Evidence on the Use and Efficacy of Internal Whistleblowing Systems

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ABSTRACT

Using a proprietary dataset from a provider of internal whistleblowing (WB) systems, we analyze nearly two million internal WB reports submitted to over one thousand publicly traded U.S. firms. We provide descriptive statistics, over time and across report types, on the amount and summary details of information provided, how extensively management reviews reports, the amount of time until reviews were completed, and the outcome of these reviews. Further, we examine the characteristics of firms with more actively used systems (i.e., a higher volume of reports, more information provided in reports, and reports that are more frequently reviewed by management). Finally, we show that internal WB report volume is associated with fewer and lower amounts of government fines and material lawsuits, which is consistent with reports being a resource that deters inappropriate behavior and helps management identify and address concerns before they become more costly to the firm.

JEL codes: G38; G34; M54

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1. Introduction

Internal whistleblowers (WB), employees who report potential problems within their firm to management, are widely viewed as an important resource in identifying and bringing to light wrongdoing within firms. Although internal WB systems (also known as internal reporting systems) have been required for public firms in the U.S. since the 2002 Sarbanes-Oxley Act (SOX), the use and efficacy of these systems is not widely known due to a lack of available data. For example, are these systems adopted only "on paper," or are they frequently used by employees and other stakeholders? What are the characteristics of reports filed? Do they pertain only to accounting issues as required by SOX, or do firms collect reports on a wider range of potential issues? Which types of companies have more actively used systems (i.e., which companies receive more reports, receive more detailed reports, and access reports more frequently)? And are the systems effective? Using proprietary data from the world's largest provider of internal WB systems, NAVEX Global, we examine nearly two million internal WB reports filed with over one thousand publicly traded U.S. firms to provide the first empirical examination in the academic literature on the characteristics of internal reports and the firm characteristics and outcomes associated with the use of internal WB systems.[1]

By providing employees a secure, anonymous means to report issues, an internal WB system enables management to identify problems difficult to discover via traditional reporting and monitoring.[2] Although employees could approach their supervisors directly with concerns, some might choose not to report without the option to remain anonymous (e.g., if the supervisor is part

[1] NAVEX Global granted us limited and secure access to data managed under its EthicsPoint® Incident Management system, a hotline system it provides to clients. Due to the sensitive and private nature of these reports, we had access to only limited data on each report—we did not have access to any free-response text entered by the reporter or any personally identifying information about either the reporter or individuals involved in the report.

[2] To be precise, many firms set up their internal WB systems to allow stakeholders beyond just employees to submit reports. Because the vast majority (92%) of reporters who identify their association with the firm are employees, we refer to use of WB systems by employees while acknowledging that some reports are made by non-employees.

of the concern, if the employee doesn't wish to be personally associated with any fallout from the report, or if the employee fears retaliation). In addition, internal WB systems allow a direct line of communication, which may not otherwise exist, from employees to management. As issues are identified, management is able to resolve them before they become more costly (e.g., before they become more severe and/or become known outside the firm). However, it is also possible that firms install a WB system as required by SOX simply to be in compliance without actively promoting or using it. Management may fear that the internal WB system will harm corporate culture by allowing anonymous reports that replace in-person discussions with managers. Internal WB systems might also permit employees, possibly underperforming employees about to be terminated and seeking legal protections as WB, to make frivolous complaints that distract from more important tasks. In addition, management may view the internal WB system as a potential liability, a digital paper trail that could be subpoenaed in litigation. Thus, the extent to which these systems are used in practice likely varies across firms.

Our study has three primary objectives. First, we provide descriptive evidence on reports made to publicly traded U.S. firms, including the types of activities reported, characteristics of reporting individuals (i.e., the reporter's connection to the company and choice to remain anonymous), the amount of information provided, details of reported activities (i.e., how the individual became aware of the alleged activity, whether management was allegedly aware and/or involved in the reported activity, and the amount of time the reported activity had been occurring), how frequently management accessed reports, the amount of time until reviews were completed, and the outcome of these reviews. Second, we examine which types of firms receive more reports, receive more detailed reports, and review reports more frequently. Third, we assess the potential

benefits of internal WB systems by examining the association between internal report volume and subsequent outcomes—government fines and litigation.

The descriptive evidence indicates that most reports relate to human resource (HR) issues such as discrimination, sexual or other forms of harassment, and violations of HR policies (54.9% of reports). Business integrity concerns (i.e., illegal or unethical business practices such as conflicts of interest, falsification of company records, bribery, etc.) comprise 15.7% of all reports, followed by reports regarding the misuse of corporate assets (11.8% of reports), workplace safety concerns (8.1% of reports), and accounting and financial concerns (0.7% of reports). The remaining 8.7% of reports are not classified by NAVEX. Although internal WB systems for accounting-related concerns were required by the Sarbanes-Oxley Act, accounting reports comprise only a small portion of the total report volume. Further, the relative frequency of accounting reports declined following the Dodd-Frank Act in 2010, which provided monetary incentives for external WB. The relative frequency of human resource incidents peaked in 2017, around the time of the widespread recognition of the #MeToo movement. We confirm these associations in regression analyses, though we do not attempt to provide evidence of a causal link behind them.

Our descriptive evidence yields a number of insights into the nature of reports and management responses. For example, the average report is accessed by management 9.1 times before being closed in 43.9 days. Reports are accessed more frequently and take longer to close when they relate to accounting issues, when they allege retaliation by management, when they contain more information about the alleged activity, when they allege management involvement in the inappropriate activity, and when the activity has been occurring for a longer period of time. In addition, reporters, when they choose to disclose their relationship to the firm, are in most cases employees of the firm. Over 28% elect to remain anonymous. Anonymous reports contain more

information about the alleged activity, are more frequently reviewed by management, and take longer to close. However, management is less likely to conclude that the claims in anonymous reports are substantiated. Management is more likely to conclude that claims are substantiated when an accounting issue is reported, when more information is provided in the report, when the reporter is an employee of the company, when the report doesn't allege management involvement, and when the reported activity has been occurring over a longer period of time.

Second, we examine reporting data at the firm level to understand how the use of internal WB systems varies cross sectionally. We find that use varies substantially across firms and industries. For example, both rapidly growing firms and firms with more employees receive fewer reports, and these reports contain less information and are accessed less frequently by management. More profitable companies receive fewer reports, but the reports contain more information and are accessed more frequently. Companies that promote internal reporting and emphasize compliance receive more reports, and companies remedying material weaknesses in internal controls exhibit a substantial increase in report volume.

Third, we examine the association between internal WB system activity and subsequent outcomes—government fines and litigation. A high number of internal reports could result from a number of factors both positive (i.e., a more accessible internal reporting system, greater trust in management, or a greater desire of employees to see that problems are addressed) and negative (i.e., a higher number or greater severity of problems to report). In practice, it is possible that the negative factors dominate the positive (i.e., a positive association between internal WB report volume and negative outcomes), the positive factors dominate the negative and WB systems enable the discovery of problems unobservable through other means (i.e., a negative association), or they offset (i.e., no association).

We find that, on average, internal WB report volume is negatively associated with the number and dollar amount of government fines received and material lawsuits filed against the firm. In particular, we find that a 10% increase in WB reports is associated with a 2.0% decrease in the dollar amount of government fines received and a 1.0% decrease in legal settlement amounts in subsequent years. These negative associations appear to be driven by low to moderate levels of internal reporting. At the highest quintile of internal report volume, we observe positive associations. The overall negative association is consistent with internal WB systems (a) providing relevant and actionable information to management about issues arising within the organization and/or (b) serving as a deterrent against inappropriate activities.

Any conclusions drawn from our analysis are limited by at least two factors. First, our results are descriptive in nature and should be interpreted with this limitation in mind. Management and stakeholders choose how actively to engage with internal WB systems, and it is possible that unknown variables omitted from our analyses explain the associations we document. Second, because we have data from only one provider of internal WB systems, the inferences based on our sample may not generalize to the broader universe of firms. However, while NAVEX Global clients tend to be larger and more profitable than other firms in the Compustat database, we are not aware of any systematic differences between how our sample firms and other firms utilize internal WB systems. Further, as NAVEX Global's client base represents over half of the Fortune 500, our sample should be of interest in its own right.

Subject to these limitations, we believe our study makes three primary contributions. First, to our knowledge, this is the first academic study to examine actual internal WB reports. We provide rich descriptive evidence on reports that helps provide a more complete understanding of internal WB systems and how they are used—including the amount and nature of reports and how

management responds, as well as how these measures vary across firms. This descriptive evidence may prove useful to researchers looking to develop cause-and-effect models (Gow et al. 2016).

Second, due to a lack of access to internal WB reports, prior research has focused primarily on surveys and external WB either to the press or regulatory agencies. External reports often occur when an employee (a) observes inappropriate behavior but doesn't trust management to respond, or fears retaliation, or (b) reports inappropriate behavior internally but doesn't believe it was adequately addressed. Once a report is made externally, management may lose the ability to control the investigation of and its response to the reported activity. Thus, inferences drawn from the analysis of external WB reports do not necessarily apply to internal WB systems. For example, we find that the number of internal WB reports is negatively associated with litigation and revenue growth. Bowen et al. (2010) find associations in the opposite direction for external WB reports of accounting malpractice.

Our findings suggest that increased activity in internal WB systems does not necessarily imply that companies have more severe problems. Whereas external complaints often reflect a failure of management to address issues internally, internal WB reports may instead reflect open communication channels between stakeholders and management and opportunities to discover and resolve issues before they become increasingly severe and costly. This distinction between internal and external WB is consistent with external WB complaints representing, at least in part, a failure of management to solicit and respond to issues through internal WB systems.

Third, our analysis has potential implications for regulators. Because data on internal WB reports is extremely sensitive and not publicly available, little is known about the extent to which internal WB programs are "paper" initiatives or substantive initiatives (Soltes 2018a). Our findings can inform regulators of the extent to which internal WB systems are used in practice, the types of

issues being reported, and the types of firms with more actively used systems. Further, our findings can inform regulatory decisions related to incentivizing internal versus external WB. For example, while Section 806 of SOX protects internal WB from retaliation, the more recent Dodd-Frank Act provides protection only for external WB reports, not internal reports, and provides financial incentives to employees who report issues directly to the SEC. Our study informs both firms and regulators of the potential value of internal WB systems, some of which may be lost with increased incentives to report outside these systems.

2. Institutional Background and Related Research

2.1 WHISTLEBLOWER REGULATIONS

Legislators and regulators have a long history of viewing insiders as an important resource in identifying inappropriate behavior within organizations. This valuable role has been recognized by the U.S. Federal Government and U.S. state governments as they have encouraged and protected WB through legislation. An early effort to encourage WB occurred in 1863 when Congress passed the False Claims Act, which allows individuals not affiliated with the U.S. government to initiate actions against federal contractors who defraud the government. These qui tam lawsuits, if successful, allow whistleblowers to receive between 15% and 30% of any award or settlement amount. Many U.S. states have similar false claims laws to protect their own state governments. More recently, the Whistleblower Protection Act of 1989 protects employees of the federal government from retaliation following reports of legal violations, mismanagement, abuse of authority, or dangers to public health and safety.

Whistleblower protections were also added to prevent retaliation by employers against employees who reported employment discrimination under the Civil Rights Act of 1964 and those

who reported workplace safety concerns under the Occupational Safety and Health Act of 1970.[3] However, outside of cases related to the federal government, employment discrimination, or workplace safety, through the end of the 20th century WB incentives and protections in the U.S. existed primarily at the state level. Employment relationships are presumed to be "at-will" in all states except Montana, meaning the employer can terminate an employee at any time for any reason. Over time, state courts carved out exceptions to employment at will, including in many states a public policy exception that protects employees from adverse employment actions that violate a public interest. One example of a violation of the public interest is termination of the employee in retaliation for reporting a violation of the law. However, the effectiveness of the public policy exception is limited because it does not exist in every state (eight states, including New York, do not currently have a public policy exception) and it is not uniformly interpreted (Rubinstein 2007, p. 643).

More recent federal WB regulation emerged out of a few high-profile cases where employee WB noted problems but were ignored.[4] Section 806 of the Sarbanes-Oxley Act (SOX) protects employees against retaliation by employers for reporting alleged violations occurring within public companies, including any conduct that the employee reasonably believes constitutes securities fraud, a violation of any rule or regulation of the SEC, or any provision of federal law relating to fraud against shareholders. This anti-retaliation provision broadened previous coverage, if any, under state law to include any unfavorable personnel action, not just wrongful termination.

[3] Other acts under OSHA's jurisdiction include the Safe Water Drinking Act of 1974, the Toxic Substances Control Act of 1976, the Clean Air Act of 1977, and the Asbestos Hazard Emergency Response Act of 1986, among others. See https://www.whistleblowers.gov/sites/default/files/whistleblowers/whistleblower_acts-desk_reference.pdf for a complete list.

