## **I. Data and Distribution of Whistleblowers**

### *A. Data: Sample of Frauds*

Our sample of corporate frauds consists of U.S. firms against which a securities class action lawsuit has been filed under the provisions of the Federal 1933/1934 Exchange Acts for the period 1996 to 2004. We use the Stanford Securities Class Action Clearinghouse (SSCAC) collection of all such suits. Because class action law firms have automated the filing of class action suits by reacting to any negative shock to share prices, it is highly unlikely that a value-relevant fraud could emerge without a subsequent class action suit being filed (Coffee (1986), Choi, Nelson, and Pritchard (2008)).<sup>1</sup>

The biggest potential problem with using class action data is not that we might miss important frauds, but that we include frivolous cases.<sup>2</sup> To address this concern we apply six filters. First, we restrict our attention to alleged frauds that ended after the enactment of the Private Securities Litigation Reform Act of 1995 (PSLRA), which sought to reduce frivolous suits by making discovery rights contingent on evidence (Johnson, Nelson, and Pritchard (2007)). This yields a sample of 2,171 suits provided by the SSCAC from 1996 to 2004. Second, we restrict our attention to large domestic firms, as these firms have sufficient assets and insurance to motivate law firms to initiate suits and do not have the complications of cross-border jurisdictional concerns. Operationally, we restrict our attention to firms with at least \$750 million in assets in the year prior to the end of the class period (as firms may reduce dramatically in size surrounding the revelation of fraud). The domestic filter reduces our sample to 501 cases.

Third, we exclude all cases in which the judicial review process leads to the case's dismissal.<sup>3</sup> Fourth, for those class actions that settled, we only include those cases where the settlement is at least \$3 million, a payment level that

<sup>1</sup> Furthermore, the suit will be filed in federal court rather than a state court because very few state cases (outside of change of control lawsuits) lead to financial settlement, especially without also involving a federal class action suit (Thompson and Sale (2003)).

<sup>2</sup> Our procedure did not lead us to include the backdating cases brought into focus by the academic work of Lie (2005) and Heron and Lie (2007), as suits launched on this basis were initiated after construction of our sample.

<sup>3</sup> We do retain cases voluntarily dismissed when the reason for dropping the suit is bankruptcy. These cases could still have had merit, but as a result of the bankruptcy status, plaintiff lawyers no longer have a strong incentive to pursue them.

previous studies suggest divides frivolous suits from meritorious ones.<sup>4</sup> Fifth, we exclude from our analysis IPO underwriter allocation cases, mutual fund timing and late trading cases, analyst cases involving false provision of favorable coverage, and cases in which the SSCAC identifies agents other than management as initiating the fraud. The third through fifth screens remove more than half the number of cases from 501 to 230.

The final filter removes a handful of firms that settle for amounts of \$3 million or greater, but that, upon our reading, seem likely to have settled to avoid the negative publicity. The rule we apply is to eliminate cases in which the firm's poor ex post realization could not have been known to the firm at the time when the firm or its executives issued a positive outlook statement for which they are later sued. This filter removes 14 cases, producing our final sample of 216 cases.

In the rest of the paper, we refer to these 216 cases as *frauds*. Strictly speaking, these are only alleged frauds. Directors and officers' insurance does not cover firm management if the courts find the firm guilty of securities fraud. Thus, all of the cases settle before reaching a court verdict, and settlements almost always involve no admission of wrongdoing. As a result, it is impossible for us to establish whether there was real fraud (which in legal terms implies the intent to deceive), gross negligence, or perhaps even just mistakes. For the purpose of this paper, however, this difference is not critical. We are interested in understanding the mechanisms that bring extreme bad execution of governance to light, not in establishing intent.

### *B. Data: Identifying the Detector of a Fraud*

Our key variable is the identity of the actor who brings each fraud to light. To uncover the fraud detectors for each of our 216 cases, we search Factiva for news wires and articles over the period from 3 months prior to the class action period (defined as the period over which the suit claims misbehavior) to the settlement date or the current date, if the case is still pending. Our searches return approximately 800 articles per case. The point to reading so many articles for each case is to understand, as much as possible, the circumstances of the alleged fraud and the detector who reveals the information. Table I provides definitions of the variables we collect from the case studies.

In a number of cases, we find that the whistleblower is not the person labeled by the media as such. A chain of events initiated by another party may already be forcing the scandal to light when an individual expedites the process by disclosing internal information. For instance, Enron's whistleblower by our classification is the Texas edition of the *Wall Street Journal*, not Sherron Watkins, who is labeled the Enron whistleblower. Of course, we do not wish to undercredit the importance of individuals who contribute details as the fraud

<sup>4</sup> Grundfest (1995), Choi (2007), and Choi, Nelson, and Pritchard (2008) suggest a dollar value for settlement as an indicator of whether a suit is frivolous or has merit.

**Table I**  
**Data Definition and Sources**

This table describes the main variables used in our analysis and provides the sources.

Variable	Description	Sources
Detector of fraud	The actor to first identify the fraud based on our reading of the legal case and an average of 800 articles from Factiva in a window from 3 months before the class action period to settlement. Detector categories include: auditor, analyst, equity holder, short seller, media, clients & suppliers, financial market regulators, non-financial-market regulators, employees, and lawyers. Media is credited only when the story does not indicate another actor as the source. Financial market regulators are the SEC and stock exchanges. Non-financial regulators include industry regulators (e.g., FERC, FAA, FDA) and government agencies.	Security Class Action filings available from Stanford Securities Class Action Clearinghouse (SSCAC) database, Factiva articles.
Settlements and fines	The sum of the settlement amount paid to shareholders in the class action lawsuit; any fines or settlements paid to the SEC, or the courts by the firm, its insurance, or its officer/directors; and any fines or settlements paid to the courts or regulators by the firm's agents (auditors and investment banks) regarding the impropriety.	Security Class Action filings in SSCAC database, SEC, Factiva articles.
Assets	The dollar value of assets in the year prior to the revelation of the fraud.	Compustat.
Fraud duration	The class period defined in the final court-certified security class action suit. We restrict the maximum duration to 3 years, to avoid changes in duration possibly arising from changing rules with the passage of SOX in July of 2002.	SSCAC.
Financial restatement dummy	Value of 1 given for filing a 10-Q/A or 10-K/A or an 8-K that referred to restatement information (116 cases); announcing an intention to restate the firm's financials but not as a result of bankruptcy (e.g., Enron) (7 cases); taking a one-time accounting-related charge (6 cases); or having accounting-related investigations for ongoing cases (3 cases).	SEC filings, General Accounting Office (GAO) report on Financial Statement Restatements.

*(continued)*

**Table I**—*Continued*

Variable	Description	Sources
Short interest	The total number of shares investors have sold short but not yet bought back. This information is available monthly from Bloomberg. We normalize short interest by the total number of outstanding shares for each company.	Bloomberg.
Investment bank tier of equity analysts	We identify equity analysts by combining information in the detailed file of analyst forecasts and recommendations from I/B/E/S. We collect information on both equity analyst whistleblowers and analysts in the same firms who did not blow the whistle. We follow Hong and Kubik (2003) and classify the tier of the investment bank where the analyst is employed for the period immediately prior to blowing the whistle and for the subsequent 2 years. Hong and Kubik (2003) report a well-established hierarchy that they capture by identifying as top tier the 10 largest brokerage houses by year, measured by the number of analysts employed. We use their ranking, where available, and update.	Analyst information from I/B/E/S. Investment bank information from Hong and Kubik (2003) and <i>Vault Career Guide to Investment Banking</i> (2007).
All-Star analysts	We identify equity analysts by combining information in the detailed file of analyst forecasts and recommendations from I/B/E/S. We collect information on both equity analyst whistleblowers and analysts in the same firms who did not blow the whistle. We identify whether an analyst is an All-American All-Star analyst using the annual survey in <i>Institutional Investor</i> . We identify the ranking immediately prior to blowing the whistle (taking into account the lag between the surveys being collected and the rankings being published), and in the next 2 subsequent years.	Analyst information from I/B/E/S. <i>Institutional Investor</i> magazine.
Media status change indicator	Takes the value 1 for a promotion, 0 for no change in status, and -1 for a demotion for the set of whistleblowing journalists and their peers, identified as reporters at the	<i>News Media Yellow Book</i> .

*(continued)*



Table I—Continued

Variable	Description	Sources
	same news outlet with a similar status at the time. For example, an Accounting Reporter in the Business Day Desk is considered a peer to a Wall Street Reporter in the Business Day Desk for the <i>New York Times</i> . In some cases, the reporter has a unique position in the desk she/he belongs in. A peer in this case is someone who holds the same title but belongs in a different desk. Change in status is defined both 1 and 3 years after publication of the article. The original classification of journalists with a similar status, and subsequent changes, is based on an independent classification by an established journalist.	
Health care dummy	Includes drug, drug proprietaries, and druggists' sundries (SIC 5122), health care providers (8000-8099), and health care-related firms in Business Services.	Industries identified in Winston (1998) and others.
Regulated firms	Includes health care (above) plus financials (SIC 6000-6999); transportation equipment (SIC 3700-3799); transportation, communications, electric, gas, and sanitary services (SIC 4000-4999).	Industries identified in Winston (1998) and others.
Organization depth	Captures organizational depth by industry.	Rajan and Wulf (2006).

emerges. However, our aim is to identify the initial force that causes a scandal to come to light.

To mitigate potential concerns about subjectivity in identifying the first actor to bring each fraud to light, we implement a meticulous procedure. The initial coding of each case was done by a research assistant (a law student) and, independently, by at least one of the authors. Where judgment was required, all three authors analyzed the case until a consensus was reached. A year after the initial coding we divided the cases into thirds and each of the authors recoded cases without referencing the prior coding. Again, when the coding was at all unclear, all three authors read the case to ensure consistency in interpretation. In the process of verifying our coding, we went back to our sources and created a list of the news article(s) that were most informative in pointing to which player was the whistleblower (this list is available on our websites and in an internet Appendix on the *Journal of Finance* website at <http://www.afajof.org/supplements.asp>.) We sent this document to academic

colleagues who work in corporate governance and to the NBER corporate governance list soliciting comments regarding the details of particular cases.

