

## **Noncompliance with Non-Accounting Securities Regulations and GAAP Violations\***

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# **Noncompliance with Non-Accounting Securities Regulations and GAAP Violations**

**Abstract:** Using enforcement actions by the Securities and Exchange Commission (SEC) as a proxy for noncompliance with securities regulations, we examine whether a firm's compliance with non-accounting laws and regulations is associated with GAAP violations. We find that firms that violate securities regulations related to non-accounting issues are more likely to report accounting restatements than control firms that comply with securities regulations. We also find that the difference between the two groups is significant only for the periods subsequent to the start of the noncompliance period but not for periods prior to this date. Our results highlight the interrelation between the accounting and compliance systems, and suggest that managers who are non-compliant with non-accounting regulations are also more likely to be non-compliant with accounting rules.

**Keywords:** compliance; GAAP violations; noncompliance with securities regulations; SEC's enforcement actions.

## 1. INTRODUCTION

The Securities and Exchange Commission (SEC) oversees the securities markets in the U.S. to protect investors and to maintain fair, orderly, and efficient markets (SEC, 2017). To achieve its objectives, the SEC conducts investigations into possible violations of securities regulations and brings enforcement actions against individuals and companies when rules are breached.

Although the SEC's enforcement actions cover various types of securities regulation violations (e.g., insider trading, accounting fraud, market manipulations, and providing false or misleading information about securities or the issuing companies), prior research on SEC enforcement actions has primarily focused on accounting misrepresentation and has not fully explored the violation of securities regulations regarding non-accounting matters.<sup>1</sup> As Hayes (2015) argues, restricting the analysis to enforcement actions involving accounting misrepresentation can limit our understanding of the SEC's overall enforcement process and firms' noncompliance behavior.

We contribute to the literature by focusing on the violation of securities regulations that are unrelated to accounting matters as a proxy for noncompliance with *non-accounting* regulations. Then, we examine the association between this notion of noncompliance with *non-accounting* securities regulations and the violation of Generally Accepted Accounting Principles (GAAP) to draw inferences about the interrelation between these two important aspects of noncompliance behavior. We posit that managers who are non-compliant with non-accounting regulations are also more likely to be non-compliant with accounting rules.

The reasons why we expect a correlation between noncompliance with non-accounting regulations and GAAP violations are as follows. First, a firm's accounting and compliance

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<sup>1</sup> Examples include Dechow, Sloan, and Sweeney (1996), deHaan, Kedia, Koh, and Rajgopal (2015), Files (2012), Kedia and Rajgoal (2011), and Miller (2006).

systems are built on common aspects of its internal culture reflecting elements such as integrity, ethical values, and tone at the top. We expect that a firm's underlying compliance culture is likely to influence noncompliance with securities regulations and GAAP violations. Second, accounting and non-accounting compliance are interrelated because of the accounting system's core function of recording economic activities. Since noncompliance with laws and regulations typically involves misrepresentation of economic reality including performance and value, this type of wrongdoing could be reflected in (or facilitated by) the accounting system. For example, a manager motivated to mislead investors would likely violate both GAAP and non-GAAP rules and regulations. In these cases, GAAP violations may be a natural consequence of the more primitive decision to violate securities regulations. Third, firm-level compliance with securities regulations and accounting rules are determined by the quality of prevailing internal controls that are designed to achieve related objectives including ensuring compliance with financial reporting rules, ensuring the effectiveness and efficiency of operations, and ensuring compliance with applicable laws and regulations (Committee of Sponsoring Organisations, 2013). Specifically, accounting and compliance are affected by common characteristics of the firm's internal control system such as resource constraints, management competence, and communication effectiveness. For example, fewer resources invested in internal control would likely adversely affect both securities regulation compliance and accounting quality (Ashbaugh-Skaife, Collins, & Kinney, 2007; Choi, Choi, Hogan, & Lee, 2013). Accordingly, we predict an association between weak compliance control and weak accounting control since both are determined by a common control system.

The case of Sequenom Inc. provides an example of how noncompliance with securities regulations co-occurs with GAAP violations. During the period between June 2008 and January

2009, Sequenom made a series of announcements and filings regarding a prenatal screening test for Down syndrome suggesting the test was close to 100% accurate and would be ready for commercial use imminently. Sequenom's stock price rose significantly as a result of these disclosures. However, it subsequently emerged that an officer of Sequenom's R&D department had falsified test results. Following an internal investigation, Sequenom announced that the public could no longer rely on its past announcements regarding the test, leading to a 76% drop in the firm's stock price. While we are unaware of evidence that accounting manipulation was necessitated by this disclosure of false information at that time, Sequenom subsequently restated its financial statements for the 2009, 2010, and 2011 fiscal years due to 'material accounting classification errors and a material weakness in internal control over financial reporting'.<sup>2</sup> The case provides anecdotal evidence about how non-accounting compliance and GAAP violations can co-occur.

We investigate whether the incidence of noncompliance with non-accounting laws and regulations is associated with GAAP violations and if so, whether non-accounting noncompliance precedes or lags GAAP violations. Specifically, we examine whether firms that do not comply with non-accounting securities regulations enforced by the SEC (hereinafter 'noncompliant firms') are more likely to violate GAAP, as reflected in accounting restatements.<sup>3</sup> We choose noncompliance with securities regulations as a setting in which to examine our research question for the following reasons.<sup>4</sup> First, compliance with securities regulations

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<sup>2</sup> Administrative Proceedings No. 3-14524 (34-65247), filed on September 1, 2011. Restatement information comes from Sequenom's 8-K filing on March 7, 2013.

<sup>3</sup> Similarly, we use the term 'noncompliance sample' to refer to the sample of firms with noncompliance with non-accounting securities regulations, and 'noncompliance events' to refer to events violating non-accounting securities regulations.

<sup>4</sup> Violations leading to investigations by the SEC include: (1) misrepresentation or omission of important information about securities; (2) manipulating the market prices of securities; (3) stealing customers' funds or securities; (4) violating broker-dealers' responsibility to treat customers fairly; (5) insider trading (violating a trust relationship by

reflects an important aspect of firms' compliance behavior because the costs of violations such as the loss of reputation and explicit penalties imposed by the SEC are substantial (Karpoff, Lee, & Martin, 2008a, 2008b). Second, securities regulations apply to all SEC registrants and therefore violations are generally investigated and enforced by a single regulatory body (the SEC).<sup>5</sup> Focusing exclusively on SEC enforcement actions therefore helps to ensure consistent regulatory authority across different firms and a degree of comparability across different industries. For example, the SEC implements the same regulations and has the same regulatory influence over an automobile firm and a pharmaceutical firm, whereas the two entities likely face very different industry standards, safety requirements, and are subject to different severity and frequency of monitoring scrutiny from other regulatory bodies (e.g., the National Highway Traffic Safety Administration for automobile firms and the Food and Drug Administration for pharmaceutical firms). Finally, the SEC makes information about its enforcement actions and firms' wrongdoing publicly available, thereby facilitating the construction of a comprehensive sample of securities regulation noncompliance.

We use SEC enforcement actions relating to non-accounting issues to proxy for noncompliance with securities regulations. We hand-collect data on SEC enforcement actions during the period 2003-2012. To avoid introducing a mechanical relation between non-accounting-related SEC enforcement actions and GAAP violations, we exclude enforcement actions classified as Accounting and Auditing Enforcement Releases (AAERs) from our

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trading while in possession of material and non-public information about a security); and (6) selling unregistered securities.

<sup>5</sup> We acknowledge that Department of Justice, private litigants, and some other parties may also levy claims under securities regulations, but the SEC holds primary responsibility for enforcing the federal securities laws, proposing securities rules, and regulating the securities industry, the nation's stock and options exchanges, and other activities and organizations including the electronic securities markets in the U.S.

securities regulation noncompliance sample.<sup>6</sup> Furthermore, we review the content of releases for the resulting sample and exclude cases that could lead to subsequent GAAP violations such as option backdating and channel stuffing. We use propensity score matching (PSM) to construct a control sample of non-enforcement action firms based on observable firm characteristics that affect the likelihood of securities regulation noncompliance and accounting problems.

We find that treatment firms that violate non-accounting securities regulations are more likely to restate financial statements relative to control firms that comply with securities regulations around the start of the noncompliance period. Examining the rate of accounting restatements separately for periods before and after the start of noncompliance events, we find that differences in GAAP violations between treatment and control firms are significant in the post-noncompliance period but not during the pre-noncompliance period. Our results indicate that prior to noncompliance with non-accounting regulations, treatment and control firms have equivalent GAAP violation rates, suggesting that our matching procedure successfully controls for the factors that influence low accounting quality. However, once firms violate non-accounting securities regulations, they are also more likely to begin violating GAAP. Our results suggest that noncompliance behaviors unrelated to accounting issues precede GAAP violations and that noncompliance with securities regulations may be an important leading indicator of GAAP violations.

In supplementary analysis, we examine the frequency of accounting restatements between treatment and control firms over multiple windows. We expect that multiple

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<sup>6</sup> AAER is a subcategory given by the SEC when enforcement actions or notices and orders are related to financial reporting issues. AAER is frequently used as a proxy for financial misrepresentation. If we do not exclude AAERs from our noncompliance sample, the noncompliance sample would include cases related to accounting matters, potentially leading to a mechanical relation between our noncompliance events and GAAP violations. After excluding AAERs based on the link to the original releases provided by the SEC, we manually re-check each of our final firms and further exclude five cases that are in fact in the AAER categories but are not properly linked to the original releases.

restatements over the period reflect more severe and systematic failings in the accounting system than a single restatement, and we therefore predict that noncompliant firms are more likely to report multiple restatements relative to control firms. Our results are consistent with this prediction, suggesting that noncompliance with securities regulations is related to more severe and systematic accounting problems as reflected in accounting restatements.

Next, we test for differences in corporate governance arrangements between noncompliance and control firms. Levels tests suggest that noncompliant firms have weak corporate governance around noncompliance events, whereas a difference-in-differences test does not suggest significant changes in corporate governance arrangements between treatment and control firms. We therefore conclude that evidence suggesting that governance arrangements represent an important omitted variable in our analysis is weak, although we cannot rule out this possibility entirely. However, insofar as observable governance features are likely to correlate positively with internal control quality (Hoitash, Hoitash, & Bedard, 2009), evidence of weak governance for the treatment sample is perhaps not surprising and does not necessarily invalidate our conclusions.

Our study contributes to the literature in several ways. First, we construct a comprehensive and unique dataset of SEC non-accounting enforcement actions and provide new empirical evidence on noncompliance with U.S. securities regulations. While the SEC's actions on accounting misrepresentation have formed the primary focus of research on its enforcement activities, other types of violations have received little attention in prior research. Our focus on SEC enforcement actions relating to non-accounting matters responds to Hayes' (2015) call for a comprehensive approach to examining SEC's enforcement actions.



Second, we contribute to research on compliance and accounting quality. Ours is one of the first studies to examine the association between compliance and accounting issues. In concurrent research, Kedia, Luo, and Rajgopal (2016) develop a comprehensive compliance index from firms' violations relating to product safety, anti-trust issues, worker safety, worker civil rights, and environmental laws to examine the association between noncompliance culture and financial reporting risk. While their objective is to measure a firm's overall culture of noncompliance, we study a specific type of noncompliance (i.e., violations of securities regulations) investigated and enforced mainly by a single regulatory body (the SEC) for a broad sample. Using a different research design and sample, our results complement Kedia et al. (2016) by enhancing our understanding of the interaction between compliance and accounting issues. Furthermore, our study extends the literature on the consequences of noncompliance by linking violations of securities regulations to GAAP violations (Jarrell & Peltzman, 1985; Jones & Rubin, 2001; Karpoff and Lott, 1993; Karpoff, Lott, & Wehrly, 2005; Mitchell & Maloney, 1989; Murphy, Shrieves, & Tibbs, 2009; Peltzman, 1981).

