Enterprise Risk Management and Financial Misconduct

Abstract

Internal control over financial reporting (ICFR) plays an important role in preventing financial misconduct. While strong internal controls are an important aspect of enterprise risk management (ERM) programs, these programs include important features—including reputational protection, managerial short-termism mitigation, new financing constraint relief, and financial distress alleviation—that can additionally deter financial misconduct. In this study, we examine the relation between ERM and financial misconduct by specifically considering the interrelation between ICFR and ERM. Using a hand-collected sample of ERM adopters from a sample of S&P 500 firms we test whether firms with ERM programs are less likely to commit financial misconduct. We find evidence that ERM adoption is associated with a higher quality discretionary accruals, as well as a significantly lower probability of AAER violations and class action lawsuits. These results are robust to controlling for ERM selection effects by using a treatment effects model. Additionally, our results are robust to the inclusion of variables measuring a firm's internal control strength, indicating that ERM provides benefits to financial reporting beyond typical internal control functions. Overall, our study documents benefits to ERM specifically associated with financial reporting.

Keywords: Enterprise Risk Management (ERM); Internal Control over Financial Reporting (ICFR); Financial Misconduct; Securities Class Action Lawsuits; AAERs
JEL Codes: G32; G38; K22; K42; M41

I. INTRODUCTION

Prior literature has documented that internal control over financial reporting (ICFR) deter financial misconduct (e.g., Beasley et al. 2000; Farber 2005; Coram, Ferguson, and Moroney 2008; Prawitt, Sharp, and Wood 2012; Ege 2015).[1] However, what underlying mechanism leads to this negative relationship has not been thoroughly explored. The objective of quality ICFR is to establish reliable financial reporting that sufficiently portrays the financial status (e.g., valuations, estimates) and associated risks of a firm (Cohen, Krishnamoorthy, and Wright 2017). That is to say, how key risks are identified, assessed, and managed, how properly risks are reflected in developing accounting estimates and disclosures, and how audit committees and auditors rely on risk management information in determining the nature and the extent of audit testing and planning are the keys to successful ICFR. Enterprise risk management (ERM) is an integrated approach of managing risks across different divisions and sources proactively at the firm's board level. It aligns strategic goals and operational decision-making throughout the entire enterprise within the firm's risk appetite (e.g., COSO 2004; 2017). Hence, ERM provides a solid foundation for systematically managing, monitoring, and controlling risks so that it serves as a gatekeeper for the risks of financial misreporting, misrepresentation, misstatement, and fraud. Relying on the ERM program, internal controls, auditing, and financial reporting can be more accurate and efficient (Bell, Peecher, and Solomon 2005; COSO 2013). Therefore, we posit that ICFR deters financial misconduct through the implementation of an ERM program.

[1] In the Securities and Exchange Commission (SEC) Rule 34-49544 filed by Public Company Accounting Oversight Board, ICFR is defined as "a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles." The Committee of Sponsoring Organizations of the Treadway Commission (COSO) defines internal control as "a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance." The ICFR, in particular, is the process related to reporting.

In addition, ERM does not only address the risks related to ICFR, but it also highlights the importance of viewing risks in both the strategy-setting process and in driving performance (COSO 2017). Therefore, by its very nature ERM encompasses ICFR and it is broader in scope (Bailey, Collins, and Abbott 2018). On top of the functions related to ICFR, ERM should further deter financial misconduct due to (1) reputational protection needs from a strategic consideration of future sustainability and corporate social responsibility (Xu and Berry-Stölzle 2018; COSO 2018), (2) managerial short-termism mitigation as a result of focusing on long-term strategic development so that managers are under less pressures from analysts and investors to meet earnings targets (Xu and Xie, 2018), (3) new financing constraint relief because ERM decreases the likelihood of firms' needs for expensive external financing to fund profitable investment projects and when they do, the cost of capital is reduced upon ERM adoption (Froot, Scharfstein, and Stein 1993; Berry-Stölzle and Xu 2018), and (4) financial distress alleviation because ERM reduces default risk and increases firm value, stock returns, and firm performance (e.g., Aebi, Sabato, and Schmid 2012; Grace et al. 2015; Lundqvist and Vilhelmsson 2018). Therefore, we expect that ERM has incremental effects on financial misconduct in addition to other monitors such as ICFR.

In this paper, we investigate two related research questions. First, we examine whether a firm's risk management program is an underlying mechanism through which ICFR helps prevent financial misconduct. Specifically, we explore, all else equal, whether firms with a holistic risk management program, ERM, have less earnings management and are less likely to be subject to allegations of financial misstatements and security class action lawsuits than the firms without an ERM program. In addition, we examine whether ERM deters financial misconduct incrementally to other monitors such as ICFR.

We offer several theoretical arguments why ERM prevents financial misconduct. In addition to four reasons listed above (reputation protection needs, managerial short-termism mitigation, new financing constraint relief, and financial distress alleviation) stemming from the unique nature of ERM, ERM also shares some common features with ICFR as to why it may deter financial misconduct. First, ERM is associated with stronger corporate governance and corporate governance motives are a major driver for ERM adoption (e.g., Kleffner, Lee, and McGannon 2003; Baxter et al. 2013; Lundqvist 2015). Stronger corporate governance reduces the likelihood of financial misconduct (Uzun, Szewczyk, and Varma 2004; Agrawal and Chadha 2005). Further, ERM reduces information asymmetry as a result of enhanced transparency of the firm's general risk profile and improved risk-related communication between corporate insiders and outsiders, especially on risks that are opaque in nature (e.g., R&D investments, M&A decisions) (Wade, Hoyt, and Liebenberg 2015).

This topic is of interest not only to researchers, but also to regulators and practitioners. In the wake of the recent financial crisis the Securities and Exchange Commission (SEC) issued Rule 33-9089 which led to firms' discussion on risk oversight in their proxy statements. This disclosure-based regulatory initiative, however, does not mandate an ERM implementation, which differs from the regulatory enforcement nature of ICFR. Moreover, recent literature has documented firm managements' hesitation to fully embrace ERM (Beasly, Branson, and Hancock 2015; Bailey, Collins, and Abbott 2018). Specifically, interviews with the governance triad members (audit committee members, CFOs, and external auditors) reveal that certain important aspects of ERM are underemphasized by all members in practice, and auditors in particular underutilize ERM in the audit process (Cohen, Krishnamoorthy, and Wright 2017). While the majority of the existing literature on ERM focuses on the financial industry, the current treatment of ERM by regulators

and practitioners demonstrates the need for evidence regarding whether ERM creates further benefits to firms in various industries, especially, incrementally to mandatory ICFR.

Using a sample of firms on the Standard and Poor's 500 index (S&P 500) that spread across various industries, we hand collect the information on firms' ERM status through newswires, including Factiva and Google searches, and firms' financial reports via Edgar and ThomsonOne databases. We measure firms' ERM implementation as a dummy variable, which equals one in the years a firm adopts and maintains an ERM program, and zero otherwise. We use three proxies to gauge financial misconduct, namely, firms' abnormal discretionary accruals that measure their earnings management, whether firms received an Accounting and Auditing Enforcement Release (AAER) issued by the SEC when firms allegedly misstated their financial statements, and whether firms were subject to a security class action lawsuit.

Based on a sample period from 1996 to 2015, we first run OLS/logistic regressions of each financial misconduct proxy on firms' ERM adoption with an array of control variables. We find a negative relationship between ERM and financial misconduct. In order to address concerns that firms self-select into ERM adoption and the potential endogeneity that certain firm characteristics may drive financial misconduct and ERM adoption simultaneously, we employ a two-equation maximum likelihood treatment effects model that jointly estimates firms' decision to implement ERM and the effects of that decision (or treatment) on firms' financial misconduct. Our findings indicate that ERM significantly deters financial misconduct. In addition, we control for additional ICFR variables and perform maximum likelihood treatment effects estimation again. We find that the relationship between ERM and financial misconduct is still negative and significant, suggesting that ERM prevents financial misconduct incrementally to regulator-enforced ICFR.

We make several contributions to the literature. First, we contribute to the ICFR literature by showing that ERM adoption is a mechanism underlying ICFR that deters financial misconduct, which offers the link between ICFR and ERM. We also differentiate ICFR and ERM by showing that ERM has incremental deterring effects on financial misconduct relative to ICFR, which provides evidence to the notion that ERM is broader than ICFR in nature and ICFR is one element of ERM. Second, we contribute to the financial misconduct literature by proposing a new institutional feature, ERM, which puts constraints on financial misconduct in addition to firm governance (Beasley 1996; Uzun et al. 2004), ownership structure (Alexander and Cohen 1999; Cornett, Marcus, and Tehranian 2008), external monitoring (Cohen, Krishnamoorthy, and Wright 2008), and regulatory oversight (Yu and Yu 2011; Kedia and Rajgopal 2011). Third, we contribute to the ERM literature by expanding our sample to firms across all industries and by providing one more channel through which ERM creates firm value. Last, from a policy perspective, our findings provide important insights to regulators and practitioners. Our evidence suggests regulators, audit committees, external auditors, and firm executives create incentives or impose punitive measures to promote ERM implementation.

This paper proceeds as follows. In the next section, we introduce the institutional background on ERM and financial misconduct. Section III develops our hypotheses. In section IV we present the data, the construction of the key variables, and the empirical methodology. Section V describes the results and the final section concludes.

II. BACKGROUND

Enterprise Risk Management

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2004) defines enterprise risk management as a holistic approach that considers all risks faced by a firm

within an integrated framework. This approach is in contrast with "traditional" risk management, which would manage the risk in each business unit separately (in a "silo"). This traditional method ignores possible coordination across the silos, such as potential offsetting risks, which are taken advantage of when a firm has an ERM program in place. ERM programs began in the financial services industries in the 1990s, but firms have increasingly adopted ERM over time (see Figure 1). Focus on risk management, generally, and enterprise risk management, particularly, has grown over time with events such as the financial crisis leading to a renewed focus on risk management practices. Additionally, the ratings agency S&P began to include ERM considerations into their credit ratings starting in 2008, indicating the importance of effective and efficient risk management for firms in various industries.

Academic literature on ERM has focused, broadly, on three separate areas: drivers of ERM adoption, ERM's value implications, and drivers of ERM's value implications. The first question studies turned to regarding ERM is *why* firms decide to adopt an ERM program (e.g., Liebenberg and Hoyt 2003; Kleffner, Lee, and McGannon 2003; Beasley, Clune, and Hermanson 2005; Pagach and Warr 2011; Xu and Berry-Stölzle 2018). These studies have found that factors such as leverage, firm size, institutional ownership, stakeholder orientation, etc. are important drivers of the decision to implement an ERM program.

The second strand of the ERM literature is interested in whether ERM creates value for firms. Hoyt and Liebenberg (2011), for example, find empirical evidence that ERM adoption in the U.S. insurance industry is associated with a 20 percent increase in firm value, measured using Tobin's Q. Baxter et al. (2013), Farrell and Gallagher (2015), and Ai, Bajtelsmit, and Wang (2018) similarly document an increase in firm value using Tobin's Q. Baxter et al. (2013) and Eastman

and Xu (2015) additionally document positive market reactions surrounding positive ERM S&P ratings changes and ERM adoption announcements, respectively.

The third strand of ERM literature notes that the preponderance of prior literature has documented overall value increases with ERM adoption and searches for the specific mechanisms that are driving these value increases. Eckles, Hoyt, and Miller (2014) find evidence that ERM is associated with a decrease in stock return volatility. Grace et al. (2015) document an increase in insurer efficiency for insurers who have adopted an ERM program. Berry-Stölzle and Xu (2018) empirically examine whether ERM reduces a firm's cost of capital. They find that there is a reduction in a firm's cost of capital when adopting an ERM program and that at least one quarter of the 20 percent value premium documented in Hoyt and Liebenberg (2011) can be attributed to the reduced cost of capital. Additional studies find evidence that ERM increases transparency (Wade, Hoyt, and Libenberg 2015), reduces default risk (Lundqvist and Vilhelmsson 2018), and improves innovation efficiency (Xu and Xie 2018).