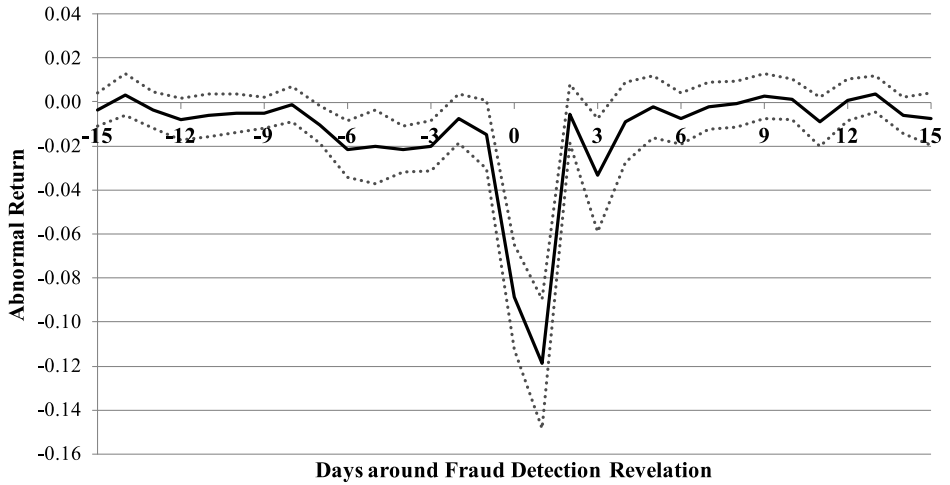
The document above includes a “smoking gun” indicator that identifies those cases where we have the most confidence in the classification.<sup>5</sup> Our results are robust to using only the sample of smoking gun cases.<sup>6</sup> As a further check, we verify our identification of a given whistleblower is plausible by conducting an event study to see whether it corresponds to a major movement in the stock price. For each company, we consider the time interval from the beginning of the class action period (the date when the fraud allegedly began) until 1 year after the end of the class action period. For each firm we regress stock returns on the S&P500 returns and an indicator variable marking the date of the news article that we associate with a whistleblower bringing a fraud to light. We then repeat the regression 30 times, changing the event date in each of the regressions such that we run the single-day event study for all dates from the news article date minus 15 days to the news article date plus 15 days. The average of the estimated coefficients of these dummy variables is plotted in Figure 1A. Since it is possible that a few large stock price declines could be driving our results, we rerun the event study using median regressions rather than OLS (Figure 1B). While there are few negative abnormal returns in dates before the whistleblowing event, on average there is a 20% negative return in the 2 days around the time the whistle was blown, providing support for our classification and for the materiality of the cases.

Notwithstanding, our coding may still be problematic when the whistleblowers are short sellers. Short sellers have a strong incentive to identify and disseminate bad news (Diamond and Verrecchia (1987)), but no incentive to reveal themselves as the source. A fraud-revealing short seller might be cut off from future information from firms and might face suits or investigations for spreading false information (e.g., Lamont (2003)). We investigate the possibility that short sellers hide their revealing of corporate fraud by testing whether each firm’s average short interest position (from Bloomberg) during the 3 months prior to the fraud revelation date is more than three standard deviations higher than that during the year prior. If we find this to be the case, we reclassify the whistleblower as a short seller. We choose the three-standard deviation rule because the volatility in the series is high for firms after accusations. In the Internet Appendix, we present the graphs of the short interest positions for each of the cases that we reclassify. Our findings are similar using alternative approaches to identify hidden short sellers, as we show in a previous version

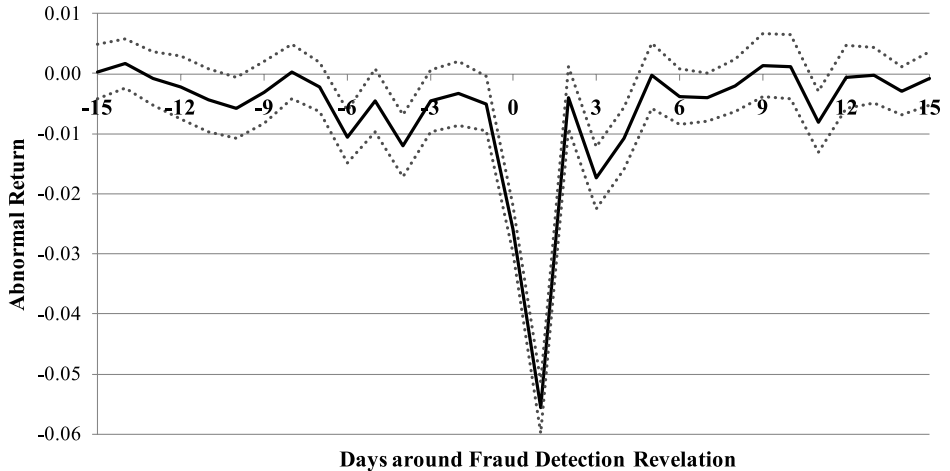
<sup>5</sup> To illustrate the importance of this final step, consider cases in which we pinpoint the fraud detector to be the media. We only attribute the media as the identifier of the fraud if the news story does not give credit for the information to any specific source, named or unnamed (e.g., anonymous employee). However, the media will only get a smoking gun designation if the article reveals that the media directly discovered the fraud.

<sup>6</sup> Even with these procedures, we cannot be completely certain that the whistleblower we identify was not secretly tipped by an employee. This biases us against finding a role for employees and makes it more likely to find a role for actors emphasized in the legal and financial views of fraud detection.

Panel A: OLS regression estimates



Panel B: Median regression estimates



**Figure 1. Event study around the whistleblowing date.** For each company, we consider the time interval from the beginning of the class action period (the date when the fraud allegedly began) until 1 year after the end of the class action period. For each firm, we regress stock returns on the S&P500 returns and an indicator variable marking the date of the news article that reported on the fraud detection. We then repeat the regression 30 times, changing the event date in each of the regressions such that we run the single-day event study for all dates between 15 days before and 15 days after the news article date. Figure 1, Panel A reports the estimates of the event dummy using an OLS regression, while Figure 1, Panel B reports the estimates using a median regression.

of the paper where we include additional control variables such as those that capture aggregate movements in short interest. Karpoff and Lou (2008) also investigate this issue in their sample of SEC enforcement actions.

Not all frauds are equally important. Some, like Enron, destroy companies and billions of dollars of value, while others are less severe. To capture these differences we weight each fraud, where the weight captures the severity of fraud. We compute these weights by summing any class action lawsuit settlement; any fines or settlement paid by the firm, its insurance, or its officer and directors; and any fines or settlements paid to the courts or regulators by the firm's agents (auditors and investment banks).<sup>7</sup>

### *C. Selection Bias of Data—Frauds Not in the Public Domain*

By focusing on discovered frauds, we introduce two selection biases: we do not observe frauds that are never caught and we do not observe frauds caught so early that they never enter the public domain. In addition, we cannot say anything about the importance of specific mechanisms in preventing fraud that does not occur.

Monitoring by the board of directors might be very effective in deterring fraud and in stopping frauds early on. In our sample, we attribute 34% of the fraud detections to internal governance, but this is undoubtedly a vast underestimate of how many frauds are prevented and corrected by internal corporate governance.<sup>8</sup> Since we cannot draw any specific conclusion about the effectiveness of internal control systems, we exclude the internal governance revelation cases from the majority of our analysis and refer the interested reader to Bowen, Call, and Rajgopal (2007). What our data do allow us to ask is: which are the most effective *external* mechanisms that help *detect* corporate fraud when there is a failure of internal mechanisms. This is an important aspect of governance that has received little attention.

### *D. Distribution of Whistleblowers*

Table II presents the distribution of whistleblowers. Column 1 reports the raw data while column 2 reports the distribution after adjusting for hidden short seller activity. We focus on the latter distribution since it is more credible. The distribution reveals a clear picture of fraud detection: no single detector type dominates. The United States apparently relies upon a village of whistleblowers. Six players account for at least 10% of detections, while none

<sup>7</sup> These estimates do not include the market value losses due to reputational effects. As Karpoff, Lee, and Martin (2008a, 2008b) show, these losses can be substantive. Nevertheless, to the extent that they are proportional to the settlement and fines, they should not affect our conclusions.

<sup>8</sup> The vast majority of the internal governance cases are associated with either a managerial turnover or an economic or financial crisis that requires some major restructuring. These cases do not appear to be precipitated by an imminent whistleblower. There are, however, some cases where the firm's decision to come clean could have been triggered or even forced by the threat of an imminent revelation by a whistleblower. Our extensive reading of the cases allows us to identify these instances and where we credit the fraud detection to the whistleblower.

**Table II**  
**Who Detects Corporate Fraud?**

We identify a case as one of *internal* governance when the revealer of fraud is firm management (e.g., via a press release or resignation) or the board of directors. Column 1 is the original coding. In column 2, we recode the fraud detector as a short seller when short selling activity prior to revelation is more than three standard deviations above the prior 3-month average. Column 3 adjusts column 2 to reflect a value-weighting of cases, where the weights are the adjusted value of the sum of settlements and fines. The adjustment is the winsorized settlement value. For the few cases that have not settled or where the settlement amount was not made public, we use the median settlement amount. The final column presents, for robustness, the cases that we identify as a “smoking gun.” See the Internet Appendix for further information on reclassifications, settlements and fines and smoking gun classifications.

Panel A: Distribution of Fraud Detectors				
Fraud Detector	Raw Distribution (Equal Weight)	Data Adjusted for Short Activity (Equal Weight)	Data Adjusted for Short Activity (Value Weight)	Robustness: Smoking Guns Only (Equal Weight)
	(1)	(2)	(3)	(4)
Internal governance	74 (34.3%)	64 (29.6%)	60 (27.9%)	n/a
External governance	142 (65.7%)	152 (70.4%)	156 (72.1%)	112
Total cases	216 (100%)	216 (100%)	216 (100%)	112 (100%)
Fraud Detectors within External Governance				
Analyst	24 (16.9%)	21 (13.8%)	24.1 (15.9%)	18 (16.1%)
Auditor	16 (11.3%)	16 (10.5%)	11.3 (7.4%)	13 (11.6%)
Client or competitor	9 (6.3%)	7 (4.6%)	2.7 (1.8%)	4 (3.6%)
Employee	26 (18.3%)	26 (17.1%)	25.6 (16.8%)	21 (18.8%)
Equity holder	5 (3.5%)	5 (3.3%)	5.3 (3.5%)	5 (4.5%)
Industry regulator, gvt. agency or self-regulatory organization	20 (14.1%)	20 (13.2%)	14.1 (9.3%)	17 (15.2%)
Law firm	5 (3.5%)	5 (3.3%)	3.5 (2.3%)	2 (1.8%)
Media (incl. academic publications)	22 (15.5%)	20 (13.2%)	35.7 (23.5%)	13 (11.6%)
SEC	10 (7.0%)	10 (6.6%)	8.6 (5.7%)	8 (7.1%)
Short-seller	5 (3.5%)	22 (14.5%)	21.2 (13.9%)	11 (9.8%)
External governance total cases	142 (100%)	152 (100%)	152 (100%)	112 (100%)

is responsible for more than 17%. Together, these six players account for 82% of all cases.

What is more surprising are some of the key players: employees (the most important external governance group with 17% of the cases), media (13%), and industry regulators (13%). These players do not appear in the traditional discussions of corporate governance, but the data suggest that they should. By contrast, auditors account for only 10.5% of detections and short sellers, who should have the strongest incentive to see fraud come to light, account for 14.5%, even under the more generous attribution mechanism.