Finally, we provide empirical evidence on the link between the accounting and non-accounting dimensions of internal control. Our evidence that noncompliance with securities regulations is associated with GAAP violations is consistent with the view of the Committee of Sponsoring Organizations (COSO) (2013) that internal control is an integrated process in which accounting outcomes are determined not only by an entity's control over its financial reporting but also by controls over its other business decisions. The tendency of extant research to focus exclusively on internal control over financial reporting (ICFR) (e.g., Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2008; Bedard, Hoitash, Hoitash, & Westermann, 2012; Doyle, Ge, & McVay, 2007a) ignores the question of potential linkages between the different aspects of

internal control. Our results indicate that weaknesses in compliance control are leading indicators of weaknesses in accounting control, thereby highlighting the importance of viewing firms' internal control arrangements as an integrated system. Our emphasis on the interrelation between multiple aspects of internal control is consistent with recent evidence suggesting that internal control weaknesses over financial reporting are related to poor control over operational decisions (Feng, Li, McVay, & Skaife, 2015; Cheng, Goh, & Kim, 2018).<sup>7</sup>

Our study is subject to some caveats. Our main objective is to provide initial evidence on the general relation between non-accounting noncompliance and GAAP violations, and thus we do not examine whether specific types of noncompliance are related to specific misstatements. In addition, we cannot completely rule out the possibility that an SEC inquiry concerning non-accounting noncompliance triggers subsequent restatements, or the announcement of restatements triggers the SEC investigation. However, despite these limitations, our results improve our collective understanding of the association between noncompliance and accounting quality.

## **2. BACKGROUND AND HYPOTHESIS DEVELOPMENT**

Compliance systems help firms meet their legal and regulatory obligations. Compliance is an important aspect of firms' activities due to the high costs of noncompliance that include legal sanctions (e.g., legal costs, penalties, fines, and restrictions) and reputational losses (e.g., loss of expected cash flows due to lower sales and higher contracting and financing costs). Jarrell and

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<sup>7</sup> Rice and Weber (2012) find that the majority of earnings restatement firms and their auditors do not report existing control weaknesses during the misstatement period, highlighting a limitation of internal control deficiency (ICD) disclosures under SOX as a measure of the effectiveness of overall internal control. In our sample, we also find that few noncompliant firms report ICDs, consistent with the argument that ICD disclosures do not provide a complete picture on the effectiveness of a firm's internal control system. A policy implication from our results is that reporting information about the effectiveness of compliance control could complement ICD disclosures under SOX in evaluating the quality of financial reporting (Dimmock & Gerken, 2012).

Peltzman (1985) suggest that when the party damaged by noncompliance is a related party (e.g., customer or investor), reputational penalties are particularly large because affected related parties revise the terms of trade. Examples of reputational penalties include loss of future sales in a customer fraud and an increase in the required return by investors following a misleading press release. Karpoff (2012) concludes that the loss of market value as a result of misconduct that imposes costs on noncompliance firms' counterparties (e.g., investors, employees, customers, and suppliers) far exceeds the direct costs of noncompliance such as fines, penalties, and law-suit settlements.<sup>8</sup>

Although compliance and accounting systems differ in their objectives, elements, and risk factors, we expect that noncompliance with non-accounting laws and regulations correlates with GAAP violations for several reasons. First, compliance with laws and regulations and compliance with GAAP are determined by a firm's integrated internal control system. Internal control systems are intended to provide reasonable assurance regarding the effectiveness and efficiency of operations, the reliability of financial reporting, and compliance with applicable laws and regulations (COSO, 2013). Since a firm's internal controls are built on common components, weaknesses in internal control affecting noncompliance with laws and regulations may also affect the accounting dimension of internal control. To the extent that the compliance and accounting aspects of internal control are achieved through common components (e.g., resource constraints, tone at the top, and competence of management), noncompliance with laws and regulations is expected to correlate with poor accounting quality as reflected in GAAP

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<sup>8</sup> Studies on noncompliance have examined various consequences of noncompliance including the effect of a firm's noncompliance with environmental regulation (Al-Tuwaijri et al., 2004; Karpoff et al., 2005), false advertising (Peltzman, 1981), product recalls (Jarrell & Peltzman, 1985), fraud (Karpoff & Lott, 1993), and financial misrepresentation (Desai, Hogan, & Wilkins, 2006; Karpoff et al., 2008a) on firm's reputation, market value, and CEO's personal financial, reputational, and criminal risk.

violations (Ashbaugh-Skaife et al., 2007; Choi et al., 2013). Consistent with the interrelated nature of control systems, recent research reveals that operational decisions made based on weak internal control over financial reporting (hereinafter ICFR) lead to poor operational outcomes such as poor inventory management (Feng et al., 2015) and low operational efficiency (Cheng et al., 2018).

Second, accountants may receive misleading information from other departments where noncompliance with securities regulations occurs. Since insiders typically misrepresent firm performance or value when they breach securities regulations, these violations may be reflected in accounting numbers as accounting systems record related transactions. In addition, insiders may intentionally manipulate accounting numbers to hide their fraudulent behavior. The case of Health Express USA illustrates one type of interaction between non-accounting noncompliance and GAAP violations. According to the auditor's report, Health Express USA reported material weaknesses in ICFR relating to control over 'non-accounting documents to the extent this information is communicated to the Chief Financial Officer'.<sup>9</sup> The case indicates that failure of compliance control can be associated with poor control over financial reporting. We therefore predict that firms violating non-accounting laws and regulations are also more likely to violate GAAP.

We may not find the predicted association between noncompliance and GAAP violations because they involve different procedures, individuals, and systems. For example, failure to disclose material information concerning an entity's business and operations, disclosure of misleading forward-looking information, or market price manipulation may not correlate with GAAP violations because these behaviors do not necessarily require accounting

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<sup>9</sup> This example is from Doyle et al. (2007b).

misrepresentation to disguise the wrongdoing. Accordingly, this view suggests that a problem in one aspect of an entity's internal control system does not necessarily imply problems in other aspects.

In a related study, Karpoff et al. (2008b) report that most financial misrepresentation cases identified from SEC enforcement actions are also associated with other types of noncompliance behaviors including insider trading, civil and criminal fraud, and tax evasion. To the extent these other charges are associated with non-accounting issues, Karpoff et al.'s (2008b) descriptive evidence indicates that GAAP violations and noncompliance with non-accounting laws and regulations are closely related. However, our approach differs from theirs since we construct a comprehensive sample of cases where securities regulation violations are not mechanically related to accounting matters and then conduct a formal test of the relation between non-accounting noncompliance behavior and GAAP violations.

While prior research finds that weakness in internal control is associated with poor financial reporting, the focus is primarily on ICFR. For instance, Doyle et al. (2007a) find that firms reporting internal control deficiencies (ICDs) under SOX exhibit lower accrual quality relative to control firms and that this relation is mainly attributable to company-level control weaknesses rather than to account-specific weaknesses. Consistent with this view, Ashbaugh-Skaife et al. (2008) find that accrual quality improves as firms remediate previously reported ICDs. Although these studies highlight the importance of internal control to ensure reliable financial reporting, their definition of internal control is limited to ICFR, thus ignoring other potentially important aspects of internal control. The focus on ICFR partly reflects regulations that require disclosure of the effectiveness of ICFR (Foreign Corrupt Practices Act (FCPA) 1977, Federal Deposit Insurance Corporation Improvement Act 1991, SOX 2002), making data on

ICFR weaknesses readily available whereas data on other aspects of internal control are not easily accessible.

Recent research also highlights a limitation of ICD reporting under SOX insofar as disclosures do not provide sufficient information to evaluate the overall effectiveness of firms' internal control arrangements in a timely manner. Specifically, Rice and Weber (2012) find that only 32.4 percent of earnings restatement firms or their auditors report the existence of a material weakness in internal control during the misstatement period. This result suggests that ICD reporting under SOX is not fully effective in identifying existing control weaknesses and does not necessarily provide an early warning of accounting problems. We extend prior research by focusing on the securities regulation compliance aspect of internal control systems and by examining the implications of weaknesses therein for accounting quality as measured by GAAP violations.

### **3. IDENTIFYING NONCOMPLIANCE WITH SECURITIES REGULATIONS AND GAAP VIOLATIONS**

#### **3.1 Noncompliance with Securities Regulations**

The SEC maintains a searchable database of enforcement action activities from 1995 onwards. We collect information about two types of SEC enforcement actions in response to violations of securities regulations: (i) federal court actions and (ii) administrative proceedings. Information about federal court actions is disclosed in the form of litigation releases (hereinafter 'LR'), while information about administrative proceedings such as orders and related materials are released when the SEC brings non-judicial actions before an administrative law judge (hereinafter

‘AP’).<sup>10</sup> We begin with 10,923 enforcement action releases available on the SEC’s website for the period 2003-2012, from which we exclude cases that are classified as AAERs by the SEC,<sup>11</sup> those issued solely against individuals, those without a firm name in the release title, and other irrelevant releases.<sup>12</sup> Applying these filters yields a sample of 3,754 releases relating to 4,129 unique firms, for which we generate an index file containing firm names, related release numbers, filing dates, and the number of individuals involved.

We identify CIK for each sample firm from EDGAR. We are able to match 2,417 firms with available CIK information from the initial sample of 4,129 firms. We use CIKs to match firms with COMPUSTAT data and retain 768 entities with available data for total assets.<sup>13</sup> We review the 900 releases for these 768 firms and extract information for our analyses including filing date, the violation period, details of the laws and sections violated, and a description of the reason for the enforcement release. We exclude cases where firms do not file their periodic financial statements by the deadline date (known as delinquent filings) because these cases are

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<sup>10</sup> There are two additional types of enforcement actions: opinions issued by Administrative Law Judges in contested administrative proceedings (ALJ Decisions) and opinions issued by the Commission on appeals of Initial Decisions or disciplinary decisions issued by self-regulatory organizations such as the New York Stock Exchange or the National Association of Securities Dealers (Commission Opinions). Since these two types of actions are not original enforcement actions related to firms’ misconduct, we do not include them in our sample.

<sup>11</sup> If one enforcement action is designated to AAER, the SEC also discloses ‘other release No(s).’ associated with this AAER. Therefore, by tracing along ‘other release No(s).’, we are able to identify a non-accounting noncompliance sample that excludes AAERs issues.

<sup>12</sup> We collect noncompliance data from January 1, 2003 because (i) ICD data are available from 2003 when the Section 302 of SOX was effective and (ii) restatement data from Audit Analytics are only available from 2001 and we require a two-year lag relative to the first noncompliance event for our tests. Our empirical models do not include ICD information disclosed under SOX because there are very few firms with ICDs in our noncompliance sample.

<sup>13</sup> Not every firm that files with the SEC is available on COMPUSTAT. Generally, COMPUSTAT’s North American population has financial data for companies filing public sources and having a trading issue, whereas COMPUSTAT adds private firms into the database only when they meet certain criteria such as the company trades on both U.S. and Canadian exchanges. The criteria for OTC to be added in the North American population are that the equity must be priced at least \$0.01 and trading with reasonable volume must occur fairly consistently; in addition, the company must file sources regularly. We check the validity of our matching procedure by comparing results with those by Dechow, Ge, Larson, and Sloan (2011) who construct AAER dataset. Dechow et al. (2011) report that only 749 distinct firms are matched on CIK with total assets on COMPUSTAT (768 firms matched on GVKEY) during the period from 1982 to 2015. We believe our matching results are reasonable considering AAERs form the largest fraction of enforcement releases issued by the SEC.

more likely to involve financial reporting problems than to non-accounting noncompliance. The resulting sample contains 532 releases (142 LRs and 390 APs) relating to 126 noncompliance events for 123 firms.<sup>14</sup> We manually re-check each of our final firms and further exclude five cases that are in fact in the AAER categories but are not properly linked to the original releases on the SEC website. We also examine the content of releases for remaining sample firms and exclude any cases involving events that are likely to result in subsequent accounting restatements such as stock option backdating and channel stuffing. This process leads to the exclusion of a further 13 cases.<sup>15</sup> Our final sample therefore comprises 108 noncompliance cases for 105 unique firms. We provide a list of our noncompliance sample and a brief description of each case in an Appendix. Seventy-nine firms have data required for our PSM procedure. Table 1 describes the process of identifying relevant releases and noncompliant firms.