Financial Misconduct

Financial misconduct has received a great deal of attention from academics. Amiram et al (2018) contend that part of the reason is that financial misconduct represents a fundamental breakdown of financial markets—if external parties cannot trust financial statements, there is the potential for inefficient capital allocation. From a regulatory perspective, financial misconduct is closely tied with high profile accounting frauds in the early 2000s (notably Enron and WorldCom) that led to the passage of the Sarbanes-Oxley Act (SOX) in 2002. From a more practical perspective, Karpoff et al. (2017) suggest that part of the reason for the popularity of misconduct research is the rich data environment—proxies for financial misconduct allow for strong tests and comparability between studies.

One strand of research examining financial misconduct is interested in identify the determinants of misconduct. Dechow et al. (2011) examine the determinants of AAER violations and find evidence that firms have higher accruals and earnings in the years leading up to an AAER violation. Ege (2015) empirically documents that firms with higher quality internal audit functions are less likely to commit misconduct (measured by class action lawsuits, among other measures). Parsons, Sulaeman and Titman (2018) find evidence that the location of a firm can influence financial misconduct. Studies have also found evidence that personal characteristics or cultural backgrounds of management can be a determinant of firm-level financial misconduct (Schrand and Zechman 2012; Liu 2016).

Studies in this area have also examined the outcomes of financial misconduct. Karpoff, Lee, and Martin (2008a) examine the consequences of financial misconduct for the employees that are involved. Their study suggests that more than 90 percent of responsible parties lose their jobs and that there are substantial reputational penalties. Studies have also found that there are substantial capital market reactions to financial misconduct—firms experience decreases in stock price, increases in risk, and decreases in future profitability following alleged financial misconduct (Gande and Lewis 2009; Murphy, Shrieves, and Tibbs 2009). Similarly, Karpoff, Lee, and Martin (2008b) find that penalties of financial misconduct associated with the market are substantially larger, over 7.5 times, that of penalties imposed by the legal system. Karpoff and Lou (2010) provide further evidence on capital markets and financial misconduct. Their findings indicate that short selling steadily increases leading up to revelations of misconduct, potentially indicating that markets can detect financial misconduct.

III. HYPOTHESIS DEVELOPMENT

How Is ERM Important in The ICFR Process?

Integrating holistic risk management in the audit process has a deeper historical root than the recent initiation of ERM by COSO (COSO 2004). In the 1990s and early 2000s, the Business Risk Audit approach was tested by the then Big 5 accounting firms in the U.S. to change the audit process due to the view that it surpasses traditional audits in effectiveness and efficiency (Bell et al. 1997, 2005; Curtis and Turley 2007). This approach is consistent with the integration of ERM in the ICFR process. ERM manages all firm risks in a holistic fashion, which facilitates the identification of previously overlooked risks that may have fallen into cracks between difference risk classes (Hoyt and Liebenberg 2011; Berry-Stölzle and Xu 2018). Hence, a firm engaged in ERM provides a better platform for auditors to assess financial reporting risks and preform audit planning (Bell and Solomon 2002; Cohen Krishnamoorthy, and Wright 2017). In addition, ERM promotes enhanced risk communications between various departments, divisions, and hierarchies, serving as a basis of more informed decision-making for auditors (Hoyt and Liebenberg 2011).

As indicated by the recent COSO guideline on internal control (COSO 2013), risk assessment of the client is one of the five components that auditors need to evaluate when conducting the ICFR. This stresses the important role that ERM plays in enhancing the quality of an internal control system. In addition to external auditors, the other vital parties of ICFR, such as audit committees and firm executives (including CFOs), also are required to play more significant roles in firms' ERM process (Clyburn 2012; KPMG 2013).

In practice there are abundant anecdotes of firms that exemplify how important ERM is in the ICFR process. First, London Whale trading losses at J.P. Morgan Chase come down to one key question, namely, whether it should be treated as a result from hedging or speculative trading activities (Phillips 2013). The accounting standards sharply contrast these two activities (IAS 39). One specialized focus of ERM is properly managing exotic financial transactions as a part its

financial risk management. Thus, ERM may help identify an erroneous or willful mis-entry of associated gains or losses in financial reporting and assure the transactions, especially those involving derivatives, are recorded strictly based on the corresponding accounting rules, reducing the likelihood of financial misconduct. Second, in recent years Airbus has struggled with preserving their budgets and keeping on schedule of delivering orders of aircrafts. In particular, Airbus suffered $1.82 billion of loss in 2009 and their order backlog totaled 6,787 jets as of the beginning of 2016 (Lam 2014; Dillow 2016). Airbus CFO, Hans Peter Ring, commented how the firm "must now do a better job of putting a price tag on the risks inherent in their airplane programs (Michaels 2012)." It illustrates the proper use of ERM in ICFR as to accurately appraise the valuation of assets, inventory, and estimates in financial reporting. Third, MF Global was a major global commodities brokerage firm that went bankrupt in 2011. They were accused of using customer funds to meet capital requirements in 2011. A significant cause of the motive was the firm's involvement in numerous repurchases agreements, many of which were conducted off their balance sheet. A well-implemented ERM program helps prevent irregular off-balance sheet activities and identify poor financial reporting that serves to conceal financial difficulties associated with these activities, which effect auditors in their judgement of giving going-concern opinion and processes of clients' risk assessment required by ICFR (COSO 2013).

Why Does ERM Deter Financial Misconduct?

We provide several theoretical arguments of the reasons why ERM deters financial misconduct. First, news on the possibility of financial misconduct is associated with share values drop, ranging from an average three-day abnormal return of -4.7% for firms alleged in securities class action lawsuit (Gande and Lewis 2009) to a one-day average abnormal return of -25.2% for those subject to Department of Justice and SEC enforcement for misrepresentation (Karpoff, Lee,

and Martin 2008b). Further, literature documents that relatively small amounts of these total losses are attributable to fines and legal settlements and the majority represents lost reputational capital (Alexander 1999; Beneish 1999). One important motive of firms' ERM adoption is to preserve their reputation by attending to their stakeholders and assuming corporate social responsibilities (Xu and Berry-Stölzle 2018; COSO 2018). Moreover, reputational risk management is within the framework of ERM (COSO 2018). Firms with ERM that build up their reputation over time with long-term strategic planning are less likely to commit financial misconduct to destroy their reputation overnight than firms without ERM.

Second, prior literature documents that managers tend to manipulate and misstate earnings when facing pressures to meet earnings targets from investors' expectation of growth (Schilit 2010), from analysts' earnings forecasts (Robb 1998), and from incentives of reporting positive profits (Degeorge, Patel, and Zeckhauser 1999). The focus of ERM is to enhance firms' ability to carry out their strategic plans while driving performance. Therefore, ERM emphasizes the long-term competency and sustainability rather than relying on the short-term opportunistic gains. In addition, the long-term strategic focus and the transparent risk structure of ERM shields managers from the reputational losses of bad income realizations (Xu and Xie, 2018). These alleviate the managerial short-termism problems so that managers are less likely to commit financial misconduct.

Third, previous studies indicate that one important motive of financial misconduct is to inflate firms' earnings and asset values to obtain new external financing at favorable terms, which includes both securing a higher price for a new equity issuance and a lower interest rate for a new debt issuance (Dechow, Sloan, and Sweeney 1996; Richardson, Tuna, and Wu 2003; Dechow et al. 2011). ERM reduces the probablity of firms' needs for expensive external financing to fund

profitable investment projects (Froot, Scharfstein, and Stein 1993). When firms do raise new external financing, firms that have adopted ERM experience significantly lower cost of capital than firms without ERM (Berry-Stölzle and Xu, 2018). Therefore, ERM deters financial misconduct by relieving the the constraints on firms' new external financing.

Fourth, Maksimovic and Titman (1991) predict a negative relationship between managers' incentives to commit misconduct and the firm's expected performance, because finanically distressed firms have less to lose when they get caught. Consistent with the theory, Loebbecke, Eining, and Willingham (1989) desmonstrate that 19% of their sample firms that committed misconduct were having solvency issues. ERM reduces default risk measured by the credit default swap spread (Lundqvist an Vilhelmsson 2018). In general, ERM adoption increases firm value and firm performance (Hoyt and Liebenberg, 2011; Eastman and Xu 2015; Grace et al. 2015). Aebi, Sabato, and Schmid (2012) find that during the financial crisis, when firms' financial distress was a common issue, banks with advanced ERM features exhibited significnatly higher stock returns and ROE. Interestingly, they also find that standard internal control variables have mostly no effect or even decrease banks' performance during the crisis. Hence, ERM mitigates firms' financial distress and increases the reputational cost associated with the risk of being caught, reducing the likelihood of financial misconduct.

In addition to the four theoretical arguments stemming from the unique nature of ERM, ERM also shares some common features with ICFR that may deter financial misconduct. First, Kleffner, Lee, and McGannon (2003) and Lundqvist (2015) document that corporate govenance motive is one of the marjor drivers for ERM adoption. Further, ERM is associated with stronger corporate governance, such as greater internal control effectiveness, more stable audit relationships, boards with longer tenure, and greater board independence (Beasley, Clune, and

Hermanson 2005; Baxter et al. 2013). Stronger corporate governance helps prevent financial misconduct (Uzun, Szewczyk, and Varma 2004; Agrawal and Chadha 2005). Moreover, ERM enhances the information available about firms' risk profile, and the information can be shared with outside investors, reducing information asymmetries. Supporting this argument, Wade, Hoyt, and Liebenberg (2015) find that ERM implementation reduces firms' dispersion in analyst earnings forecasts and bond rating disagreement. Improved risk-related communications through ERM disclose risks that are opaque in nature (e.g., R&D investments, M&A decisions) more efficiently to outside investors. Financial miscondcut literature documents that the probability of misconduct increases when it is expensive for outsiders to monitor the firms' operations and managers (Kedia and Philippon 2007; Povel, Singh, and Winton 2007; Wang, Winton, and Yu 2010). Hence, ERM deters financial misconduct through information asymmetry reduction.

Based on the above theoretical arguments, we form our hypotheses as follows.

H1: *ERM adoption deters firms' financial misconduct.*

Given that ERM programs include important features that ICFR does not necessarily have, including reputational protection, managerial short-termism mitigation, new financing constraint relief, and financial distress alleviation, we further hypothesize that ERM has additional deterring effects to ICFR on financial misconduct.

H2: *ERM adoption deters firms' financial misconduct incrementally to the ICFR process.*

IV. RESEARCH DESIGN

Data

We construct our dataset using several sources. Our sample includes all S&P 500 firms extracted from Compustat from 1996 to 2015. Firm financial information is from Compustat and stock returns data are from CRSP. Institutional investor data are from Thomson Reuters

Institutional Holdings (13F). We use ISS, Audit Analytics, and additional searches in firms' proxy statements to construct variables related to a firm's corporate governance and the ICFR process. We winsorize all variables at the 1 and 99 percent levels.

Construction of ERM Indicator Variable

Following prior literature on ERM, we construct a binary variable equal to one if a firm had an ERM program in a given year and zero otherwise (e.g., Hoyt and Liebenberg 2011; Eckles, Hoyt, and Miller 2014; Berry-Stölzle and Xu 2018; Xu and Berry-Stölzle 2018; Xu and Xie 2018). We construct this variable by first constructing a list of keywords related to ERM programs. These keywords and their abbreviations are "enterprise risk management," "chief risk officer," "risk committee," "risk management committee," "strategic risk management," "consolidated risk management," "holistic risk management," and "integrated risk management." We search for mentions of these terms and their abbreviations in news media releases related to each sample firm by searching Factiva, Google, and each firm's website during our sample period.