A third fact emerging from Table II is the relative unimportance of many mechanisms emphasized in the literature. Completely missing are investment banks, commercial banks, and stock exchanges. The absence of banks or investment banks in fraud detection is consistent with Coffee's (2001) hypothesis that these actors have "neither the obligation nor the right to make disclosure when any reasonable doubt exists concerning the client's obligation of disclosure." (Coffee (2003, p. 1295)). This result does not preclude the possibility that these actors played a more indirect role, for example, not accepting jobs from companies whenever a concern of fraud emerged. The SEC, plaintiff lawyers, and equity holders do a little better than the banks, but together only account for 13% of all cases.

In column 3, we investigate whether the results are an artifact of treating all frauds equally by introducing a value-weighted distribution, where value is the value of settlements and fines related to the fraud. The median fraud punishment is \$34 million, with a mean of \$198 million. This difference is due to a couple of outlying cases (e.g., Enron (\$7.4 billion) and Cendant (\$9.7 billion)) whose damages completely swamp the distribution. For this reason, we winsorize the settlements and fines at the upper 10<sup>th</sup> percentile and use the winsorized punishments as the fraud size weights.<sup>9</sup> Column 3 shows that value-weighting does not change our results much. If anything, it makes the traditional monitors look even less important, with the auditors dropping from 10% to 7% and the SEC from 7% to 6%. The only category of whistleblowers that dramatically increases in importance when we value-weight is the media, which account for almost one-quarter of the detections. This asymmetry likely reflects the particular incentives journalists face: the importance of a scoop is directly related to both the size of the company involved and the magnitude of the fraud. We return to this point in Section II.C.3.

Differences in our ability to identify the fraud detector also do not change the distribution. In column 4, we restrict our attention to those cases that we have the most confidence in, that is, cases that we classify as having a smoking gun (112 of the 152 cases of external whistleblowing). The distribution is almost identical to that in column 2, relieving the concern that our results are driven by subjective calls.

<sup>9</sup> The punishment amounts by whistleblower type are provided in the Internet Appendix.

## II. Making Sense of the Distribution: Theory and Results

While these descriptive statistics are interesting, they cannot be evaluated outside of a theoretical framework, which we provide below.

### A. Theory: Who Should Blow the Whistle?

Which external control mechanisms should intervene when the board, management, and internal control systems fail to identify and resolve governance shortfalls? The legal and economic literatures offer three main views.

- (i) *Legal view: Corporate fraud should be revealed by those mandated to do so, namely, auditors and securities regulators*

The legal view of the firm emphasizes the roles of external auditors and the SEC. The Securities Act of 1933 requires all firms subject to the Act to have an annual audit of financial statements, and the Securities Exchange Act of 1934 underscores the roles of the audit committee and independent auditors in their financial monitoring role. The second pillar of the legal view is the SEC. According to its web page, the SEC's primary goals are "promoting the disclosure of important market-related information, maintaining fair dealing, and protecting against fraud."

- (ii) *Private litigation view: Corporate fraud should be exposed by private litigation lawyers*

Coffee (1986) states that contingent fee payments in security class action cases create large incentives for lawyers to bring cases against companies committing value-relevant fraud. This view has been recently supported by La Porta et al. (2006), who show in an international comparison that private enforcement (which they identify with security class action suits) is more effective than public enforcement in dealing with security law violations.

- (iii) *Financial risk view: Fraud should be revealed by parties with the most payoff at risk, namely, investors and their delegates*

According to Fama (1990), building on the previous work of Fama and Jensen (1983a, 1983b), it is efficient to insulate most firm stakeholders from risk by providing them with a fixed payoff. As a result, the incentives to monitor and the role for monitoring are left to equity holders, debt holders, and their delegates (auditors, analysts, rating agencies, and bankers). According to this view, no role for monitoring is expected from stakeholders with fixed-payoff contracts, such as employees, suppliers, and customers. If employees have significant stock option stakes (Bergman and Jenter (2007)), however, their incentives may be aligned with those of equity holders and thus they might have incentives to monitor.

While these three theories dominate the current corporate governance discussion, we think that they lack several factors important to explaining the detection of fraud. First, there are *monetary incentives to reveal fraud that do not arise from stock ownership*. The most obvious actors fitting this depiction

are short sellers, whose positions benefit from the arrival of negative news. A more subtle but equally important case is employees in industries dealing with the government. Thanks to the Federal Civil False Claims Act (also known as the *qui tam* statute), when the fraud involves a false claim against the government, individuals who bring forward relevant information are entitled to between 15% and 30% of the money recovered by the government. This is particularly relevant in the health care and defense industries, where a large portion of revenues are derived from governmental billings.<sup>10</sup>

A second important factor is *career concerns*. Several potential fraud detectors may derive reputational benefits from blowing the whistle, mostly in the form of better career opportunities. Journalists, analysts, auditors, regulators, and law firms are in this category. However, only for law firms is the career benefit of blowing the whistle unequivocal. For all the others, besides the potential career benefits, there might be some costs too. For example, a journalist can be denied access to information if he develops a reputation for exposing corporate scandals.

A third missing factor is the *cost of accessing information*, for clearly there are differences in the cost that different actors bear to access information about fraud. As Hayek (1945) says, information is diffuse. As a result, certain actors (employees, industry regulators, and analysts) gather a lot of relevant information as a byproduct of their normal work. An industry regulator, for example, may uncover securities fraud while using its regulatory discovery privilege unrelated to financial matters (e.g., Schein Pharmaceutical), or an employee might be confronted with management misbehavior while trying to maintain operational safety standards (e.g., Northeast Utilities). By contrast, an analyst or a short seller has to delve through details of financial reports and industry trends to uncover misrepresentations (e.g., CVS and CHS Electronics).

### B. Results of Testing Competing Theories of Whistleblowing

Which of these views best explains fraud detection? A concern in testing the theories is the question of how we can credit one theory or another with the motivation for whistleblowing. Our identification of the effectiveness of the competing motivations comes from our ability to bundle predicted whistleblowers together and then see which bundles have explanatory power in explaining the distribution.

In Table III, the dependent variable is a categorical variable identifying the fraud detector for each of the 152 cases. Each case has 10 observations, one for each potential type of whistle blower, and the dependent variable identifies the actor responsible for the case in question. We use a conditional logit estimation to control for the unobserved difficulty in discovering and revealing each case via a fraud-case fixed effect. The independent variables are indicators bundling potential whistleblowers together as predicted by theory. In particular, *Legal*

<sup>10</sup> Another possibility is to pursue a suit under the tax laws, but this provision only came into effect in December 2006 and was not in effect during our sample period.



**Table III**  
**Competing Theories of Who Blows the Whistle—Results**

The table reports conditional logit tests of fraud detection theories, where the dependent variable is an indicator for being the fraud detector for that case with case fixed effects. Panel A reports results for equal-weighted tests, and Panel B value-weighted test results. Robust standard errors are in parentheses. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. The mfx column reports marginal effects for significant variables in the previous column.

Theories	Dependent Variable: Choice of Fraud Detector among 10 Types					
	(1)	(2)	(3) mfx	(4)	(5)	(6)
Panel A: Equal Weighted						
Legal view	-0.962*** (0.308)					
Private litigation	-1.460*** (0.470)					
Financial risk	-0.183 (0.213)	-0.167 (0.216)		-0.268 (0.232)	-0.290 (0.241)	-0.315 (0.244)
Monetary rewards	1.065*** (0.290)	0.949*** (0.273)	0.230	0.934*** (0.280)	0.937*** (0.280)	0.933*** (0.281)
Career concerns	1.047*** (0.249)	0.464** (0.201)	0.115	0.453** (0.211)	0.453** (0.213)	0.451** (0.214)
External access	-0.953*** (0.239)	-0.596*** (0.205)	-0.148	-0.671*** (0.214)	-0.685*** (0.221)	-0.700*** (0.221)
All-Star analyst %				1.374** (0.681)		1.165 (0.871)
Analyst tenure					0.062* (0.037)	0.026 (0.049)
Observations	1,520	1,520		1,480	1,480	1,480
Pseudo $R^2$	0.059	0.027		0.031	0.029	0.031
Panel B: Value Weighted						
Legal view	-1.529*** (0.539)					
Private litigation	-1.993*** (0.676)					
Financial risk	-0.172 (0.346)	-0.169 (0.369)		-0.282 (0.426)	-0.503 (0.456)	-0.503 (0.459)
Monetary rewards	1.412*** (0.445)	1.203*** (0.413)	0.266	1.211*** (0.418)	1.210*** (0.424)	1.210*** (0.424)
Career concerns	1.573*** (0.403)	0.741** (0.324)	0.183	0.748** (0.337)	0.751** (0.358)	0.751** (0.358)
External access	-1.097*** (0.403)	-0.456 (0.354)		-0.521 (0.381)	-0.659* (0.393)	-0.659* (0.394)
All-Star analyst %				1.033 (1.032)		-0.043 (1.444)
Analyst tenure					0.102 (0.066)	0.104 (0.083)
Observations	1,520	1,520		1,480	1,480	1,480
Pseudo $R^2$	0.097	0.033		0.035	0.040	0.040

*view* variable equals unity if the potential whistleblower left-hand-side variable is either an auditor or the SEC; *Private litigation* equals unity for law firms; *Financial risk* equals unity for analysts, auditors, and equity holders; *Monetary rewards* equals unity for short sellers or employees in the health care industry; and *Career concerns* equals unity for analysts, auditors, industry regulators, law firms, media, and the SEC. To create a “*cost of access*” variable, we went back to all the cases and identified the source of the whistleblower’s information—private information inside the firm, regulatory privilege information, or public information. For only two categories, auditors and employees, does the majority of information come from private internal access. For this reason, we set the cost of access for these two categories to zero, and that of all others to one.

Table III presents the conditional logit estimates for the equal-weighted (Panel A) and value-weighted (Panel B) distributions. The results in column 1 provide little support for the legal and private litigation views, as the associated dummies are not positive as predicted but rather negative (and significant). This is not very surprising since in Table II we saw that auditors catch a mere 10.5% of the cases, while litigation lawyers catch 3%.

One explanation for the relative paucity of auditor detections is that auditors do not see this as their responsibility. As the CEO of one of the four large accounting firms stated in an interview, “investors seem to expect that an audit is an assurance of a company’s financial health. In fact, an audit is an attestation of the accuracy of a company’s financial statements, based on information that the company itself provides” (Taub, 2005). Concern over this gap between perception and reality induced the Auditing Standards Board to issue two rulings (SAS 53 in 1988; SAS 82 in 1997) to address shortcomings in the role of auditors in the detection of misstatements (Jakubowski et al. (2002)).

Turning to the weak performance of plaintiffs’ lawyers, the fact that they only reveal 3% of the cases does not mean that private litigation is useless in preventing fraud. First, it can play an important role in punishing those who have committed fraud. Second, it can help publicize and make credible the claims made by other whistleblowers. At the very minimum, however, our finding suggests that private litigation alone is not sufficient to stop fraud. It can only work when a web of other mechanisms help bring fraud to light.