Table 2 reports summary statistics for noncompliance events and the industry distribution of noncompliant firms. We provide information about our full noncompliance dataset prior to matching to provide a complete picture of our initial dataset of securities regulation noncompliance cases. Panel A of Table 2 describes the distribution of the 105 noncompliance events across calendar years based on the year when (i) the violation period begins and (ii) the violation period ends. Very few noncompliance events during our sample window are initiated prior to 1995 or after 2009, reflecting that our approach focuses on releases filed from 2003 through 2012. The number of violations initiated between 1999 and 2003 is 63, accounting for 60% of our noncompliance sample. The period 2004-2006 is also associated with a high proportion of enforcement actions (17%).

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<sup>14</sup> Note that multiple releases may pertain to one noncompliance event at a single firm, such as order instituting proceedings, initial decisions, and final decisions.

<sup>15</sup> Though SEC hasn't classified them as AAERs and those cases do involve non-accounting noncompliance, to be rigorous, we exclude them from our sample. All our results remain robust if we include those cases in our sample.



Panel B of Table 2 reports the industry distribution of the 105 noncompliant firms. Noncompliant firms cluster in the following sectors: Durable Manufacturers (19.05%), Banks & Insurance (19.05%), and Service (13.33%). However, comparing the composition of industries in our sample with the COMPUSTAT population indicates that only the Durable Manufacturers and Service sectors are associated with statistically abnormal noncompliance rates.

Table 3 reports information on the duration of noncompliance events together with the laws and regulations that are violated. Panel A indicates that violation periods lasted less than 1,000 days for approximately 67% of noncompliance events, while 21% of events are associated with a violation period between 1,000 and 2,000 days. The mean (median) value of the noncompliance event duration is 917 (516) days. Panel B reports the distribution of securities act violations. Most violation events involve the Securities Act of 1933 (44 out of 105 noncompliance events or 41.9%) and the Securities Exchange Act of 1934 (87 out of 105 noncompliance events or 82.9%). The most common areas of noncompliance in our sample include misleading press releases, misleading disclosures on business activities, insider trading, foreign bribery, stock manipulation, unregistered securities, and related party transactions. Noncompliance may involve violating multiple sections of securities regulations. The average noncompliance event involves the violation of 2.2 subsections of securities regulations (untabulated). Panel C reports that 40 events involve violation of a single subsection, while the maximum number of violations is eight subsections (two cases). Panel D of Table 3 indicates that 58.1% of our noncompliance sample involves the CEO, president or chairperson, while 9.52%, 9.52%, and 16.19% of events involve general counsel, the CFO, or other top management, respectively. The evidence indicates that noncompliance with securities regulations typically

involves senior management, suggesting that tone at the top could be an important latent factor influencing all aspects of internal control.

### **3.2 Identifying GAAP Violations**

Our measure of GAAP violations is an indicator for the presence of an accounting restatement. Data on accounting restatements are collected from Audit Analytics, which includes details of all SEC registrants disclosing at least one restatement of financial statements since 2001. Audit Analytics defines a restatement as a ‘revision of previously filed financial statements as a result of an error, GAAP failure, or fraud’. Technical revisions such as adjustments caused by mergers or changes in accounting principles are not considered as restatements involving errors or irregularities and hence are excluded by Audit Analytics. We further eliminate restatements due to the adoption of Interpretation No. 48 *Accounting for Uncertainty in Income Taxes – An Interpretation of FASB Statement No. 109* (FIN 48) or SEC Staff Accounting Bulletin No. 108 (SAB 108) because these cases are essentially changes in accounting principles. We collect information on the periods for which financial statements were restated (i.e., misstatement periods).

## **4. RESEARCH DESIGN**

Compliance is a management choice made after weighing the costs and benefits of noncompliance, rather than a random event and therefore our noncompliance sample is subject to selection bias (Robinson, Xue, & Yong, 2011). We address this problem using propensity score matching (PSM) to select a group of control firms with similar observable characteristics. Our matching procedure begins by identifying a group of potential control firms. As noncompliance behavior may span multiple years, we use the initial noncompliance date ( $d$ ) as the starting point

for our matching process. For each noncompliance observation, we select all firms from COMPUSTAT in the same SIC industry and then require available financial data for years  $t - 3$  through  $t + 3$ . Firms that violated securities regulations at any point during the matching period are excluded from the pool of potential control matches. Specification of the PSM model involves a trade-off between efficiency and bias (see Augurzky & Schmidt, 2001; Brookhart et al., 2006; Caliendo & Kopeinig, 2008; Tucker, 2010 for more details). There is a particular risk of over-parameterization in our setting since our noncompliance sample is small relative to the control population. We therefore focus on defining a comprehensive vector of variables predicted to affect the probabilities of both noncompliance and GAAP violations.<sup>16</sup> Accordingly, we estimate propensity scores using the following model (time subscripts not reported to simplify notation):

$$\begin{aligned} \text{logit}(p_i) = \ln\left(\frac{p_i}{1-p_i}\right) = & \beta_0 + \beta_1 ROA_i + \beta_2 SIZE_i + \beta_3 LEVERAGE_i + \beta_4 LOSS_i \\ & + \beta_5 BIGN_i + \beta_6 AGE_i + \beta_7 BM_i + \beta_8 STOCKRET_i + \textit{Year fixed effects} \end{aligned} \quad (1)$$

where the dependent variable is the natural log of the odds of the probability ( $p$ ) of observable outcome  $y$  ( $y = \text{one}$  for noncompliant firms that violate non-accounting securities regulations and zero for control firms). We include return on assets (ROA) and an indicator variable for losses because Kim and Skinner (2012) find that poor performance increases the likelihood of managers' engaging in aggressive actions that potentially lead to litigation. Moreover, weak performance is also found to be associated with GAAP violations and the quality of accounting control (Ashbaugh-Skaife et al., 2007; Dechow et al., 2011; Doyle, Ge, & McVay, 2007b; Files, 2012; Kinney & McDaniel, 1989; Nagy, 2010; Rice & Weber, 2012; Thevenot, 2012). We

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<sup>16</sup> Results remain robust when we exclude book-market ratio and stock returns from the model.

include firm size because prior research finds its association with the probability of misconduct, enforcement actions, GAAP violations, and internal control problems. Following prior research on SEC enforcement actions (e.g., Kedia & Rajgopal, 2011) and debt-related earnings management (DeFond & Jiambalvo, 1991; Abbott, Parker, & Presley, 2012), we also include leverage in equation (1) together with firm age because operating history is often treated as a financing risk factor (e.g., Hanley & Hoberg, 2012). We also include an indicator variable for Big N auditor status since prior research finds a positive association between litigation exposure and auditors' incentives to provide high audit quality (Khurana & Raman, 2004; Schwartz & Soo, 1996; Venkataraman, Weber, & Willenborg, 2008). We also include book-to-market ratio and stock returns to control for market expectations and market-based performance, respectively. Year fixed effects are also included to control for temporal differences in securities regulation noncompliance suggested in Table 2, Panel A.<sup>17</sup> Variable definitions are provided in Table 4.

We winsorize all continuous variables at their 1<sup>st</sup> and 99<sup>th</sup> percentiles. Conditional probabilities (propensity scores) of securities regulation noncompliance are calculated as the fitted value from equation (1). We use estimated propensity scores to match each noncompliant firm to a control firm in the same industry and calendar year with the closest propensity score (without replacement), subject to 0.5 caliper.

We analyse GAAP violations for noncompliance and control firms over a series of windows relative to the start of the noncompliance period for noncompliant firms (denoted  $d$ ). We begin by examining the following four windows around the initiation of the noncompliance

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<sup>17</sup> While our choice of variables is to a degree *ad hoc*, it reflects extant research on compliance and financial reporting quality discussed in the main text. We note that some potentially important covariates may be missing. We therefore conduct the MHbounds test to evaluate the extent of selection bias due to unobservable factors.

event: years (-3, 3), (-2, 2), (-1, 1), and the start date of the noncompliance period ( $d$ ).<sup>18</sup> We also examine pre- and post-noncompliance periods separately for three windows prior to the initiation of noncompliance events [years (-3, -1), (-2, -1), and (-1)] and four windows subsequent to the start of the noncompliance period [ $(d, 3)$ , (1, 3), (1, 2) and (1)]. Figure 1 illustrates how our GAAP violation windows are defined.

We measure the ratio of GAAP violations separately for noncompliance and control firms during each violation window. For example, for the analysis of restatements over the six-year window (-3, 3), we calculate the number of treatment and control firms restating their financial statements at least once during entire window and divide them by the number of firms in each sample, respectively.<sup>19</sup> This approach counts firm-level restatements *once* during a given violation window regardless of how many times the firm restates during the period. We refer to this approach as “firm-level” analysis in subsequent discussions. However, since reporting multiple restatements during a violation window could indicate a more severe and systematic accounting failure, we also examine the total number of individual restatements per firm. We refer to this approach as “restatement-level” analysis in subsequent discussions.

## 5. RESULTS

### 5.1 Logistic regression results for PSM

Panel A of Table 4 reports the estimation results for the logistic model used to generate propensity scores for matching. Results indicate that firms are more likely to violate securities

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<sup>18</sup> Strictly,  $d$  is a discrete event date representing the start of the noncompliance period rather than a window. Misstatements occurring on date  $d$  are excluded from the definition of all pre- and post-compliance years except for window  $(d, 3)$ . We treat  $d$  separately and report results for exclusively  $d$  to address concerns that noncompliance and GAAP violations might be capturing the same event with the same date of initiation.

<sup>19</sup> We count accounting restatements initiated in any year of the windows and therefore we avoid double counting cases where accounting restatements span multiple years.

regulations if they are larger (*SIZE*), performing poorly (*ROA*), audited by non-Big N auditors (*BIGN*), and young (*AGE*). The positive coefficient on stock returns (*STOCKRET*) is consistent with the evidence in Dechow et al. (2011), where they find “strong stock return performance in the years prior to misstatement.”

Panel B of Table 4 reports the distribution of propensity scores for the noncompliance sample ( $N = 79$ ) and the potential control group in the same industry and year ( $N = 19,066$ ) prior to matching. Comparing the two distributions indicates that noncompliant firms and potential control firms differ significantly in the probability of noncompliance before matching, highlighting the importance of the matching procedure.

## **5.2 Validity of PSM**

The application of PSM is invalid if only treatment firms are observable at a given propensity score (and thus it is not possible to select a control firm with a given score), and if the distributions of covariates are not similar for the treatment and control groups after matching (Tucker, 2010). We therefore first exclude treatment observations whose propensity scores are higher than the maximum or less than the minimum propensity scores of the potential control group. Imposing this condition results in a loss of two observations from the noncompliance sample. Subsequent empirical analyses are therefore based on 77 noncompliant firms and 77 control firms. We follow Caliendo and Kopeinig’s (2008) suggestion to use several measures to assess the matching quality in terms of covariate balance, including standardized bias, a two-sample  $t$ -test, joint significance, Wilcoxon test, and Pseudo- $R^2$ . We apply these tests to the samples before and after matching, and report results in Table 5.