Additionally, we also investigate each firm's SEC filings—including 10-Ks, 8-Ks, and proxy statements—using Edgar and ThomsonOne databases to search for mentions of our ERM keywords. Using both news media reports and financial statements, we manually review each document to identify the earliest year in which a firm adopts an ERM program.[2] The resulting variable is an indicator equal to one in the year when a firm adopts ERM and in all following years, and zero for years prior to adoption.[3]

Financial Misconduct Proxies

[2] Manual review ensures that our measure does not contain "false positives" where ERM is mentioned, but in a context unrelated to adoption.

[3] Theoretically, it is possible for a firm to start and then abandon an ERM program. After a careful review of our sample firms, we are unable to identify any instances of a firm terminating an ERM program.

Accruals Quality. We measure accruals quality as the absolute value of abnormal discretionary accruals. Abnormal discretionary accruals ($AQ_{i,t}$) are measured as the absolute value of the residuals from industry-year regressions predicting total accruals using determinants of non-discretionary accruals. This measure is consistent with prior literature in accounting (e.g., Jones 1991; Dechow, Sloan, and Sweeney1995; Kothari, Leone, and Wasley 2005) as well as prior literature examining financial misconduct (e.g., Liu 2016). See Appendix Table A1 for a detailed description of our variable construction (also refer to Appendix of Liu 2016).

Accounting and Auditing Enforcement Releases. AAERs are issued by the Securities and Exchange Commission (SEC) when a firm has allegedly misstated their financial statements. Dechow, Ge, and Schrand (2010, pg 252) note that an advantage of using AAERs as a measure of accounting quality is that they "[u]nambiguously reflect accounting measurement problems." We obtain data on AAERs from the Center for Financial Reporting and Management at the University of California Berkeley (Dechow et al. 2011). Our variable measuring AAER violations, $AAER_{i,t}$, is a binary variable equal to one if firm *i* had an AAER violation in year *t* and zero otherwise.

Class Action Lawsuit. Our final proxy for financial misstatement is measured as whether a firm was subject to a security class action lawsuit. Data on class action lawsuits are collected from the Stanford Securities Class Action Clearinghouse database (e.g., Dyck, Morse, and Zingales 2010; Liu 2016). Our proxy, $Lawsuit_{i,t}$, is measured as a binary variable equal to one if firm *i* was subject to a class action lawsuit in year *t* and zero otherwise.

Empirical Methodology

We perform two sets of tests in order to examine the impact of ERM adoption on financial misconduct. Specifically, we examine the determinants of our three empirical proxies of financial

misconduct while including ERM adoption as an independent variable. We estimate the following models:

$$AQ_{i,t} = \beta ERM_{i,t-1} + X_{i,t}\psi + \epsilon_{i,t} \quad (1a)$$

$$P\left(Misconduct_{i,t} = 1\right) = F(\beta ERM_{i,t-1} + X_{i,t}\psi + \epsilon_{i,t}) \quad (1b)$$

where $AQ_{i,t}$ is firm i's accruals quality in year t. $Misconduct_{i,t}$ is separately measured as either $AAER_{i,t}$ or $Lawsuit_{i,t}$, which represent binary variables equal to one if firm i had an AAER violation or was subject to a shareholder class action lawsuit, respectively, in year t. $ERM_{i,t}$ is a binary variable equal to one if firm i had an ERM program in year t, and zero otherwise. $X_{i,t}$ represents a vector of control variables. We estimate the $AQ_{i,t}$ determinants model (equation (1a)) using ordinary least squares (OLS). We include industry and year fixed effects. Since $AAER_{i,t}$ and $Lawsuit_{i,t}$ are discrete variables, we estimate equation (1b) using logit. These models include year fixed effects.

We follow prior literature examining discretionary accruals and financial misconduct to include a set of additional independent variables in an attempt to isolate the impact of ERM adoption on financial misconduct (e.g., Hribar and Nichols 2007; Gande and Lewis 2009; Schrand and Zechman 2012; Liu 2016). Specifically, we include controls for size, book-to-market, leverage, return volatility, return on assets, capital intensity, research and development, a firm's operating cycle, whether a firm has had loss years, sales growth, cash flow volatility, a firm's Z-score, and firm age. See Appendix Table A1 for detailed descriptions and specific data sources for each variable.

Our second set of tests account for potential endogeneity in the ERM adoption decision. ERM is not randomly determined and prior studies have suggested that the decision to adopt an ERM program is driven by firm-level characteristics (e.g., Kleffner, Lee, McGannon 2003;

Liebenberg and Hoyt 2003). To alleviate endogeneity concerns, we follow prior literature examining outcomes of ERM adoption (e.g., Hoyt and Liebenberg 2011; Berry-Stölzle and Xu 2018) and specify a maximum likelihood treatment effects model.[4] We estimate :

$$ERM_{i,t-1} = \omega_{i,t-1}\gamma + \mu_{i,t-1} \quad (2)$$

where $ERM_{i,t}$ is a binary variable equal to one if firm *i* had an ERM program in year *t*, and zero otherwise. $\omega_{i,t}$ is a vector of control variables hypothesized to determine ERM adoption. We follow prior literature on ERM adoption to include an appropriate set of control variables (e.g., Berry-Stölzle and Xu 2018; Xu and Xie 2018). Specifically, we include controls for: firm size (natural log of assets), book-to-market ratio, leverage (debt divided by assets), standard deviation of daily stock returns, one-year percentage growth in sales, standard deviation of cash flows (scaled by assets) over the prior five years, one-year change in firm value, pension assets (scaled by sales), long-term debt issuances (scaled by assets), assets invested in cash, opacity (intangible assets scaled by total assets), number of segments, capital expenditures (scaled by sales), and a binary variable indicating whether a year was after the SEC filing standard change in 2010. We additionally include industry and year fixed effects.

We then simultaneously estimate the following equation:

$$Misconduct_{i,t} = X_{i,t}\beta + \delta ERM_{i,t-1} + \epsilon_{i,t} \quad (3)$$

where $Misconduct_{i,t}$ is one of our three measures of misconduct: $AQ_{i,t}$, $AAER_{i,t}$, or $Lawsuit_{i,t}$ Our key independent variable of interest is $ERM_{i,t}$ which, again, is defined as a binary variable equal to

[4] One potential limitation of using a treatment effects model to control for endogeneity is that two of our financial misconduct proxies are binary variables. The treatment effects models we use do not explicitly treat the second-stage dependent variables as limited—therefore these second stage results are similar to linear probability models. Our models are further complicated since our endogenous independent variable is also a binary variable, which also leads to potential issues in estimation if we were to use "traditional" two-stage least squares models (Wooldridge 2002, p.235). Certain potentially appropriate models, such as a probit with a control for selection, impose restrictions that require us to exclude certain variables (e.g., industry and year fixed effects). While controlling for selection is important, excluding these variables also creates potential biases in our estimation. Therefore, we present treatment effects models as the most appropriate model given our present setting.

one if a firm had an enterprise risk management program and zero otherwise. As in equation (1a) and equation (1b) above, we control for additional factors hypothesized to determine financial misconduct ($X_{i,t}$). These second stage models also include industry and year fixed effects.

V. RESULTS

Descriptive Statistics

Summary statistics related to our three measures of financial misconduct over time are presented in Table 1. For our measure of accruals quality ($AQ_{i,t}$), we observe substantial variation over time, from a low of 0.0577 in 2005 to a maximum of 0.1002 in 2001. There are an average of around three AAER violations for our sample firms from a low of zero to a maximum of nine in 2001. There are around 8.7 class action lawsuits per-year for firms in our sample from a minimum of 2 to a maximum of 15 in 2002.

We present descriptive statistics for our variables in Table 2. The mean value of *AQ* (0.071) is higher compared to the median (0.056) indicating positive skewness. Around one percent of firm-years in our sample report an AAER violation, while around 2.8 percent of firm-year observations report a class action lawsuit. Our hand-collect ERM measure indicates that 20 percent of firm-years represent firms that have adopted ERM programs.

Table 3 reports univariate differences across all variables in our study based whether or not they had an ERM program in place. The first three columns present means and medians for firm-years with ERM programs while the second three columns present means and medians for firm-years without ERM programs. The final two columns represent differences between ERM firm-years and non-ERM firm-years. We perform and report significance levels of statistical significant differences between ERM and non-ERM firms using *t*-tests for differences in means and Wilcoxon rank sum tests for differences in medians.

Focusing on our main variables of interest ($AQ_{i,t}$, $AAER_{i,t}$, and $Lawsuit_{i,t}$), we note that firm-years in which the firm has an ERM program in place tend to have lower values for $AQ_{i,t}$. These differences are statistically significant at the one percent level for both means and medians. This result is consistent with our hypothesis that ERM program adoption is associated with lower volatility accruals. Moreover, we see that firm-years with ERM programs are less likely to be associated with an AAER violation ($AAER_{i,t}$=0.001 for ERM firms and $AAER_{i,t}$=0.012 for non-ERM firms). This is, again, consistent with our hypothesis that ERM programs can reduce the probability of financial misconduct.

While the univariate differences for $AQ_{i,t}$ and $AAER_{i,t}$ provide preliminary support for our hypotheses, we note that there are no statistically significant differences for $Lawsuit_{i,t}$ (equal to 0.027 for ERM firm-years and 0.028 for non-ERM firm-years). This is not consistent with our hypothesis (or univariate results for $AQ_{i,t}$ and $AAER_{i,t}$), but caution needs to be used when interpreting this result as a univariate tests does not consider additional variables that may cause a class action lawsuit.

A final observation regarding Table 3 is that the vast majority of control variables are statistically significantly different for ERM and non-ERM firm-years. We interpret this to provide support for using a treatment effects model since, as we note previously, the selection of ERM is not random and is dependent on many firm-level characteristics.

Taken together, Table 3 provides some support for the relationship between ERM and financial misconduct (for $AQ_{i,t}$ and $AAER_{i,t}$). However, we note that while univariate tests can provide some preliminary information on the relationship between ERM and financial misconduct, it is important to control for additional factors that could potentially contribute to a firm

committing financial misconduct. We, therefore, interpret these univariate differences lightly and provide more robust multivariate analysis in the next section.

Table 4 presents correlations between the dependent and independent variables we use in our study. Pearson correlations are in the lower triangle while spearman correlations are in the upper triangle. Bolded values are significant at the one percent level. We note that using both pearson and spearman correlations, $ERM_{i,t}$ is negatively and statistically significantly correlated with $AQ_{i,t}$ and $AAER_{i,t}$, which is consistent with our hypotheses (and the results in Table 3). We continue to find no univariate evidence that $Lawsuit_{i,t}$ is statistically associated with $ERM_{i,t}$, though, as we note above, we provide stronger multivariate tests to fully determine whether there is any relationship between enterprise risk management and financial misconduct.

Determinants of Financial Misconduct

We present results from our estimation of equation (1a) and equation (1b) in Table 5. The dependent variables are empirical proxies for financial misconduct. The dependent variable in column (1), $AQ_{i,t}$, measures accruals quality, the dependent variable in column (2), $AAER_{i,t}$, is a binary variable equal to one if a firm had an AAER violation and zero otherwise, and the dependent variable in column (3), $Lawsuit_{i,t}$, is a binary variable equal to one if a firm was subject to a class action lawsuit and zero otherwise. In column (1), positive coefficients are indicative of lower accruals quality (i.e., higher accruals volatility) while negative coefficients are indicative of higher accruals quality (i.e., lower accruals volatility). In columns (2) and (3) positive coefficients indicate a higher probability of financial misconduct while negative coefficients indicate a lower probability. Column (1) results are estimated using OLS while the results in columns (2) and (3) are estimated using a logistic model. Standard errors, presented beneath each coefficient estimate in parentheses, are clustered at the firm level.