Similarly, in column 1, we find no significant effects for the financial risk variable for either the equally weighted or the value-weighted distributions.<sup>11</sup>

By contrast, we find strong support for the importance of the other three factors. As expected, detectors with monetary or career incentives are more likely to blow the whistle, as are detectors with better access to information. To conservatively assess the economic magnitude of these effects, in column 2 we

<sup>11</sup> This result is robust to excluding the legal and private litigation variables, as we do in column 2 of Panels A and B. To account for the possibility that employees might be motivated to blow the whistle by their stock ownership, we also include in the finance view the employees in companies where the average stock option holding per employee is above \$6,699 (75<sup>th</sup> percentile). The results do not change.

drop the legal and private litigation dummies, which had significant coefficients in the wrong direction, and focus on the marginal effects, reported in column 3. A potential detector with a monetary incentive is 23 percentage points more likely to blow the whistle. Similarly, career incentives increase the probability of blowing the whistle by 11.5 percentage points. Potential whistleblowers who do not have direct access to information are 15 percentage points less likely to blow the whistle. These effects are robust to value-weighting the observations, except the effect of access cost (Panel B).

However, not all analysts have the same incentives and access to information. An All-Star analyst could have better access to information than other analysts while a new analyst has more to gain (and less to lose) than an All-Star analyst.<sup>12</sup> To explore this hypothesis, in column 4, we insert a variable equal to the percentage of analysts following a firm who belong to the *Institutional Investor* All American Analyst ranking (All-Star). The variable has a positive effect, suggesting that an analyst is more likely to blow the whistle when the percentage of All-Star analysts is higher, but this effect is not statistically significant. The same can be said for the average tenure of the analysts (column 5). If we insert both variables in the regression at the same time (column 6), the results do not change.

This multinomial analysis confirms the descriptive results. The traditional views of fraud detection appear to be unable to explain the results. To understand who blows the whistle we need to look at the incentives, both monetary and reputational, for doing so, as well as at the cost of gathering the information. These costs seem to represent an important barrier to uncovering ordinary fraud, but not very large cases.<sup>13</sup>

### C. Incentive Payoffs within Whistleblower Type—Results

Our distributional tests find that reputational and monetary benefits are both associated with the detection of fraud, but that reputational benefits only matter for big-impact cases. In this section, we build on these results and validate them by verifying the existence of these benefits. An advantage of our data set is that we can delve into the details of cases and into the careers of individuals revealing fraud. Of the six main classes of fraud detectors, we were able to trace the career effects for auditors, analysts, journalists, and employees. We could not do the same, however, for short sellers, since we do not know their identities, or for industry regulators, for whom it proved impossible to trace their careers.

Before undertaking this analysis a word of caution is in order. Since we do not observe the “dog that did not bark,” we only have data for those whistleblowers who chose to speak up. Assuming they behave rationally, these are people

<sup>12</sup> We thank an anonymous referee for this suggestion.

<sup>13</sup> Again, we found similar qualitative results and levels of significance when we repeated these tests restricting our attention only to the cases that we classified as most reliable, that is, that have a “smoking gun” classification.

for whom the expected benefits of blowing the whistle exceeded the expected costs. Hence, the benefits we observe overestimate the average benefit and the costs we observe underestimate the average cost. Nevertheless, this exercise is valuable as it documents the existence of these benefits and costs and is able to highlight incentives that are not generally discussed in the traditional corporate governance literature.

### *C.1. Auditors*

Almost all of the theories suggest a significant role for auditors: not only are they agents of the board with an oversight mandate, but they also have direct access to internal and external information. An auditor has an incentive to report a fraud if he is more likely to retain an account and to gain a new account after blowing the whistle.

While these incentives are very powerful in theory, they might not be as powerful in practice. Until SOX, auditors were appointed by management and thus were more likely to care about being friendly to management than being loyal to shareholders. For example, the Arthur Andersen partner suspended by the SEC for improper professional conduct in the Waste Management case was subsequently promoted by Arthur Andersen (Brickey (2004)). Academic evidence also supports the weak (if not perverse) incentives for auditors to reveal fraud. Chen and Zhou (2007) show that poorly governed firms choose lower quality auditors. Similarly, Brickey (2004) and Fuerman (2006) document that it was known that the quality of Arthur Andersen's auditing had deteriorated prior to Enron, yet they did not experience a loss of market share.

To test the role played by incentives in an auditor's whistleblowing, Table IV reports evidence on auditor turnover and new account acquisitions around whistleblowing. We identify auditor turnover from annual report data compiled by Compustat. We also manually code auditor turnover for our fraud cases by conducting Factiva searches for auditor turnover events 3 months subsequent to the revelation.

As Panel A of Table IV reports, auditors that blow the whistle are more likely to lose accounts: 50% of whistleblowing auditors lose the account of the fraud-committing firm in the year of the fraud revelation (or 3 months subsequent to the revelation, if the fraud occurs in the last quarter). This is very statistically different (at the 1% level) from auditors in the overall 1996 to 2004 sample of Compustat firms with assets greater than \$750 million, who—excluding Arthur Andersen forced turnovers—experience on average a 5% turnover. This is also very statistically different from the 14% to 15% turnover of auditors presiding over a fraud-committing firm but not uncovering or revealing the fraud. Therefore, an auditor of a fraud-committing firm is more likely to be replaced after the fraud comes to light, but this likelihood is much higher if the auditor himself blew the whistle.

Often in the labor literature, it is difficult to separate firings from voluntary resignations. However, in the case of auditors, the SEC requires all filing firms to disclose the cause of the turnover within 5 business days in a form

**Table IV**  
**Auditor Turnover**

The first row of Panel A reports the turnover of auditors in the sample of all large firms (more than \$750 million in assets) during the sample period, excluding Arthur Andersen clients during 2001 to 2002. The next two rows report the turnover of auditors for the fraud firms, separately for the fraud being revealed by internal (second row) and external (third row) mechanisms. The fourth row reports the turnover of auditors in the subset of firms where the whistleblower was the auditing firm. The third column of Panel A reports the  $p$ -value from a simple binomial test that the probability of turnover is different from the all-firms frequency in row 1. Panel B reports summary statistics for the independent variables. Panel C presents the results of a conditional logit assumption of the choice of new auditor following auditor turnover. The first two columns limit the analysis to turnovers in 1999 and 2000. Columns 3 and 4 limit the sample to the selection of auditor in 2002 for clients of Arthur Andersen as of 2000. The columns labeled mfx report the marginal effects from the prior column for the significant coefficients. Standard errors are in parentheses. \*\*\*, \*\*, and \* indicate significant differences at the 1%, 5%, and 10% levels, respectively.

Panel A								
Turnover in	Frequency		Observations		$p$ -Value for Difference from Row 1			
All large firms 1996–2004	0.052		20,171					
Fraud firms, internal 1996–2004	0.141		64		0.006			
Fraud firms, external 1996–2004	0.147		136		0.000			
Auditor whistleblowing firms	0.500		16		0.000			
Panel B								
3 Prior Year Cumulates of	1999 & 2000 Turnovers, Sample of 290 Auditor Changes			2002 Arthur Anderson Turnovers, Sample of 356 Auditor Changes				
	Mean	Std. Dev.		Mean	Std. Dev.			
Frauds in auditing firm clients	7.00	3.58		26.3	5.66			
Accounting frauds in clients	4.52	2.25		15.7	3.73			
Whistleblowing by auditor	–	–		0.913	0.250			
Frauds/market share	39.4	20.4		110.9	56.7			
Accounting frauds/market share	25.7	13.7		66.0	34.8			
Whistleblowing/market share	–	–		3.99	3.92			
Panel C								
Conditional Logit Estimation	Choice of New Auditor Turnovers 1999 & 2000				Arthur Andersen Clients' Auditor Choice in 2002			
	(1)	mfx	(2)	mfx	(3)	mfx	(4)	mfx
Proportion frauds	–0.016** (0.006)	–0.0033	–0.011* (0.006)	–0.0024	–0.005*** (0.001)	–0.0004	–0.022** (0.011)	–0.002
Proportion accounting frauds			–0.012* (0.007)	–0.0026			0.024 (0.020)	
Proportion frauds where whistleblower							0.033 (0.041)	
Big 5/4	2.10*** (0.331)		2.28*** (0.338)		4.47*** (0.515)		4.61*** (0.523)	
Observations	2,320		2,320		2,208		2,208	
Pseudo $R^2$	0.073		0.076		0.221		0.227	

8-K.<sup>14</sup> The firm initiates the replacement in the vast majority of our cases. In particular, the firm terminates the auditors' contracts in 91% of the cases when an auditor is the whistleblower, in 83% of the cases when there is a non-auditor external whistleblower, and in 91% of the cases when the firm is the whistleblower.

This result does not necessarily prove that auditors lose out by whistleblowing since they could gain on the extensive margin by attracting new clients, thanks to their enhanced reputation. To test this hypothesis, in Panel C of Table IV, we examine whether a company's historical association with fraud-committing firms affects its ability to attract new accounts. Because the demise of Arthur Andersen may have structurally changed the reputational incentives of auditors, we break the sample into two periods (1999 to 2000, and 2001 to 2003).<sup>15</sup>

We estimate a conditional logit choice model, where the dependent variable is the choice of a new auditing firm among a set of eight and the independent variables are the proportion of prior accounts with frauds (the cumulative number of frauds that took place in auditor client accounts for the 3 years prior to the turnover divided by the firms' market share), the proportion of prior accounts that required restatements (not all frauds resulted in financial restatements), the proportion of prior accounts in which the auditor itself did the whistleblowing, as well as a dummy indicating where an auditor is a Big Five/Big Four firm.<sup>16</sup>

Both before (columns 1 and 2) and after (columns 3 and 4) the demise of Arthur Andersen, we find that auditors overseeing firms where a fraud comes to light suffer in terms of reputation. Specifically, we find that a one standard deviation increase in the normalized number of large firm frauds (equivalent to 3.6 more frauds over 3 years) results in a 4.8% lower likelihood of attracting a new turnover client ( $0.048 = 20.3 * 0.0024$ ). Firms where the frauds require restatements fare even worse, with one standard deviation more accounting frauds producing an additional 3.5 percentage point decline in the likelihood of attracting a new client.<sup>17</sup>

Columns 3 and 4 repeat the analysis for the 368 accounts that have become available as a result of the demise of Arthur Andersen, finding that a one standard deviation increase in the count of prior frauds results in an 8.5% lower likelihood of attracting an Arthur Andersen client. In this sample period, we have enough observations with whistleblowing auditors to be able to add the

<sup>14</sup> We thank an anonymous referee for suggesting this test.

<sup>15</sup> By focusing on these years, we take advantage of having a rolling 3-year prior window to measure fraud detection reputation for our data starting in 1996. Of the roughly 2,400 large companies in both 1999 and 2000, we observe a total of 290 auditor turnovers.

<sup>16</sup> Arthur Andersen; Deloitte & Touche; Ernst & Young; Grant Thornton; McGladrey & Pullen; Peat, Marwick, Main; PriceWaterhouseCoopers; and others.

<sup>17</sup> We also investigated whether our finding of a negative reputation effect from frauds could be driven by a change in the composition of clients by interacting the cumulative number of frauds variable with proxies for the quality of clients. The interactions are not significant and we continue to find a negative and significant coefficient on frauds, suggesting that our results are not driven by a change in the type of clients.

proportion of companies in which an auditor blew the whistle. Consistent with positive reputation effects, whistleblowing has a positive effect on the probability of gaining new accounts, but this effect is not statistically significant.