Columns 1 and 2 of Table 5 report the mean value of each covariate for the noncompliance and control groups, respectively, before and after matching. Column 3 presents

the standardized bias for each covariate in the pre-matching and post-matching samples, while column 4 presents the percentage reduction in covariate bias.<sup>20</sup> The *t*-tests reported in columns 5 and 6 are the parametric tests of differences in the mean values between the samples, while the Wilcoxon tests reported in columns 7 and 8 provide nonparametric comparisons.<sup>21</sup> The *t*-test results indicate that while the means of *ROA*, *LEVERAGE*, *BIGN*, *AGE*, *BM* and *STOCKRET* are significantly different between the two samples prior to matching, all covariates are statistically indistinguishable after matching. Following Peel and Makepeace (2012), we evaluate the quality of matching by considering the standardized bias less than  $\pm 10\%$  after matching as acceptable. As presented in column 3, all the covariates are very close to this criterion after matching with the exception of *LOSS* and *AGE*, which have a standardized bias of 20.80% and -22%, respectively. We re-examine the bias for firm age after replacing logged values with raw values and find that the bias in the post-matching samples is small at -6.8%, which is acceptable. Paired Wilcoxon tests indicate that none of the covariates differ significantly after matching.

The pseudo  $R^2$  from equation (1) is reported in the lower part of Table 5. The value declines from 10.7% before matching to 5.2% after matching. The low pseudo- $R^2$  for the post-matching regression is consistent with the argument that there should be no systematic differences in the distribution of covariates between the two samples after matching (Caliendo & Kopeinig, 2008). In addition, the likelihood ratio test on the joint significance of all regressors in the logistic model is rejected for the pre-matching sample but is not rejected for the post-matching sample, suggesting that the quality of matching is good. Collectively, results in Table 5

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<sup>20</sup> For each covariate, the standardized bias is defined as the difference in the sample means between the noncompliance and control samples as a percentage of the square root of the average of the sample variances in both samples.

<sup>21</sup> As Wilcoxon tests presented in columns 7-8 are for the differences in matched pairs, there is no statistics presented for unmatched groups.

indicate that the matched samples display similar observable characteristics as a result of the PSM approach.

### 5.3 GAAP violations between the noncompliance and control groups

We report the results comparing firm-level GAAP violation rates for noncompliance and control firms in Table 6, where restatement is a binary outcome that takes the value of one regardless of how many restatements a firm reports during the event period. We report restatement rates (%) for noncompliance and control samples for eleven different windows, along with results of Fisher's exact test for differences between the two groups.<sup>22</sup> For windows (-3, 3), (-2, 2), (-1, 1) and (*d*), restatement rates for the noncompliance sample are 14.29%, 14.29%, 10.39% and 1.30%, respectively. Corresponding restatement rates for the control sample are 7.79%, 5.19%, 3.9% and 0%, respectively. With the exception of date *d* (noncompliance period start date), differences are statistically significant at either 5% or 10% significance levels. The lack of significance for date *d* corroborates the absence of a higher incidence of restatements on the start date of the noncompliance period, thereby reducing concern that restatements form an integral part of the noncompliance event.

Next, we examine firm-level restatement rates separately for periods prior to the initiation of noncompliance events and subsequent to the initiation of noncompliance events. For windows (-3, -1), (-2, -1), and (-1) prior to the initiation of noncompliance events, restatement rates for noncompliance and control groups are statistically indistinguishable. Conversely, restatement rates for post-event windows (*d*, 3), (1, 3), (1, 2), and (1) are all statistically higher for noncompliant firms relative to control firms.<sup>23</sup> The contrasting results for windows before and

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<sup>22</sup> We use a Fisher's exact test rather than a Chi-squared test because the latter requires each cell to have an expected frequency of five or more and we observe several cells with frequency of less than five in our sample.

<sup>23</sup> Window (*d*, 3) includes the first day of noncompliance period, while other post-noncompliance windows (1,3), (1,2), (1) are measured from one day after the noncompliance start date.



after the noncompliance start date suggest that noncompliance with securities regulations tends to precede GAAP violations rather than vice versa. The lack of differences in restatement rates for pre-noncompliance windows also suggests that our matching process successfully identifies control firms facing a similar likelihood of accounting problems prior to the start of the noncompliance period. Subsequent to violations of non-accounting securities regulations, however, restatement rates begin to diverge as noncompliant firms engage in more GAAP violations. Our results highlight the potential importance of noncompliance behavior unrelated to accounting issues as a leading indicator for GAAP violations.

Table 7 reports results for our restatement-level analysis where we count the total number of restatements reported, conditional on at least one restatement occurring. Specifically, Panel A of Table 7 reports percentages of firms in the treatment and control samples reporting one, two, three, or four restatements for windows around the noncompliance beginning day, while Panels B and C report the results for the pre- and post-noncompliance windows, respectively. This approach reflects the view that multiple misstatements over an event window indicate a more severe and systematic accounting problems. Results indicate that noncompliant firms are more likely to report multiple restatements relative to control firms and that this higher propensity is more pronounced in the post-compliance periods. For example, for window (1, 3) reported in Panel C, 33% of noncompliant firms that restate report two restatements, while no restating control firms report more than one restatement. Results in Table 7 support the evidence presented in Table 6 and corroborate the notion that firms characterized by securities regulation noncompliance tend to display higher rates of accounting problems and that these accounting problems are more likely to occur after the start of noncompliance events.

Evidence that GAAP violations tend to occur after the start of noncompliance events raises the possibility that non-accounting noncompliance and misstatements are capturing the same underlying event; or that an SEC inquiry concerning non-accounting noncompliance mechanically triggers subsequent restatements; or that a restatement announcement triggers an SEC investigation leading to identification of retrospective noncompliance behavior. To address these concerns, we present Figure 2 illustrating the typical sequence in our sample of four related events (i.e., noncompliance with securities regulations, accounting misstatements, announcements of restatements, filings of non-accounting enforcement actions) and their timeline. Figure 2.A presents a timeline of an actual case whose time lag between the filing date of the non-accounting enforcement action and the announcement date of restatements equals the sample median time lag (601 days). The figure also provides a timeline of the noncompliance event period and the misstatement period. Several results are apparent from this case. First, the four events typically occur at very different points in time with long time lags between each one, suggesting that it is unlikely that non-accounting noncompliance and accounting restatements reflect the same underlying event. Second, with respect to the sequence of events, noncompliance with non-accounting regulations occurs first, followed by GAAP violations, announcements of restatements, and filings of enforcement actions. The evidence helps mitigate concern that SEC enforcement actions automatically trigger announcement of restatements. Instead, the results are consistent with the interpretation of our main results that noncompliance with securities regulations precedes (unrelated) GAAP violations. Third, the time lag between a restatement announcement and the enforcement action filing date is relatively long (601 days), making it unlikely that SEC investigations are triggered by restatement events.

For completeness, Figure 2.B presents the timeline for representative composite case constructed using sample median values of several time lags and durations of events. For the median case, the misstatement period starts 198 days after the start of noncompliance with securities regulations, and the typical length of the period of noncompliance with securities regulations (accounting misstatements) is 395 (1,001) days. Consistent with Figure 2.A, the timeline for this representative case suggests neither significant overlap between noncompliance and GAAP violation events nor the SEC’s scrutiny of one event automatically leading to the other event.

Collectively, our results suggest that noncompliant firms display a significantly higher likelihood of violating GAAP in the post-noncompliance periods relative to a control sample of compliant firms, and that noncompliant firms are also more likely to report multiple restatements.

#### **5.4 Robustness to matching method**

To check the robustness of our results to our matching strategy, we repeat the firm-level analysis using a 1:N nearest matching approach (with replacement and a maximum calliper distance of 0.5), where N is set equal to 2 or 3 control firms in the same industry and year.<sup>24</sup> Table 8 reports results for both the 1:2 match (74 noncompliant firms are matched) and the 1:3 match (71 noncompliant firms are matched). The results are entirely consistent with those reported in Table 6 using a 1:1 match. Noncompliant firms are significantly more likely to report GAAP violations

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<sup>24</sup> As we increase the number of control firms matched (i.e., 1:2, 1:3, and 1:4 matches), standardized biases for covariates increase. For example, while the standardized biases for most covariates remain close to acceptable levels (i.e.,  $\pm 10\%$ ) for the 1:1 match, more covariates (i.e., *ROA* and *LEVERAGE*) show high levels of standardized bias (-22.3% and 14.9%, respectively) for the 1:4 match. Furthermore, the sample size that can be matched decreases to 67 for the 1:4 match. As a result, we do not report results for the 1:4 matching strategy in Table 8.

relative to the control sample, and this difference is confined to post-noncompliance windows. (Results not tabulated for pre-noncompliance windows.)

### 5.5 MHBounds test

While PSM addresses selection bias due to observable factors, it does not alleviate selection bias due to unobservable factors (Tucker, 2010). If unobserved variables exist that simultaneously affect selection into both noncompliance with securities regulations and GAAP violation states, then hidden bias may lead to the estimated treatment effects in Tables 6 and 7 being overestimated. To address this possibility, we report results for a bounding analysis proposed by Rosenbaum (2002) to test how strongly any unobserved variable(s) would need to influence the selection process to undermine the implications of the matching analysis. Specifically, we implement the MHbounds test in Stata using the Becker and Caliendo (2007) algorithm.

The MHbounds technique allows us to gauge the impact that potential hidden bias has on the matched treatment effect with reference to a parameter  $\Gamma$ . When  $\Gamma = 1$  it is assumed that the treatment effect is free from bias. Where  $\Gamma = 2$ , firms that appear to be similar (in terms of matching covariates) may differ in their odds of receiving the treatment by a factor of up to 2; and so on, with higher values of  $\Gamma$  indicating greater deviations from ‘randomised distribution’. To assess the extent to which this deviation affects the inference from significant treatment effects, we use the Mantel and Haenszel (1959) test statistic ( $Q_{MH}$ ), which compares the successful number of cases in the treatment group with the same expected number, assuming that the treatment effect is zero (Aakvik, 2001). The test statistic,  $Q_{MH}$ , is bounded by two known distributions,  $Q_{MH}^+$  and  $Q_{MH}^-$  (Rosenbaum 2002), where  $Q_{MH}^+$  ( $Q_{MH}^-$ ) is the test statistic since the treatment effect is overestimated (underestimated). When  $\Gamma = 1$ , the two bounds are equal, and

there is no hidden bias. With increasing  $\Gamma$ , the bounds move apart reflecting uncertainty about the test statistics in the presence of unobserved selection bias.<sup>25</sup>

We calculate the  $Q_{MH}$  test statistic for the outcomes associates with each post-noncompliance window displaying a significant noncompliance effect in our 1:1 matching test. For example, Panel A of Table 9 presents the MHbounds statistics for the estimation effects for the three-year window ( $d, 3$ ), along with the key parameters highlighted in bold. Because we estimate positive treatment effects, our focus is on the upper bound ( $Q_{MH}^+$ ) in column 1 and its significance level ( $p_{mh}^+$ ) in column 3. Results suggest that for this window and under the assumption of no hidden bias ( $\Gamma=1$ ), there exists a significant noncompliance effect ( $p_{mh}^+ = 0.004$ ). Accordingly, at the 10% significance level, hidden bias from a confounding variable would need to increase the odds to 1.4 times ( $\Gamma = 1.4$ ) the odds of exposure to noncompliance (based on the covariates incorporated in the PSM model) to affect the estimation of noncompliance effects.