[4] During the Enron and WorldCom investigations, regulators found that some employees were aware of fraud but failed to come forward out of fear of retaliation, or those who spoke up were ignored or terminated by management. For example, Sherron Watkins blew the whistle to both Enron and Enron's external auditor but was forced out of the firm for doing so (Curwen 2003). Likewise, Cynthia Cooper informed management and an external audit partner of WorldCom's accounting problems but was effectively ignored.

The Dodd-Frank Act added external WB incentives and additional WB protections to the protections included in SOX. In addition to specific provisions for employees in the financial services industry, Section 922 provides for a monetary incentive for original information resulting in monetary sanctions exceeding $1 million. Specifically, the WB is entitled to 10% to 30% of any amount recouped. Further, Section 922 offers protection to employees who have suffered retaliation for WB, but only if the WB report is made directly to the SEC.[5]

2.2 Research on Whistleblowing and Whistleblower Regulations

Extant research suggests that insiders play an important role in identifying and reporting inappropriate behavior. For example, Dyck et al. (2010) found that employees of public companies detect fraud more frequently than any other group, accounting for 18% of detected frauds compared to only 14% for industry regulators, 11% for auditors, and 7% for the SEC. The impact of employees as WB is even greater in non-public companies. The Association of Certified Fraud Examiners reported that 40% of fraud cases in non-public companies are discovered via WB tips (ACFE 2018).

Much of the research on the efficacy of WB and WB regulations uses survey data or outcomes of lawsuits claiming WB protections. For example, Miceli et. al. (1999) document two intended and two unintended effects of WB regulation using data from surveys of U.S. government employees. They found that although WB regulation led to lower rates of wrongdoing and higher rates of reporting given wrongdoing, as intended, it also led to higher rates of retaliation by management and consequently higher rates of anonymous reporting. The findings of Peffer et al. (2015) suggest that WB regulations fail to protect whistleblowers. The authors analyzed legal

[5] The U.S. Supreme Court unanimously concluded on February 21, 2018, that an employee who was terminated after making a report to senior management did not have WB employment protections under the Dodd-Frank Act as the report was made internally rather than to the SEC (*Digital Realty Trust v Somers* 2018).

claims of WB retaliation filed by employees of the federal government and found only 21% of the 151 appellate cases reviewed were ruled in favor of the employee.

Academic research on the effects of federal regulation on accounting-related WB has concluded that external WB reports are economically meaningful and that regulation encouraging these reports deter misbehavior. For example, Bowen et al. (2010) find that the stock market reacts negatively to external WB allegations and that firms targeted by WB complaints are more likely to restate financial statements and experience shareholder lawsuits. Wilde (2017) finds that external WB reports deter financial misreporting and tax aggressiveness for up to two years after a report is made. Furthermore, Call et al. (2018) conclude that the involvement of an external WB is associated with more severe penalties resulting from investigations by the Securities and Exchange Commission and Department of Justice, which could explain why firms involved in financial reporting violations grant more stock options to rank-and-file employees (Call et al. 2016). Berger and Lee (2019) find a reduction in the likelihood of accounting fraud following the passage of the Dodd-Frank Act's WB incentive program, especially for firms in states that had previously not been subject to a state-level False Claims Act. Finally, Wiedman and Zhu (2017) document a decrease in abnormal accruals following the passage of the Dodd-Frank Act, which they attribute to its WB provisions.

2.3 Internal Whistleblowing

The regulatory approach to supporting corporate WB must balance requiring or incentivizing the use of internal WB systems with incentivizing external WB. The advantage of internal WB systems is that they provide a direct route to bring issues to the attention of those in a position to quickly and effectively address them—managers. Further, though employees have alternative outlets to voice concerns about financial reporting issues (i.e., the SEC), discrimination

(i.e., the EEOC), or workplace safety concerns (i.e., OHSA), some issues can only be reasonably and effectively reported directly to management. Moreover, issues that arise might be in early stages and thus not merit attention by regulators. However, if the employee believes that the company is not likely to address the concern and/or is likely to retaliate against the employee, then an external report may be more effective, if the option is available.[6]

In the past, there has been a trend toward encouraging internal WB, reflected by the establishment of internal WB procedures and state laws requiring employees to first pursue internal channels of reporting, where feasible (Rubenstein 2007). In some U.S. states (e.g., Florida, New York, and Ohio), employees are required to report violations within the firm prior to reporting the alleged violations outside the firm. Other states provide for an exception if the employee believes an internal report would be futile (Rubenstein 2007).

At the federal level, the U.S. Department of Justice and the U.S. Sentencing Commission's Corporate Federal Sentencing Guidelines recognize the importance of internal WB systems and offer incentives to firms to implement effective compliance and ethics programs to prevent and detect violations of law. The Department of Justice takes the internal WB system into account when deciding whether to charge a firm, and the Corporate Federal Sentencing Guidelines offer reduced penalties for firms convicted of federal crimes that have implemented programs designed to detect and deter misconduct (Rubenstein 2007). One requirement for an effective program is that the organization "have and publicize a system that may include mechanisms for reporting that allow for anonymity or confidentiality" (18 U.S.C. app. §8B2.1 Supp. IV 2004).

[6] In a survey of over 2,500 managers by Freshfields Bruckhaus Deringer (2014), more than a quarter of respondents stated they would report to a regulator if the wrongdoing wasn't handled property by their company.

Section 301 of SOX requires companies to establish channels through which corporate WB can report financial misconduct anonymously.[7] However, when it established rules to meet this requirement, the SEC did not require disclosures relating to internal WB activity, leaving many questions unanswered. For example, how actively are these systems used, and are they used only for financial issues as required or for other types of issues as well?

The need for external WB incentives likely depends at least partially on the effectiveness of internal WB systems. However, given the understandably sensitive nature of data on internal WB reports, little is known about how these systems are used (Rajgopal 2017). Notable exceptions include surveys in the academic literature and in practice (e.g., Dyck et al. 2010, Freshfields Bruckhaus Deringer 2014, ACFE 2018), laboratory experiments (e.g., Chen et al. 2017), and a novel field study by Soltes (2018b). Soltes (2018b) attempted to report misconduct through hotlines at 231 firms, finding that while obstacles to reporting exist at 20% of firms, more than 90% responded in a timely manner to the reports. Our study provides insight into internal WB systems by analyzing nearly two million actual reports made through these systems.

3. Data and Research Design

3.1 INTERNAL WHISTLEBLOWING SYSTEM DATA

We obtained data on 1,992,334 internal WB reports filed with 1,135 publicly traded U.S. companies from NAVEX Global, a provider of internal WB hotline and online reporting systems.[8] Due to the sensitivity of details relating to internal WB cases, we received only limited data on each WB event. We observe the date of each report, the category of the complaint (e.g., financial

[7] Section 301 requires that companies' audit committees "establish procedures for (a) the receipt, retention, and treatment of complaints received by the issuer regarding accounting, internal accounting controls, or auditing matters; and (b) the confidential, anonymous submission by employees of the issuer of concerns regarding questionable accounting or auditing matters" (SOX Sect. 301(4)).

[8] We removed 1,480 reports that are labeled explicitly as test reports (e.g., "Hotline test", "Test case", "Test call", "Penetration test", "Test issue", or "Test"). However, we are not able to identify any test reports that were not explicitly flagged as such.

reporting issues, harassment or other HR issues, illegal or unethical business practices, health and safety issues, and misuse or theft of corporate assets), how the report was filed (e.g., by web form, by email, by phone, or in person), and the number of times the report file was accessed. In addition, we observe categorical information reporters may provide about their association with the company and the activity being reported. Further, after a review of the case, a company representative may document the outcome of any investigation.

At the firm level, we measure internal WB system use based on the number of reports submitted per 1,000 employees in a given year, *RPRTS*. This variable is intended to capture employees' awareness of the internal WB system, their willingness to submit reports, and the accessibility of the reporting system. Despite the existence of an internal WB system, employees may be hesitant to use it if it is difficult to access (Soltes 2018b), if they doubt that management will respond, or if they fear retaliation.[9] However, internal report volume is also likely to be affected by the number of reportable offenses.

We measure two additional dimensions of firm-level reporting. *INFO* captures the amount of information provided in reports, on average. It is calculated as the fraction of five key fields that are included in each report (i.e., not left blank), averaged across reports filed during the calendar year. The five fields are (1) the reporter's relationship to the company (e.g., employee, customer, business partner, etc.), (2) how the individual became aware of the activity (e.g., observed personally, informed by customer, etc.), (3) whether management was aware of the activity, (4) whether management was involved in the activity, and (5) how long the inappropriate activity

[9] Despite WB protections in place, WB is an inherently risky decision. Whistleblowers are often met with retaliation by both their employer and also on the job market and at subsequent employment (Eisenstadt and Pacella 2008). Zingales (2004) describes the findings from a survey of 1,500 federal government employees who reported misconduct: 25% were verbally harassed, 20% were shunned by coworkers, 18% were reassigned to less desirable duties, and 11% were denied promotions.

occurred. Although we don't have access to any detailed descriptions provided in reports, we use the disclosure of this categorical information as a proxy for the total amount of detail provided and conveyed to management about potential issues within the firm. *ACCESS* is intended to capture management's responsiveness to reports. It is calculated as the average number of times reports filed during the calendar year were accessed, typically by an individual in management, internal audit, the legal department, or human resources.

3.2 Other Data Sources

We obtain financial accounting data from Compustat, market data from CRSP, institutional ownership data from Thomson Reuters, director data from BoardEx, sustainability ratings from Morgan Stanley Capital International, litigation and internal control data from AuditAnalytics, and data on corporate fines and penalties from Violation Tracker.

The AuditAnalytics Litigation Database includes federal securities class action claims, SEC actions, and material federal civil litigation. AuditAnalytics collects data on federal cases from disclosures of material legal proceedings under SEC Reg S-K. In addition, AuditAnalytics includes data on securities class action suits, litigation initiated by the SEC, and federal litigation involving the top 100 accounting firms. The litigation data spans from the beginning of our sample period in 2004 through 2017. We calculate *#LEGAL* as the number of new lawsuits filed during the subsequent calendar year and *$LEGAL* as the sum of eventual settlement amounts associated with lawsuits filed during the subsequent calendar year.

The Violation Tracker database, prepared by the Corporate Research Project of Good Jobs First, combines enforcement data obtained from over 40 federal regulatory agencies and the U.S. Department of Justice. Included violations relate to banking, consumer protection, environmental concerns, unfair labor practices, health and safety concerns, workplace discrimination, price-

fixing, bribery, false claims, civil rights abuses, and tax evasion, among others.[10] Whereas with litigation we know the date the lawsuit was initiated, we know only the concluding dates of investigations resulting in fines. For that reason, we calculate fines based on decisions made over the three subsequent years. We calculate *#FINES* as the number of fines received over the subsequent three calendar years and *$FINES* as the sum of fines received over the subsequent three calendar years.

3.3 Research Design

3.3.1 Characteristics of Internal Whistleblowing Reports

We conduct our first set of analyses at the report level. We present means and frequencies—in aggregate, over time, and by report category—of the various characteristics of reporters, events being reported, and management responses.

Our first regression analysis regresses the fraction of potential data items included in reports onto characteristics of the reporter and the reported activities.

$$INFO_t = b0 + \Sigma\, bi\, CATEGORY_{it} + b6\, DIRECT_t + b7\, ANON_t + b8\, RETALIAT_t + firm\ FE + year\ FE + e_t \quad (1)$$

INFO represents the fraction of five categorical inputs that were filled in by the reporter (i.e., not left blank). *CATEGORY* represents separate five separate indicator variables for the type of issue that has been reported: accounting and financial concerns (*AC*), business integrity issues (*BI*), human resource complaints (*HR*), misuse of corporate assets (*MU*), and workplace safety concerns (*SF*). Because we omit the indicator for uncategorized reports, each of these five coefficients represents a difference relative to uncategorized reports. *DIRECT* is an indicator variable representing whether the reporter was submitted directly to a person (e.g., by phone or in

[10] See https://www.goodjobsfirst.org/violation-tracker-data-sources for a complete list of their sources.

person) or not (e.g., by web form or by email). *ANON* is an indicator variable representing whether the reporter chose to remain anonymous (i.e., the reporter may identify herself as an employee but choose not to provide her name and contact information), and *RETALIAT* is an indicator for whether the report alleged retaliation by management. We include firm fixed effects to isolate differences in report characteristics within a firm, and we include year fixed effects to control for variation in the amount of information provided that occurs over time. We estimate Equation (1), as well as those that follow, using ordinary least squares with standard errors clustered by firm.