To summarize, we find very weak evidence of auditors' incentives to blow the whistle. Auditing a fraudulent company is bad for the auditor's reputation, but conditional on doing so, bringing this information to light does not benefit the auditor: doing so is likely to cost the auditor the account and does not lead to an increase in new accounts.

### C.2. Financial Analysts

The finance and career concern views suggest a significant role for analysts in fraud detection. As agents of investors holding residual claims (for both equity and debt), they specialize in interpreting company information and generating insightful analysis. While analysts do not receive direct monetary compensation for revealing fraud, they can benefit indirectly through enhanced reputation and career prospects (e.g., Fama (1980), Hong and Kubik (2003)).<sup>18</sup>

At the same time, analysts' incentives to reveal fraud may be reduced by the potential conflict of interest between the analysis they do and the investment banking services their companies offer (e.g., Michaely and Womack (1999)). Their incentives to reveal fraud may also be significantly reduced or eliminated by their tendency to herd.<sup>19</sup> Finally, before Regulation FD analysts might have had incentives to develop a good reputation vis-à-vis the companies they followed to gain privileged access to soft information.

To test the benefits of whistleblowing on analysts' careers, we focus on two observable indicators of their career prospects used by Hong and Kubik (2003). The first measure is the *Institutional Investor* All American Analyst ranking. Every year the magazine *Institutional Investor* ranks analysts whom buy-side money managers see as the best in their industry. The top ranked in each category (All-Stars) are actively sought by investment banks and receive the highest salaries (Hong and Kubik (2003)). Our second measure of career advancement is the ranking of the investment bank where an analyst works. Hong and Kubik (2003) document a "well-defined hierarchy of prestige" among investment banks. If whistleblowing advances careers, we would expect that analysts who blow the whistle are more likely to become All-Star analysts and more likely to move to a higher-tier investment bank (as measured by Hong and Kubik's hierarchy variable, and updated to cover our extended sample period).

To properly compare the whistleblowing analysts, we benchmark against all the other analysts from I/B/E/S covering the same firm at the time the fraud was revealed. We then trace where these analysts worked and their All-Star

<sup>18</sup> Consistent with such career concerns in the analyst industry, Hong and Kubik (2000), for example, report that good forecast records are rewarded by upward mobility to higher-tiered brokerage houses, or by the retention of jobs in top-tier brokerage houses.

<sup>19</sup> Scharfstein and Stein (1990), for example, identify a "share the blame" effect, whereby the penalty for being incorrect is lower if one is not the sole incorrect voice. This herding-based bias is greater when analysts are young and there is uncertainty about their ability.

status both before and 2 years after a fraud was revealed. We exclude from the analysis those analysts who leave the industry because such movements could indicate either a promotion (e.g., to join a hedge fund) or a demotion (e.g., to spend “more time with their families,” Hong and Kubik (2003)) from the profession.

Table V presents our results. Panel A shows that whistleblowers are significantly more likely to be All-Stars (50% vs. 9.8%) and work in high-tier investment banks (60% vs. 38%) at the time they blow the whistle. The differences are strikingly large, suggesting perhaps that whistleblowing is only credible when a person has first achieved credibility.

The raw promotion and demotion probabilities reported in Panel B show that analysts who blow the whistle are more likely to be promoted and less likely to be demoted than non-whistleblowers, but neither of these differences is statistically significant. The lack of impact could be due to the univariate tests ignoring other variables that affect promotion and demotion.

For this reason, Panel C presents a multivariate setting where we estimate a logit with company fixed effects, controlling for analysts' experience in the regression. We can perform this analysis only for the All-Star measure since no whistleblowers move in investment bank ranking, which by itself is an indication of lack of positive career effects. Panel C reinforces the univariate result that whistleblowing analysts are no more likely to be promoted. However, over the 2 years following the fraud revelation, the probability that a whistleblowing analyst is demoted is 45% less likely than that for non-whistleblowing analysts following the same firms. (This is the economic effect of the logit coefficient,  $-2.562$ .) Although this is a small sample result, we feel that the inference is fairly intuitive: whistleblowing is done by successful analysts who do not worry about consequences from companies of bringing bad news to light.

### *C.3. Media*

Journalists are similar to analysts in the sense that they collect and analyze information for their clients (the readers). Furthermore, they also have an incentive to build a reputation of being nice vis-à-vis companies in order to cultivate their sources (Dyck and Zingales (2003)), and they may also face a conflict arising from the fact that the companies in their stories often make direct payments to their employers (e.g., advertising).

The main difference between journalists and analysts is that journalists are much less specialized than analysts and thus potentially have access to less company- and industry-specific information. On the upside, however, journalists might benefit more from revelation of fraud, because a scoop might help establish a journalist's career and reputation.

As Table VI, Panel A shows, 10 of the 11 cases reported by daily news outlets are published in the *Wall Street Journal* or the *New York Times*. Similarly, *Business Week* and *Fortune* account for five of the six cases identified by magazines. As is the case for analysts, whistleblowing by journalists takes place primarily at the most prestigious media outlets. As for analysts, this result may be due



**Table V**  
**Do Analysts Who Blow the Whistle Advance Their Careers?**

This table provides statistics and tests for differences in the promotion and demotion probabilities between sell-side equity analysts who blow the whistle and analysts in the firms where a whistle was blown that do not themselves blow the whistle. All-Star rankings are derived from *Institutional Investor* rankings. Ranking of investment banks follows the classification in Hong and Kubik (2003), applied to our sample period. See Table I for further information. Analyst information is from I/B/E/S. In Panel C, columns 1 and 2, the dependent variable takes the value one if the analyst became an All-Star following the whistle being blown (and was not beforehand), and zero otherwise. In Panel C, columns 3 and 4, the dependent variable takes the value one if the analyst loses an All-Star ranking following the whistle being blown. Regressions include company fixed effects. Robust standard errors are presented in parentheses. \*\*\* and \*\* indicate significant differences at the 1% and 5% levels, respectively.

Panel A: % of Highly Ranked Analysts among All I/B/E/S Analysis Covering Fraud-Committing Firms				
	Whistleblower	Non-whistleblower	<i>p</i> -Value (Diff)	
Pre-period All-Star analyst	50%	9.8%	0.000***	
Pre-period employed at high-tier I-bank	60%	38%	0.053**	
Observations	20	397		
Panel B: Career Advancement of I/B/E/S Analysts Covering Fraud-Committing Firms				
		whistleblower	Non-whistleblower	<i>p</i> -Value (Diff)
All-Star analyst				
Promoted to All-Star in	1 year	10.0%	4.5%	0.419
	2 years	12.5%	5.4%	0.398
Demoted from All-Star in	1 year	20.0%	18.4%	0.912
	2 years	22.2%	50.0%	0.138
I-bank ranking				
Promoted to high-tier I-bank in	1 year	0	1.0%	0.783
	2 years	0	3.8%	0.604
Demoted from high-tier I-bank in	1 year	0	4.3%	0.466
	2 years	0	8.5%	0.339
Panel C: Logit Test of Advancement Difference for All-Star Analysts				
Dependent Variable	Promoted		Demoted	
	One Year	Two Years	One Year	Two Years
Whistleblower	0.921 (1.540)	0.871 (1.522)	0.618 (1.653)	-2.562** (1.286)
Experience	0.528 (0.395)	0.920** (0.411)	-0.630 (0.681)	0.030 (0.525)
Pseudo $R^2$	195	155	20	34
Observations	0.104	0.173	0.149	0.155

**Table VI**  
**Who in the Media Detects Fraud?**

For each case in which the media is the fraud detector, the table records the newspaper or journal that reveals the fraud, the reporter(s) of the article, and the page on which the article appears.

Company	News Outlet	Reporter	Article Location
AOL TimeWarner	<i>New York Times</i>	Gretchen Morgenson	Page 1, Business
Computer Associates	<i>New York Times</i>	Alex Berenson	Page 1, Business
Halliburton	<i>New York Times</i>	Alex Berenson and Lowell Bergaman	Page 1, Business
Sprint	<i>New York Times</i>	David Cay Johnston	Page 25, Section 1
Ascend	<i>San Francisco Chronicle</i>	Herb Greenberg	Page 1, Business
Communications Broadcom	<i>Wall Street Journal</i>	Molly Williams	Page C11, Heard on the Street
Cardinal Health	<i>Wall Street Journal</i>	Jonathan Weil	Page C1, Heard on the Street
Enron	<i>Wall Street Journal</i>	Jonathan Weil	Page T1—regional front page of <i>WSJ</i>
E.W. Blanch	<i>Wall Street Journal</i>	Deborah Lohse	Page A10
Qwest	<i>Wall Street Journal</i>	Deborah Solomon, Steve Liesman, Denis Berman	Pages A1, B6
Raytheon	<i>Wall Street Journal</i>	N/A	
AT&T	<i>Business Week</i>	Robert Barker	Investor column (p. 264)
Bausch & Lomb	<i>Business Week</i>	Rochelle Sharpe	Page 87
Silicon Graphics	<i>Business Week</i>	Robert Hof, Ira Sager, Linda Himmelstein	Cover story
Apria Health Care	<i>Fortune</i>	Erick Schonfeld	Page 114
Sunbeam	<i>Barrons</i>	Jonathan Laing	Page 17
Cambrex	<i>Chemical Reporter</i>	N/A	N/A
Long Island Lighting	<i>Daily Electricity Reporter</i>	N/A	N/A
Bristol Myers Squibb	<i>Cancer Letter</i>	N/A	N/A
Cumulus Media	<i>Inside Radio</i>	N/A	N/A

to the fact that only the most reputable publications have the credibility to blow the whistle. An alternative hypothesis is that only very established media with a diversified advertising base can afford to alienate potential (or actual) advertisers. The pressure faced by *Fortune* when it was about to publish the first negative report on Enron lends support to this hypothesis.<sup>20</sup> Finally, it

<sup>20</sup> As reported in the *New York Times*, "Her questions were so pointed that Enron's chief executive, Jeffrey K. Skilling, called her unethical for failing to do more research. Three Enron executives flew to New York in an unsuccessful effort to convince her editors that she was wrongheaded. Enron's chairman, Kenneth L. Lay, called Fortune's managing editor, Rik Kirkland, to complain that Fortune was relying on a source who stood to profit if the share price fell." Felicity Barringer, "10 Months Ago, Questions on Enron Came and Went with Little Notice," 28 January 2002, Page 11, Column 1.

**Table VII**  
**Does Whistleblowing Advance Journalists' Careers?**

This table provides statistics and tests for differences in the promotion and demotion probabilities between reporters who blow the whistle identified in Table VII and reporters with a similar status at the same time in the same media outlet who did not blow the whistle. See Table I for further details about peer construction. Panel A reports the movement distribution, where movement is categorized as moving to a lower job, staying in the same job or equivalent job, or moving to a higher job. Panel B tests whether the mean movement is different for the whistleblower and non-whistleblower samples. An  $F$ -test is used to allow for weighting of the peers such that there is one peer and one whistleblower for each case. \*\* and \* indicate significant differences at the 5% and 10% levels, respectively.