Since our prime interest is the critical MHbounds parameters ( $\Gamma$ ) at which the estimated noncompliance effect becomes questionable, Panel B of Table 9 reports critical values of  $\Gamma$  (i.e., the values at which the noncompliance effects are no longer statistically significant) at the 5 and 10% significance levels for windows displaying significant differences across the two groups. As reported in column 1 ( $p = 10\%$ ), across all the windows, the smallest value of  $\Gamma$  is 1.2 for window (1, 3). This means that after controlling for observed bias using PSM, an unobserved confounding variable would have to increase the likelihood of selection into the noncompliance sample by 20% to render reported inferences invalid. For all other windows, an unobserved

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<sup>25</sup> Note that the bounding approach does not test the conditional independence assumption itself because this would amount to testing that there are no (unobserved) variables that influence selection into treatment sample. Instead, the bounding approach provides evidence about the degree to which any significant results hinge on the untestable assumption of conditional independence (Becker & Caliendo, 2007).

confounding variable would need to increase the likelihood of selection into the noncompliance sample by more than 20% to render results spurious. Since model (1) controls for broad set of observable factors, we believe that biases of this magnitude are unlikely. While the MHbounds test cannot directly justify the conditional independence assumption of PSM, it nevertheless provides some comfort regarding the reliability of our results and conclusions.

## **5.6 The effect of corporate governance**

Prior research finds evidence suggesting that corporate governance characteristics such as board size and board structure may be important factors affecting GAAP violations (Agrawal & Chadha, 2005; Hazarika, Karpoff, & Nahata, 2012). However, Kim and Skinner (2012) report that corporate governance quality adds little to the predictive ability for securities litigation risk. We next examine whether differences in corporate governance mechanisms between our noncompliance and control samples explain noncompliance and restatement behaviors. Specifically, we collect data on a vector of corporate governance characteristics including board size, size of key committees (audit committee, compensation committee, and nomination committee), CEO duality, and whether the board is staggered. We collect governance data manually from firms' proxy statements and 10-Ks (or 10-KSBs for small business issuers).<sup>26</sup> We also collect data on whether board members have legal backgrounds since Krishnan, Wen, and Zhao (2011) find that the presence of directors with legal expertise enhances financial reporting quality. In addition, directors with legal expertise might respond differently to noncompliance than those lacking this type of expertise due to differences in their perception of legal risk (Langevoort, 2007).

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<sup>26</sup> We also experimented with governance data obtained from BoardEx and Riskmetrics. However, only 20% of our noncompliant firms are covered by BoardEx. Similar low coverage rates are also apparent for Riskmetrics.

We conduct the following two tests. First, we examine whether there are significant differences in the levels of observed corporate governance arrangements between noncompliance and control samples. Second, we apply a difference-in-differences approach based on changes in governance characteristics between the pre- and post-noncompliance periods to determine whether changes in corporate governance arrangements is an underlying factor affecting noncompliance behavior.

Panel A of Table 10 reports results for paired differences in governance features between noncompliance and control firms for two years before and after the initiation year of noncompliance events. Results indicate that noncompliant firms and control firms are similar in most corporate governance aspects. Nevertheless, several differences in the pre- and post-noncompliance period are apparent. Specifically, relative to their control counterparts, noncompliant firms are more likely to have staggered boards and smaller audit committees, and the CEO is more likely to chair the board. The results point to noncompliant firms having weaker governance arrangements and thus facing fewer constraints on noncompliance behavior.

To examine the changes in corporate governance arrangements, we calculate the difference in governance variables from years  $t-1$  and  $t+1$ , where year  $t$  is the beginning year of the noncompliance event period. Columns 1 and 2 of Panel B report  $t$ -tests for changes in governance measures between the pre- and post- noncompliance periods for noncompliance and control samples, respectively. Column 3 reports paired  $t$ -test results for changes in corporate governance between noncompliance and control samples. Results reported in columns 1 and 2 provide little evidence of significant changes in corporate governance arrangements for both the noncompliance and control samples. Further, difference-in-differences results presented in

column 3 indicate that changes in corporate governance variables do not differ significantly between the noncompliance and control samples.

Collectively, the results reported in Table 10 suggest that noncompliance sample firms display lower quality arrangements for a subset of governance features. However, no differences are apparent for changes in governance arrangements surrounding the start of the noncompliance period. Furthermore, to the extent that corporate governance is positively associated with internal control quality (Hoitash et al. 2009), evidence of weaker governance arrangements for noncompliance firms is not inconsistent with our view that systemic internal control weaknesses affect both noncompliance with securities regulations and GAAP violations. Nevertheless, these results indicate that we cannot entirely rule out the possibility that externally-focused governance arrangements represent an omitted variable in our tests.

## **6. CONCLUSIONS**

We examine the association between noncompliance with securities regulations and GAAP violations to draw inferences about whether noncompliance with securities regulations has implications for GAAP violations. We hypothesize that general factors that affect the effectiveness of the integrated internal control system are likely to simultaneously affect both compliance behavior and accounting systems. Therefore, we predict and find that the likelihood of GAAP violations is higher for firms that violate securities regulations compared to a control sample matched on observable characteristics at the noncompliance date. In addition, the differences between the noncompliant and control firms are significant for the periods subsequent to the start of the noncompliance period but not for periods prior to this date. The results suggest that once noncompliance behavior begins, firms are also more likely to engage in



GAAP violations. These results are important because they are consistent with the view that firms' internal control arrangements form part of an integrated system.

Our study has a number of limitations, some of which merit further research. First, while we find the association between noncompliance with securities regulations and GAAP violations, our data and research design do not allow us to directly test causality. Second, we focus on the violation of securities regulations as a setting for noncompliance. Future research can explore whether the associations that we find hold for other types of noncompliance behavior. Third, it is possible that monitoring intensity by the SEC increases once a noncompliance event is detected, thereby increasing the likelihood of the restatement of previous misstatements. Our analysis indicates that restatement announcements precede the SEC enforcement action filing date by 601 days for the median sample firm, suggesting that this scenario is less plausible. However, we acknowledge that SEC scrutiny could introduce a potential bias because our data are based on observed and detected outcomes. Finally, auditors' response to known noncompliance behavior (e.g., exerting more effort) may affect our results. We leave the investigation of auditors' response to noncompliance behavior to future research.

## APPENDIX

### The List of Noncompliance Events

	Company Name	Brief Description of Event
1	Value Line Inc	Misappropriated assets
2	National Presto Industries Inc	Operating as an unregistered investment company
3	Daxor Corp	An unregistered investment company to offer for sale
4	General Electric Co	Failed to fully and accurately disclose CEO compensation
5	Pennichuck Corp	False and misleading disclosures in operation
6	Online Power Supply Inc	Unregistered stock transactions; false and misleading statements
7	China Fruits Corp	Acting as unregistered investment adviser
8	Tyson Foods Inc	Misleading disclosures of perquisites and personal benefits for its president, CEO and chairman; failed to maintain adequate internal controls over his personal use of company assets and the disclosure of those perquisites in its proxy statements.
9	Revolutions Medical Corp	False or misleading statements about company and product
10	Syndicated Food Service International Inc	Broker bribery scheme
11	Verint Systems Inc	Improper practice in IPO; inefficient internal control system
12	Competitive Technologies Inc	Manipulate and fraudulently inflate the price of stock
13	Integral Systems Inc /Md/	Failed to disclose an executive officer's securities fraud background in its periodic reports and proxy statements
14	Nicor Inc	Improper transactions, material misrepresentations, and failed to disclose material information regarding gas inventory
15	UBS Ag	Acting as an unregistered broker-dealer and investment adviser for cross-border business
16	Genesisintermedia Inc	Manipulating stock price
17	Save The World Air Inc	False and materially misleading information about products, business and revenue records
18	Ford Motor Credit Co Llc	Unlawful marketing of securities
19	Harcourt Companies Inc	Illegally raise money by using a Form S-8 registration statement; false and misleading press releases
20	Wi-Tron, Inc.	False and misleading statements concerning purported entry into the high-speed Internet wireless access market
21	Gilman Ciocia, Inc.	Fraudulent conduct in the offer, sale and purchase of securities
22	Packetport.Com, Inc.	Pump and Dump stock price
23	Entrade Inc	Pink sheet failed to file periodic filings
24	Fiat S P A	Foreign bribery
25	Cnh Global N V	Foreign bribery
26	Rica Foods Inc	CEO self-dealing in operation resulting in millions of dollars in related-party transactions
27	Natures Sunshine Products Inc	Foreign bribery
28	Agco Corp /De	Foreign bribery
29	Lnb Bancorp Inc	Manipulation stock price
30	Dreyfus Corp	Violated investment advisor's regulation of Performance-Based Compensation contract

31	Intervoice Inc	Misleading statements
32	Nano World Projects Corp	False and misleading statements concerning business
33	Westwood Holdings Group Inc	Fraudulent stock offering
34	Tasty Fries Inc	Unregistered Sales of Securities; false and misleading filings and press releases
35	Textron Inc	Foreign bribery –kickback
36	Westinghouse Air Brake Technologies Corp	Foreign bribery
37	Wulf International Ltd	Misleading press releases concerning business
38	Tristar Corp	Pink sheet failed to file periodic filings
39	Universal Express Inc/	Illegal distribution of stock to public; false and misleading statements about funding commitments for the company and its business
40	Chevron Corp	Foreign bribery
41	El Paso Corp/De	Foreign bribery
42	Stansbury Holdings Corp	Failed to disclose significant events and periodic filings
43	Freedom Golf Corp/Nv	Fraudulent projections; failed to disclose material information
44	Softnet Technology Corp.	Small cap unregistered distribution of stock
45	Bgi Inc	Noncompliance with game laws; misleading statements
46	Xaibe Inc	False and Misleading Statements about purported audited financial statements
47	Pacel Corp	Fraudulent form S-8 transactions
48	Siebel Systems Inc	Selectively disclosing material nonpublic information to certain persons- securities analysts, broker-dealers, investment advisers and institutional investors- before disclosing the same information to the public.
49	KIT Digital, Inc.	Small cap unregistered distribution of stock
50	Veridigm, Inc.	Material misrepresentations and omissions concerning business
51	Dean Holding Co	Misleading side letters as suppliers to an earning overstatement firm
52	Hutech21 Co. Ltd.	Violations of the transfer agent rules; false filings with the SEC
53	Energy & Engine Technology Corp	Small cap unregistered distribution of stock
54	Applied Minerals, Inc.	Improper offer and sale of securities; internal control deficiencies
55	Amerco /Nv/	No detailed information; SEC issued a formal order of private investigation
56	Eknowledge Group Inc	False and Misleading Statements of business
57	General Motors Financial Company, Inc.	Insider trading
58	Intrepid Holdings, Inc.	Materially misleading press releases concerning acquisition of a multi-million dollar loan portfolio, revenue, loan
59	Statoil Asa	Foreign bribery
60	Jb Oxford Holdings Inc	Facilitating late trading and market timing
61	Ab Watley Group Inc	Participated in a fraudulent scheme to trade ahead of large institutional orders
62	Converge Global Inc/Ca	False release concerning business
63	Sei Investments Co	Ineffectively control of wholly owned subsidiary
64	Merck & Co. Inc.	Disclose material, non-public information regarding earnings prospects to institutional investors and analysts