The estimated coefficient on $ERM_{i,t}$ is not statistically different from zero in column (1), which indicates that enterprise risk management program adoption does not appear to influence accruals quality. However, the estimated coefficients on $ERM_{i,t}$ are negative and statistically significant when using $AAER_{,t}$ and $Lawsuit_{,t}$ as the dependent variables. The results in columns (2) and (3) provide evidence that adoption of an ERM program reduces the likelihood of a firm being subject to an AAER violation or a shareholder class action lawsuit. These results are consistent with our hypothesis that ERM programs provide superior internal controls that result in lower probabilities of financial misconduct.

While the results in column (1) indicate that there is no statistical relationship between ERM program adoption and accruals quality, we argue that the tests of $AAER_{i,t}$ and $Lawsuit_{i,t}$ are stronger, given that they are subject to less measurement error relative to the discretionary accruals measurement (Dechow, Ge, and Schrand 2010). Moreover, we note that discretionary accruals are not necessarily only tests of financial misconduct, as noted by Liu (2016). In addition, these results based on the OLS model are preliminary, which do not take into account of the potential endogeneity of ERM and need to be interpreted with caution. Therefore, while our results related to $AQ_{i,t}$ are not consistent with our results for $AAER_{i,t}$ and $Lawsuit_{i,t}$, we do not interpret this as going against our hypothesis given our strong results for $AAER_{i,t}$ and $Lawsuit_{i,t}$.

Determinants of Financial Misconduct—Treatment Effects

While we present preliminary evidence that ERM adoption is associated with a reduction in the probability of financial misconduct in our analysis presented in Table 5, these tests have not considered or accounted for potential endogeneity related to the decision to adopt an ERM program. Accordingly, we next present results using the two-equation maximum likelihood

treatment effects models to ensure that our results are robust to concerns of endogenous ERM selection.

Results from our treatment effects estimation of equation (2) and equation (3) are presented in Table 6. Columns (2), (4), and (6) are results from estimating equation (2)—the first stage model where we estimate the determinants of ERM adoption. Positive coefficients indicate a higher probability of ERM adoption while negative coefficients indicate a lower probability of ERM adoption. Columns (1), (3), and (5) report results from estimating equation (3). The dependent variable in column (1), $AQ_{i,t}$, measures accruals quality, the dependent variable in column (3), $AAER_{i,t}$, is a binary variable equal to one if a firm had an AAER violation and zero otherwise, and the dependent variable in column (5), $Lawsuit_{i,t}$, is a binary variable equal to one if a firm was subject to a class action lawsuit and zero otherwise. As in our prior tests, negative coefficient estimates on our main variable of interest, $ERM_{i,t}$, would be consistent with our hypothesis that enterprise risk management programs result in less financial misconduct. Standard errors are presented beneath each coefficient estimate and are clustered at the firm level.

The coefficient estimate on $ERM_{i,t}$ is negative and statistically significant in column (1). This indicates that firms with enterprise risk management programs tend to have less volatile—and, therefore, higher quality—accruals. This finding is consistent with our hypothesis that ERM programs can mitigate financial misconduct.[5] Notably, this result differs from our OLS model examining the determinants of accruals quality in Table 4 (column (1)). We suggest that this difference in result suggests that it is important when examining outcomes of ERM adoption to control for endogeneity in the ERM decision and believe that the treatment effects results are more appropriate given our setting.

[5] This finding is also consistent with results presented in Gao and Hsu (2016).

The results in column (3) of Table 6 provide further support for our hypothesis by finding a negative and significant coefficient estimate on $ERM_{i,t}$. We interpret this result as indicating that ERM program adoption is associated with a lower probability of receiving an AAER violation, consistent with ERM lessening the probability of financial misconduct. Moreover, we find further support in column (5) where the coefficient on $ERM_{i,t}$ is negative and statistically significant when examining the determinants of $Lawsuit_{i,t}$. This is, again, consistent in empirically documenting ERM's association with lower probabilities of financial misconduct, in this case proxying financial misconduct with shareholder class action lawsuits.

We additionally present results where we include additional control variables related to corporate governance and ICFR in the first-stage ERM determinants model. (Baxter, et al. 2013; Hines, et al. 2015; Bailey, Collins, and Abbot 2018; Xu and Berry-Stölzle 2018). While these variables are certainly important factors to include, we present results in Table 6 first due to sample limitations. Certain variables included in our expanded set of controls are only available beginning in 1999. We, therefore, present both sets of results to ensure that our main empirical predictions related to the interaction between ERM adoption and financial misconduct are robust to the longer sample period as well as to an expanded set of control variables in the first stage of the treatment effects models.

Table 7 provides empirical estimates of equation (2) and equation (3) from treatment effects models. The difference between these results and the results in Table 6, as mentioned above, are that the first stage estimates (columns (2), (4), and (6)) contain additional control variables related to corporate governance and ICFR (institutional ownership, board size, outside director characteristics, CEO duality, audit-related risk, and audit quality). As in Table 6, columns (1), (3), and (5) report results from estimating equation (3). The dependent variable in column (1), $AQ_{i,t}$,

measures accruals quality, the dependent variable in column (3), $AAER_{i,t}$, is a binary variable equal to one if a firm had an AAER violation and zero otherwise, and the dependent variable in column (5), $Lawsuit_{i,t}$, is a binary variable equal to one if a firm was subject to a class action lawsuit and zero otherwise. Standard errors are presented beneath each coefficient estimate and are clustered at the firm level.

The coefficient estimates on our main variable of interest, $ERM_{i,t}$, are negative and statistically significant in all three second-stage models. In column (1), the coefficient estimate on $ERM_{i,t}$ suggests that adopting an ERM program is associated with lower accruals volatility (i.e., higher accruals quality). In column (3) and column (5), the negative and statistically significant coefficient estimates on $ERM_{i,t}$ indicate that ERM programs are associated with lower probabilities of AAER violations and class action lawsuits, respectively. Overall, the results in Table 7 provide further support for our hypothesis that ERM programs are associated with lessened probabilities of financial misconduct.

VI. CONCLUSION

In this study, we examine the relationship between enterprise risk management program adoption and financial misconduct. Using three different proxies for financial misconduct (accruals quality, AAER violations, and class action lawsuits) we find evidence that ERM program adoption reduces financial misconduct. These results are robust to controlling for endogeneity in the ERM adoption decision. We additionally find that ERM program adoption provides an incremental reduction in financial misconduct relative to other ICFR measures. Overall, these results suggest that ERM programs are an additional and effective means of implementing internal controls for firms.

One limitation of our study is that we presently account for only two measures of financial misconduct used in previous literature. Karpoff et al. (2017) highlight two additional measures that have been widely used in prior research. The first is Government Accountability Office (GAO) financial statement restatement announcements and the second is financial statement restatement and non-reliance filings announcements from Audit Analytics. Given the prevalence of these measures in prior research we plan to collect and implement these measures in future versions of our study. The second limitation of our study is that we examine the presence of ERM, but not the *quality* of each firm's ERM program. Prior studies have examined ERM quality using S&P ERM ratings (e.g., Baxter et al. 2013). However, we contend that using these ratings has several limitations relative to our hand collected sample. The S&P ratings are only for a limited sample of, mostly, financial services firms, making inference difficult to generalize. Moreover, there is limited variation across ratings, making differences in quality difficult to quantify. We, therefore, suggest that our use of a hand-collected binary variable to provide similar inference to studies examining ERM quality.

Overall, our study provides important extensions of the literature examining ERM, generally, and internal controls, specifically. We find evidence that ERM programs can provide incremental benefits to firms with internal controls in place. Additionally, we contribute to the ERM literature by examining one avenue through which ERM can provide value—by reducing financial misconduct. We also contribute to the literature that focuses on financial misconduct. Our study identifies that ERM is an additional factor that can mitigate the ability of firms to commit corporate misconduct.

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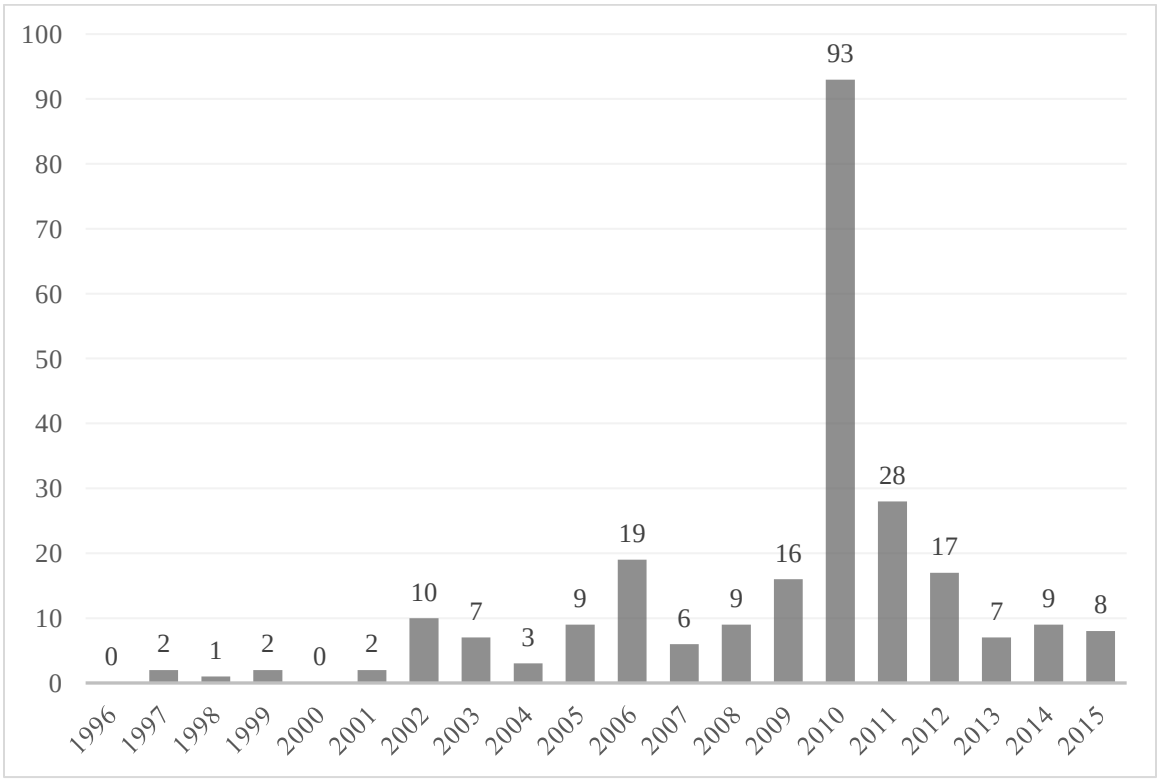
Figure 1: Numbers of Sample Firms Engaged in ERM by Year



Note: This figure is based on Standard & Poor's (S&P) 500 firms from 1996 to 2015. Each bar represents the number of ERM adopters in the OLS regression sample in equation (1a). We classify firms as ERM adopters based on a comprehensive search of SEC filings, annual reports, newswires, and other media.

Table 1: Financial Misconduct by Year

Year	*AQ* (1)	*AAER* (2)	*Lawsuit* (3)
1996	0.0643	1	3
1997	0.0660	5	2
1998	0.0725	6	3
1999	0.0734	8	9
2000	0.0794	6	8
2001	0.1002	9	6
2002	0.0832	8	15
2003	0.0742	3	12
2004	0.0702	4	10
2005	0.0577	4	12
2006	0.0615	2	11
2007	0.0618	1	11
2008	0.0765	1	5
2009	0.0815	1	7
2010	0.0648	1	12
2011	0.0547	1	12
2012	0.0683	0	10
2013	0.0597	0	13
2014	0.0610	0	5
2015	0.0861	0	8
Average	0.0709	3.0500	8.7000

Note: This table reports the financial misconduct measures by year. The sample includes S&P 500 firms from 1996 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. The appendix provides a detailed description of the construction of the variables. Column (1) reports the mean of *AQ* among all sample firms in each year, and columns (2) and (3) present the total numbers of *AAER* and *Lawsuit* of all sample firms in each year, respectively.