	One Year Post-Fraud		Three Years Post-Fraud	
	Whistleblower	Non-whistleblower	Whistleblower	Non-whistleblower
Panel A: Distribution of Career Promotions & Demotions				
Lower job	0 (0%)	18 (12%)	1 (6%)	39 (26%)
Equivalent job	14 (82%)	120 (78%)	12 (71%)	80 (53%)
Higher job	3 (18%)	16 (10%)	4 (24%)	33 (22%)
Panel B: Test for Difference in Mean Movement (Mean Movement Is Coded +1 = Promoted, 0 = No Change, -1 = Demoted)				
Mean movement	0.153	-0.086	0.289	-0.083
	Ho: Whistle – Non-whistle = 0		Ho: Whistle – Non-whistle = 0	
	$F(1, 167) = 2.75^*$		$F(1, 167) = 3.99^{**}$	
	Prob > $F = 0.0990$		Prob > $F = 0.0475$	

could be the case that secret tipping of journalists by company insiders only takes place at the most prestigious media outlets.

A preliminary indication that whistleblowing might contribute positively to journalists' reputation is the fact that in the vast majority of cases (75%), the journalist presenting the information identifies him or herself by name. This contrasts with the situation for employees, as we describe below.

In Table VII, we test whether whistleblowing enhances a journalist's career. We first identify a matching sample of journalists that were in a similar position as the whistleblower at the time. We then track the career of the whistleblower and of the matching journalist to test whether whistleblowing produced a significant change in promotion or demotion probabilities.

To identify a comparison set of non-whistleblowing journalists for every journalist who writes a whistleblowing article, we gather from *News Media Yellow Book* all the names of journalists in the same position (for example, business reporter) who write for the same newspaper at the same time. This matching procedure creates a sample of 154 comparisons for the 17 whistleblowers. For all these journalists we track their employer, the desk they work at, and their

job title 1 year and 3 years after the quarter the journalist wrote the article. We then provided all of this information to a third party with expertise in journalism who classified the career changes using a three-point scale to identify promotions (+1), no change or change to an equivalent job (0), or demotion (-1).<sup>21</sup>

Panel A reports the distribution of career advancement for journalists who blew the whistle and for the comparison set. Whistleblowing journalists are never demoted within 1 year (6% are demoted within 3 years) of bringing the fraud to light, whereas non-whistleblowers face a demotion in contrast with a probability of 12% (26%). Whistleblowers are promoted 18% (24%) of the time in contrast to the 10% (22%) promotion probability for non-whistleblowers. To summarize these different career paths, in Panel B, we average the -1 (demotion), 0 (no change), and +1 (promotion) scoring. We find a positive mean movement for whistleblowers that is significantly different from the negative mean movement for non-whistleblowers, both at the 1-year and the 3-year horizons.<sup>22</sup> While we do not want to overstate these results given the limited data and rough career advancement coding, the results are consistent with positive incentives for media bringing fraud to light.

#### *C.4. Employees*

Employees clearly have the best access to information. Few, if any, frauds can be committed without the knowledge and often the support of several employees. Some might be accomplices, enjoying some of the benefits of the fraud, but most are not. To examine the incentives and disincentives that employees face in exposing the fraud, we focus on the 27 cases of employee whistleblowing in our sample.<sup>23</sup>

Table VIII provides a summary. In 37% of the cases, the whistleblower conceals his identity. This is a clear sign that the expected reputational costs exceed the expected reputational benefits of whistleblowing. This impression is confirmed by the data on the cases in which the identity of the whistleblower was revealed. In spite of these cases being those for which the expected benefit of revealing should exceed the expected cost, we find that in 82% of the cases, the whistleblower was fired, quit under duress, or had significantly altered responsibilities. In addition, many employee whistleblowers report having to

<sup>21</sup> Discussions with journalists suggested that this procedure that incorporates three dimensions of status (outlet, desk, position) and allows an experienced journalist to weight these dimensions was superior to a simpler procedure focusing just on one dimension or a fixed weighting on dimensions.

<sup>22</sup> The result gives the same result as an ordered logit test or a distribution transition matrix test.

<sup>23</sup> Bowen, Call, and Rajgopal (2007) provide further examination of employee incentives surrounding whistleblowing. They first collect whistleblower allegations arising from OSHA collection of such allegations following the passage of SOX. This part of the sample is likely to include more frivolous complaints as the sample is not subject to the same judicial scrutiny as class action law suits. The second part of their sample arises from any press allegations that connected a financial fraud with employee whistleblowing, a procedure different from our own.

**Table VIII**  
**What Are the Costs and Benefits for Employees to Whistleblow?**

The table indicates for each employee whistleblower the following information: company (column 1); the whistleblower's name and position (column 2); whether the whistleblower was terminated, quit, or given a job with significantly reduced responsibility (column 3); other costs claimed by the employee (column 4); whether a lawsuit was filed with potential for damages, including the type of lawsuit (column 5); whether an outcome to the lawsuit if any (column 6); and other possible benefits of whistleblowing (column 7). Panel A reports results for whistleblowers where the name of the whistleblower was revealed. Panel B reports results for whistleblowers that remain unnamed.

Company (1)	Whistleblower, Position (2)	Costs			Benefits		
		Terminated, Quit, or Reduced Responsibility? (3)	Other Costs (4)	Filed Lawsuit with Potential for Damages (5)	Positive Outcome of Lawsuit (6)	Other Possible Benefits (7)	
Panel A: Named Whistleblowers							
Apria Health Care	Mark Parker, Branch Manager	Yes		Yes— <i>qui tam</i> , wrongful dismissal	No—government doesn't join	Retaliation	
Citizens Utilities	Robert Arnold, Project Manager	Yes		Not clear—state filed lawsuit, gets lower rates	Yes—\$35 million	Avoid potential legal liability	
Columbia HCA Health Care/ Olisten (2 cases) Dynergy	Donald McLendon, executive of acquired firm Ted Beatty, Management Trainee	Yes	Could not find other job, financial stress.	Yes— <i>qui tam</i>		Retaliation	
Endocare	Joseph Hafemann, Corporate Controller	Yes	Could not find other job, forced to leave hometown, home broken into, threats and intimidation.	No		Avoid potential legal liability	
GTECH holdings	David Armitage, Engineer	No		No		Vengeance	

(continued)

Table VIII—Continued

Company (1)	Whistleblower, Position (2)	Costs			Benefits		
		Terminated, Quit, or Reduced Responsibility? (3)	Other Costs (4)	Filed Lawsuit with Potential for Damages (5)	Positive Outcome of Lawsuit (6)	Other Possible Benefits (7)	
Healthsouth	Weston Smith, Vice President	Yes	Sentenced to 27 months, forced to pay \$6.9 million.	No		Avoid potential legal liability	
ICG	Carl Vogel, CEO	Yes	Left within month after forcing firm to reveal concerns about fraud and accounting.	No		Maintain reputation— within year hired CEO elsewhere	
JDN Realty	William Kerley, CFO	No	Alleged loss of \$19 million including legal and job loss costs.	Yes—wrongful dismissal suit	Yes—\$2.3 million		
Northeast Utilities	George Galatis, Engineer	Yes	"If I had it to do over again," says Galatis, "I wouldn't." Alienated by coworkers.	Yes—payment to leave likely	Yes—settlement amount not revealed	On cover of <i>Time</i> magazine	

(continued)

Table VIII—Continued

Company (1)	Whistleblower, Position (2)	Costs			Benefits		
		Terminated, Quit, or Reduced Responsibility? (3)	Other Costs (4)	Filed Lawsuit with Potential for Damages (5)	Positive Outcome of Lawsuit (6)	Other Possible Benefits (7)	
Olsten	Donald McLendon, executive	Yes	Lost job, could not find other job, alienated from employees.	Yes— <i>qui tam</i>	Yes—\$85 million (significant time delay)		
Quorum	Jim Alderson	Yes	Lost job. Moved to five towns in next 10 years.	Yes— <i>qui tam</i>	Yes—\$70 million		
Rite Aid	Joseph Speaker, senior finance executive	No	Left firm a year later.	No			
Service Corporation International Solectron	Charles Albert and Thomas Chaney Ronald Sorisho, division CFO	Yes		Yes—wrongful dismissal suit	No information		
Xerox	James Bingham, Assistant Treasurer	Yes	“... will never get a job in Corporate America again,” according to Bingham’s lawyer.	Yes—wrongful dismissal suit	No information No information No information	Avoid potential legal liability Avoid potential legal liability	

(continued)

Table VIII—Continued

Company (1)	Whistleblower, Position (2)	Costs			Benefits		
		Terminated, Quit, or Reduced Responsibility? (3)	Other Costs (4)	Filed Lawsuit with Potential for Damages (5)	Positive Outcome of Lawsuit (6)	Other Possible Benefits (7)	
Panel B: Unnamed Whistleblowers							
Allegheny Energy	Unnamed executives	Unknown					
America West	Unionized maintenance workers	Unknown				Improve employment conditions	
Cendant	Accounting staff integrating newly acquired firm	Unknown				Avoid potential legal liability	
Enterasys Networks	Unnamed finance executive	Unknown					
Footstar	Corporate Accounting group	Unknown				Avoid potential legal liability	
Nicor	Anonymous letter	Unknown					
PhyCor	Doctors who are employees	Unknown				Improve employment conditions	
Symbol Technologies	Unknown letter to SEC	Unknown					
Tenet health care	Unnamed employee	Unknown					
Union Pacific	Union action	Unknown				Improve employment conditions	



move to another industry and often to another town to escape personal harassment. The lawyer of James Bingham, a whistleblower in the Xerox case, sums up Jim's situation as follows: "Jim had a great career, but he'll never get a job in Corporate America again." Even according to a law firm seeking to sell its services to potential whistleblowers, the consequences to being the whistleblower include distancing and retaliation from fellow workers and friends, personal attacks on one's character during the course of a protracted dispute, and the need to change one's career.<sup>24</sup> This is an aspect rarely emphasized in the literature. Not only is the honest behavior not rewarded by the market, but it is penalized. Why employers prefer loyal employees to honest ones is an interesting question that deserves separate study.

Given these costs, the surprising part is not that most employees do not talk, but that some talk at all. Table VII tries to give a sense of what motivates them. In 29% of the cases in which the identity of the whistleblower is known, we observe a *qui tam* lawsuit. Such suits arise from the Federal Civil False Claims Act, revised in 1986, whereby individuals revealing fraud committed against the U.S. government can collect 15% to 30% of the money recovered by the government. In our sample, three *qui tam* cases that have already settled rendered whistleblowers rewards of \$35 million, \$35 million, and \$70 million. While the outcome of *qui tam* suits can be highly uncertain and delayed in time (5 and 10 years in these cases), the expectation is that these rewards might have been an important factor in leading the employee to talk. Other potential monetary incentives are hard to find.<sup>25</sup>

Another motivation for whistleblowing could be the desire to avoid a potential liability. This seems to be relevant in 35% of the cases. A similar, but distinct, case involves ICG, where the newly appointed CEO resigned a few months after beginning his job, while forcing the firm to reveal its misdoings. This is a clear example of whistleblowing aimed at preserving reputation. Yet we do not observe any evidence of this behavior among subordinates. As the case of Sharon Watkins at Enron suggests, the best way to avoid the reputational loss is to change jobs as soon as possible, without whistleblowing.