65	Concentrax Inc	False and misleading claims regarding purported contracts to sell products; misleading earnings projections
66	Flowserve Corp	Selectively disclosing material, non-public information to certain persons outside the issuer.
67	Orthofix International N V	Foreign bribery
68	Rocky Mountain Energy Corp	False and Misleading Statements of share transactions
69	International Biochemical Industries Inc	False and misleading press releases on biotech products and business opportunities
70	Us Global Nanospace Inc	Materially misleading press releases regarding products and business
71	Anscott Industries Inc	Microcap, a fraudulent touting scheme of stock
72	Bennett Environmental Inc	False and misleading information concerning a contract
73	Vaso Active Pharmaceuticals Inc	Material misrepresentations and omissions concerning business in both public statements and filings with
74	Biopure Corp	Misleading public statements about products
75	Tyson Foods Inc	Foreign bribery
76	Bio One Corp	Amended registration statement failed to include information for acquired businesses
77	Starinvest Group, Inc.	Multiple violation of Regulation on Business Development Companies
78	Stockeryale Inc	False and misleading press releases concerning business
79	Inspire Pharmaceuticals Inc	Misleading disclosures of products'(drug's)efficiency
80	Aero Performance Products, Inc.	Multiple violation of Regulation on Business Development Companies
81	Oretech Inc	Failed to report certain significant events
82	Deutsche Telekom Ag	Foreign bribery
83	Magyar Telekom Plc.	Foreign bribery
84	Kings Road Entertainment Inc	Pink sheet failed to file periodic filings
85	American Equity Investment Life Holding Co	Misleading disclosure of a related-party transaction in proxy statement
86	Advanced Optics Electronics Inc	Unlawful public offering of the securities
87	Hst Global, Inc.	Penny stock; illegal unregistered stock distributions
88	Lilly Eli & Co	Foreign bribery
89	4d Seismic Inc	Unregistered transactions; materially false press releases
90	Rbc Capital Markets, Llc	Improper offer or sale of securities
91	Hewlett Packard Co	Failed to disclose the circumstances of a director's resignation
92	Excellency Investment Realty Trust, Inc.	Fraudulent market manipulation scheme
93	Presstek Inc /De/	Selectively disclosed material non-public information to a managing partner of a registered investment adviser
94	Bbx Capital Corp	Misleading statements in public filings and earnings calls regarding the deteriorating state of business
95	Citigroup Inc	Misleading disclosures regarding its exposure to sub-prime Assets

96	Massachusetts Mutual Life Insurance Co	Misleading/insufficient disclosure of investment products
97	Acorn Energy, Inc.	Fraudulent offer and sale of unregistered securities
98	Sequenom Inc	Misleading press releases/filings of scientific data regarding a prenatal screening test
99	Nyse Euronext	Inadequate compliance efforts/fail to record business/inefficient control of subsidiary
100	Sunrise Solar Corp	Manipulating Stock price; misleading press releases
101	Earthworks Entertainment Inc	Microcap :insiders or promoters of publicly traded microcap companies, sought to manipulate the volume and price of microcap stocks and to generate stock sales through the payment of illegal kickbacks
102	China Intelligent Lighting & Electronics, Inc.	Registration Statements were materially deficient and included an untrue statement of a material fact.
103	China Century Dragon Media, Inc.	Registration Statements were materially deficient and included an untrue statement of a material fact.
104	Wfc Holdings Corp	Failed to produce documents in Mortgage-Backed Securities Investigation
105	Axius Inc.	Penny stock, fraudulent broker bribery scheme designed to manipulate the company's stock market

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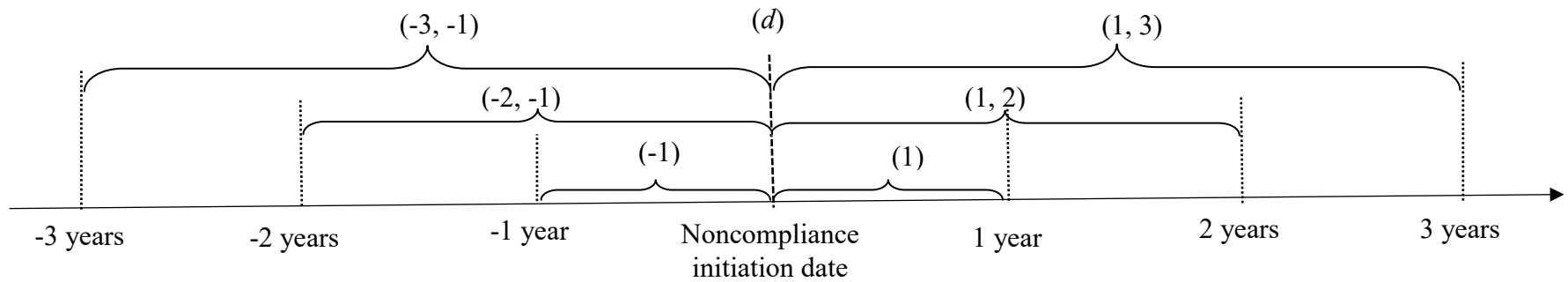
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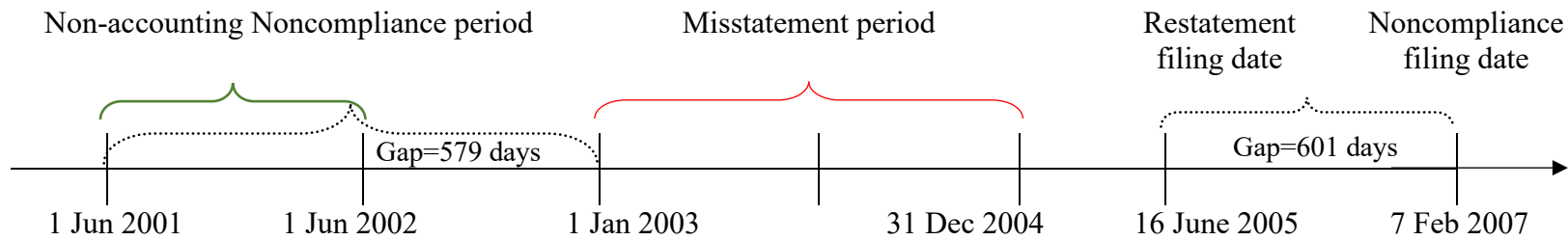


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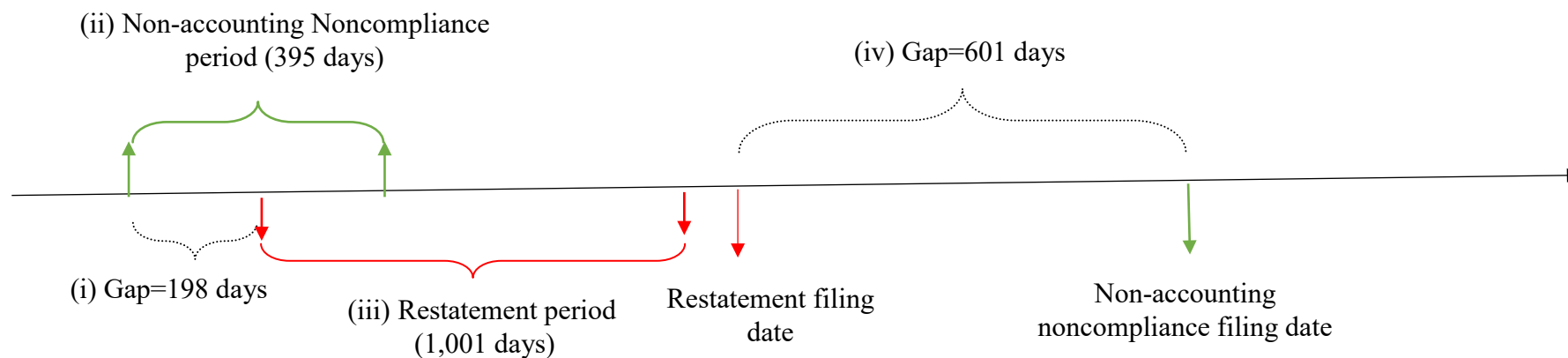
**Figure 1 Identifying misstatement occurrence centering on noncompliance initiation date**

**Notes:** This figure illustrates how we identify misstatements occurrence across different windows. We identify misstatements occurrence for noncompliance and control firms over a series of windows relative to the start of the noncompliance period for noncompliant firms.  $d$  is the date when noncompliance initiated.  $(-3, -1)$ ,  $(-2, -1)$ , and  $(-1)$  represent pre-noncompliance windows until one day before  $d$  for the periods of 3 years, 2 years and 1 year, respectively.  $(1, 3)$ ,  $(1, 2)$  and  $(1)$  represent post-noncompliance windows starting one day after  $d$  for the periods of 3 years, 2 years and 1 year, respectively. The occurrence of misstatements that occurred on the dates that noncompliance start are not counted for these pre- and post-compliance windows but only reflected in  $(d)$ .



**Figure 2.A. Timeline of a real SEC non-accounting noncompliance case and the restatement associated with it**

**Notes:** This figure represents a timeline for an actual case whose time lag between the filing date of the non-accounting enforcement action and the announcement date of restatements equals the sample median value, i.e. 601 days. It also presents the timeline of noncompliance event period and misstatement period. ‘Gap=579 days’ represents the time lag between the date when the noncompliance event was initiated and the start date of accounting misstatement. ‘GAP=601 days’ represents the time lag between the announcement date of restatement and the filing date of noncompliance with securities regulations.



**Figure 2.B. Timeline of a representative case constructed based on several median values**

**Notes:** This figure represents a timeline for a representative case that we construct using the sample median values of several time lags and durations of events; (i) the median time lag between the initiation of noncompliance event and the starting date of accounting misstatement is 198 days; (ii) the median duration of noncompliance events is 395 days; (iii) the median duration of misstatement periods is 1,001 days; and (iv) the median time lag between the announcement of restatements and the filing of noncompliance enforcement action is 601 days.

**Table 1** Sample Selection of Enforcement Action Releases**Panel A:** Sample selection of Enforcement Action Releases

## Number of Releases

Total releases (2003-2012)	10,923
Total_LR (2003-2012)	4,675
Total_AP (2003-2012)	6,248
less: releases towards individual and categorized as AAER	5,904
less: other releases	1,212
Indexed releases (4,129 unique firms)	3,754

**Panel B:** Sample selection of firms against by Enforcement Actions

## Number of Firms

Number of firms referred by indexed releases	4,129
Number of firms found in EDGAR	2,417
Number of firms with 'total assets' information on Compustat, corresponding to 900 releases	768
Number of firms after deleting releases against firms delinquent in financial reports (corresponding to 532 releases about 126 events)	123
Number of firms after deleting re-examination of AAER category and potential GAAP-related events	118
Number of firms after deleting cases of stock option backdating	105*
Number of firms with all available financial data for PSM regression	79

**Note**

This table reports the process of identifying non-GAAP related SEC's enforcement actions releases.

**Total releases:** the sum of SEC's enforcement releases in each year for the period from 2003 to 2012.

**Indexed releases:** the number of SEC's enforcement releases covered in our index file.

**Other Releases:** the number of releases which are not relevant for identifying firms' non-compliance behaviors, such as releases for fair fund distributions, and which don't specify all the firms' names in the release titles.

\*Those cases arguably involve accounting restatements, though the cases collected are not subcategorized as AAERs. All the results remain robust when we include those cases.

**Table 2** Summary Statistics for Frequency of Noncompliance Events and Noncompliant Firms by Year and Industry

<b>Panel A: Year Frequency of Noncompliant Firms</b>				<b>Panel B: Industry Frequency of Noncompliant Firms</b>			
Vio_Beg	Freq	Vio_End	Freq	Industry	Frequency	Percent	Compustat
1986	1			Banks&Insurance	20	19.05	20.13
1994	1			Chemicals	7	6.66	1.84
1995	1			Computers	7	6.67	11.18
1996	5	1996	1	Durable Manufacturers	20	19.05	11.24
1997	3			Food&Tobacco	5	4.76	1.93
1998	1			Mining &Construction	3	2.85	11.04
1999	10	1999	4	Pharmaceuticals	7	6.67	9.46
2000	9	2000	2	Refining&Extractive	5	4.77	7.18
2001	20	2001	8	Retail	9	8.57	6.49
2002	15	2002	20	Service	14	13.33	7.25
2003	9	2003	20	Transportation	3	2.86	5.06
2004	6	2004	12	Utilities	5	4.76	4.26
2005	4	2005	5				
2006	8	2006	9				
2007	4	2007	7				
2008	3	2008	4				
2009	1	2009	5				
2010	1	2010	4				
2011	2	2011	2				
2012	1	2012	2				
<b>Total</b>	<b>105</b>		<b>105</b>	<b>Total</b>	<b>105</b>	<b>100</b>	<b>97.06</b>

**Note**

This table reports summary statistics for frequency of securities regulation noncompliance events/firms by year and industry.