Next, we assess management's responses to reports as they relate to characteristics of the reporter, characteristics of the reported activity, and the amount of information provided in the report. We estimate the following equation:

$$\begin{aligned} \textit{Dep. Var.} = {} & b0 + \Sigma\, bi\ \textit{CATEGORY}_{it} + b6\ \textit{DIRECT}_{t} + b7\ \textit{ANON}_{t} + b8\ \textit{RETALIAT}_{t} \\ & + b9\ I(\textit{REPORTER}_{it}) + b10\ I(\textit{SOURCE}_{it}) + b11\ I(\textit{MGTAW}_{it}) + b12\ I(\textit{MGTINV}_{it}) \\ & + b13\ I(\textit{LENGTH}_{it}) + \textit{firm FE} + \textit{year FE} + e_t \end{aligned} \quad (2)$$

where *Dep. Var.* is management's response to the report, either *log(ACCESS)*, *log(TIME)*, or *SUBSTANT*. *log(ACCESS)* is the natural log of the number of times the report was accessed by management, *log(TIME)* is the natural log of the number of days from the submission of the report until the case was closed by management, and *SUBSTANT* is an indicator variable for whether the allegations in the report were later determined by management to be substantiated. We take natural logs of *ACCESS* and *TIME* to help normalize their skewed distributions.[11] Equation (2) includes explanatory variables from Equation (1) plus additional variables that indicate whether five key categorical data fields were left blank in the report—the reporter's relation to the company (*REPORTER*), how the reporter became aware of the reported activity (*SOURCE*), whether

[11] So that the natural log is defined, we add one to the values of *ACCESS* and *TIME*, as well as *#FINES*, *$FINES*, *#LEGAL*, and *$LEGAL*, in our calculations.

management was aware of the activity (*MGTAW*), whether management was involved in the activity (*MGTINV*), and how long the activity had been occurring (*LENGTH*).

Finally, we estimate a variation of Equation (2) that replaces the indicators for missing data fields with indictors for the actual values provided by reporters.

$$\begin{aligned} \textit{Dep. Var.} = {} & b0 + \Sigma\, bi\, CATEGORY_{it} + b6\, DIRECT_t + b7\, ANON_t + b8\, RETALIAT_t \\ & + \Sigma\, bi\, REPORTER_{it} + \Sigma\, bi\, SOURCE_{it} + \Sigma\, bi\, MGTAW_{it} + \Sigma\, bi\, MGTINV_{it} \\ & + \Sigma\, bi\, LENGTH_{it} + \textit{firm FE} + \textit{year FE} + e_t \end{aligned} \quad (3)$$

where *Dep. Var.* is either *log(ACCESS)*, *log(TIME)*, or *SUBSTANT*. *REPORTER* represents indicators for whether the reporter was an employee (*EMPL*), business partner (*PART*), customer (*CUST*), or other identified party (*OTH*). With *REPORTER* and the following four variables, we omit indicators for missing data fields so coefficients on included indicators capture effects relative to a report with this data item missing. *SOURCE* represents indicators for how the reporter became aware of the reported activity: an eyewitness to the alleged activity (*1ST*) or knowledge based on second-hand information (*2ND*). *MGTAW* (*MGTINV*) represents indicators for whether management was alleged to be aware of (involved in) the activity—*YES* or *NO*. Finally, *LENGTH* represents indicators for how long the alleged activity had been occurring at the time of the report: once or less than one month (*< 1*), between one and three months (*1 to 3*), between three months and one year (*3 to 12*) and more than one year (*> 12*).[12]

3.3.2 Firm Characteristics Associated with the Use of Internal WB Systems

The number of internal WB reports a firm receives can be broken down into two components—the number of reportable issues and stakeholders' likelihood of reporting upon observing an issue. Although Section 301 of SOX requires companies to establish internal WB systems, the extent to which companies implement and stakeholders utilize these systems to report

[12] Appendix A includes sample responses from our dataset for each of these variables.

issues likely varies. While we are not aware of any clear, definitive theoretical predictions as to which firms' stakeholders are more likely to report issues through the internal WB system, we expect several factors to play a role.

PROMOTION OF INTERNAL WB SYSTEM: Not surprisingly, employees are more likely to report through internal WB systems when they are encouraged by their employers to do so. Although it is difficult for a company outsider to measure the promotion of internal reporting, one visible form of promotion is naming and marketing the reporting system as a "helpline" rather than a "hotline."[13] We expect that companies advertising "helplines" are likely receive more reports.

EMPHASIS ON REGULATORY COMPLIANCE: Companies that emphasize regulatory compliance are more likely to effectively implement a required internal WB system rather than just adopt it "on paper." We expect boards that include a director who focuses on compliance (e.g., a Chief Compliance Officer) are more likely to ensure that internal WB systems are accessible to employees and other stakeholders, and that reports are taken seriously by management.

FIRM SIZE: Various factors related to the size of firms could suggest that larger firms are either more or less likely to have actively used internal WB systems. On the one hand, larger firms typically have more financial resources available to invest in implementing an internal WB system. Larger firms also tend to have more developed internal control procedures that complement the implementation of an internal WB system (DeFond 1991). Further, larger firms may stand to benefit more from the information an internal WB system provides. The value of information likely increases when it comes from a more diffuse set of employees, when there are more individuals available to observe and report inappropriate activity, and when personal communication between employees and upper management is less frequent. Also, the benefits of avoiding the negative

[13] Kastiel (2014) notes that marketing an internal WB system as a helpline "may alter the perception or negativity associated with hotlines and facilitate reducing the fear of calling and the associated stigma."

publicity and other consequences of a corporate scandal are likely to be more important for larger companies with greater reputational costs.

On the other hand, implementing an internal WB system that effectively captures employee reports is likely to be more costly for large companies, in terms of disseminating information, creating a consistent culture of use of the system, and managing the reports. The costs of fully implementing an internal WB system include the cost of installing, promoting, and operating the system, and the time and attention directed toward following up on reports.

FIRM PROFITABILITY: We expect that firms with more available financial resources are more likely to invest in implementing an internal WB system. Accordingly, we expect that more profitable companies are more likely to have actively used internal WB systems.

FIRM GROWTH AND STABILITY: Firms that are rapidly growing are likely to be more focused on achieving further growth, with less focus on implementing an internal WB system. In addition, as new employees are added to the firm as it grows, cultivating and maintaining an open culture that encourages active use of the internal reporting system is more difficult. On the contrary, firms in more of a steady state are more likely to direct resources toward internal WB systems. We expect that firms with greater growth and greater volatility are less likely to have actively used internal WB systems.

MONITORING: We expect greater use of internal WB systems in firms that face more extensive external monitoring. External monitors, such as institutional shareholders, are likely to more closely scrutinize potential risk factors within the firm and pressure the firm to put effective systems in place to reduce these risks.

INTERNAL CONTROL ENVIRONMENT: An internal WB system is one part of a firm's broader set of internal controls, and as such it likely complements other internal controls. We expect that

effective audit committees and internal audit teams will ensure that internal WB systems are widely promoted and accessible, and that reports are promptly reviewed. Consistent with this idea, Soltes (2018b) finds that firms more likely to have internal control weaknesses tend to discourage anonymous reporting and are less likely to request additional information from the employee. We expect that firms with a strong internal control environment are more likely to have actively used internal WB systems.

ETHICS: We expect a higher use of internal WB systems when management exhibits a commitment to ethical behavior. If management runs the business ethically with respect to its employees, its customers, its community, and the environment, we expect management to be more willing to solicit feedback from stakeholders and stakeholders to be more willing to provide it.

GEOGRAPHIC DISPERSION: Companies that are more geographically disperse may have more actively used internal WB systems. When employees are separated from company headquarters with fewer opportunities to interact with management, internal WB systems may serve as a direct line of communication to management that would otherwise not be available.

We provide descriptive evidence on the relation between internal report volume and empirical proxies for the factors described above. *HELPLINE* is an indicator variable equal to one in years where the firm receives at least one internal WB report through an intake method labeled by NAVEX Global as a "helpline". *BRD_COMPL* is an indicator variable that equals one if the company's board includes a director whose job title includes the words "ethics" or "compliance" (e.g., Chief Compliance Officer). *ICWEAK* is an indicator variable equal to one if the firm disclosed a material weakness in internal controls during the fiscal year, and *ICFOCUS* equals one if the firm disclosed a material weakness in the prior year. *SIZE* is the natural log of the firm's total assets, *EMP* is the natural log of the number of employees working for the firm, and *ROA* is

the firm's net income before extraordinary items divided by total assets. *GROWTH* is the firm's year-over-year growth in sales revenue, *VOL* is the standard deviation of the firm's monthly stock returns during the fiscal year, and *OWN* is the percentage of the firm's shares held by institutional owners as reported in 13F filings. *KLD* measures a company's commitment to ethics, which is calculated as the net KLD score. Using MSCI's KLD measures, we sum the number of strengths across five categories (environment, community, employees, customers, and governance) and then subtract the total number of concerns across those five categories. Finally, *GEODISP* equals negative one times the Herfindahl-Hirschman index of corporate revenues across reporting geographic segments (if disclosed).

For each of the indicator variables (i.e., *HELPLINE*, *BRD_COMPL*, *ICWEAK*, and *ICFOCUS*), we compare means of internal report volume across the two values. For each of the remaining continuous variables, we present means of *RPRTS* across the five quintiles of its distribution, to reveal any linear or nonlinear relations with internal report volume.

Then, using the subset of explanatory variables that are available for our full sample of firms (i.e., excluding *BRD_COMPL*, *ICWEAK*, *ICFOCUS*, *KLD*, and *GEODISP*), we examine linear associations with internal report volume using the following regression[14]:

$$log(RPRTS_t) = b0 + b1\ HELPLINE_t + b2\ SIZE_t + b3\ EMP_t + b4\ ROA_t + b5\ GROWTH_t + b6\ VOL_t + b7\ OWN_t + industry\ FE + year\ FE + e_t \quad (4a)$$

RPRTS is as defined in section 3.1. We take the natural log to help normalize its skewed distribution. To protect our results from undue influence of outliers, we winsorize continuous variables at the 2nd and 98th percentiles and variables bounded at zero at the 98th percentile. We include year and industry fixed effects to control for variation in use due to industry factors likely

[14] We considered including in the model variables for firm age, book-to-market ratio, and litigation risk. However, based on the results of a LASSO estimation with 10-fold cross-validation, we retained only those variables in Equation (4a).

to increase usage, unrelated to the firm, and variation in use over time due to external factors coinciding outside the firm. We don't include firm fixed effects as we are primarily interested in variation in use across firms. We also estimate four variations of Equation (4a) that include (a) *BRD_COMPL*, (b) *ICWEAK* and *ICFOCUS*, (c) *KLD*, and (d) *GEODISP* on reduced samples of firms with available data.

We estimate two additional versions of Equation (4a) that examine different dimensions of the use of internal WB systems, where $INFO_t$ and $log(ACCESS_t)$ are as defined in section 3.1.

$$INFO_t = b0 + b1\ HELPLINE_t + b2\ SIZE_t + b3\ EMP_t + b4\ ROA_t + b5\ GROWTH_t + b6\ VOL_t + b7\ OWN_t + industry\ FE + year\ FE + e_t \quad (4b)$$

$$log(ACCESS_t) = b0 + b1\ HELPLINE_t + b2\ SIZE_t + b3\ EMP_t + b4\ ROA_t + b5\ GROWTH_t + b6\ VOL_t + b7\ OWN_t + industry\ FE + year\ FE + e_t \quad (4c)$$

Lastly, we estimate versions of Equation (4a) that separate the total report volume into the number of reports across six separate categories.

$$log(CATEG_t) = b0 + b1\ log(NOT\_CATEG_t) + b2\ I(YEAR >= 2010) + b3\ I(YEAR >= 2017) + b4\ HELPLINE_t + b5\ SIZE_t + b6\ EMP_t + b7\ ROA_t + b8\ GROWTH_t + b9\ VOL_t + b10\ OWN_t + industry\ FE + e_t \quad (5)$$

where *CATEG* represents one of the six category types (i.e., accounting, *AC*; business integrity, *BI*; human resources, *HR*; misuse of corporate assets, *MU*; workplace safety, *SF*; and uncategorized, *UN*). For example, *AC* is the number of accounting reports per 1,000 employees, and *NOT_AC* is the total number of reports per 1,000 employees that were not accounting-related (i.e., all other reports). We include time indicator variables to test whether reporting changed following the Dodd-Frank Act in 2010 or the #MeToo movement in 2017.

3.3.3 Outcomes Associated with the Use of Internal WB Systems

We examine two outcomes that may be related to active use of internal WB systems—government fines and litigation. Companies with fully implemented, actively advertised, and

widely used internal WB systems can potentially benefit from a flow of information from employees and other stakeholders, thus being in a position to more quickly identify and rectify problems before they become reported externally or discovered by regulators. In addition, having an actively used system may serve as a deterrent that prevents inappropriate behavior from occurring in the first place. If management uses its internal WB system to learn of and address issues arising within the organization relating to, for example, financial reporting improprieties, harassment of employees, or workplace safety, then we expect a negative association between report volume and fines and litigation in subsequent years. However, we might instead see a positive association between report volume and fines and litigation if report volume reflects the extent of problems existing within the company. For example, instead of reflecting open communication channels between management and employees, the number of reports filed could reflect the frequency and severity of issues within the company.