Finally, the revelation of information by employees is highly associated with wrongful dismissal suits (29% of the identified cases). It is unclear whether these are cases where the employee is fired for blowing the whistle internally or whether whistleblowing is a form of revenge for a dismissal that is (or is perceived to be) unjust.

<sup>24</sup> See the statements on the website [quitam.com](http://quitam.com), which is organized by the Bauman and Rasor Group.

<sup>25</sup> This point is illustrated by the case of Ted Beatty, as outlined in the *Wall Street Journal*, who tried but failed to profit by selling short the stock (only stopping when he realized he was violating insider-trading rules), by giving information to a short seller (failing to elicit a payment), by giving information to a plaintiff attorney (receiving only a small consulting contract), by giving information to a newspaper in exchange for payment (the paper refused to pay), and giving information to the government (which would not hire him as consultant). "Informer's Odyssey: The Complex Goals and Unseen Costs of Whistle-Blowing—Dynergy Ex-Trainee Encounters Short-Sellers and Lawyers, Fears Being Blackballed—Seeking Justice and a Payday," by Jathon Sapsford and Paul Beckett, *The Wall Street Journal*, 25 November 2002.

### C.5. Monetary Incentives in Whistleblowing

As a test of the effect of monetary incentives on whistleblowing, we exploit the fact that *qui tam* lawsuits are not available in all industries, but rather only in the very few industries where the government is a significant buyer. Table IX compares the distribution of whistleblowers between the health care industry, which is a significant seller of services to the government, and all other industries. Consistent with this incentive having a significant impact, we find that employees reveal the fraud in 41% of cases in the health care industry but only in 14% of cases in industries where the *qui tam* suits are not available. A proportion test confirms that these shares of the distribution are different at the 1% confidence level.

However, there are at least three other possible explanations for our findings. First, heightened monetary incentives might create a free option for the employees, leading to an excessive amount of false claims.<sup>26</sup> If true, such an argument would completely change the policy implications of our results. To test this hypothesis we compare the frequency of frivolous suits (suits dismissed or settled for less than 3 million) in the health care industry to those in other industries (where they are not clearly present). We find that the percentage of frivolous suits (Panel B) is *lower* in the health care industry. Hence, there is no evidence that having stronger monetary incentives to blow the whistle leads to more frivolous suits.

A second explanation consistent with our finding of more employee whistleblowing in the health care industry comes from Bowen, Call, and Rajgopal (2007). Bowen, Call, and Rajgopal find that employee whistleblowing is more likely in firms in “sensitive” industries, which the authors define as including pharmaceuticals, health care, medicine, the environment, oil, utilities, and banks. Not surprisingly, these are regulated industries. To ensure that our results come from monetary incentives and not from heightened moral sensitivity in these regulated industries, we set up a simple logit framework in which we estimate the probability that the whistleblower is an employee as a function of the industry. The results are presented in Panel C of Table IX.

Column 1 reproduces a test similar to the proportion test, including only the health care dummy as a predictor of employee whistleblowing. The marginal effects reported suggest that among our fraud-committing firms, those in the health care industry have 0.271 higher probability of having an employee as the whistleblower. The second column captures the “sensitivity” of the industry by including a dummy variable for regulated industries, defined by the SIC codes listed in Table I. We do not find any statistical evidence that employees in regulated industries are more likely to be whistleblowers.

A third possibility is that the health care industry might have a flatter organizational structure so that employees are more likely to observe executives’ actions and become informed of a fraud if it occurs.<sup>27</sup> To address this concern, we obtain Rajan and Wulf’s (2006) measure of depth (verticality) of hierarchies

<sup>26</sup> Bowen et al. (2007) provide a more extended discussion of this issue and related literature.

<sup>27</sup> We thank an anonymous referee for this suggestion.

**Table IX**  
**Do Monetary Incentives Impact Employee Whistleblowing?**

This table reports differences in fraud detection between health care industries and non-health care industries. In health care, government purchasing creates the potential for employees to use the *qui tam* statute and derive a monetary benefit from whistleblowing. Panel A reports differences in the distribution of fraud detectors based on our sample of all external whistleblowers. Panel B reports the dismissal rates of suits over our sample period across health care and non-health care industries based on data from Stanford Securities Class Action Clearinghouse. Panel C tests whether employee whistleblowing is more likely in industries where monetary incentives exist as a result of *qui tam* suits, where the dependent variable takes the value of one if the fraud detector is an employee and zero otherwise. Table I provides definitions for the industries included in health care and regulated dummies. The measure of organizational depth is the Rajan and Wulf (2006) measure. \*\*\* and \*\* indicate significant differences at the 1% and 5% levels, respectively.

Panel A: Distribution of Fraud Detectors by Health Care or Other Industries				
	Non-Health Care		Health Care	
	Count	Freq %	Count	Freq %
Analyst	20	14.8%	1	5.9%
Auditor	14	10.4%	2	11.8%
Client or competitor	7	5.2%	–	–
Employee	19	14.1%	7	41.2%
Equity holder	4	3.0%	1	5.9%
Industry regulator	17	12.6%	3	17.7%
Law firm	5	3.7%	–	–
Newspaper	17	12.6%	3	17.7%
SEC	10	7.4%	–	–
Short seller	22	16.3%	–	–
Total	135		17	
Proportions test null hypothesis: Proportion (employee whistleblowing, non-health care) – Proportion (employee whistleblowing, health care) = 0				
	Difference	–27.1%	<i>p</i> -Value	0.005

Panel B: Frivolous Suits by Health Care or Other Industries				
	Original Sample	Fraud Cases	Dismissed as Frivolous	Percentage Frivolous
Health care	30	17	13	36.7%
Non-health care	471	199	272	57.8%
Total sample	501	216	285	56.9%

Panel C: Is Employee Whistleblowing More Common in Health Care?				
	Logit Estimates: Dependent Variable: Probability of Fraud Detector Being Employee			
	(1)	(2)	(3)	(4)
Health Care				
Coefficient	1.452***	1.577***	1.646***	1.950***
Robust standard error	(0.55)	(0.60)	(0.57)	(0.66)
Marginal effects	0.271	0.299	0.307	0.374

(continued)

**Table IX**—*Continued*

Panel C: Is Employee Whistleblowing More Common in Health Care?				
Logit Estimates: Dependent Variable: Probability of Fraud Detector Being Employee				
	(1)	(2)	(3)	(4)
<b>Regulated</b>				
Coefficient		-0.269		-0.591
Robust standard error		(0.482)		(0.53)
Marginal effects		n/sig		n/sig
<b>Industry Organizational Depth</b>				
Coefficient			-1.210**	-1.467***
Robust standard error			(0.52)	(0.56)
Marginal effects			-0.157	-0.187
Observations	152	152	152	152
Pseudo $R^2$	0.046	0.048	0.071	0.080

by industry. When we insert this measure in the regression (column 3), we find that, indeed, more vertical hierarchies are less likely to have employees blowing the whistle. But this effect does not change the magnitude and significance of the health care dummy, increasing our confidence that the monetary incentives available in health care drive this result. Finally, in column 4 we include both the regulated and the industry organization depth measures, again finding a significant effect for health care.<sup>28</sup>

### *C.6. Summary*

Overall, our analysis of whistleblowers' incentives suggests that positive reputational and career incentives tend to be weak, except for journalists. For this category, however, the incentives exist only for very large frauds in well-known companies. We cannot expect the media to act as an effective monitor in smaller companies and for smaller and more technical violations. Monetary incentives seem to work well, without the negative side effects often attributed to them, but they are limited to a very specific set of cases. By contrast, we identify significant costs of whistleblowing for employees. Before drawing any conclusions on what could be done to improve fraud detection, it is interesting to examine how the pattern of whistleblowing has responded to the various regulatory changes to incentives that followed the Enron scandal.

### *D. Impact of Regulatory Changes on Incentives*

Thus far we have considered the whole period 1996 to 2004 as homogenous. But there have been a number of regulatory changes leading up to and following the Enron and WorldCom scandals. In 2000, Regulation Fair Disclosure was

<sup>28</sup> These findings are also robust to the use of various controls for characteristics of the fraud.

approved, making it impossible for analysts to have private conversations with the top executives of the firms they follow. According to the proponents of this measure, this change should have increased analysts' independence, making them more likely to reveal fraud. Opponents, in contrast, argued that this change could reduce analysts' incentives to search for information, making them less likely to reveal fraud. In late 2001 and early 2002, the Enron scandal and the collapse of Arthur Andersen increased the risk faced by auditors and thus their incentives to speak up.

In July 2002, the Sarbanes-Oxley Act was passed, introducing a vast array of changes. SOX made SEC involvement more politically appealing by providing that SEC civil penalties be used to compensate investors who were victims of securities fraud. It also made SEC involvement more feasible by significantly increasing its budget. SOX dramatically changed auditors' incentives by introducing a ban on consulting work done by audit firms; by requiring that the hiring and firing of auditors be a decision of the audit committee, which is now required to be composed only of independent directors; and by introducing Section 404, which enhances the monitoring of internal control systems.

SOX also altered the cost of whistleblowing for employees. Section 301 requires audit committees of publicly traded companies to establish procedures for "the confidential anonymous submission by employees of the issuer of concerns regarding questionable accounting or auditing matters." It also enhances protections for employees against being fired for coming forward with such information. Finally, in April 2003, the New York Attorney General reached a settlement with 10 of the nation's top investment firms aimed at promoting the independence of equity research. If this Global Research Settlement achieved its goal, the analysts should have become more independent and thus active in revealing fraud.

Since all of these changes took place almost simultaneously, it is impossible to separate the effect of each of them. However, it is possible to examine whether the relative frequency of the different types of whistleblowers changed according to the net changes in their relative incentives.

Table X reports the frequency of the different types of whistleblowers before and after SOX (which we take as the middle point of all these changes). The biggest change is for auditors. Prior to SOX, auditors accounted for just 6% of the cases detected by external actors, and they focused exclusively on frauds requiring financial restatements. Post-SOX, they account for 24% of cases, and their activity is spread across not only financial restatement cases, but also those not involving restatements. One possible explanation for this broader scope is auditors' increased exposure to liability for a firm's fraudulent activity. Another is that auditors have become more aware of fraudulent activity as a result of their responsibility in evaluating internal controls per SOX Section 404. A third explanation is that auditors have become more sensitive to shareholders' needs because independent directors on the audit committee appointed them. Our data do not allow us to distinguish among these interpretations.