Following Dechow et al (2011), Industries are based on the following SIC codes: Agriculture: 0100–0999; Mining & Construction: 1000–1299, 1400–1999; Food & Tobacco: 2000–2141; Textiles and Apparel: 2200–2399; Lumber, Furniture, & Printing: 2400–2796; Chemicals: 2800–2824, 2840–2899; Refining & Extractive: 1300–1399, 2900–2999; Durable Manufacturers: 3000–3569, 3580–3669, 3680–3828, 3852–3999; Computers: 3570–3579, 3670–3679, 7370–7379; Transportation: 4000–4899; Utilities: 4900–4999; Retail: 5000–5999; Services: 7000–7369, 7380–9999; Banks & Insurance: 6000–6999; Pharmaceuticals: 2830–2836, 3829–3851.

The calculation of Compustat industry proportion is based on the firms which have valid financial statement data in year 2012. I do a small correction for Dechow et al (2011), where they include 3829–3851 in both Durable Manufacturers and Pharmaceuticals.

**Table 3** Summary Statistics for Noncompliance Events

Panel A: Frequency of Violation Days			Panel B: Frequency of Violated Acts				Panel C: Frequency of Violated Subsections of Acts			Panel D: Frequency of Involved Parties		
Vio_Days	Freq	Percent %	Vio_Acts	Vio_Ind		Total	Sub-sections	Freq	Percent %	Involved Parties	Freq	Percent %
1-999	70	66.67		0	1	.	1	40	38.46	CEO/president/Chair	61	58.10
1000-1999	22	20.95	Vio_33	60	44	1	2	31	29.81	Law_person	10	9.52
2000-2999	9	8.57	Vio_34	17	87	1	3	18	17.31	CFO	10	9.52
3000-3999	2	1.90	Vio_ICA40	100	5	0	4	8	7.69	Other_Top	17	16.19
5000-5999	1	0.95	Vio_IAA40	101	4	0	6	4	3.85			
>6000	1	0.95					8	2	1.92			
mean	917						.	1	0.96			
median	516											
Total	105	100					Total	105	100	Total	105	**

**Note**

This table reports summarized details for the 126 (123) noncompliance events (firms).

**Vio\_Ind** indicates if a specific Act was violated or not.

**Vio\_Acts** indicates what Act was violated.

**Vio\_33** stands for the violated law was Securities Act of 1933.

**Vio\_34** stands for the violated law was Securities Exchange Act of 1934.

**Vio\_ICA40** stands for the violated law was Investment Company Act of 1940.

**Vio\_IAA40** stands for the violated law was Investment Advisers Act of 1940.

**Sub-sections** is the number of subsections of Acts that a noncompliance event violated.

**Law\_person** is an indicator for the existence of a general counsel or compliance officer in the company.

**Other\_Top** is an indicator for senior executives, senior officers, or vice presidents.

\* For one of the two missing cases, the SEC issued a formal order of private investigation therefore this information is not publicly available. For the other case which involves insider trading, the violated acts information is missed without known reason.

\*\* One noncompliance event might involve multiple parties; therefore the sum of the percentage is not 100%. There are 11 events have no information on the involved parties.

**Table 4** Logistic Regression for Propensity Score

<b>Panel A: Regression Results</b>							
Noncompliance	Coef.	Std. Err.	z	P> z			
ROA	-0.395	0.086	-4.59	<0.001			
SIZE	0.164	0.055	2.97	0.003			
LEVERAGE	-0.079	0.199	-0.4	0.693			
LOSS	-0.396	0.296	-1.34	0.180			
BIGN	-0.829	0.292	-2.84	0.005			
AGE	-0.324	0.195	-1.66	0.096			
BM	-0.230	0.149	-1.55	0.121			
STOCKRET	0.105	0.056	1.87	0.062			
_CONS	-5.805	1.151	-5.04	<0.001			
YEAR	Included						
N	19145						
LR chi2	93.58						
(p-value)	(0.001)						
Pseudo R <sup>2</sup>	0.091						
<b>Panel B: Distribution of Fitted Conditional Probabilities (P-scores)</b>							
Sample	N	Mean	1 <sup>st</sup> pct.	25 <sup>th</sup> pct.	median	75 <sup>th</sup> pct.	99 <sup>th</sup> pct.
	19,06						
Control	6	0.0041	0.0004	0.0012	0.0024	0.0045	0.0270
Noncompliance	79	0.0188	0.0027	0.0026	0.0054	0.0209	0.1890
<b>Note</b>							
This table reports logistic regression results for propensity scores.							
The dependent variable is the logarithm of the odds of noncompliance. Noncompliance equals 1 if a firm is against by the SEC's enforcement actions; equals 0 if a firm is from COMPUSTAT potential control group.							
All variables are measured at the fiscal year (COMPUSTAT identification) where the noncompliance beginning date lies.							
Panel A contains regression results. Panel B provides distributional information of the fitted conditional probabilities (i.e. propensity scores) for two samples: the whole population for control group before matched and the noncompliance sample.							
<b>Variable Definitions:</b>							
<i>ROA</i>	= income before extraordinary items divided by total asset;						
<i>SIZE</i>	= the natural log of outstanding common stock times share price;						
<i>LEVERAGE</i>	= the sum of debt in current liability and long term debt divided by total assets;						
<i>LOSS</i>	= an indicator variable taking the value of 1 if income before extraordinary items is less than zero, and 0 otherwise;						
<i>BIGN</i>	= an indicator variable taking the value of 1 if the auditor comes from Big Five, and 0 otherwise;						
<i>AGE</i>	= the natural log of firm's age;						
<i>BM</i>	= Book – Market ratio, calculated as book value of common equity divided by market value of common equity;						
<i>STOCKRET</i>	= the difference between outstanding common stock times share price at year end and year beginning divided by the market capitalization at year beginning;						
<i>YEAR</i>	= an indicator variable for noncompliance beginning year;						



**Table 5.** Covariate Balancing Tests for Logistic Model

Variable	Unmatched/ Matched	Mean		%bias (3)	%reduct bias (4)	t-test		Wilcoxon test	
		Noncompliance	Control			t	p> t	t	p> t
		(1)	(2)			(5)	(6)	(7)	(8)
<b>ROA</b>	Unmatched	-0.999	-0.222	-52.90		-8.100	0.000		
	Matched	-0.987	-0.850	-9.30	82.40	-0.450	0.652	-0.534	0.595
<b>SIZE</b>	Unmatched	5.235	5.213	0.70		0.070	0.942		
	Matched	5.272	5.047	7.20	-953.60	0.420	0.676	-0.813	0.419
<b>LEVERAGE</b>	Unmatched	0.450	0.256	34.20		4.010	0.000		
	Matched	0.441	0.375	11.50	66.20	0.600	0.552	-0.464	0.644
<b>LOSS</b>	Unmatched	0.494	0.446	9.50		0.850	0.396		
	Matched	0.494	0.390	20.80	-118.60	1.300	0.197	0.376	0.708
<b>BIGN</b>	Unmatched	0.570	0.716	-30.90		-2.890	0.004		
	Matched	0.558	0.571	-2.70	91.20	-0.160	0.872	-0.113	0.910
<b>AGE</b>	Unmatched	2.454	2.604	-19.50		-2.130	0.033		
	Matched	2.459	2.627	-22.00	-12.80	-1.270	0.206	-1.579	0.119
<b>BM</b>	Unmatched	0.139	0.456	-31.20		-3.520	0.000		
	Matched	0.184	0.197	-1.30	95.80	-0.080	0.939	-0.251	0.802
<b>STOCKRET</b>	Unmatched	0.811	0.368	23.50		2.840	0.005		
	Matched	0.840	0.614	12.00	49.00	0.680	0.496	1.118	0.267
<b>Pseudo R2</b>	Unmatched	0.107		<b>MeanBias</b>	Unmatched	24.70			
	Matched	0.052			Matched	10.00			
<b>LR chi2</b>	Unmatched	110.12		<b>MedBias</b>	Unmatched	23.50			
	Matched	11.04			Matched	9.30			
<b>p&gt;chi2</b>	Unmatched	<0.001							
	Matched	0.440							

This table reports results for covariate balancing tests including standardized bias, a two-sample t-test, joint significance, Wilcoxon test, and Pseudo-R<sup>2</sup>.

%reduct bias is the percentage reduction in covariate bias.

MeanBias is the mean of standardized bias.

MedBias is the median of standardized bias.

**Table 6.** Firm-level GAAP Violation Rates for Noncompliance and Control Samples

Windows	Noncompliance (N=77)		Control (N=77)		Fisher's Exact Test	
	percent(%)	number	percent(%)	number	<u>Table Probability(P)</u>	<u>Two-sided Pr ≤=P</u>
<i>Windows centred on noncompliance initiation date</i>						
(-3, 3)	14.29	11	7.79	6	0.091	0.304
(-2, 2)	14.29	11	5.19	4	0.037	0.100
(-1, 1)	10.39	8	3.90	3	0.077	0.209
(d)	1.30	1	0.00	0	0.500	1.000
<i>Windows pre- noncompliance</i>						
(-3, -1)	7.79	6	6.49	5	0.233	1.000
(-2, -1)	5.19	4	3.90	3	0.279	1.000
(-1)	2.60	2	2.60	2	0.380	1.000
<i>Windows post noncompliance</i>						
(d, 3)	12.99	10	3.90	3	0.031	0.079
(1, 3)	11.69	9	3.90	3	0.049	0.130
(1, 2)	11.69	9	2.60	2	0.024	0.056
(1)	7.79	6	1.30	1	0.051	0.116

**Note**

This table reports firm-level GAAP violation rates for noncompliance and control firms.

We measure the ratio of GAAP violations separately for noncompliance and control firms during each violation window. For the analysis of restatements over a given window, we calculate the number of treatment and control firms restating their financial statements at least once during entire window and divide them by the number of firms in each sample, respectively. This approach counts firm-level restatements *once* during a given violation window regardless of how many times the firm restates during the period.

Restatement data is collected from Audit Analytics' restatement dataset.

(-3, 3) is a six-year window centring on noncompliance initiation date with a coverage of preceding three years to subsequent three years.

(-2, 2) is a four-year window centring on the date noncompliance began with a coverage of preceding two years to subsequent two years.

(-1, 1) is a two-year window centring on the date noncompliance began with a coverage of preceding one year to subsequent one year.

(-3, -1) is a three-year window covering three years preceding to the date noncompliance began.

(-2, -1) is a two-year window covering two years preceding to the date noncompliance began.

(-1) is a one-year window covering one year preceding to the date noncompliance began.

(d) is the date on which a noncompliance event started.

(d, 3) is a three-year window starting with the date noncompliance began to subsequent three years.

(1, 3) is a three-year window starting with one day after the date noncompliance began to subsequent three years.

(1, 2) is a two-year window starting with one day after the date noncompliance began to subsequent two years.

(1) is a one-year window covering one year after the date noncompliance began.