We begin by examining the bivariate associations between internal report volume and each of four outcomes relating to government fines and litigation. We compare the mean of each outcome across quintiles of the distribution of internal report volume, which will reveal any nonlinear associations between the variables. For example, although a higher internal report volume could reflect more information flowing to management that allows concerns to be identified and corrected, resulting in fewer negative outcomes, an extremely high internal report volume could indicate more severe problems that result in more negative outcomes.

Next, we analyze the linear associations between internal WB report volume and outcomes by estimating the following regression:

$$OUTCOME_{t+k} = \text{b0} + \text{b1}\ log(RPRTS_t) + \text{b2}\ SIZE_t + \text{b3}\ ROA_t + \text{b4}\ GROWTH_t + \text{b5}\ VOL_t + \text{b6}\ OWN_t + \text{b7}\ AGE_t + \text{b8}\ LITRISK_t + firm\ FE + year\ FE + e_{t+k} \quad (6a)$$

OUTCOME represents one of four subsequent outcomes we analyze.[15] *log*(*#FINES*$_{t+1\ to\ 3}$) is the natural log of one plus the number of government fines received by the firm over the subsequent three years, and *log*(*$FINES*$_{t+1\ to\ 3}$) is the natural log of one plus the total dollar amount of government fines received. *log*(*#LEGAL*$_{t+1}$) is the natural log of one plus the number of lawsuits filed against by the firm in the subsequent year, and *log*(*$LEGAL*$_{t+1}$) is the natural log of one plus the aggregate amount of settlements relating to lawsuits filed against by the firm. We shift the measurement of outcomes to subsequent years to reduce the possibility that these outcomes affect the submission of reports through the internal WB system. We include controls variables and firm and year fixed effects to control for underlying amount and severity of wrongdoing. That is, we attempt to measure the association between the number of internal WB reports and outcomes that is not attributable to underlying factors driving problems that could potentially be reported. *SIZE*, *ROA*, *GROWTH*, *VOL*, and *OWN* are as defined in Section 3.3.2. *AGE* is the natural log of the number of years since the firm's first appearance on Compustat, and *LITRISK* is litigation risk, as calculated by Kim and Skinner (2012).

Finally, we re-estimate these regressions after splitting *log(RPRTS)* into each of the six categories of reports (*CATEG*). We do so to examine whether the ability of internal report volume to explain subsequent outcomes is driven by one or two report categories, and whether this differs across outcomes.

$$OUTCOME_{t+k} = b0 + \Sigma\ bi\ log(CATEG_{it}) + b7\ SIZE_t + b8\ ROA_t + b9\ GROWTH_t + b10\ VOL_t + b11\ OWN_t + b12\ AGE_t + b13\ LITRISK_t + firm\ FE + year\ FE + e_{t+k} \quad (6b)$$

[15] To ensure that our findings are not driven by a few influential observations, we also estimate versions of Equation (6a) where the dependent variable is an indicator for whether the company received a fine or had a material lawsuit filed. Untabulated regression results reveal similar inferences (t = -2.48 and -3.08, respectively).

4. Results

4.1 REPORT-LEVEL ANALYSES

Table 1, Panel A, presents the distribution of report categories by year. Overall, over half of all reports submitted relate to human resource issues (54.9%). These are followed in frequency by reports relating to business integrity (15.7%), misuse of corporate assets (11.8%), workplace safety (8.1%), and accounting concerns (0.7%). 8.7% of reports submitted involve concerns that NAVEX did not map into the five primary categories. Although internal WB systems are required by Section 301 of SOX only for accounting and financial reporting concerns, firms use these systems to collect information about a broad range of issues.

Over time, the frequency of reports relating to business integrity and misuse of corporate assets increased in the second half of the sample period. This could be due to an increase in actual reports or the lower incidence of uncategorized reports by NAVEX during these years. The frequency of reports pertaining to HR issues remains fairly stable over the sample period, while the frequency of accounting-related reports is nearly twice as high over the first half of the sample period as it is over the second half, i.e., after the passage of the Dodd-Frank Act in 2010, which created monetary incentives for employees to report concerns outside the firm.

Table 1, Panel B, represents statistics on the characteristics of reports. Turning first to overall sample means, in the average report 29.8% of fields are filled in by reporters.[16] The average report is accessed by management and others 9.1 times before being closed in 43.9 days. 28.5% of reporters choose to remain anonymous, and 1.3% of reports involve claims of retaliation by

[16] Although we observe which fields are filled in by reporters, our data does not specify whether a blank field results from an employee choosing not to report or the employer not requesting the item. However, for over 88% of firms in our sample, we observe both missing and nonmissing values for four of the five fields, suggesting reporters are given a choice to provide this information. The fifth field, the reporter's relation to the firm, is the field most frequently missing—only 18% of sample firms have at least some nonmissing fields. This suggests that many firms may not ask this question, possibly because their internal WB system is accessible only by employees or potential WB events occur primarily within the firm.

management. 36.4% of claims are submitted by phone or in person, while the remainder are submitted without personal interaction, typically through web forms or email. In addition, only 21.2% of claims are determined by management to be substantiated.[17]

In 19.9% of reports, the reporter identifies her relation to the firm. The reporter is usually an employee (18.3%, or 92.0% of identified relationships). Customers (1.1%) and business partners (0.4%) file reports less frequently. This could be due to these groups (a) being less aware of questionable activities, (b) not being aware of how to file a report, or (c) not being permitted to file a report (e.g., access to the system is located within the company's intranet). In addition, reporters are more likely to file reports based on first-hand knowledge (29.4%) vs. second-hand knowledge (6.6%) of inappropriate activities. Reporters are more likely to claim that management was aware of the inappropriate activities (21.0%) than not (7.9%), and they are more likely to claim that management was involved in the activities (19.0%) than not (8.6%). However, it is not clear to us whether a missing response to these questions indicates that the reporter does not believe management was aware or involved, or that the reporter chose not to reveal that information. Finally, in the 36.5% of reports where reporters indicated the amount of time the inappropriate activity had been occurring, 14.3% occurred only once or were ongoing for less than one month, 8.5% occurred for more than one month but less than three months, 7.2% occurred for more than three months but less than one year, and 6.4% had been occurring for more than one year.

In 2017, compared to the two or three years prior, reports are more likely to be anonymous, contain more information, and be accessed more frequently by management. Recent reports are

[17] Although only 21% of claims are determined to be substantiated, that does not imply the remaining 79% are determined not to be substantiated. In many cases, the report is marked as "pending further review," having "insufficient evidence," or "N/A" because the report was a question about a hypothetical situation.

more likely to allege retaliation by management, and they are less likely to be judged to be substantiated after investigation.

Table 1, Panel C, presents statistics by report category. Reports about HR and accounting issues have the most information provided by reporters (37.0% and 33.0%, respectively), while reports about the misuse of assets have the least information provided (15.5%). Reports about accounting and HR issues are also more frequently accessed by management (14.1 and 10.2 times, respectively), while reports about the misuse of assets are less frequently accessed (6.6 times). Accounting-related reports take the longest to close (79.1 days vs. the overall mean of 43.9 days) and are most likely to be anonymous (35.4% vs. the overall mean of 28.5%).

Compared to other categories, accounting-related reports are more likely to be filed by business partners (0.9% vs. the overall mean of 0.4%), and reports about business integrity are more likely to be filed by customers (3.1% vs. the overall mean of 1.1%). Not surprisingly, reports of HR concerns are most likely to stem from first-hand knowledge (e.g., "it happened to me"). Management is more likely to be aware of or involved in HR-related (26.6% and 25.8%, respectively) and accounting-related (21.9% and 20.2%, respectively) activities reported. Management is less likely to be aware of or involved in reports pertaining to the misuse of corporate assets (10.7% and 5.3%, respectively). Finally, accounting concerns are most likely to have been occurring for more than one year (13.8%).

Table 2 presents results from report-level regressions. The regressions in Panel A focus on how much information was provided in each report, while the regressions in Panel B analyze the specific values of information provided. The first set of results in Panel A indicates that, controlling for other factors, no one report category typically contains more information than other categories of reports. Reports made through personal interaction (i.e., by phone or in person) contain more

information that other reports (*DIRECT* coef. = 0.134, t = 7.47). In addition, anonymous reporters provide significantly more information than those who elect to report their identities (*ANON* coef. = 0.097, t = 6.01). Further, reports of retaliation contain more information than other reports (*RETALIAT* coef. = 0.101, t = 4.89).

The second and third set of results reveal that accounting-related reports are more frequently accessed (t = 4.19) and take longer to close (t = 3.72) than other reports. Likewise, anonymous reports and reports of retaliation are more frequently accessed (*ANON* coef. = 0.231, t = 7.24; *RETALIAT* coef. = 0.306, t = 7.82) and take longer to close (*ANON* coef. = 0.441, t = 7.21; *RETALIAT* coef. = 0.541, t = 6.18). Reports with missing information are less frequently accessed and generally close more quickly.

The final set of results in Panel A reveals that the claims in accounting-related reports are more likely to be determined by management to be substantiated (t = 3.30), while the claims in HR-related reports are less likely to be substantiated (t = -1.85). Anonymous reports and reports of retaliation are less likely to be determined to be substantiated (*ANON* coef. = -0.043, t = -2.36; *RETALIAT* coef. = -0.070, t = -3.23). Finally, claims with missing data are less likely to be substantiated.[18]

In Table 2, Panel B, we replace indicators for five key missing pieces of information (i.e., the relationship between the reporter and the firm, how the reporter became aware of the issue, whether management was aware of the issue, whether management was involved in the issue, and how long the issue had been ongoing at the time of the report) with the information provided in

[18] We include results from separate regressions by report type in an online appendix. While some variation in coefficient estimates across categories is evident, these results reveal that the associations we find in the full sample are fairly consistent across categories—the overall associations do not appear to be driven by any one category type.

the report. In each case, the coefficients on these variables are relative to a missing value. That is, indicators for missing values for each of the five items are omitted from the regression.

The first set of results reveals that reports by each of the reporter types (i.e., employees, business partners, customers, and others) are more likely to be accessed than cases where the reporter chose not to disclose her relationship to the firm. Reports by business partners are the most frequently accessed, on average (*REPORTER=PART* coef. = 0.225, t = 2.68). Reports that allege management was aware of or involved in the activity are more frequently accessed (*MGTAW=YES* coef. = 0.111, t = 4.04; *MGTINV=YES* coef. = 0.130, t = 4.74). Reports of activities that are alleged to have been occurring over a longer period of time are also more frequently accessed.

The second set of results in Panel B shows that reports that allege management was aware of or involved in the activity take longer to close (*MGTAW=YES* coef. = 0.158, t = 3.02; *MGTIN=YES* coef. = 0.108, t = 2.14). Reports of activities that are alleged to have been occurring over a longer period of time also take longer to close.

The final set of results in Panel B reveals that the claims in reports submitted by business partners and customers are less likely to be determined by management to be substantiated (*REPORTER=PART* coef. = -0.073, t = -2.10; *REPORTER=CUST* coef. = -0.078, t = -2.15). Reports alleging that management was aware of the activity are more likely to be substantiated (*MGTAW=YES* coef. = 0.030, t = 2.91), but this is not the case for reports alleging management involvement (*MGTINV=YES* coef. = 0.014, t = 1.43). Reports of activities that are alleged to have been occurring over a longer period of time are more likely to be substantiated.

4.2 Firm-Level Analyses

Table 3 presents descriptive statistics for our firm-year sample. Panel A presents summary statistics, and Panel B presents means of internal WB system usage variables by industry. Panel B reveals that the use of internal WB systems varies substantially across industries. For example, firms in the Semiconductors, Technology, and Diversified Financials industries average 4.2, 5.1, and 5.8 reports per 1,000 employees, respectively. At the other end of the spectrum, firms in the Household & Personal Products, Utilities, and Real Estate industries average 43.6, 32.9, and 22.3 reports per 1,000 employees.

Figure 1 presents the mean number of reports per 1,000 employees across the distributions of various explanatory variables. Panel A presents means of report volume across quintiles of eight continuous variables. Firm size, measured in assets or number of employees, exhibits a U-shaped relation with the number of reports—firms in the second quintile of size receive fewer reports than do smaller or larger firms. More profitable firms, higher growth firms, firms with greater volatility, and firms with more institutional ownership generally receive fewer reports, though the associations are not monotonic across the quintiles of each variable's distribution. Firms with higher sustainability ratings generally receive more internal WB reports, and firms receive more reports when they are either highly concentrated geographically or highly dispersed.

Figure 1, Panel B, presents means of report volume across the two values of binary variables. Firms receive more reports when they advertise their internal WB system as a "Helpline" (21.8 vs. 12.5 reports) and when they have a director on the board whose role relates to compliance and/or ethics (16.0 vs. 12.2 reports). Firms with a material weakness in internal controls receive only 12.8 reports per 1,000 employees, but that number increases to 15.5 in the following year as they work to improve on their internal controls.