We do not observe much change in the role of analysts, while there is a surge in SEC interventions, which go from a mere 5% of the cases to 10%, although

**Table X**  
**Do Regulatory Changes around the Passage of SOX Affect Whistleblowing?**

This table reports differences in the pattern of whistleblowers before and after the passage of the Sarbanes-Oxley Act (SOX) in July of 2002. Columns 2 and 4 report results where observations are weighted by value using the sum of all settlements and fines associated with the class action. \*\*\*, \*\*, and \* indicate significant differences in the distribution pre- and post-SOX for each category compared to all other categories using a Chi-square distribution test.

	Ended Pre-SOX		Ended Post-SOX	
	Equal Weight (1)	(Value Weight) (2)	(Equal Weight) (3)	(Value Weight) (4)
Analyst	16 (14.0%)	21.3 (17.4%)	5 (13.2%)	2.8 (9.6%)
Auditor	7 (6.1%)	5.9 (4.8%)	9** (23.7%)	5.3*** (18.1%)
Client or competitor	7 (6.1%)	2.7 (2.2%)	—	—
Employee	21 (18.4%)	18.7 (15.2%)	5 (13.2%)	6.9 (23.5%)
Equity holder	4 (3.5%)	4.5 (3.7%)	1* (2.6%)	0.7 (2.4%)
Industry Regulator, Gvt. Agency	13 (11.4%)	10.4 (8.5%)	7 (18.4%)	3.7 (12.6%)
Law firm	5 (4.4%)	3.5 (2.9%)	—	—
Media	17 (14.9%)	31.2 (25.4%)	3 (7.9%)	4.5 (15.4%)
SEC	6 (5.3%)	6.8 (5.5%)	4 (10.5%)	1.8 (6.1%)
Short seller	18 (15.8%)	17.5 (14.3%)	4 (10.5%)	3.7 (12.6%)
Total external governance	114 (100%)	122.7 (100%)	38 (100%)	29.3 (100%)

if we look at the value-weighted number, we do not see this trend. The same increasing pattern is true for industry regulators.

The final point from Table X is that the percentage of employee whistleblowers drops from 18% to 13%, suggesting that SOX's protection for whistleblowers has not increased employees' incentives to come forward with cases of fraud.<sup>29</sup> One possible explanation is that rules that strengthen the protection of the whistleblowers' current jobs offer only a small reward relative to the extensive ostracism whistleblowers face. Additionally, just because

<sup>29</sup> This is not to say that the legislation has not influenced employee whistleblowing by other measures. Bowen, Call, and Rajgopal (2007) report, for example, 137 cases of alleged financial frauds from employee whistleblowing arising from their inquiries to OSHA offices that are mandated to oversee SOX whistleblower provisions. This sample, unlike ours, does not limit cases to those where there has been judicial scrutiny and where there are significant financial settlements.

jobs are protected does not mean that career advancements in the firm are not impacted by whistleblowing. Another explanation could be that job protection is of no use if the firm goes bankrupt after the revelation of fraud. Given the limited amount of time since the regulatory changes in our sample, we cannot tell whether these changes in the patterns of whistleblowing are permanent or have temporarily crowded out the oversight of other actors.

### III. Conclusions

The main result emerging from our analysis is that in the United States, fraud detection relies on a wide range of (often improbable) actors. No single one of them accounts for more than 20% of the cases detected. These findings suggest that to improve corporate governance abroad one needs to adopt a broader view than that implied by the legal or private litigation approaches to corporate governance, that is, it is insufficient to replicate U.S. institutions of private enforcement such as class action suits or of public enforcement such as the SEC (together they account for only 10% of the frauds detected by external actors). Rather, the United States relies on a complex web of market actors that complement each other. Unfortunately, reproducing such a complex system abroad is much more difficult than copying a single legal institution.

The second main result is that the incentives for the existing network of whistleblowers are weak. Auditors, analysts, and employees do not seem to gain much and, in the cases of employees, seem to lose outright from whistleblowing. The two notable exceptions regarding who benefits from whistleblowing are journalists involved in large cases and employees who have access to a *qui tam* suit.

A natural implication of our findings is that the role of monetary incentives should be expanded. We find that the use of monetary rewards provides positive incentives for whistleblowing. As the evidence in the health care industry shows, such a system appears to be able to be fashioned in a way that does not lead to an excessive amount of frivolous suits. The idea of extending the *qui tam* statute to corporate frauds (i.e., providing a financial award to those who bring forward information about a corporate fraud) is very much in the Hayekian spirit of sharpening the incentives of those who are endowed with information. This proposal is consistent with a recent IRS move, which instituted a form of *qui tam* statute for whistleblowers in tax evasion cases.

### REFERENCES

- Bergman, Nittai, and Dirk Jenter, 2007, Employee sentiment and stock option compensation, *Journal of Financial Economics* 84, 667–712.
- Black, Bernard, 2001, The legal and institutional preconditions for strong securities markets, *UCLA Law Review* 48, 781–855.
- Bowen, Robert, Andrew Call, and Shiva Rajgopal, 2007, Whistle-blowing: Target firm characteristics and economic consequences, Working Paper, University of Washington.
- Brickey, Kathleen F., 2004, Anderson's fall from grace, *Washington University Law Quarterly*, 81, 917–960.

- Burns, Natasha, and Simi Kedia, 2006, The impact of performance-based compensation on misreporting, *Journal of Financial Economics* 79, 35–67.
- Chen, Ken Y., and Jian Zhou, 2007, Audit committee, board characteristics and auditor switch decisions by Andersen's clients, *Contemporary Accounting Research* 24, 1085–1117.
- Choi, Stephen J., 2007, Do the merits matter less after the Private Securities Litigation Reform Act? *Journal of Law, Economics and Organization* 23, 598–626.
- Choi, Stephen J., Karen K. Nelson, and Adam C. Pritchard, 2008, The screening effect of the Securities Litigation Reform Act, *Journal of Empirical Legal Studies* 6, 35–68.
- Coffee, John C., 1986, Understanding the plaintiff's attorney: The implications of economic theory for private enforcement of law through class and derivative actions, *Columbia Law Review* 86, 669–727.
- Coffee, John C., 2001, The acquiescent gatekeeper: Reputational intermediaries, auditor independence and the governance of accounting, Columbia Law and Economics Working paper No. 191.
- Coffee, John C., 2003, The attorney as gatekeeper: An agenda for the SEC, Columbia Law and Economics Working Paper No. 221.
- Diamond, Douglas, and Robert Verrecchia, 1987, Constraints on short-selling and asset price adjustment to private information, *Journal of Financial Economics* 18, 277–311.
- Dyck, Alexander, and Luigi Zingales, 2003, Media and asset prices, Working paper Chicago Booth.
- Efendi, Jap, Anup Srivastava, and Edward Swanson, 2007, Why do corporate managers misstate financial statements? The role of in-the-money options and other incentives, *Journal of Financial Economics* 85, 667–708.
- Fama, Eugene, 1980, Agency problems and the theory of the firm, *Journal of Political Economy* 88, 288–307.
- Fama, Eugene, 1990, Contract costs and financing decisions, *Journal of Business* 63, S71–S91.
- Fama, Eugene, and Michael Jensen, 1983a, Separation of ownership and control, *Journal of Law and Economics* 26, 301–325.
- Fama, Eugene, and Michael Jensen, 1983b, Agency problems and residual claims, *Journal of Law and Economics* 26, 327–349.
- Fuerman, Ross D., 2006, Comparing the auditor quality of Arthur Andersen to that of the “Big 4,” *Accounting and the Public Interest* 6, 135–161.
- Griffin, Paula, Joseph Grundfest, and Michael Perino, 2001, Stock price response to news of securities fraud litigation: Market efficiency and the slow diffusion of costly information, Stanford Law and Economics Olin Working paper No. 208.
- Grundfest, Joseph A., 1995, Why disimply? *Harvard Law Review* 108, 740–741.
- Hayek, Friedrich, 1945, The use of knowledge in society, *American Economic Review* 34, 519–530.
- Heron, Randall A., and Erik Lie, 2007, Does backdating explain the stock price pattern around executive stock option grants? *Journal of Financial Economics* 83, 271–295.
- Hong, Harrison, and Jeffrey D. Kubik, 2003, Analyzing the analysts: Career concerns and biased earnings forecasts, *Journal of Finance* 58, 313–351.
- Jakubowski, Stephen T., Patricia Broce, Joseph Stone, and Carolyn Conner, 2002, S 82's effects on fraud discovery, *CPA Journal* 72, 42–47.
- Johnson, Marilyn F., Karen K. Nelson, and Adam C. Pritchard, 2007, Do the merits matter more? Class actions under the Private Securities Litigation Reform Act, *Journal of Law, Economics, and Organization* 23, 627–652.
- Karpoff, Jonathan, D. Scott Lee, and Gerald S. Martin, 2008a, The costs to firms of cooking the books, *Journal of Financial and Quantitative Analysis* 43, 581–612.
- Karpoff, Jonathan, D. Scott Lee, and Gerald S. Martin, 2008b, The consequences to managers for cooking the books, *Journal of Financial Economics* 88, 193–215.
- Karpoff, Jonathan, and Xiaoxia Lou, 2008, Do short sellers detect overpriced firms? Evidence from SEC enforcement actions, Working Paper, University of Washington.
- La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2006, What works in securities laws? *Journal of Finance* 61, 1–33.
- Lamont, Owen, 2003, Go down fighting: Short sellers versus firms, NBER Working Paper #10659.
- Lie, Erik, 2005, On the timing of CEO stock option awards, *Management Science* 51, 802–810.



- Lott, Derek Loosvelt, William Jarvis, and the staff of Vault, 2007, *Vault Career Guide to Investment Banking* (Vault, Inc., New York).
- Michaely, Roni, and Kent L. Womack, 1999, Conflict of interest and the credibility of underwriter analyst recommendations, *Review of Financial Studies* 12, 653–686.
- Miller, Gregory S., 2006, The press as a watchdog for accounting fraud, *Journal of Accounting Research* 44, 1001–1033.
- Palmrose, Zoe-Vonna, and Susan W. Scholz, 2004, The circumstances and legal consequences of non-GAAP reporting: Evidence from restatements, *Contemporary Accounting Research* 21, 139–180.
- Rajan, Raghuram, and Julie Wulf, 2006, The flattening firm: Evidence from panel data on the changing nature of corporate hierarchies, *Review of Economics and Statistics* 88, 759–773.
- Richardson, Scott, A. Irem Tuna, and Min Wu, 2002, Predicting earnings management: The case of earnings restatements, SSRN Working Paper #338681.
- Scharfstein, David, and Jeremy Stein, 1990, Herd behavior and investment, *American Economic Review* 80, 465–480.
- Taub, Stephen, 2005, The auditor-investor expectation gap, *CFO.com*, October 17, 2005.
- Thompson, Robert, and Hillary Sale, 2003, Securities fraud as corporate governance: Reflections upon federalism, *Vanderbilt Law Review* 56, 859–910.
- Winston, Clifford, 1998, U.S. industry adjustment to economic deregulation, *Journal of Economic Perspectives* 12, 89–110.