**Table 7.** Restatement-level GAAP Violation Rates for Noncompliance and Control Samples

<i>Panel A. Windows centred on noncompliance beginning year</i>						
Restatement Frequency	(-3, 3)		(-2, 2)		(-1, 1)	
	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)
Cumulative	64.71	35.29	78.57	21.43	72.73	27.27
1	27.27	50.00	63.64	50.00	87.50	66.67
2	63.64	16.67	36.36	25.00	12.50	0
3	9.09	16.67	0	25.00	0	33.33
4	0	16.67				
Total	100.00	100.00	100.00	100.00	100.00	100.00
<i>Panel B. Windows pre- noncompliance</i>						
Restatement Frequency	(-3, -1)		(-2, -1)		(-1)	
	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)
Cumulative	54.55	45.45	57.14	42.86	33.33	66.67
1	83.33	40.00	100.00	66.67	100.00	50.00
2	16.67	40.00	0	0	0	0
3	0	20.00	0	33.33	0	50.00
Total	100.00	100.00	100.00	100.00	100.00	100.00
<i>Panel C. Windows post- noncompliance</i>						
Restatement Frequency	(d, 3)		(1, 3)		(1, 2)	
	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)	Noncompliance (%)	Control (%)
Cumulative	76.92	23.08	75.00	25.00	75.00	25.00
1	70.00	100.00	66.67	100.00	88.89	100.00
2	30.00	0	33.33	0	11.11	0
Total	100.00	100.00	100.00	100.00	100.00	100.00

**Note**

This table reports restatement-level GAAP violation rates for noncompliance and control firms. Restatement frequency is the total number of individual restatements per firm over a given window.

Restatement data is collected from Audit Analytics' restatement dataset.

(-3, 3) is a six-year window centring on noncompliance beginning date with a coverage of preceding three years to subsequent three years.

(-2, 2) is a four-year window centring on the date noncompliance began with a coverage of preceding two years to subsequent two years.

(-1, 1) is a two-year window centring on the date noncompliance began with a coverage of preceding one year to subsequent one year.

(-3, -1) is a three-year window covering three years preceding to the date noncompliance began.

(-2, -1) is a two-year window covering two years preceding to the date noncompliance began.

(-1) is a one-year window covering one year preceding to the date noncompliance began.

(d, 3) is a three-year window starting with the date noncompliance began to subsequent three years.

(1, 3) is a three-year window starting with one day after the date noncompliance began to subsequent three years.

(1, 2) is a two-year window starting with one day after the date noncompliance began to subsequent two years.

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**Table 8.** Restatements Occurrence in Noncompliance and Control Samples(1:N matches)

Windows	Noncompliance		Control		Fisher's Exact Test	
	percent(%)	number	percent(%)	number	Table Probability(P)	Two-sided Pr <=P
<i>1:2 matches</i>	<i>(N=74)</i>		<i>(N=128)</i>			
(-3, 3)	12.16	9	8.78	13	0.133	0.477
(-2, 2)	12.16	9	6.76	10	0.079	0.205
(-1, 1)	8.11	6	4.73	7	0.139	0.367
( <i>d</i> , 3)	10.81	8	4.73	7	0.055	0.097
(1, 3)	9.46	7	4.73	7	0.090	0.240
(1, 2)	9.46	7	4.05	6	0.066	0.131
(1)	5.41	4	2.70	4	0.171	0.446
<i>1:3 matches</i>	<i>(N=71)</i>		<i>(N=213)</i>			
(-3, 3)	11.27	8	7.51	16	0.114	0.330
(-2, 2)	11.27	8	5.63	12	0.059	0.115
(-1, 1)	7.04	5	3.76	8	0.126	0.322
( <i>d</i> , 3)	9.86	7	3.29	7	0.026	0.050
(1, 3)	8.45	6	3.29	7	0.054	0.097
(1, 2)	8.45	6	2.82	6	0.038	0.080
(1)	4.23	3	1.88	4	0.174	0.372

**Note**

This table reports the occurrence of restatements around noncompliance events with 1:2 and 1:3 PSM matches. Restatements occurrence has only been calculated once in each window while multiple restatement occurred in that window.

Restatement data is collected from Audit Analytics' restatement dataset.

(-3, 3) is a six-year window centring on noncompliance beginning date with a coverage of preceding three years to subsequent three years.

(-2, 2) is a four-year window centring on the date noncompliance began with a coverage of preceding two years to subsequent two years.

(-1, 1) is a two-year window centring on the date noncompliance began with a coverage of preceding one year to subsequent one year.

(*d*, 3) is a three-year window starting with the date noncompliance began to subsequent three years.

(1, 3) is a three-year window starting with one day after the date noncompliance began to subsequent three years.

(1, 2) is a two-year window starting with one day after the date noncompliance began to subsequent two years.

(1) is a one-year window covering one year after the date noncompliance began.

**Table 9.** Mantel-Haenszel (1959) Bounds for Post-Noncompliance Effect Estimation

<b>Panel A:</b> MHbounds for Restatements' 3years window (0, 3)					<b>Panel B:</b> Summary of MHbounds Test for Post-noncompliance Windows with Significant Effect	
$\Gamma$	$Q_{MH}^+$	$Q_{MH}^-$	$p_{mh}^+$	$p_{mh}^-$	Windows	Critical $\Gamma$ cut-off (p=10%)
	(1)	(2)	(3)	(4)		(1)
1**	1.73347	1.73347	0.041506	0.041506	Restatement (1, 3)	1.2
1.1*	1.57618	1.9051	<b>0.057492</b>	0.028384	Restatement (1, 2)	1.5
1.2*	1.42984	2.05952	0.076382	0.019722	Restatement (1)	1.3
1.3*	1.29706	2.20422	0.097305	0.013754		
1.4	1.17557	2.34063	<b>0.119883</b>	0.009626		
1.5	1.06359	2.46986	0.143757	0.006758		
1.6	0.959739	2.59283	0.168593	0.00476		
1.7	0.862901	2.71026	0.194096	0.003362		
1.8	0.772175	2.82278	0.220006	0.00238		
1.9	0.686816	2.9309	0.246099	0.00169		
2	0.606209	3.03506	0.272188	0.001202		

**Note**

This table reports MHbounds statistics for the estimation effects on the three-year window (0, 3) of restatement data as an example, and the summary of critical values of  $\Gamma$  for the post-noncompliance windows where significant noncompliance effects are observed.

$\Gamma$  : odds of differential assignment due to unobserved factors

$Q_{MH}^+$  : Mantel-Haenszel statistic (assumption: over-estimation of treatment effect)

$Q_{MH}^-$  : Mantel-Haenszel statistic (assumption: under-estimation of treatment effect)

$p_{mh}^+$  : significance level (assumption: over-estimation of treatment effect)

$p_{mh}^-$  : significance level (assumption: under-estimation of treatment effect)

\*\* indicates 5% significance level; \* indicates 10% significance level

**Table 10. Differences in Corporate Governance Mechanisms between Noncompliance and Control Samples**

<b>Panel A: Corporate Governance Differences</b>												
Variable	Noncompliance			Control			<i>t</i> -test for mean differences					
	Obs.	Mean	Median	Obs.	Mean	Median	<i>t</i> -statistic	<i>p</i> -value				
<i>Pre-noncompliance (t-2, t-1)</i>												
BOARD_SIZE	114	7.053	6.000	127	7.670	8.000	1.40	0.164				
DUALITY	116	0.733	1.000	127	0.622	1.000	-1.85	0.065*				
SD_PERCENT	116	0.573	0.600	127	0.560	0.600	-0.37	0.713				
STAGGERED_BOARD	115	0.321	0.000	127	0.142	0.000	-3.35	<0.001***				
AUDIT_COMMITTEE_SIZE	98	2.704	3.000	127	3.189	3.000	2.20	0.029**				
COMPENSATION_COMMITTEE_SIZE	100	2.36	3.000	127	2.661	3.000	1.28	0.202				
NOMINATION_COMMITTEE_SIZE	100	1.620	0.000	127	1.402	0.000	-0.80	0.425				
LAW_ON_BOARD	116	0.422	0.000	127	0.394	0.000	-0.45	0.651				
LAW_PERCENT	114	0.084	0.000	127	0.070	0.000	-0.88	0.379				
<i>Post- noncompliance (t+1, t+2)</i>												
BOARD_SIZE	113	7.487	7.000	140	7.85	8.000	0.81	0.416				
DUALITY	114	0.702	1.000	140	0.593	1.000	-1.82	0.070*				
SD_PERCENT	109	0.581	0.667	140	0.581	0.615	-0.00	0.999				
STAGGERED_BOARD	111	0.360	0.000	140	0.114	0.000	-4.63	<0.001***				
AUDIT_COMMITTEE_SIZE	101	2.911	3.000	140	3.464	3.000	2.58	0.011**				
COMPENSATION_COMMITTEE_SIZE	99	2.515	3.000	140	2.907	3.000	1.63	0.105				
NOMINATION_COMMITTEE_SIZE	99	1.929	2.000	140	2.014	2.000	0.31	0.758				
LAW_ON_BOARD	114	0.412	0.000	140	0.443	0.000	0.49	0.626				
LAW_PERCENT	111	0.065	0.000	140	0.085	0.000	1.46	0.146				
<b>Panel B: Corporate Governance Changes Surrounding Noncompliance</b>												
Variable	(1) Change for Noncompliance (t+1)- (t-1)				(2) Change for Control (t+1)- (t-1)				(3) Noncompliance Change VS Control Change (t+1)- (t-1)			
	Mean	<i>t</i> -test	<i>p</i> -value	Obs.	Mean	<i>t</i> -test	<i>p</i> -value	Obs.	Mean	<i>paired t</i> -test	<i>p</i> -value	Obs.
BOARD_SIZE	0.054	0.25	0.805	56	-0.061	-0.25	0.805	66	0.180	0.54	0.588	50
DUALITY	0.018	0.30	0.766	57	-0.015	-0.38	0.709	66	0.059	0.77	0.444	51

SD_PERCENT	-0.008	-0.35	0.728	55	-0.014	-0.42	0.675	66	0.036	0.75	0.456	50
STAGGERED_BOARD	0.000	.	.	56	0.000	.	.	66	0	.	.	51
AUDIT_COMMITTEE_SIZE	-0.020	-0.15	0.880	49	0.167	1.29	0.200	66	-0.227	-1.22	0.229	44
COMPENSATION_COMMITTEE_SIZE	0.000	0.00	1.000	48	0.136	1.14	0.260	66	-0.116	-0.63	0.535	43
NOMINATION_COMMITTEE_SIZE	0.14	0.69	0.492	48	0.258	2.42	0.018	66	-0.009	-0.35	0.730	43
LAW_ON_BOARD	-0.035	-0.63	0.532	57	0.015	0.30	0.766	66	0	0.00	1.000	51
LAW_PERCENT	-0.009	-0.55	0.584	56	0.013	1.20	0.234	66	-0.013	-0.71	0.481	51

**Note**

This table reports the differences in corporate governance mechanisms between noncompliance and control samples.

**BOARD\_SIZE** is the number of directors on board.

**DUALITY** is an indicator variable that equals one if the CEO and the chairman in the firm is the same person, and zero otherwise.

**SD\_PERCENT** is the percentage of non-executive directors on the board.

**STAGGERED\_BOARD** is an indicator variable that equals one if the directors of the board are divided into more than one class and zero otherwise.

**AUDIT\_COMMITTEE\_SIZE** is the number of directors on audit committee of the board.

**COMPENSATION\_COMMITTEE\_SIZE** is the number of directors on compensation committee of the board.

**NOMINATION\_COMMITTEE\_SIZE** is the number of directors on nomination committee of the board.

**LAW\_ON\_BOARD** is an indicator variable that equals one if at least one director on the board has law background, and zero otherwise.

**LAW\_PERCENT** is the percentage of directors with law background on the board.