Enterprise Risk Management, Financial Reporting Outcomes, and Auditor Behavior

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Enterprise risk management (ERM) offers a new framework for organizations to take a portfolio view of risk management with a goal to minimize the occurrence of enterprise-wide risks to achieve organizational objectives. This paper investigates whether the implementation of a quality ERM program reduces the risk of financial statement manipulations by companies, and whether it influences external auditors' assessments of the risk profile of companies in the conduct of an audit. Using a set of ERM scores published by Standard & Poor's on insurance companies to measure the quality of ERM adoption, results show that high-quality ERM programs contribute to improving the quality of financial statement reporting, and influence auditors' actions in the conduct of an audit.

INTRODUCTION

Enterprise risk management (ERM) is a framework that stresses the need for organizations to manage their risk portfolio in a cohesive way (Committee of Sponsoring Organizations of the Tradeway Commission [COSO], 2004). ERM is a departure from traditional risk management approaches where the focus is on managing risks at the departmental level or in *silo*[1] (Fong-Woon, Azizan, & Samad, 2010). Consistent with the theoretical benefits of ERM, prior studies have examined the value proposition of ERM from the perspective of an organization's financial performance and shareholder value maximization (Hoyt & Liebenberg, 2011; Pagach & Warr, 2010). Some of these studies (e.g., Eckles, Hoyt, & Miller, 2014) have suggested that organizations experience lower risk and higher profits simultaneously after ERM implementation. However, the findings from other studies on ERM have been inconclusive, resulting in questions about the overall benefit of ERM programs (Bromiley, McShane, Nair, & Rustambekov, 2014).

Despite the value of previous studies, little research has looked at the synergies between ERM programs and financial reporting quality, as well as external auditor actions related to the implementation of ERM programs. To fill in these gaps in literature, the first question asked in this study is whether an ERM program can help mitigate financial statement misreporting and increase financial reporting quality. Answering this question is appropriate because financial statement misstatements affect the quality of accounting information used in investment and credit making decisions (Rezaee, 2005). A recent study

showed that between 1998-2007, investors lost an average of 16.7% in the value of companies following the announcement of financial statement misstatements (Beasley, Carcello, Hermanson, & Neal, 2010).

Arguably, a strong ERM program could help organizations ensure compliance with existing laws and regulations to avoid such risk failures and the payment of the resulting penalties and fees. ERM internal control structures help to achieve compliance by promoting accurate reporting of an organization's operations, capital assets, and inventory in the annual financial statements. A survey of the opinions of the governance triad, comprising of chief financial officers (CFOs), audit committee members, and external audit partners, highlighted the importance of ERM in the financial reporting process and the development of organizational internal control structures (Cohen, Krishnamoorthy, & Wright, 2014).

A related second question asked in this study is whether ERM influences auditors' behavior towards audit clients. Professional auditing standards require auditors to assess clients' risks related to fraudulent financial reporting and internal control structures. From these risk assessments, auditors plan and conduct the audit to obtain reasonable assurance that material misstatements will be detected. Auditors may face severe penalties and fines from standard setters such as the Public Company Accounting Oversight Board (PCAOB) for failing to gain a level of reasonable assurance concerning the effectiveness of a client's internal control structure over financial statement reporting. For the audit client, not having an effective internal control structure could result in a qualified audit report. Thus, it is important to know if ERM implementation affects auditor behavior.

This paper uses the S&P's (Standard and Poor's) ERM rating scale to determine the quality of ERM adoption among insurance companies. The sample for this study includes publicly-listed insurance companies whose ERM scores were covered in the S&P's Ratings Direct Database for the period between 2010 and 2015. Focusig on insurance companies was a good fit for this study because of the risky nature of the business of insurance companies. The use of S&P's ERM ratings not only helps to avoid possible spurious correlations arising from unobservable differences in risk programs in multiple industries but also provides an unbiased assessment of the quality of ERM programs among companies.

Results of the study support the hypotheses that high-quality ERM programs contribute to better accruals and lower real earnings management (REM) activities related to abnormal cash flows from operations that are essential requirements to ensure quality financial reporting. Moreover, the findings from the study indicate that high-quality ERM programs are inversely related to audit fees paid by public companies and audit report lags. Thus, high-quality ERM programs create conditions that facilitate external auditors planned work related to audits of companies. Findings of the paper are confirmed using various robustness tests.