Table 4 presents results from regressions of WB activity onto a set of explanatory variables. Panels A and B present results on firm characteristics associated the number of internal WB reports. Panel A also includes results on the amount of information in reports and the number of times management accesses reports, while Panel B adds additional explanatory variables on subsamples of observations where data is available. Panel C presents firm characteristics associated with the number of reports broken out by category types.

Table 4, Panel A, reveals two stark differences across internal WB system use measures. First, while firms that advertise their reporting systems as "helplines" receive significantly more reports (*HELPLINE* coef. = 0.563, t = 3.72), these firms tend to receive reports with less information (t = -3.70) and access reports less frequently (t = -2.65). Thus, it is possible that while advertising a "helpline" generates more reports, these reports may be, on average, less useful to management. Second, more profitable firms have fewer reports (*ROA* coef. = -0.550; t = -2.75), but these reports contain more information (t = 2.39) and are accessed more frequently (t = 3.23). Though a higher frequency of reports may be a sign of a healthy reporting environment, it is also possible that more profitable firms have fewer concerns to report. Growth firms and firms with more employees tend of have internal WB systems that are less used, with fewer reports received (*GROWTH* coef. = -0.130, t = -1.63; *EMP* coef. = -0.154, t = -2.95), less information in reports (t = -2.55 and -1.70, respectively), and reports that are less frequently accessed (t = -3.92 and -1.65, respectively). Finally, firms with greater institutional ownership receive fewer reports (*OWN* coef. = -0.209, t = -2.28) but those reports tend to include more information about the reported activity (t = 1.63).

Table 4, Panel B, presents results from estimations of Equation (4a) that include additional explanatory variables. We find that firms receive more internal WB reports when their board

includes a director who focuses on compliance (*COMPL_ROLE* coef. = 0.197, t = 2.60) and when the firm is in the process of improving internal controls (*ICFOCUS* coef. = 0.232, t = 3.22). Firms with higher ratings for corporate ethics receive more reports, though the association is not statistically significant (*KLD* coef. = 0.018, t = 1.50). Finally, more geographically disperse firms receive fewer reports (*GEODISP* coef. = -0.532, t = -3.53).

Table 4, Panel C, highlights various differences across report types. Reports of accounting-related concerns tend to be the most idiosyncratic, exhibiting the smallest association with the aggregate number of other reports (*log(NOT_AC)* coef. = 0.024, t = 2.56). Controlling for the number of employees, larger firms (in terms of assets) tend to have more reports of business integrity issues and concerns about misuse of corporate assets, but they have fewer reports of HR-related concerns. More profitable firms have fewer reports of accounting-related concerns, and firms with more institutional ownership have fewer accounting reports and reports related to business integrity concerns.

Out of all report types, only accounting-related reports decline in frequency after 2010 (*YEAR >= 2010* coef. = -0.031, t = -2.01), i.e., after the passage of the Dodd-Frank Act. This finding is consistent with the Dodd-Frank Act's whistleblower incentive program diverting reporting away from management directly to the SEC. Further, HR-related reports increase in frequency in 2017 (*YEAR >= 2017* coef. = 0.127, t = 3.71), which is consistent with greater incentives to report following the inception of the #MeToo Movement.

4.3 Outcomes Associated with the Use of Internal WB Systems

Figure 2 and Table 5 present results from our analysis of internal WB reports and subsequent outcomes. Panel A of Figure 2 plots the mean number and amount of government fines by quintile internal WB report volume. As the number of internal WB reports increases through

the first four quintiles, the amount of government fines decreases dramatically. However, the relation reverses in the fifth quintile, where a higher number of reports is associated with larger amounts of government fines. The association changes sooner for the number of government fines, where the association in sharply negative through the second quintile before becoming positive thereafter. Results in Panel B for the number of lawsuits filed and aggregate settlement amounts are roughly similar to those for the amount of government fines. Thus, while moderate numbers of internal WB reports are associated with improved outcomes in terms of government fines and litigation, those improved outcomes partially reverse with high report volumes.

Table 5, Panel A, presents results from the regressions of government fines and litigation. The coefficients on *log(RPRTS)* across the four sets of results indicate that firms with more internal WB reports tend to face fewer fines (*log(RPTS)* coef. = -0.030, t = -2.22), smaller aggregate amounts of fines (coef. = -0.204, t = -2.02), fewer lawsuits (coef. = -0.028, t = -3.16), and smaller aggregate amounts of settlements (coef. = -0.102, t = -1.67).[19] In economic terms, these results indicate that a 10% increase in WB reports is associated with a 2.0% decrease in the dollar amount of government fines received and a 1.0% decrease in legal settlement amounts in subsequent years.

Panel B presents associations between specific categories of reports and subsequent outcomes. Both reports of misuse of corporate assets and workplace safety concerns are associated with a lower amount of aggregate government fines (*log(MU)* coef. = -0.250, t = -1.72; *log(SF)* coef. = -0.419, t = -1.65). Reports of business integrity concerns are associated with fewer lawsuits (*log(BI)* coef. = -0.024, t = -2.17) and lower settlement amounts (coef. = -0.145, t = -2.22). Other

[19] We also estimate Equation (5) after dropping sample years prior to 2010, as the early part of our sample period exhibits sharp growth both in sample size and use of internal WB systems. Our results are qualitatively similar, though with larger coefficient estimates on *log(RPRTS)* and t-statistics of -2.42, -3.01, -2.97, and -2.93 across the four estimations in Panel A.

associations are not statistically significant, possibly due to the high degree of collinearity among the various report categories.

In summary, the results in Table 5 indicate that the volume of internal WB reports is associated with improved outcomes in terms of both government fines and litigation. This finding contrasts with prior research on external WB, which is associated with higher rates of litigation (Bowen et al. 2010). Although we observe some differences across report categories (e.g., business integrity reports are more negatively associated with lawsuits while workplace safety reports are more negatively associated with fines), there is not one category of report that seems to dominate in terms of explanatory power across outcomes.

5. Summary and Conclusions

Using a proprietary dataset of internal whistleblowing (WB) reports, provide a rich set of descriptive statistics on the characteristics of these reports and the characteristics of firms with more actively used internal WB systems. Further, we find that internal WB report volume is associated with fewer and smaller amounts of government fines and material lawsuits filed against the firm. These findings are consistent with internal WB reports being a valuable resource to identify and quickly address concerns arising within the firm. Our findings inform the academic literature on external WB by highlighting the distinctions between internal WB and external WB and by documenting potential benefits of an actively used internal WB system.

The results have implications for companies and regulators. The results may be of value to management and audit committees, as they provide insight into which firms have more actively used systems and their potential benefits. Finally, our findings may be useful to regulators, as they must trade off incentives for external WB with the promotion of internal WB. It is important for

regulators to understand the value of internal WB systems, and to our knowledge this study presents the first empirical analysis in the academic literature of actual internal WB reports.

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APPENDIX A
Database Description

Report categories and common examples

AC = Accounting and financial issues

Accounting and auditing practices
Accounting, auditing and internal financial controls
Accounting/audit irregularities
Financial fraud
Financial misconduct

BI = Business integrity concerns

Conflict of interest
Falsification of contracts, reports or records
Potential illegal activity
Violation of law or policy

HR = Human resource issues

Concerns with manager
Discrimination or harassment
Misconduct or inappropriate behavior
Sexual harassment
Unfair employment practices
Violation of HR policy

MU = Misuse of corporate assets

Embezzlement
Disclosure of confidential information
External theft
Internal theft
Privacy and data security

SF = Workplace safety concerns

Employee injury
Gas leaks
Hazardous substance incident
Health, safety, environmental concern or violation
Odors
Security incidents
Unsafe working conditions

APPENDIX A—*Continued*
Database Description

Reported fields and example entries

REPORTER = Reporter's relation to the company

EMPL (Employee)	*CUST* (Customer)
Employee	Customer
Current/active employee	
Former employee	
PART (Business partner)	*OTH* (Other)
Contractor	Competitor
Supplier/vendor	Shareholder (non-employee)
Contractor/consultant	Relative of employee

SOURCE = Reporter's source of knowledge about the issue

1ST (First-hand knowledge)	*2ND* (Second-hand knowledge)
It happened to me	Told to me by a co-worker
I observed it	I heard it
Accidentally found a document or file	Told to me by someone outside the company

MGTAW = Is management aware of the issue?

YES	*NO*

MGTINV = Is management involved in the issue?

YES	*NO*

LENGTH = Number of months issue has been occurring

<1 (One time or less than one month)	*3-12* (Three to twelve months)
Once	3 months to a year
One week	Several months
1-3 (One to three months)	*> 12* (More than one year)
1 to 3 months	More than a year

Other report-level variable definitions

INFO	Fraction of *REPORTER*, *SOURCE*, *MGTAW*, *MGTINV*, and *LENGTH* that are non-missing.
ACCESS	Number of times the report was accessed.
TIME	Number of days from the submission of the report until the case was closed by management.
SUBSTANT	Indicator for whether allegations were later determined by management to be substantiated.
DIRECT	Indicator for whether the report was made directly to a person (e.g., by phone or in person).
ANON	Indicator for whether the reporter chose to remain anonymous.
RETALIAT	Indicator for whether the report alleged retaliation by management.

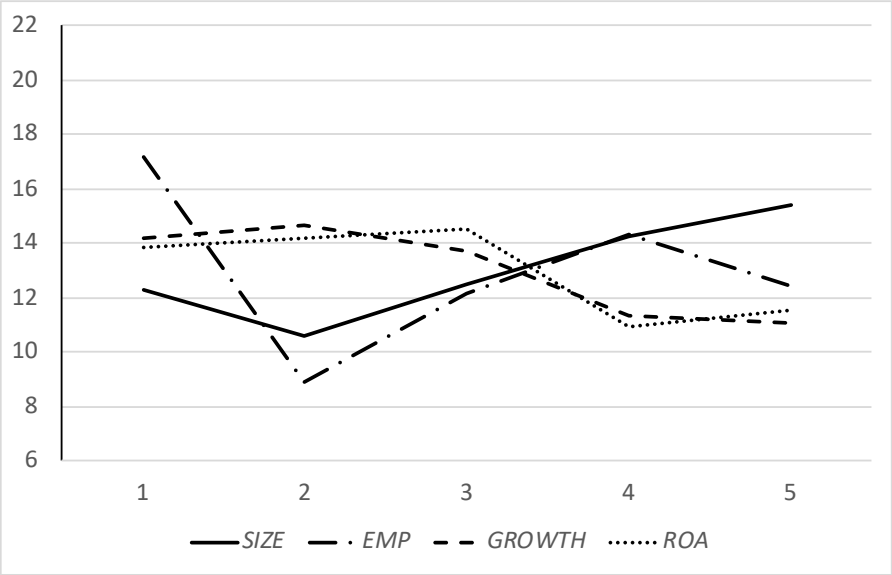
APPENDIX B

Firm-Level Variable Definitions

RPRTS	Number of reports made per 1,000 employees through the internal reporting system during the calendar year.
AC, NOT_AC	Number of accounting-related (not accounting-related) reports made per 1,000 employees through the internal reporting system during the calendar year. *BI* (business integrity), *HR* (human resources), *MU* (misuse of corporate assets), *SF* (workplace safety), and *UN* (uncategorized) reports are defined similarly.
INFO	Fraction of five key variables that are filled in the system, averaged across reports filed during the calendar year: (1) the reporter's relationship to the company, (2) how the reporter became aware of the activity, (3) whether management was aware of the activity, (4) whether management was involved in the activity, and (5) how long the activity had been occurring.
ACCESS	Average number of times reports filed during the calendar year were accessed.
#FINES	Number of government fines received over the subsequent three years (Violation Tracker).
$FINES	Aggregate amount of government fines received over the subsequent three years (Violation Tracker).
#LEGAL	Number of lawsuits filed against the company in the subsequent year (AuditAnalytics).
$LEGAL	Aggregate amount of settlements relating to lawsuits filed in the subsequent year (AuditAnalytics).
HELPLINE	Indicator equal to one in years the firm received at least one internal WB report through an intake method labeled by NAVEX Global as a "helpline".
SIZE	Natural log of the firm's total assets (Compustat).
EMP	Natural log of the number of employees (Compustat).
ROA	Net income before extraordinary items divided by total assets (Compustat).
GROWTH	Year-over-year growth in the firm's sales revenue (Compustat).
VOL	Standard deviation of monthly stock returns during the fiscal year (CRSP)
OWN	Percentage of the firm's shares held by institutional owners as reported in 13F filings (Thomson Reuters).
BRD_COMPL	Indicator equal to one if the company's board includes a director whose job title includes the words "ethics" or "compliance".
ICWEAK	Weakness in internal controls, as measured by an indicator variable equal to one if the firm disclosed a material weakness in internal controls during the current fiscal year (AuditAnalytics).
ICFOCUS	Focus on internal controls, as measured by an indicator variable equal to one if the firm disclosed a material weakness in internal controls during the prior fiscal year (AuditAnalytics).
KLD	Commitment to ethics, which is calculated as using MSCI's KLD measures as the sum the number of strengths across five categories (environment, community, employees, customers, and governance) less the total number of concerns across those five categories.
GEODISP	Geographic dispersion, negative one times the Herfindahl-Hirschman index of corporate revenues across geographic segments.
AGE	Natural log of the number of years since the firm's first appearance on Compustat.
LITRISK	Litigation risk, as calculated by Kim and Skinner (2012).