Table 2: Summary Statistics

				Percentile				
	N	Mean	St. Dev.	5th	25th	Median	75th	95th
AQ	7226	0.071	0.062	0.007	0.031	0.056	0.092	0.178
AAER	6237	0.010	0.098	0.000	0.000	0.000	0.000	0.000
Lawsuit	6237	0.028	0.165	0.000	0.000	0.000	0.000	0.000
ERM	7226	0.200	0.400	0.000	0.000	0.000	0.000	1.000
Size	7226	8.675	1.300	6.607	7.780	8.582	9.630	10.868
Book-to-Market	7226	1.680	1.327	0.573	0.893	1.327	1.983	4.019
Leverage	7226	0.245	0.152	0.000	0.141	0.237	0.339	0.507
SD(Returns)	7226	0.023	0.012	0.010	0.015	0.020	0.028	0.046
ROA	7226	0.065	0.089	-0.058	0.028	0.064	0.106	0.187
Capital Intensity	7226	0.315	0.212	0.062	0.147	0.259	0.447	0.745
R&D	7226	0.040	0.098	0.000	0.000	0.004	0.039	0.190
Operating Cycle	7226	4.352	1.161	2.489	3.832	4.349	4.890	5.980
Loss Percentage	7226	0.025	0.097	0.000	0.000	0.000	0.000	0.200
Sales Growth	7226	0.094	0.594	-0.183	0.000	0.058	0.142	0.427
Cash Flow Volatility	7226	-3.239	0.500	-4.094	-3.511	-3.197	-2.921	-2.513
Z-Score	7226	4.218	4.711	0.892	2.099	3.286	4.921	10.351
Firm Age	7226	3.591	0.495	2.639	3.178	3.761	3.989	4.159
Value Change	6237	0.175	0.629	-0.450	-0.112	0.101	0.334	0.978
Pension	6237	0.008	0.009	-0.001	0.003	0.007	0.011	0.023
Long-term Debt Issuance	6237	0.082	0.293	0.000	0.000	0.029	0.089	0.293
Cash Ratio	6237	0.111	0.131	0.005	0.022	0.064	0.152	0.387
Opacity	6237	0.179	0.172	0.000	0.032	0.130	0.281	0.520
No. of Segments	6237	2.155	1.282	1.000	1.000	2.000	3.000	5.000
CapEx	6237	0.083	0.123	0.013	0.026	0.044	0.081	0.290
SEC Standard Change	6237	0.325	0.468	0.000	0.000	0.000	1.000	1.000
P_Institutional Owner	4233	75.336	15.935	46.557	65.633	77.076	86.330	97.991
N_Institutional Owner	4233	454.335	304.844	148.000	251.000	363.000	547.000	1150.000
Board Size	4233	2.328	0.217	1.946	2.197	2.303	2.485	2.639
P_Outside Director	4233	0.849	0.080	0.667	0.818	0.875	0.909	0.923
Outside Director Tenure	4233	10.722	3.155	6.250	8.571	10.333	12.444	16.800
CEO Dual	4233	0.758	0.428	0.000	1.000	1.000	1.000	1.000
Audit Related Risk	4233	0.060	0.238	0.000	0.000	0.000	0.000	1.000
Big 4 Auditor	4233	0.962	0.192	1.000	1.000	1.000	1.000	1.000

Note: This table reports the summary statistics of the variables used in the empirical analysis. The baseline sample includes S&P 500 firms from 1996 to 2015, and the regressions with additional internal control variables are based on a period from 1999 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables.

Table 3: Univariate Differences across ERM Status

	(1) ERM = 1			(2) ERM = 0			Difference (1) - (2)	
	N	Mean	Median	N	Mean	Median	Mean	Median
AQ	1445	0.063	0.049	5781	0.073	0.058	-0.010***	-0.009***
AAER	1385	0.001	0.000	4852	0.012	0.000	-0.012***	0.000***
Lawsuit	1385	0.027	0.000	4852	0.028	0.000	-0.001	0.000
Size	1445	9.539	9.628	5781	8.459	8.367	1.080***	1.262***
Book-to-Market	1445	1.316	1.084	5781	1.771	1.386	-0.454***	-0.302***
Leverage	1445	0.278	0.267	5781	0.236	0.227	0.042***	0.039***
SD(Returns)	1445	0.018	0.016	5781	0.024	0.021	-0.006***	-0.006***
ROA	1445	0.059	0.053	5781	0.066	0.067	-0.007***	-0.014***
Capital Intensity	1445	0.322	0.286	5781	0.313	0.256	0.009	0.030**
R&D	1445	0.027	0.000	5781	0.043	0.005	-0.016***	-0.005***
Operating Cycle	1445	4.152	4.100	5781	4.402	4.413	-0.249***	-0.313***
Loss Percentage	1445	0.015	0.000	5781	0.028	0.000	-0.013***	0.000***
Sales Growth	1445	0.045	0.034	5781	0.106	0.065	-0.061***	-0.031***
Cash Flow Volatility	1445	-3.380	-3.331	5781	-3.204	-3.168	-0.177***	-0.163***
Z-Score	1445	2.724	2.519	5781	4.592	3.486	-1.868***	-0.967***
Firm Age	1445	3.796	4.007	5781	3.539	3.714	0.256***	0.294***
Value Change	1385	0.154	0.115	4852	0.181	0.096	-0.027	0.019*
Pension	1385	0.011	0.009	4852	0.007	0.006	0.004***	0.004***
Long-term Debt Issuance	1385	0.086	0.041	4852	0.080	0.024	0.006	0.017***
Cash Ratio	1385	0.103	0.068	4852	0.114	0.062	-0.012***	0.006*
Opacity	1385	0.199	0.151	4852	0.173	0.123	0.025***	0.028***
No. of Segments	1385	2.261	2.000	4852	2.124	2.000	0.137***	0.000
CapEx	1385	0.098	0.048	4852	0.079	0.042	0.019***	0.006***
SEC Standard Change	1385	0.784	1.000	4852	0.194	0.000	0.590***	1.000***
P_Institutional Owner	1191	75.857	77.911	3042	75.132	76.931	0.725	0.980
N_Institutional Owner	1191	589.718	465.000	3042	401.330	326.000	188.388***	139.000***
Board Size	1191	2.387	2.398	3042	2.305	2.303	0.082***	0.095***
P_Outside Director	1191	0.877	0.900	3042	0.838	0.875	0.039***	0.025***
Outside Director Tenure	1191	10.480	10.200	3042	10.817	10.408	-0.337***	-0.208**
CEO Dual	1191	0.687	1.000	3042	0.786	1.000	-0.100***	0.000
Audit Related Risk	1191	0.041	0.000	3042	0.068	0.000	-0.027***	0.000***
Big 4 Auditor	1191	0.994	1.000	3042	0.949	1.000	0.045***	0.000

Note: This table presents the univariate difference across ERM status for the sample firms. The baseline sample includes S&P 500 firms from 1996 to 2015, and the regressions with additional internal control variables are based on a period from 1999 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables. The *t*-test is used to examine the statistical significance of difference in means. The nonparametric Wilcoxon rank sum test is used to examine the statistical significance of difference in medians. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 4: Correlation Matrix