FIGURE 1
Internal Whistleblowing Report Volume

Panel A: Mean number of internal whistleblower reports per 1,000 employees by quintile of continuous explanatory variables



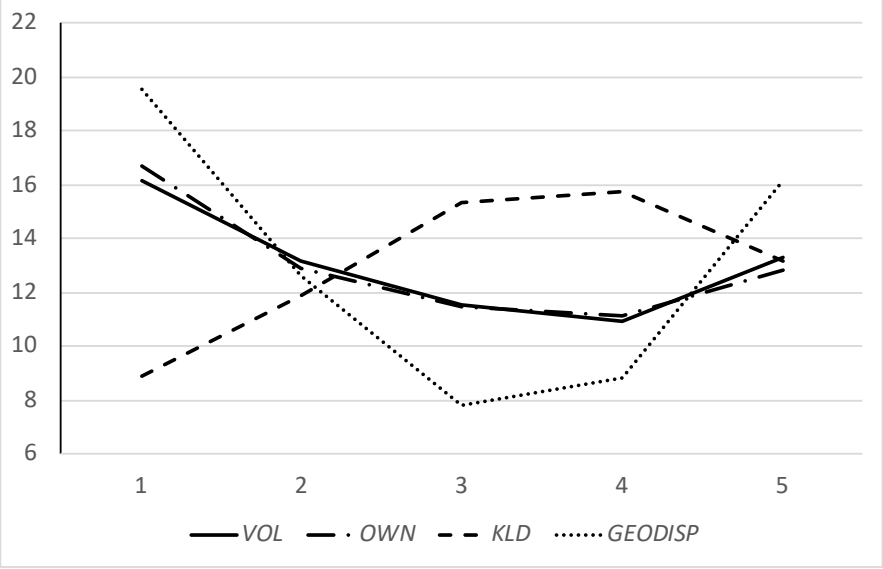


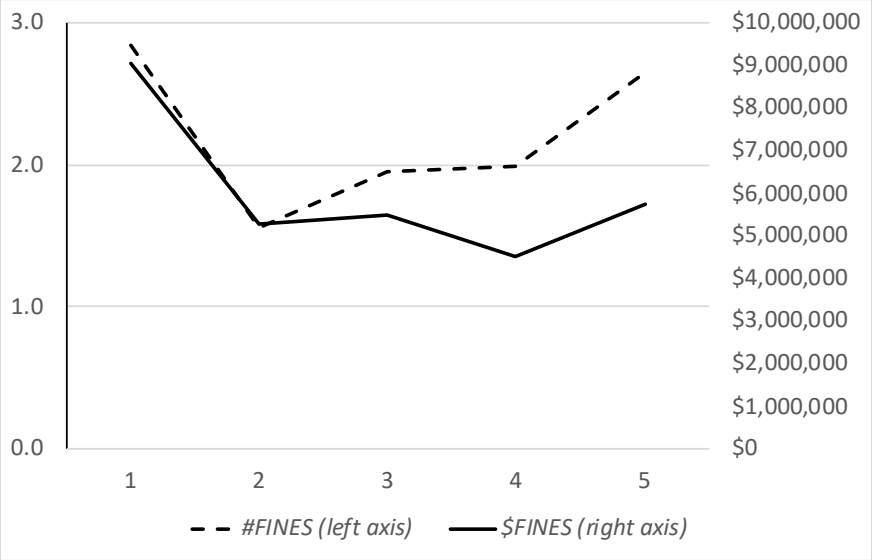
FIGURE 1—*Continued*
Internal Whistleblowing Report Volume

Panel B: Mean number of internal whistleblower reports per 1,000 employees by level of binary explanatory variables

Figure 1 presents the mean number of internal WB reports per 1,000 employees (*RPRTS*) across quintiles of continuous variables (Panel A) and values of binary variables (Panel B). Definitions of explanatory variables are provided in Appendix B.

FIGURE 2
Internal Whistleblowing Report Volume and Subsequent Outcomes

Panel A: Government fines by quintile of internal whistleblower report volume



Panel B: Lawsuits by quintile of internal whistleblower report volume

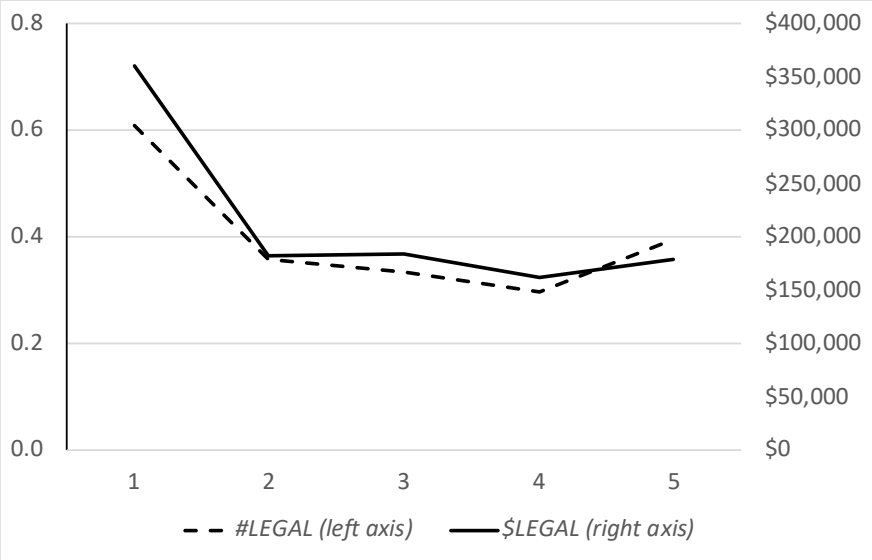


Figure 2 presents the mean number of government fines and lawsuits received ($\#FINES_{t+1\ to\ 3}$ and $\#LEGAL_{t+1}$ on the left axes of Panels A and B, respectively) and the mean dollar amount of government fines received and legal settlements paid ($\$FINES_{t+1\ to\ 3}$ and $\$LEGAL_{t+1}$ on the right axes of Panels A and B, respectively) by quintile of internal WB reports received (*RPTS*).

TABLE 1
Internal Whistleblowing System Data

Panel A: Distribution of internal whistleblowing report categories by year

Year	*RPRTS*	*%AC*	*%BI*	*%HR*	*%MU*	*%SF*	*%UN*
2004	3,956	1.8%	11.2%	59.5%	8.1%	5.7%	13.8%
2005	10,826	1.8%	9.3%	61.6%	7.2%	6.9%	13.2%
2006	23,817	1.7%	8.0%	55.7%	6.1%	7.0%	21.6%
2007	28,903	1.4%	9.2%	59.6%	5.4%	7.5%	16.9%
2008	47,581	1.2%	9.8%	60.6%	6.6%	7.1%	14.8%
2009	74,493	1.0%	10.3%	61.3%	6.6%	10.2%	10.5%
2010	106,678	0.8%	10.5%	62.5%	7.0%	9.8%	9.3%
2011	142,506	0.6%	14.9%	60.5%	8.4%	8.4%	7.0%
2012	204,518	0.6%	16.7%	49.6%	18.9%	5.7%	8.5%
2013	255,873	0.6%	16.7%	48.6%	15.0%	9.9%	9.2%
2014	266,608	0.6%	16.2%	51.2%	15.1%	8.7%	8.1%
2015	290,089	0.7%	17.5%	53.0%	14.4%	8.3%	6.0%
2016	302,798	0.7%	18.8%	56.0%	10.0%	7.9%	6.5%
2017	233,688	0.9%	14.9%	60.4%	6.2%	6.5%	11.2%
All	1,992,334	0.7%	15.7%	54.9%	11.8%	8.1%	8.7%

TABLE 1—*Continued*
Internal Whistleblowing System Data

Panel B: Means of internal whistleblowing report characteristics by year

YEAR	*N*	*INFO*	*ACCESS*	*TIME*	*ANON*	*RETALIAT*	*DIRECT*	*SUBSTANT*
<2010	189,576	42.8%	11.26	66.46	41.0%	1.0%	50.4%	17.0%
2010	106,678	35.4%	9.99	44.84	29.8%	0.9%	42.6%	18.8%
2011	142,506	34.1%	9.84	46.12	27.5%	1.1%	39.9%	19.6%
2012	204,518	28.7%	8.83	48.61	25.9%	1.2%	33.1%	23.6%
2013	255,873	27.9%	8.36	38.77	24.8%	1.1%	31.3%	22.0%
2014	266,608	26.8%	8.51	40.42	25.6%	1.3%	31.7%	23.2%
2015	290,089	25.9%	8.59	39.25	25.8%	1.5%	32.6%	22.3%
2016	302,798	27.2%	8.84	41.61	28.7%	1.4%	35.5%	20.5%
2017	233,688	28.4%	9.54	38.88	31.0%	1.8%	39.6%	20.8%
Total	1,992,334	29.8%	9.14	43.92	28.5%	1.3%	36.4%	21.2%

	REPORTER					*SOURCE*			*MGTAW*			*MGTINV*			*LENGTH*				
YEAR	*MISS*	*EMPL*	*PART*	*CUST*	*OTH*	*MISS*	*1ST*	*2ND*	*MISS*	*YES*	*NO*	*MISS*	*YES*	*NO*	*MISS*	*0 to 1*	*1 to 3*	*3 to 12*	*> 12*
<2010	84.1%	15.0%	0.1%	0.6%	0.1%	47.6%	42.7%	9.7%	55.2%	36.9%	8.0%	53.1%	35.0%	11.9%	46.3%	19.6%	13.6%	11.6%	9.0%
2010	81.5%	17.5%	0.2%	0.7%	0.1%	59.7%	32.1%	8.2%	62.9%	29.3%	7.8%	63.8%	26.2%	10.0%	55.4%	18.3%	10.0%	8.7%	7.6%
2011	80.0%	19.1%	0.3%	0.5%	0.1%	60.5%	31.0%	8.5%	65.1%	25.9%	9.0%	66.0%	23.4%	10.6%	57.7%	18.1%	9.1%	7.8%	7.3%
2012	80.2%	18.1%	0.3%	1.3%	0.1%	67.4%	26.0%	6.6%	70.9%	21.2%	7.9%	72.5%	18.8%	8.7%	65.3%	14.5%	7.6%	6.6%	6.0%
2013	78.3%	19.0%	0.4%	2.2%	0.1%	67.2%	26.5%	6.2%	72.5%	19.4%	8.1%	75.9%	16.2%	7.9%	66.4%	13.8%	7.7%	6.4%	5.7%
2014	80.2%	18.6%	0.3%	0.8%	0.1%	67.3%	27.1%	5.6%	74.8%	17.4%	7.9%	76.9%	15.8%	7.3%	67.0%	12.8%	7.7%	6.5%	5.9%
2015	80.3%	18.2%	0.5%	0.8%	0.2%	68.4%	26.4%	5.2%	75.7%	16.9%	7.4%	77.5%	15.5%	7.0%	68.7%	12.1%	7.4%	6.2%	5.6%
2016	79.7%	18.3%	0.5%	1.4%	0.2%	65.2%	29.2%	5.6%	75.3%	17.2%	7.4%	77.2%	15.2%	7.6%	66.7%	13.0%	8.0%	6.5%	5.8%
2017	78.6%	20.2%	0.5%	0.6%	0.1%	64.3%	29.4%	6.3%	74.7%	17.0%	8.3%	75.0%	15.8%	9.2%	65.4%	12.7%	8.2%	6.9%	6.8%
Total	80.1%	18.3%	0.4%	1.1%	0.1%	64.0%	29.4%	6.6%	71.1%	21.0%	7.9%	72.5%	19.0%	8.6%	63.5%	14.3%	8.5%	7.2%	6.4%

TABLE 1—*Continued*
Internal Whistleblowing System Data

Panel C: Means of internal whistleblowing report characteristics by report category

CAT.	*N*	*INFO*	*ACCESS*	*TIME*	*ANON*	*RETALIAT*	*DIRECT*	*SUBSTANT*
AC	14,828	33.0%	14.10	79.06	35.4%	0.0%	23.2%	26.5%
BI	313,551	21.7%	8.04	48.73	23.0%	0.0%	21.8%	19.1%
HR	1,093,561	37.0%	10.21	42.97	33.9%	1.6%	47.3%	20.7%
MU	235,796	15.5%	6.57	34.81	19.6%	0.0%	15.4%	26.3%
SF	161,673	20.8%	6.96	36.30	18.4%	0.0%	25.4%	19.6%
UN	172,925	26.0%	9.53	59.25	25.5%	4.8%	33.2%	21.7%
Total	1,992,334	29.8%	9.14	43.92	28.5%	1.3%	36.4%	21.2%

	REPORTER					*SOURCE*			*MGTAW*			*MGTINV*			*LENGTH*				
CAT.	*MISS*	*EMPL*	*PART*	*CUST*	*OTH*	*MISS*	*1ST*	*2ND*	*MISS*	*YES*	*NO*	*MISS*	*YES*	*NO*	*MISS*	*0 to 1*	*1 to 3*	*3 to 12*	*> 12*
AC	79.2%	19.1%	0.9%	0.7%	0.1%	58.2%	28.4%	13.4%	70.5%	21.9%	7.6%	69.1%	20.2%	10.8%	58.1%	11.9%	7.4%	8.8%	13.8%
BI	81.4%	14.7%	0.6%	3.1%	0.1%	74.0%	18.4%	7.6%	80.5%	12.9%	6.6%	81.0%	10.8%	8.3%	74.6%	10.0%	5.0%	4.7%	5.7%
HR	76.4%	22.4%	0.3%	0.6%	0.2%	55.2%	38.7%	6.0%	63.6%	26.6%	9.8%	65.5%	25.8%	8.7%	54.1%	17.0%	11.6%	9.5%	7.8%
MU	87.8%	11.4%	0.3%	0.5%	0.1%	82.1%	11.5%	6.4%	84.9%	10.7%	4.4%	85.9%	5.3%	8.8%	81.8%	10.3%	3.0%	2.4%	2.5%
SF	89.7%	9.6%	0.2%	0.3%	0.1%	73.9%	18.1%	8.0%	78.9%	15.8%	5.3%	81.4%	9.9%	8.7%	71.9%	14.6%	5.0%	4.1%	4.4%
UN	81.8%	16.3%	0.3%	1.4%	0.0%	67.9%	25.9%	6.3%	75.5%	19.0%	5.5%	74.6%	17.5%	7.9%	70.3%	10.6%	7.1%	6.5%	5.5%
Total	80.1%	18.3%	0.4%	1.1%	0.1%	64.0%	29.4%	6.6%	71.1%	21.0%	7.9%	72.5%	19.0%	8.6%	63.5%	14.3%	8.5%	7.2%	6.4%

Table 1 presents descriptive statistics on our sample of 1,992,334 internal WB reports. Panel A presents the number of reports and distribution of reports across categories (accounting, *AC*; business integrity, *BI*; human resources, *HR*; misuse of assets, *MU*; workplace safety, *SF*; and uncategorized, *UN*) by year. Panel B (Panel C) presents means of report characteristics over time (by report category). Report characteristics include the percent of fields that were filled in the report (*INFO*), the number of times the report was accessed (*ACCESS*), the number of days until the report was closed (*TIME*), and whether the report was anonymous (*ANON*), alleged retaliation (*RETALIAT*), was made directly to a person (*DIRECT*), and was determined to be substantiated (*SUBSTANT*). Values for the reporter's relation to the company (*REPORTER*), source of information (*SOURCE*), allegation of management awareness of the activity (*MGTAW*), allegation of management involvement in the activity (*MGTINV*), and allegation of the activity's duration (*LENGTH*) are described in Appendix A.

TABLE 2

Regression Analysis of Internal Whistleblowing System Data

Panel A: Regressions using indicators for missing data fields

$$INFO_t = b0 + \Sigma\, bi\ CATEGORY_{it} + b6\ DIRECT_t + b7\ ANON_t + b8\ RETALIAT_t + firm\ FE + year\ FE + e_t \quad (1)$$

$$Dep.\ Var. = b0 + \Sigma\, bi\ CATEGORY_{it} + b6\ DIRECT_t + b7\ ANON_t + b8\ RETALIAT_t + b9\ I(REPORTER_{it}) + b10\ I(SOURCE_{it}) + b11\ I(MGTAW_{it}) + b12\ I(MGTINV_{it}) + b13\ I(LENGTH_{it}) + firm\ FE + year\ FE + e_t \quad (2)$$

Dep. Var. =	*$INFO_t$*		*$log(ACCESS_t)$*		*$log(TIME_t)$*		*$SUBSTANT_t$*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat
CATEGORY=AC	0.013	0.43	**0.285**	**4.19**	**0.486**	**3.72**	**0.062**	**3.30**
CATEGORY=BI	-0.034	-1.32	0.005	0.06	0.105	0.62	-0.025	-0.69
CATEGORY=HR	0.001	0.02	0.080	1.51	0.024	0.24	-0.024	-1.85
CATEGORY=MU	-0.033	-1.07	0.029	0.39	0.047	0.31	0.036	1.65
CATEGORY=SF	-0.025	-0.70	-0.027	-0.34	-0.174	-1.01	0.011	0.52
DIRECT	**0.134**	**7.47**	0.010	0.25	0.050	0.74	-0.029	-1.92
ANON	**0.097**	**6.01**	**0.231**	**7.24**	**0.441**	**7.21**	**-0.043**	**-2.36**
RETALIAT	**0.101**	**4.89**	**0.306**	**7.82**	**0.541**	**6.18**	**-0.070**	**-3.23**
REPORTER=MISS			-0.139	-1.90	0.004	0.02	0.018	0.52
SOURCE=MISS			**-0.257**	**-5.14**	**-0.307**	**-3.74**	-0.022	-1.35
MGTAW=MISS			**-0.091**	**-3.56**	**-0.133**	**-2.75**	**-0.024**	**-2.73**
MGTINV=MISS			**-0.100**	**-4.22**	-0.057	-1.22	**-0.037**	**-3.66**
LENGTH=MISS			**-0.087**	**-2.64**	-0.002	-0.04	**-0.029**	**-2.25**
Firm and Year FE	Yes		Yes		Yes		Yes	
Adjusted R^2	0.551		0.416		0.236		0.215	
N	1,992,290		1,992,290		1,864,477		1,992,290	

TABLE 2—*Continued*
Regression Analysis of Internal Whistleblowing System Data

Panel B: Regressions using indicators for specific information provided in reports

$$\begin{aligned} Dep.\ Var. = {} & b0 + \Sigma\ bi\ CATEGORY_{it} + b6\ DIRECT_t + b7\ ANON_t + b8\ RETALIAT_t \\ & + \Sigma\ bi\ REPORTER_{it} + \Sigma\ bi\ SOURCE_{it} + \Sigma\ bi\ MGTAW_{it} + \Sigma\ bi\ MGTINV_{it} \\ & + \Sigma\ bi\ LENGTH_{it} + firm\ FE + year\ FE + e_t \end{aligned} \quad (3)$$

Dep. Var. =	*log(ACCESS$_t$)*		*log(TIME$_t$)*		*SUBSTANT$_t$*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat
CATEGORY=AC	**0.277**	**4.11**	**0.471**	**3.65**	**0.060**	**3.22**
CATEGORY=BI	0.005	0.06	0.107	0.63	-0.025	-0.72
CATEGORY=HR	0.078	1.47	0.022	0.21	-0.023	-1.76
CATEGORY=MU	0.035	0.47	0.063	0.42	0.030	1.35
CATEGORY=SF	-0.024	-0.32	-0.167	-0.97	0.009	0.38
DIRECT	0.020	0.49	0.067	0.97	-0.024	-1.53
ANON	**0.209**	**6.26**	**0.393**	**6.01**	**-0.038**	**-2.06**
RETALIAT	**0.292**	**7.28**	**0.512**	**5.75**	**-0.063**	**-3.07**
REPORTER=EMPL	0.141	1.80	-0.008	-0.05	-0.010	-0.29
REPORTER=PART	**0.225**	**2.68**	0.104	0.72	**-0.073**	**-2.10**
REPORTER=CUST	**0.124**	**2.46**	0.067	0.35	**-0.078**	**-2.15**
REPORTER=OTH	**0.174**	**2.65**	0.045	0.29	-0.039	-1.54
SOURCE=1ST	**0.241**	**5.26**	**0.287**	**3.76**	0.008	0.56
SOURCE=2ND	**0.285**	**4.40**	**0.324**	**3.14**	**0.068**	**3.06**
MGTAW=YES	**0.111**	**4.04**	**0.158**	**3.02**	**0.030**	**2.91**
MGTAW=NO	**0.061**	**2.38**	**0.113**	**2.28**	-0.012	-1.52
MGTINV=YES	**0.130**	**4.74**	**0.108**	**2.14**	0.014	1.43
MGTINV=NO	0.031	1.07	-0.076	-1.25	**0.084**	**5.95**
LENGTH<1	0.013	0.41	**-0.175**	**-2.58**	**0.040**	**2.91**
LENGTH=1 to 3	**0.080**	**2.28**	0.034	0.58	**0.036**	**2.83**
LENGTH=3 to 12	**0.138**	**3.96**	**0.142**	**2.32**	**0.031**	**2.37**
LENGTH>12	**0.218**	**7.06**	**0.242**	**4.31**	0.018	1.57
Firm and Year FE	Yes		Yes		Yes	
Adjusted R^2	0.420		0.240		0.218	
N	1,992,290		1,864,477		1,992,290	

Table 2 presents results from OLS regressions of report-level characteristics. Panel A presents results from estimations of Equations (1) and (2), and Panel B presents results from estimations of Equation (3). Dependent variables are the percent of fields that were filled in the report (*INFO*), the number of times the report was accessed (*ACCESS*), the number of days until the report was closed (*TIME*), and whether the report was determined to be substantiated (*SUBSTANT*). Explanatory variables are defined in Appendix A. t-statistics are based on standard errors clustered by firm, and statistically significant estimates (two-sided p-value < 0.05) are displayed in bold.

TABLE 3
Firm-Level Descriptive Statistics

Panel A: Summary statistics

	N	Mean	Std. Dev.	Q1	Median	Q3
$log(RPRTS_t)$	7,047	1.84	1.18	0.91	1.71	2.60
$INFO_t$	7,047	0.39	0.26	0.13	0.46	0.60
$log(ACCESS_t)$	7,047	2.32	0.80	1.84	2.48	2.91
$log(\#FINES_{t+1 \text{ to } 3})$	5,670	0.56	0.92	0.00	0.00	1.10
$log(\$FINES_{t+1 \text{ to } 3})$	5,670	4.42	6.57	0.00	0.00	10.88
$log(\#LEGAL_{t+1})$	6,425	0.22	0.43	0.00	0.00	0.00
$log(\$LEGAL_{t+1})$	6,425	0.47	2.67	0.00	0.00	0.00
$HELPLINE_t$	7,047	0.05	0.22	0.00	0.00	0.00
$SIZE_t$	7,047	8.02	1.83	6.72	8.03	9.33
EMP_t	7,047	1.99	1.36	0.79	1.81	2.97
AGE_t	7,047	3.04	0.73	2.56	3.04	3.64
$GROWTH_t$	7,047	0.08	0.21	-0.02	0.06	0.15
ROA_t	7,047	0.02	0.11	0.01	0.04	0.07
VOL_t	7,047	0.10	0.06	0.06	0.08	0.12
$LITRISK_t$	7,047	-0.96	1.33	-1.88	-1.15	-0.30
OWN_t	7,047	0.68	0.32	0.53	0.79	0.91
BRD_COMPL_t	6,546	0.24	0.43	0.00	0.00	0.00
$ICWEAK_t$	6,482	0.05	0.22	0.00	0.00	0.00
$ICFOCUS_t$	6,134	0.05	0.22	0.00	0.00	0.00
KLD_t	2,960	0.19	3.11	-2.00	0.00	1.00
$GEODISP_t$	5,552	-0.63	0.28	-0.98	-0.57	-0.38

TABLE 3—*Continued*
Firm-Level Descriptive Statistics

Panel B: Means of firm-level reporting statistics by industry

Industry	*N*	*RPRTS*	*INFO*	*ACCESS*
Energy	355	17.01	35.2%	10.75
Materials	418	7.56	42.1%	12.99
Capital Goods	713	9.83	41.0%	13.84
Commercial & Professional Services	194	6.76	50.1%	13.40
Transportation	136	13.63	47.0%	11.39
Automobiles & Components	113	11.30	36.6%	11.02
Consumer Durables & Apparel	208	9.07	36.9%	11.00
Consumer Services	287	21.97	43.5%	10.42
Retailing	328	17.77	34.2%	7.17
Food & Staples Retailing	76	22.19	53.9%	8.41
Food, Beverage & Tobacco	253	6.62	37.4%	12.01
Household & Personal Products	45	43.60	39.2%	16.06
Health Care Equipment & Services	479	11.15	35.1%	12.02
Pharmaceuticals Biotech. & Life Sciences	433	17.38	35.1%	9.85
Banks	488	16.21	43.5%	14.11
Diversified Financials	146	5.81	40.2%	13.82
Insurance	157	11.78	39.1%	14.59
Software & Services	605	7.35	41.9%	12.81
Technology Hardware & Equipment	470	5.09	40.5%	14.99
Semiconductors & Semiconductor Equipment	254	4.23	38.7%	15.11
Telecommunication Services	85	14.26	46.7%	11.55
Media & Entertainment	180	11.02	38.8%	13.67
Utilities	287	32.87	29.8%	12.42
Real Estate	337	22.26	36.2%	11.57
Total	7,047	12.99	39.4%	12.39

Table 3 presents summary statistics for our sample of 7,047 firm-year observations. Panel A presents summary statistics for firm-level variables, which are defined in Appendix B. Panel B presents means of the number of internal WB reports per 1,000 employees (*RPRTS*), average amount of information provided in reports (*INFO*), and average number of times reports are accessed (*ACCESS*) across two-digit GICS industry groups.