Panel A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) *AQ*		0.0368	-0.0001	**-0.0616**	0.0006	**-0.1211**	**0.0798**	**0.1831**	**-0.2000**	**0.2837**	**-0.1428**	**-0.1509**	**0.0500**	-0.0334	0.0116	**-0.1573**
(2) *AAER*	**0.0876**		0.0202	**-0.0458**	0.0191	0.0179	0.0260	**0.0429**	-0.0157	-0.0034	-0.0318	0.0046	0.0036	-0.0146	0.0068	0.0032
(3) *Lawsuit*	-0.0104	0.0202		-0.0200	**0.0534**	0.0231	-0.0267	0.0253	0.0195	-0.0240	0.0391	0.0269	0.0145	**0.0506**	0.0063	0.0261
(4) *ERM*	**-0.0676**	**-0.0458**	-0.0200		**0.3405**	**-0.1939**	**0.1107**	**-0.3041**	**-0.0813**	0.0214	**-0.0988**	**-0.1295**	**-0.0719**	**-0.1079**	**-0.1731**	**-0.2288**
(5) *Size*	-0.0065	0.0173	**0.0550**	**0.3423**		**-0.3411**	**0.1093**	**-0.3371**	**-0.0959**	**0.0973**	**-0.1607**	**-0.1566**	**-0.1730**	**-0.1212**	**-0.2482**	**-0.3368**
(6) *Book-to-Market*	**-0.0726**	0.0201	0.0282	**-0.1731**	**-0.3180**		**-0.1673**	**-0.0986**	**0.6308**	**-0.1883**	**0.3269**	**0.1794**	**0.0435**	**0.2729**	**0.4953**	**0.7240**
(7) *Leverage*	**0.0676**	0.0272	-0.0275	**0.1013**	**0.0655**	**-0.1564**		**-0.0893**	**-0.3182**	**0.3347**	**-0.2548**	**-0.1201**	**-0.0659**	**-0.1119**	**-0.3022**	**-0.5665**
(8) *SD(Returns)*	**0.1785**	**0.0416**	0.0212	**-0.2518**	**-0.2865**	-0.0216	-0.0293		**-0.1919**	0.0310	**0.0965**	**0.0707**	**0.2705**	0.0138	**0.0558**	-0.0102
(9) *ROA*	**-0.2228**	-0.0061	0.0260	**-0.0412**	-0.0361	**0.4466**	**-0.2328**	**-0.2652**		**-0.1875**	**0.1842**	**0.1385**	**-0.1332**	**0.3002**	**0.5686**	**0.6729**
(10) *Capital Intensity*	**0.2845**	-0.0131	-0.0319	0.0146	**0.0593**	**-0.1771**	**0.2879**	**0.0431**	**-0.1391**		**-0.5394**	**-0.2530**	**-0.1048**	**-0.0598**	**-0.0619**	**-0.3022**
(11) *R&D*	-0.0019	-0.0214	0.0310	**-0.0920**	**-0.1760**	**0.3139**	**-0.1357**	**0.1649**	**-0.1817**	**-0.2621**		**0.3374**	**0.1913**	**0.0700**	**0.1931**	**0.3085**
(12) *Operating Cycle*	**-0.1091**	-0.0086	0.0141	**-0.0933**	**-0.0657**	**0.1058**	**-0.0826**	0.0273	**0.0768**	**-0.2257**	**0.0809**		**0.0452**	-0.0161	**0.1156**	**0.2385**
(13) *Loss Percentage*	**0.0471**	-0.0094	0.0245	**-0.0782**	**-0.1832**	**0.2445**	-0.0063	**0.2410**	**-0.1863**	**-0.1073**	**0.5726**	0.0126		**0.0931**	**-0.0521**	**-0.0405**
(14) *Sales Growth*	0.0031	-0.0126	**0.0991**	**-0.0821**	**-0.0531**	**0.1515**	**-0.0441**	0.0153	**0.1842**	-0.0074	**0.1111**	-0.0256	**0.2338**		**0.0528**	**0.1984**
(15) *Cash Flow Volatility*	0.0228	0.0025	-0.0031	**-0.1750**	**-0.2376**	**0.4170**	**-0.2687**	0.0004	**0.4447**	**-0.1073**	**0.1145**	**0.0801**	-0.0166	0.0147		**0.5530**
(16) *Z-Score*	**-0.0924**	0.0039	0.0236	**-0.1816**	**-0.2705**	**0.7184**	**-0.4586**	**0.0520**	**0.4217**	**-0.2354**	**0.1969**	**0.1086**	**0.1343**	**0.1010**	**0.3429**	
(17) *Firm Age*	**-0.0987**	-0.0109	-0.0270	**0.2213**	**0.3034**	**-0.2693**	**0.1228**	**-0.2611**	**-0.0635**	**0.0507**	**-0.2391**	**0.0407**	**-0.2428**	**-0.1578**	**-0.1767**	**-0.2735**
(18) *Value Change*	-0.0162	0.0048	-0.0258	-0.0216	**-0.0506**	**0.1867**	**-0.0517**	-0.0195	**0.0649**	-0.0099	**0.0456**	-0.0153	**0.0838**	**0.1683**	0.0214	**0.1432**
(19) *Pension*	**-0.0599**	**-0.0470**	-0.0335	**0.2172**	**0.0621**	**-0.0480**	**-0.0411**	**-0.1182**	**-0.0691**	**-0.0461**	0.0205	0.0055	-0.0258	**-0.0892**	**-0.0521**	**-0.0869**
(20) *Long-term Debt Issuance*	0.0105	0.0011	0.0188	-0.0286	**-0.0769**	-0.0030	**0.1945**	**0.0417**	-0.0329	0.0310	-0.0202	-0.0019	-0.0091	0.0096	-0.0074	**-0.0711**
(21) *Cash Ratio*	**-0.0957**	-0.0396	0.0207	**-0.0884**	**-0.1973**	**0.4031**	**-0.3619**	**0.1631**	**0.1643**	**-0.4123**	**0.5193**	**0.0851**	**0.3574**	**0.0762**	**0.2754**	**0.4363**
(22) *Opacity*	**-0.1493**	-0.0033	0.0132	**0.0452**	**0.0476**	**-0.0526**	**0.0854**	**-0.1981**	-0.0038	**-0.5110**	0.0096	**0.0574**	**-0.0752**	0.0310	**-0.0743**	**-0.1164**
(23) *No. of Segments*	**-0.0915**	0.0304	-0.0131	**0.0524**	**0.2530**	**-0.2133**	**0.0934**	**-0.1065**	**-0.0814**	-0.0201	**-0.1698**	-0.0245	**-0.1156**	**-0.0641**	**-0.2005**	**-0.1932**
(24) *CapEx*	**0.2206**	-0.0114	-0.0103	**0.0503**	**0.1326**	**-0.1045**	**0.1113**	**0.0635**	**-0.1002**	**0.6073**	**-0.0525**	**-0.1333**	0.0261	**0.0656**	-0.0299	**-0.1679**
(25) *SEC Standard Change*	**-0.0716**	**-0.0676**	-0.0170	**0.5103**	**0.2650**	**-0.0964**	-0.0182	**-0.2261**	0.0229	**-0.1049**	-0.0135	-0.0039	-0.0191	**-0.0850**	-0.0227	**-0.0906**
(26) *P_Institutional Owner*	-0.0007	**-0.0573**	-0.0217	0.0274	**-0.1842**	**0.0429**	**-0.0741**	-0.0003	0.0307	**-0.1223**	**0.0671**	**0.0460**	**0.0531**	**0.0606**	**0.1031**	0.0249
(27) *N_Institutional Owner*	**-0.0627**	-0.0015	**0.0670**	**0.2721**	**0.7596**	0.0354	**-0.1516**	**-0.3320**	**0.2476**	**-0.1677**	-0.0257	0.0212	**-0.1090**	-0.0321	**0.1287**	0.0397
(28) *Board Size*	-0.0064	0.0268	**0.0500**	**0.1658**	**0.4405**	**-0.1972**	**0.1242**	**-0.2050**	**-0.0549**	**0.0845**	**-0.1818**	-0.0242	**-0.1444**	**-0.0939**	**-0.1050**	**-0.2044**
(29) *P_Outside Director*	-0.0308	-0.0327	0.0223	**0.2175**	**0.2947**	**-0.1669**	**0.1255**	**-0.1519**	**-0.0631**	-0.0015	**-0.0894**	0.0106	**-0.0880**	**-0.0613**	**-0.1063**	**-0.2010**
(30) *Outside Director Tenure*	-0.0267	**-0.0513**	-0.0137	**-0.0446**	**-0.1198**	**0.0934**	-0.0393	**-0.0492**	**0.0921**	-0.0105	0.0037	**0.0434**	-0.0299	-0.0055	**0.0556**	**0.0981**
(31) *CEO Dual*	0.0103	0.0207	0.0033	**-0.0999**	0.0365	**-0.0403**	**0.0471**	**0.0551**	-0.0108	**0.0876**	**-0.0785**	-0.0005	**-0.1035**	0.0110	0.0089	**-0.0546**
(32) *Audit Related Risk*	-0.0039	0.0388	0.0162	**-0.0491**	**-0.0413**	-0.0316	0.0158	**0.0535**	**-0.0616**	0.0224	-0.0078	-0.0261	0.0184	-0.0094	-0.0398	-0.0365
(33) *Big 4 Auditor*	**-0.0714**	**-0.0876**	-0.0025	**0.1062**	**0.0862**	0.0090	**-0.0553**	**-0.0809**	0.0230	**-0.0572**	**0.0525**	-0.0259	0.0224	-0.0231	0.0260	0.0340

Panel B.

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
(1) *AQ*	**-0.1155**	**-0.0852**	**-0.1106**	**0.0503**	**-0.1295**	**-0.1736**	**-0.1015**	**0.2273**	**-0.0806**	0.0087	**-0.0855**	0.0022	**-0.0485**	**-0.0452**	-0.0010	-0.0085	**-0.0661**
(2) *AAER*	-0.0215	0.0137	**-0.0510**	0.0232	**-0.0445**	-0.0075	0.0341	-0.0039	**-0.0676**	**-0.0519**	-0.0044	0.0297	-0.0158	**-0.0573**	0.0207	0.0388	**-0.0876**
(3) *Lawsuit*	-0.0284	-0.0283	**-0.0467**	0.0109	0.0336	0.0246	-0.0149	0.0327	-0.0170	-0.0241	**0.0601**	**0.0502**	0.0225	-0.0146	0.0033	0.0162	-0.0025
(4) *ERM*	**0.2855**	0.0336	**0.2328**	**0.0718**	-0.0371	**0.0468**	**0.0661**	**0.0818**	**0.5103**	0.0304	**0.2872**	**0.1583**	**0.2619**	-0.0343	**-0.0999**	**-0.0491**	**0.1062**
(5) *Size*	**0.3428**	0.0018	**0.0651**	**0.1376**	**-0.1459**	**0.0490**	**0.2297**	**0.2164**	**0.2619**	**-0.2076**	**0.7745**	**0.4395**	**0.3426**	**-0.0961**	0.0393	-0.0336	**0.0856**
(6) *Book-to-Market*	**-0.2608**	**0.2183**	0.0015	**-0.1192**	**0.3017**	**0.0650**	**-0.2164**	**-0.0541**	**-0.0700**	**0.0876**	**0.1568**	**-0.1622**	**-0.1730**	**0.1069**	-0.0268	**-0.0409**	-0.0005
(7) *Leverage*	**0.1586**	**-0.0664**	0.0010	**0.4496**	**-0.4703**	**0.0611**	**0.1162**	**0.1965**	-0.0287	**-0.1004**	**-0.1335**	**0.1297**	**0.1662**	-0.0271	**0.0710**	0.0175	**-0.0651**
(8) *SD(Returns)*	**-0.3266**	**-0.1629**	**-0.2403**	-0.0096	**0.1285**	**-0.2029**	**-0.1144**	0.0035	**-0.2426**	**0.0626**	**-0.4113**	**-0.2148**	**-0.2032**	**-0.0420**	**0.0509**	**0.0699**	**-0.1224**
(9) *ROA*	**-0.1073**	**0.0917**	-0.0139	**-0.1364**	**0.2683**	**0.0458**	**-0.1233**	**-0.0953**	0.0029	0.0297	**0.3133**	**-0.0656**	**-0.0981**	**0.1109**	-0.0134	**-0.0775**	0.0277
(10) *Capital Intensity*	**0.0933**	-0.0380	**-0.0623**	**0.1658**	**-0.4803**	**-0.5359**	0.0037	**0.6345**	**-0.1309**	**-0.1991**	**-0.1260**	**0.1432**	0.0084	-0.0020	**0.1154**	0.0169	**-0.0537**
(11) *R&D*	**-0.0841**	0.0000	**0.1596**	**-0.1815**	**0.5133**	**0.2544**	**-0.0804**	**-0.1824**	-0.0143	**0.0605**	**0.0840**	**-0.1831**	**-0.0485**	-0.0190	-0.0221	-0.0396	**0.0542**
(12) *Operating Cycle*	0.0066	-0.0254	**0.0601**	**-0.0487**	**0.2025**	**0.1004**	**-0.0593**	**-0.1727**	-0.0097	**0.0773**	-0.0178	**-0.0748**	-0.0341	**0.0683**	-0.0040	-0.0212	-0.0305
(13) *Loss Percentage*	**-0.1930**	0.0284	**-0.0430**	**-0.0654**	**0.2516**	**-0.1090**	**-0.1150**	-0.0026	-0.0150	**0.0659**	**-0.1489**	**-0.1771**	**-0.0909**	**-0.0690**	**-0.0829**	0.0353	0.0236
(14) *Sales Growth*	**-0.2021**	**0.1389**	**-0.1119**	0.0128	**0.0549**	**0.0438**	**-0.0877**	**0.0474**	**-0.1551**	**0.1077**	0.0008	**-0.1472**	**-0.1215**	0.0007	0.0015	-0.0242	-0.0166
(15) *Cash Flow Volatility*	**-0.1940**	0.0063	**-0.0570**	**-0.1482**	**0.3185**	**-0.0832**	**-0.2103**	-0.0183	**-0.0427**	**0.0766**	**0.1076**	**-0.0971**	**-0.1265**	**0.0581**	0.0052	-0.0321	0.0140
(16) *Z-Score*	**-0.2424**	**0.1164**	**-0.0849**	**-0.2919**	**0.4545**	0.0157	**-0.2076**	**-0.2896**	**-0.0644**	**0.1007**	**0.1360**	**-0.1799**	**-0.2295**	**0.1326**	-0.0364	**-0.0466**	0.0281
(17) *Firm Age*		-0.0197	**0.3293**	**0.0496**	**-0.1973**	**0.0582**	**0.3736**	**-0.0408**	**0.1537**	**-0.2015**	**0.1802**	**0.3038**	**0.2701**	**0.0696**	**0.1301**	-0.0281	**0.0565**
(18) *Value Change*	**-0.0985**		**0.0633**	**-0.0458**	**0.0859**	0.0124	-0.0096	**-0.0524**	**0.1811**	**0.1113**	**0.0801**	**-0.0569**	0.0103	0.0235	-0.0180	-0.0220	0.0269
(19) *Pension*	**0.2198**	0.0274		-0.0124	**0.0793**	**0.1276**	**0.0865**	0.0348	**0.2110**	0.0278	**0.1049**	**0.0651**	**0.1448**	0.0316	0.0133	**-0.0440**	**0.1023**
(20) *Long-term Debt Issuance*	**-0.0452**	-0.0081	-0.0093		**-0.3062**	**0.0609**	**0.0837**	**0.1536**	0.0281	-0.0095	0.0003	**0.0620**	**0.0729**	-0.0022	0.0255	0.0071	-0.0260
(21) *Cash Ratio*	**-0.3264**	**0.0796**	0.0156	**-0.0671**		**-0.0514**	**-0.2003**	**-0.2592**	**0.1664**	**0.2061**	**0.1393**	**-0.2262**	**-0.0749**	-0.0118	**-0.1424**	-0.0276	**0.1430**
(22) *Opacity*	0.0303	-0.0004	**0.0554**	0.0261	**-0.1544**		**0.1171**	**-0.3881**	**0.1143**	**0.1152**	**0.1185**	**0.0427**	**0.0845**	0.0214	**-0.0449**	-0.0164	-0.0006
(23) *No. of Segments*	**0.3676**	**-0.0409**	**0.0459**	-0.0130	**-0.2408**	**0.0979**		**-0.0534**	**-0.0488**	**-0.2203**	**0.0746**	**0.1973**	**0.1336**	**0.0559**	**0.1202**	0.0361	-0.0390
(24) *CapEx*	**-0.0704**	0.0063	-0.0018	**0.0657**	**-0.1877**	**-0.2928**	**-0.0673**		**-0.0751**	**-0.1537**	**0.1059**	**0.0914**	**0.0413**	**-0.0618**	0.0390	0.0074	-0.0110
(25) *SEC Standard Change*	**0.0853**	**0.1015**	**0.2001**	-0.0228	**0.0872**	**0.1295**	**-0.0522**	0.0056		**0.2813**	**0.3756**	**0.0468**	**0.2096**	**0.0875**	**-0.2517**	**-0.1047**	**0.1523**
(26) *P_Institutional Owner*	**-0.2131**	**0.0775**	**0.0585**	**0.0534**	**0.1533**	**0.1222**	**-0.2040**	0.0163	**0.2600**		**-0.0633**	**-0.2819**	0.0122	0.0293	**-0.1717**	-0.0096	**0.0855**
(27) *N_Institutional Owner*	**0.1683**	-0.0129	**0.0706**	**-0.0852**	**0.0666**	**0.0873**	**0.1496**	-0.0069	**0.3248**	**-0.1285**		**0.3025**	**0.2625**	-0.0211	**-0.0426**	**-0.0968**	**0.1270**
(28) *Board Size*	**0.3299**	**-0.0966**	**0.0440**	**-0.0558**	**-0.3153**	0.0350	**0.2083**	-0.0315	**0.0549**	**-0.2568**	**0.2980**		**0.2854**	-0.0002	**0.0541**	-0.0090	-0.0034
(29) *P_Outside Director*	**0.2106**	-0.0204	**0.1066**	0.0064	**-0.1023**	**0.0711**	**0.1072**	0.0048	**0.1884**	**0.0661**	**0.1997**	**0.1684**		**-0.1426**	**0.0983**	-0.0046	**0.1046**
(30) *Outside Director Tenure*	**0.0926**	-0.0094	-0.0088	0.0311	-0.0127	0.0390	0.0382	-0.0187	**0.0804**	0.0287	**-0.0499**	**-0.0481**	**-0.1578**		**-0.0593**	**-0.0431**	0.0238
(31) *CEO Dual*	**0.1277**	-0.0016	0.0031	-0.0068	**-0.1408**	**-0.0715**	**0.1154**	0.0280	**-0.2517**	**-0.1551**	-0.0081	**0.0419**	**0.1142**	**-0.0813**		0.0114	**-0.0827**
(32) *Audit Related Risk*	-0.0196	-0.0218	**-0.0499**	0.0036	-0.0254	-0.0206	0.0251	0.0181	**-0.1047**	-0.0041	**-0.0807**	-0.0069	0.0006	**-0.0535**	0.0114		0.0102
(33) *Big 4 Auditor*	0.0225	0.0154	**0.0918**	-0.0003	**0.1078**	0.0075	**-0.0410**	-0.0310	**0.1523**	**0.0725**	**0.1107**	-0.0065	**0.0972**	0.0232	**-0.0827**	0.0102	