TABLE 4

Firm Characteristics Associated with Internal Whistleblowing System Activity

Panel A: Firm characteristics associated with internal whistleblowing system use

$$Dep.\ Var. = b0 + b1\ HELPLINE_t + b2\ SIZE_t + b3\ EMP_t + b4\ ROA_t + b5\ GROWTH_t + b6\ VOL_t + b7\ OWN_t + industry\ FE + year\ FE + e_t \quad (4)$$

Dep. Var. =	*log(RPRTS$_t$)*		*INFO$_t$*		*log(ACCESS$_t$)*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat
HELPLINE$_t$	**0.563**	**3.72**	**-0.139**	**-3.70**	**-0.314**	**-2.65**
SIZE$_t$	0.020	0.54	-0.011	-1.67	0.015	0.68
EMP$_t$	**-0.154**	**-2.95**	-0.016	-1.70	-0.052	-1.65
ROA$_t$	**-0.550**	**-2.75**	**0.113**	**2.39**	**0.489**	**3.23**
GROWTH$_t$	-0.130	-1.63	**-0.042**	**-2.55**	**-0.207**	**-3.92**
VOL$_t$	0.375	0.76	0.139	1.28	0.473	1.37
OWN$_t$	**-0.209**	**-2.28**	0.032	1.63	0.012	0.18
Industry and Year FE	Yes		Yes		Yes	
Adjusted R^2	0.150		0.096		0.071	
N	7,047		7,047		7,047	

TABLE 4—*Continued*
Firm Characteristics Associated with Internal Whistleblowing System Activity

Panel B: Additional firm characteristics associated with internal whistleblower report volume

$$log(RPRTS_t) = b0 + b1\ HELPLINE_t + b2\ SIZE_t + b3\ EMP_t + b4\ ROA_t + b5\ GROWTH_t + b6\ VOL_t + b7\ OWN_t + industry\ FE + year\ FE + e_t \quad (4a)$$

Dep. Var. =	*log(RPRTS$_t$)*		*log(RPRTS$_t$)*		*log(RPRTS$_t$)*		*log(RPRTS$_t$)*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat
HELPLINE$_t$	**0.509**	**3.19**	**0.553**	**3.45**	0.344	1.75	**0.448**	**3.37**
SIZE$_t$	0.019	0.50	0.048	1.25	0.077	1.50	0.041	1.04
EMP$_t$	**-0.130**	**-2.41**	**-0.162**	**-2.96**	**-0.252**	**-3.61**	**-0.151**	**-2.73**
ROA$_t$	**-0.585**	**-2.85**	**-0.621**	**-2.83**	**-0.633**	**-2.28**	**-0.419**	**-1.96**
GROWTH$_t$	-0.117	-1.43	-0.130	-1.41	0.045	0.37	**-0.205**	**-2.30**
VOL$_t$	0.187	0.37	0.309	0.57	0.027	0.04	0.589	1.10
OWN$_t$	**-0.342**	**-3.20**	**-0.208**	**-1.98**	-0.230	-1.63	**-0.253**	**-2.53**
COMPL_ROLE$_t$	**0.197**	**2.60**						
ICWEAK$_t$			-0.023	-0.32				
ICFOCUS$_t$			**0.232**	**3.22**				
KLD$_t$					0.018	1.50		
GEODISP$_t$							**-0.532**	**-3.53**
Industry and Year FE	Yes		Yes		Yes		Yes	
Adjusted R^2	0.146		0.145		0.143		0.166	
N	6,546		6,004		2,960		5,552	

TABLE 4—*Continued*
Firm Characteristics Associated with Internal Whistleblowing System Activity

Panel C: Internal whistleblower report volume by report category

$$Dep.\ Var. = b0 + b1\ log(NOT\_CATEG_t) + b2\ I(YEAR >= 2010) + b3\ I(YEAR >= 2017) + b4\ HELPLINE_t + b5\ SIZE_t + b6\ EMP_t + b7\ ROA_t + b8\ GROWTH_t + b9\ VOL_t + b10\ OWN_t + industry\ FE + e_t \quad (5)$$

Dep. Var. =	*log(AC$_t$)*		*log(BI$_t$)*		*log(HR$_t$)*		*log(MU$_t$)*		*log(SF$_t$)*		*log(UN$_t$)*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat
log(NOT_AC$_t$)	**0.024**	**2.56**										
log(NOT_BI$_t$)			**0.340**	**18.12**								
log(NOT_HR$_t$)					**0.455**	**15.95**						
log(NOT_MU$_t$)							**0.231**	**14.96**				
log(NOT_SF$_t$)									**0.207**	**16.13**		
log(NOT_UN$_t$)											**0.126**	**7.46**
YEAR >= 2010	**-0.031**	**-2.01**	**0.107**	**5.67**	**0.211**	**6.46**	0.006	0.41	**0.023**	**2.00**	0.024	1.22
YEAR >= 2017	0.028	1.80	0.030	1.23	**0.127**	**3.71**	**-0.064**	**-3.39**	0.012	0.76	**0.056**	**2.15**
HELPLINE$_t$	0.033	0.81	0.080	0.96	0.152	1.41	0.075	0.98	0.067	1.07	0.036	0.43
SIZE$_t$	-0.003	-0.34	**0.085**	**5.13**	-0.053	-1.80	**0.042**	**3.68**	**0.019**	**2.18**	0.032	1.93
EMP$_t$	**-0.092**	**-7.10**	-0.021	-0.97	-0.013	-0.31	0.014	0.91	**0.043**	**3.36**	0.038	1.48
ROA$_t$	**-0.311**	**-2.68**	0.043	0.31	0.141	0.63	0.138	1.34	**0.209**	**3.18**	0.155	1.54
GROWTH$_t$	0.023	0.62	**-0.119**	**-2.50**	**-0.189**	**-2.77**	0.034	0.92	-0.011	-0.43	-0.006	-0.13
VOL$_t$	-0.191	-1.35	**0.678**	**2.85**	0.202	0.58	0.141	0.83	-0.025	-0.20	0.184	0.99
OWN$_t$	**-0.084**	**-3.01**	-0.081	-1.75	0.095	1.37	-0.021	-0.65	-0.004	-0.13	-0.071	-1.69
Industry FE	Yes		Yes		Yes		Yes		Yes		Yes	
Adjusted R^2	0.118		0.332		0.288		0.281		0.367		0.135	
N	7,047		7,047		7,047		7,047		7,047		7,047	

Table 4 presents results from OLS regressions of firm-level reporting characteristics. Panels A and B (Panel C) present results from estimations of Equation (4) (Equation (5)). Dependent variables in Panel A are the number of reports received per 1,000 employees (*RPRTS*), the average percent of fields that were filled in reports (*INFO*), the average number of times reports were accessed (*ACCESS*). The dependent variable in Panel B is the number of reports received per 1,000 employees (*RPRTS*). Dependent variables in Panel C are the number of reports in each of six categories (accounting, *AC*; business integrity, *BI*; human resources, *HR*; misuse of assets, *MU*; workplace safety, *SF*; and uncategorized, *UN*). Explanatory variables are defined in Appendix B. t-statistics are based on standard errors clustered by firm, and statistically significant estimates (two-sided p-value < 0.05) are displayed in bold.

TABLE 5

Internal Whistleblower Report Volume and Subsequent Outcomes

Panel A: Internal whistleblower report volume and subsequent outcomes

$$OUTCOME_{t+k} = b0 + b1\ log(RPRTS_t) + b2\ SIZE_t + b3\ ROA_t + b4\ GROWTH_t + b5\ VOL_t + b6\ OWN_t + b7\ AGE_t + b8\ LITRISK_t + firm\ FE + year\ FE + e_{t+k} \quad (6)$$

Dep. Var. =	*log(#FINES$_{t+1\ to\ 3}$)*		*log($FINES$_{t+1\ to\ 3}$)*		*log(#LEGAL$_{t+1}$)*		*log($LEGAL$_{t+1}$)*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat
log(RPRTS$_t$)	**-0.030**	**-2.22**	**-0.204**	**-2.02**	**-0.028**	**-3.16**	-0.102	-1.67
SIZE$_t$	**0.079**	**2.88**	**0.468**	**2.17**	**0.101**	**4.17**	**0.347**	**3.17**
ROA$_t$	0.055	0.62	0.187	0.27	-0.120	-1.62	0.670	1.03
GROWTH$_t$	0.044	1.57	0.028	0.11	-0.016	-0.57	0.113	0.48
VOL$_t$	-0.266	-0.64	-5.159	-1.33	0.047	0.13	-0.484	-0.17
OWN$_t$	-0.020	-0.47	-0.553	-1.15	-0.047	-0.91	-0.285	-1.12
AGE$_t$	0.073	0.82	1.072	1.46	0.097	1.97	0.152	0.43
LITRISK$_t$	0.004	0.25	0.102	0.77	0.006	0.46	0.026	0.25
Firm and Year FE	Yes		Yes		Yes		Yes	
Adjusted R^2	0.841		0.744		0.376		0.049	
N	5,506		5,506		6,281		6,281	

TABLE 5—*Continued*
Internal Whistleblower Report Volume and Subsequent Outcomes

Panel B: Internal whistleblower report volume by report category and subsequent outcomes

$$OUTCOME_{t+k} = b0 + \Sigma\, bi\ log(CATEG_{it}) + b7\ SIZE_t + b8\ ROA_t + b9\ GROWTH_t + b10\ VOL_t + b11\ OWN_t + b12\ AGE_t + b13\ LITRISK_t + firm\ FE + year\ FE + e_{t+k} \quad (6b)$$

Dep. Var. =	*log(#FINES$_{t+1\ to\ 3}$)*		*log($FINES$_{t+1\ to\ 3}$)*		*log(#LEGAL$_{t+1}$)*		*log($LEGAL$_{t+1}$)*	
	Est.	t-stat	Est.	t-stat	Est.	t-stat	Est.	t-stat
log(AC$_t$)	-0.007	-0.56	-0.072	-0.62	0.003	0.24	0.037	0.54
log(BI$_t$)	-0.010	-0.67	0.030	0.27	**-0.024**	**-2.17**	**-0.145**	**-2.22**
log(HR$_t$)	-0.009	-0.88	-0.030	-0.34	-0.003	-0.32	0.019	0.42
log(MU$_t$)	-0.024	-1.47	-0.250	-1.72	-0.017	-1.33	-0.110	-1.60
log(SF$_t$)	-0.037	-1.36	-0.419	-1.65	0.007	0.38	-0.019	-0.15
log(UN$_t$)	-0.010	-0.35	-0.027	-0.13	-0.029	-1.62	-0.044	-0.36
SIZE$_t$	**0.081**	**3.00**	**0.479**	**2.22**	**0.105**	**4.33**	**0.362**	**3.31**
ROA$_t$	0.060	0.68	0.242	0.35	-0.117	-1.58	0.678	1.04
GROWTH$_t$	0.046	1.63	0.048	0.19	-0.015	-0.54	0.117	0.49
VOL$_t$	-0.249	-0.60	-5.206	-1.33	0.101	0.27	-0.157	-0.05
OWN$_t$	-0.021	-0.48	-0.564	-1.17	-0.047	-0.90	-0.291	-1.14
AGE$_t$	0.073	0.82	1.074	1.46	**0.107**	**2.18**	0.180	0.51
LITRISK$_t$	0.003	0.20	0.101	0.76	0.005	0.34	0.016	0.15
Firm and Year FE	Yes		Yes		Yes		Yes	
Adjusted R^2	0.841		0.744		0.375		0.049	
N	5,506		5,506		6,281		6,281	

Table 5 presents results from OLS regressions of subsequent outcomes onto internal WB report volume and control variables. Panel A (Panel B) presents results from estimations of Equation (6a) (Equation (6b)). Dependent variables number of government fines received (*#FINES*), the aggregate dollar amount of fines received *($FINES*), the number of material lawsuits received *(#LEGAL*) and the aggregate dollar amount of settlements resulting from lawsuits received *($LEGAL*). Explanatory variables are defined in Appendix B. t-statistics are based on standard errors clustered by firm, and statistically significant estimates (two-sided p-value < 0.05) are displayed in bold.