Note: This table reports correlations for the variables used in the empirical analysis. Pearson correlations are in the lower triangle while spearman correlations are in the upper triangle. The baseline sample includes S&P 500 firms from 1996 to 2015, and the regressions with additional internal control variables are based on a period from 1999 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables. Bolded correlations are significant at the 1 percent level.

Table 5: OLS/Pooled Logit Regression

	AQ	*AAER*	*Lawsuit*
	(1)	(2)	(3)
ERM	-0.0004	-3.1710***	-0.4393**
	(0.0022)	(0.9644)	(0.2064)
Size	0.0002	0.4012**	0.4600***
	(0.0010)	(0.1656)	(0.0631)
Book-to-Market	0.0029***	0.4381***	0.0355
	(0.0011)	(0.1095)	(0.0717)
Leverage	-0.0175**	1.0502	-0.7227
	(0.0070)	(0.9506)	(0.5668)
SD(Returns)	0.4020***	26.0339***	24.6414***
	(0.1215)	(6.6647)	(5.1477)
ROA	-0.1672***	-1.0592	1.9296**
	(0.0182)	(1.5302)	(0.8671)
Capital Intensity	0.0808***	-1.1291	-0.8449*
	(0.0073)	(1.4171)	(0.4743)
R&D	-0.0189*	1.1130	0.2118
	(0.0108)	(1.8029)	(0.8627)
Operating Cycle	-0.0027***	-0.1626	-0.0200
	(0.0007)	(0.1781)	(0.0600)
Loss Percentage	0.0252**	-2.1639	-0.5668
	(0.0101)	(1.4908)	(0.8649)
Sales Growth	-0.0002	0.0731*	0.0992**
	(0.0008)	(0.0386)	(0.0395)
Cash Flow Volatility	0.0040**	-1.0117***	-0.1922
	(0.0018)	(0.3402)	(0.1947)
Z-Score	-0.0005*	-0.0732***	-0.0174
	(0.0003)	(0.0282)	(0.0172)
Firm Age	-0.0012	-0.2488	-0.2158
	(0.0021)	(0.2988)	(0.1505)
Constant	0.0704***	-9.9968***	-7.9836***
	(0.0156)	(2.5716)	(1.1577)
Industry FE	Yes	Yes	Yes
Year FE	Yes	No	No
Adj. R-sq	0.255		
Pseudo R-sq		0.155	0.080
Wald χ^2		289.0	185.9
No. of clusters	615	496	587
Log pseudolikelihood	10878.9	-415.5	-865.7
Observations	7226	5721	6942

Note: This table reports the baseline regression results of the determinants of financial misconduct. Column (1) displays the OLS regression results for *AQ* and columns (2) and (3) present the pulled Logit regression results for *AAER* and *Lawsuit*, respectively. The sample includes S&P 500 firms from 1996 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables. The standard errors in parentheses are heteroskedasticity-consistent and allow for clustering at the firm level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 6: Treatment Effects Models

	AQ		*AAER*		*Lawsuit*	
	(1)	(2)	(3)	(4)	(5)	(6)
ERM	-0.0136**		-0.0399***		-0.0271***	
	(0.0066)		(0.0130)		(0.0103)	
Size	0.0010	0.2765***	0.0088***	0.2852***	0.0150***	0.2857***
	(0.0011)	(0.0631)	(0.0027)	(0.0632)	(0.0023)	(0.0633)
Book-to-Market	0.0019	-0.0617	0.0056**	-0.0520	0.0017	-0.0507
	(0.0014)	(0.0736)	(0.0023)	(0.0728)	(0.0033)	(0.0720)
Leverage	-0.0167**	0.2338	0.0191	0.1342	-0.0247*	0.1057
	(0.0079)	(0.3299)	(0.0140)	(0.3327)	(0.0139)	(0.3334)
SD(Returns)	0.3826***	-10.3429**	0.6371*	-11.0592**	1.0630***	-10.7795**
	(0.1404)	(4.9484)	(0.3358)	(5.2102)	(0.2923)	(5.1255)
ROA	-0.1702***		-0.0284		0.0673**	
	(0.0201)		(0.0247)		(0.0339)	
Capital Intensity	0.0841***		-0.0216		-0.0198	
	(0.0082)		(0.0145)		(0.0126)	
R&D	-0.0168		0.0191		0.0023	
	(0.0111)		(0.0618)		(0.0266)	
Operating Cycle	-0.0025***		-0.0010		0.0009	
	(0.0007)		(0.0020)		(0.0020)	
Loss Percentage	0.0236**		-0.0289		-0.0165	
	(0.0103)		(0.0306)		(0.0277)	
Sales Growth	-0.0006	-0.3661**	-0.0007	-0.3507**	0.0068	-0.3907**
	(0.0005)	(0.1655)	(0.0012)	(0.1613)	(0.0065)	(0.1636)
Cash Flow Volatility	0.0039*	-0.0290	-0.0039	-0.0383	-0.0031	-0.0364
	(0.0021)	(0.1082)	(0.0046)	(0.1095)	(0.0056)	(0.1091)
Z-Score	-0.0004		-0.0006		-0.0008	
	(0.0003)		(0.0004)		(0.0006)	
Firm Age	-0.0026		-0.0012		-0.0016	
	(0.0022)		(0.0033)		(0.0048)	
Value Change		0.0291	-0.0724*	0.0299	-0.1260***	0.0395
		(0.0393)	(0.0383)	(0.0358)	(0.0343)	(0.0369)
Pension		12.3360**		12.5280***		12.6707***
		(4.8285)		(4.7351)		(4.7726)
Long-term Debt Issuance		0.1473		0.1919***		0.1846**
		(0.0983)		(0.0710)		(0.0738)
Cash Ratio		-0.7327		-0.4967		-0.6576
		(0.6215)		(0.6208)		(0.6220)
Opacity		-0.3786		-0.4043		-0.3939
		(0.3406)		(0.3335)		(0.3396)
No. of Segments		-0.0580		-0.0497		-0.0540
		(0.0446)		(0.0435)		(0.0439)
CapEx		-0.5998		-0.5573		-0.6130
		(0.5579)		(0.5518)		(0.5556)
SEC Standard Change		7.1612***		8.1643***		7.9229
		(0.6189)		(0.7049)		(50.5176)
Constant	0.0701***	-8.9087***		-10.0706***		-9.7512
	(0.0162)	(0.5865)		(1.0565)		(0.0001)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of clusters	568		571		571	
Log pseudolikelihood	7450.3		3955.4		721.4	
Wald independence test	5.83**		8.92***		6.35**	
Observations	6101		6237		6237	

Note: This table reports the treatment effects regression results of the determinants of financial misconduct. The two-equation treatment effects model is defined as: $Misconduct_{i,t} = X_{i,t-1}\beta + \delta ERM_{i,t-1} + \varepsilon_{i,t}$, with ERM adoption being modeled in the first stage as a latent unobservable variable $ERM^{*}_{i,t-1} = \omega_{i,t-1}\gamma + u_{i,t-1}$, where $\omega_{i,t-1}$ is a vector of firm characteristics. The two equations are jointly estimated using the maximum-likelihood method. Columns (2), (4), and (6) report the first-stage ERM determinants results and columns (1), (3), and (5) present the second-stage results for corporate misconduct. The sample includes S&P 500 firms from 1996 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by

total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables. The standard errors in parentheses are heteroskedasticity-consistent and allow for clustering at the firm level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 7: Treatment Effects Models with Internal Control Variables

	AQ		*AAER*		*Lawsuit*	
	(1)	(2)	(3)	(4)	(5)	(6)
ERM	-0.0157**		-0.0264***		-0.0307*	
	(0.0079)		(0.0096)		(0.0157)	
Size	0.0026**	0.1716	0.0057**	0.1673	0.0142***	0.1792*
	(0.0012)	(0.1048)	(0.0026)	(0.1054)	(0.0029)	(0.1056)
Book-to-Market	0.0013	0.0059	0.0030	0.0149	0.0013	0.0171
	(0.0015)	(0.1172)	(0.0025)	(0.1155)	(0.0046)	(0.1139)
Leverage	-0.0075	0.1423	0.0117	0.0266	-0.0236	0.0254
	(0.0088)	(0.4875)	(0.0133)	(0.4826)	(0.0180)	(0.4893)
SD(Returns)	0.2276	-3.6026	0.4215	-4.5511	1.0192***	-5.3062
	(0.1622)	(5.9308)	(0.2687)	(6.2089)	(0.3792)	(6.2017)
ROA	-0.1967***		-0.0142		0.0221	
	(0.0210)		(0.0158)		(0.0424)	
Capital Intensity	0.0848***		-0.0105		-0.0141	
	(0.0092)		(0.0111)		(0.0156)	
R&D	-0.0151		-0.0283*		-0.0045	
	(0.0114)		(0.0160)		(0.0320)	
Operating Cycle	-0.0027***		-0.0006		-0.0001	
	(0.0008)		(0.0019)		(0.0021)	
Loss Percentage	0.0083		-0.0009		-0.0363	
	(0.0136)		(0.0145)		(0.0456)	
Sales Growth	0.0025	-0.3040*	-0.0078	-0.2527	0.0615***	-0.2794*
	(0.0028)	(0.1697)	(0.0056)	(0.1600)	(0.0232)	(0.1596)
Cash Flow Volatility	0.0053**	-0.0594	0.0018	-0.0543	0.0001	-0.0446
	(0.0025)	(0.1124)	(0.0045)	(0.1136)	(0.0078)	(0.1152)
Z-Score	0.0000	-0.0660	-0.0005	-0.0728	-0.0009	-0.0727
	(0.0003)	(0.0447)	(0.0005)	(0.0450)	(0.0010)	(0.0461)
Firm Age	-0.0020	0.1819	-0.0002	0.1721	0.0047	0.1614
	(0.0028)	(0.1437)	(0.0042)	(0.1383)	(0.0066)	(0.1392)
Value Change		0.0034		-0.0052		0.0252
		(0.0702)		(0.0702)		(0.0722)
Pension		15.3552***		15.4001***		15.4683***
		(4.7577)		(4.7011)		(4.7154)
Long-term Debt Issuance		-0.2243		-0.2240		-0.2775
		(0.2995)		(0.2938)		(0.2933)
Cash Ratio		-1.0368		-0.8745		-0.9835
		(0.6735)		(0.6854)		(0.6799)
Opacity		-0.4607		-0.4249		-0.4647
		(0.3706)		(0.3652)		(0.3675)
No. of Segments		-0.0621		-0.0699		-0.0623
		(0.0543)		(0.0533)		(0.0533)
CapEx		-0.8668		-0.8459		-0.8539
		(0.6096)		(0.5932)		(0.5961)
P_Institutional Owner		-0.0041		-0.0050		-0.0050
		(0.0043)		(0.0042)		(0.0042)
N_Institutional Owner		-0.0000		0.0000		-0.0000
		(0.0004)		(0.0004)		(0.0004)
Board Size		0.4749		0.5052		0.4911
		(0.3366)		(0.3294)		(0.3329)
P_Outside Director		0.5210		0.6287		0.6215
		(0.7999)		(0.7937)		(0.7951)
Outside Director Tenure		-0.0257		-0.0238		-0.0276
		(0.0175)		(0.0173)		(0.0171)
CEO Dual		0.1039		0.0937		0.0994
		(0.1147)		(0.1125)		(0.1140)
Audit Related Risk		-0.0536		-0.0910		-0.0782
		(0.1444)		(0.1493)		(0.1451)
Big 4 Auditor		-0.2633		-0.0989		-0.2493
		(0.3333)		(0.4080)		(0.3331)

SEC Standard Change		3.4561***		3.5581***		3.2366***
		(0.6824)		(0.7102)		(0.4114)
Constant	0.0655***	-5.6087***	0.0025	-5.9028***	-0.1258***	-5.2994***
	(0.0176)	(1.6150)	(0.0451)	(1.7465)	(0.0460)	(1.5750)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of clusters	465		469		469	
Log pseudolikelihood	5002.3		3249.8		276.2	
Wald independence test	6.39**		10.07***		3.53*	
Observations	4131		4233		4233	

Note: This table reports the treatment effects regression results of the determinants of financial misconduct with additional internal control variables. The two-equation treatment effects model is defined as: $Misconduct_{i,t} = X_{i,t-1}\beta + \delta ERM_{i,t-1} + \varepsilon_{i,t}$, with ERM adoption being modeled in the first stage as a latent unobservable variable $ERM^{*}_{i,t-1} = \omega_{i,t-1}\gamma + u_{i,t-1}$, where $\omega_{i,t-1}$ is a vector of firm characteristics. The two equations are jointly estimated using the maximum-likelihood method. Columns (2), (4), and (6) report the first-stage ERM determinants results and columns (1), (3), and (5) present the second-stage results for corporate misconduct. The sample includes S&P 500 firms from 1999 to 2015. *AQ* is earnings management for a firm measured as the absolute value of abnormal discretionary accruals scaled by total assets. *AAER* is an indicator, which takes the value of one if a firm-year has misstated earnings according to SEC's Accounting and Auditing Enforcement Releases (AAER), and zero otherwise. *Lawsuit* is an indicator, which equals one if the firm-year is within a class action lawsuit period, and zero otherwise. *ERM* is coded equal to 1 for a firm-year in which ERM is adopted, and 0 otherwise. ERM classification is based on a comprehensive search of SEC filings, annual reports, newswires, and other media. The appendix provides a detailed description of the construction of the variables. The standard errors in parentheses are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Appendix

Table A1: Description of Variables

Variable Name	Definition	Source
AQ	Absolute value of abnormal discretionary accruals, defined as $AAC_{i,t} = \frac{TAC_{i,t}}{AT_{i,t-1}} - NAC_{i,t}$ and $NAC_{i,t} = \hat{\alpha}_{0,t} + \hat{\alpha}_{1,t}\left(\frac{1}{AT_{i,t-1}}\right) + \hat{\beta}_t\left(\frac{\Delta SALE_{i,t} - \Delta RECT_{i,t}}{AT_{i,t-1}}\right) + \hat{\gamma}_t\left(\frac{PPEGT_{i,t}}{AT_{i,t-1}}\right) + \hat{\delta}_t\left(\frac{IBC_{i,t-1}}{AT_{i,t-1}}\right)$. $\hat{\alpha}$, $\hat{\beta}$, $\hat{\gamma}$, and $\hat{\delta}$ are coefficients from estimating firm-level regressions specified as $\frac{TAC_{i,t}}{AT_{i,t-1}} = \alpha_{0,t} + \alpha_{1,t}\left(\frac{1}{AT_{i,t-1}}\right) + \beta_t\left(\frac{\Delta SALE_{i,t}}{AT_{i,t-1}}\right) + \gamma_t\left(\frac{PPEGT_{i,t}}{AT_{i,t-1}}\right) + \delta_t\left(\frac{IBC_{i,t-1}}{AT_{i,t-1}}\right) + \epsilon_{i,t}$ for each industry-year group with more than eight firms, where industry is defined by Fama-French 49 industries. $TAC = IBC - OANCF$. If $OANCF$ is missing, then $OANCF = IB - [(\Delta ACT - \Delta LCT - \Delta CHE + \Delta DLC) - DP]$.	Compustat: *AT*, *SALE*, *RETC*, *PPEGT*, *IBC*, *OANCF*, *ACT*, *LCT*, *CHE*, *DLC*, *DP*
AAER	= 1 for a firm-year in which earnings are misstated according to the SEC's Accounting and Auditing Enforcement Releases, 0 otherwise	The UC Berkeley Center for Financial Reporting Management
Lawsuit	= 1 for a firm-year within a class action lawsuit period based on Dyck, Morse, and Zingales (2010) and hand-collected data from the Stanford Securities Class Action Clearinghouse, 0 otherwise	Stanford Securities Class Action Clearinghouse
ERM	= 1 for a firm-year in which ERM is adopted, 0 otherwise	Factiva, SEC filings, Google search and other media
Size	ln (assets)	Compustat: *AT*
Book-to-Market	Market value of assets / Book value of assets	Compustat: (*CSHO* × *PRCC_F* + *PSTK* + *DLTT* + *DLC*)/*AT*
Leverage	Debt / Book value of assets	Compustat: (*DLTT* + *DLC*)/*AT*
SD(Returns)	Annualized standard deviation of daily returns	CRSP
ROA	Operating income before depreciation / Assets	Compustat: *OIBDP/AT*
Capital Intensity	Property, plant, and equipment / Assets	Compustat: *PPENT/AT*
R&D	Research and development expenditure / Sales	Compustat: *XRD / SALE*
Operating Cycle	Natural logarithm of the firm's operating cycle, calculated as ln((360/(*SALE*$_{i,t}$ /((*RECT*$_{i,t}$ + *RECT* $_{i,t-1}$)/2))) + (360/(*COGS*$_{i,t}$ /((*INVT*$_{i,t}$ + *INVT*$_{i,t-1}$)/2))))	Compustat: *SALE*, *RECT*, *COGS*, *INVT*
Loss Percentage	Percentage of annual losses reported over the prior 10 years	Compustat: *OIBDP*, *AT*
Sales Growth	Annual rate of change in sales	Compustat: *SALE*
Cash Flow Volatility	Standard deviation of cash flows from operations (*OANCF* - *XIDOC*) deflated by the lagged total assets (*AT*) over the prior 5 years	Compustat: *OANCF*, *XIDOC*, *AT*

Z-Score	$1.2\times X_1+1.4\times X_2+3.3\times X_3+0.6\times X_4+ X_5$, where X_1 = (short-term assets – short-term liabilities) / total assets, X_2 = retained earnings / total assets, X_3 = EBIT / total assets, X_4 = market value of equity / total liabilities, and X_5 = total sales / total assets.	Compustat: *ACT*, *LCT*, *AT*, *RE*, *EBIT*, *PRCC*, *CSHO*, *LT*, *SALE*
Firm Age	Natural logarithm of the difference between year *t* and the year the firm showed up on Compustat	Compustat
Value Change	(Firm value in year *t* – firm value in year *t*−1) / firm value in year *t*−1	Compustat: $PRCC_t \times CSHO_t - PRCC_{t-1} \times CSHO_{t-1}$
Pension	Pension and retirement expenses / Sales	Compustat: *XPR/SALE*
Long-term Debt Issuance	Long-term debt issuance / Assets	Compustat: *DLTIS / AT*
Cash Ratio	Cash and short-term investments / Book value of assets	Compustat: *CHE / AT*
Opacity	Intangible assets / Book value of assets	Compustat: *INTAN / AT*
No. of Segments	Number of operating segments	Compustat Historical Segments
CapEx	Capital expenditure / Sales	Compustat: *CAPX / SALE*
SEC Standard Change	= 1 for the year of the 2010 SEC filing standard change and thereafter, and 0 otherwise	SEC
P_Institutional Owner	Percentage of the firm's stock held by institutional investors	Thomson Reuters Institutional (13F) Holdings
N_Institutional Owner	Number of institutional investors	Thomson Reuters Institutional (13F) Holdings
Board Size	Ln (number of members serving on the board of directors)	Audit Analytics
P_Outside Director	Percentage of outsiders as board members	ISS, Audit Analytics, and proxy statements
Outside Director Tenure	Average tenure of outsiders serving on the board	ISS, Audit Analytics, and proxy statements
CEO Dual	= 1 if the CEO is also the board chair, 0 otherwise	ISS, Audit Analytics, and proxy statements
Audit Related Risk	= 1 for firms that switched auditors or reported Section 302/404 material weakness in year *t*, 0 otherwise	Audit Analytics
Big 4 Auditor	= 1 if the firm used a Big4 auditor in year *t*	Compustat: *AU*