The findings of this study could be used by standard-setters and regulators to advocate for advanced risk management standards to enhance the financial reporting quality of companies. In addition, the findings of this study support the benefits of the S&P's ERM rating and subsequently inform regulators and the credit market participants about the value of having an effective ERM program.

The next sections of the paper are organized as follows. Section II reviews the prior literature on ERM, and develops the testable hypotheses. Section III discusses the research methods and design. Section IV summarizes research findings and interpretations. Section V offers the conclusion.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Introduction to Enterprise Risk Management

ERM is a Committee of Sponsoring Organizations of the Treadway Commission (COSO) sponsored risk management framework which management can utilize to aggregate enterprise-wide risks (strategic, operations, reporting, and compliance), discern the interdependency among them, and design an appropriate risk mitigation strategy (COSO, 2004).

Driven by lessons from the financial crisis in 2008, many publicly-listed organizations have begun to implement ERM to manage their systematic risks, protect shareholder value, and avoid other financial crises (Hoyt & Liebenberg, 2011). Other companies are also relying on ERM to manage risks because of Standard & Poor's decision to use ERM-based risk assessment metrics in the credit rating evaluation of

both financial and non-financial organizations (Dreyer & Ingram, 2008). Further, in response to regulatory and standard setters' requirements, many companies have chosen to manage their risks using the ERM framework (Beasley, Branson, & Hancock, 2014). For instance, section 404 (a) of the Sarbanes-Oxley Act (SOX) of 2002 requires the management of a public company to include an assessment of the effectiveness of the company's internal control structure in its annual report, while section 404 (b) requires the company's auditor to express an opinion concerning the effectiveness of the client's internal control over financial reporting. The New York Stock Exchange (2013) mandates audit committees of registrant companies to assume additional responsibilities for the evaluation and management of risk beyond financial reporting. Finally, the Dodd-Frank Act of 2010 requires publicly-traded banks that have consolidated assets greater than $10 billion to form a risk management committee.

The underlying premise of ERM is that uncertainty exists in every organization and management's challenge is to determine how much uncertainty it is willing to accept as it seeks to increase shareholder value (COSO, 2004). Because ERM takes a holistic view of risk management in an organization, it is presumed to increase shareholder value through enhanced organizational performance and reduced cost of capital at both the macro and micro levels (Fong-Woon et al., 2010).

Enterprise Risk Management and Financial Reporting Quality

The quality of financial statements reporting is affected by accrual-based accounting and REM. Accrual-based accounting is required by generally accepted accounting principles (GAAP) as it provides accurate information about an entity's assets and liabilities and changes in those numbers that otherwise cannot be obtained by accounting for only cash receipts and outlays (FASB, 1985). However, unfortunately, accruals can be used to obscure or maximize the actual economic performance of a company. A number of studies (e.g., Cohen & Zarowin, 2010; Dechow et al., 2011) have examined this phenomenon in the context of discretionary and abnormal accruals, resulting in restatements of financial reports using the cross-sectional modified Jones model (Dechow et al., 1995) and the signed model of earnings quality developed by Dechow and Dichev (2002). In addition to the inappropriate use of accruals, the actual economic performance of a company can be modified through the use of REM, which is concerned with the intentional use of managerial choices related to the timing of investment or financing decisions to alter the reported earnings of a company (Roychowdhury, 2006).

It is worth noting that risks related to operational, compliance, and reporting objectives that define the effectiveness of an organization's internal control structure are also some of the risks that ERM is designed to minimize. Though the passage of section 404 of the SOX Act (2002) was meant to improve the internal control structure over financial reporting to reduce the incidence of financial misstatements, there continue to be cases of financial statements misreporting among publicly-traded companies (Beasley et al., 2010). A 2010 COSO-sponsored study examining 347 SEC enforcement cases against public companies over the period between 1998 and 2007 showed that the most common financial statement fraud (misstatements or misrepresentation) involves improper revenue recognition, followed by an overstatement of existing assets or capitalization of expenses. Improper revenue recognition accounted for 60% of the financial statement misstatements.

The preceding discussion points to a plausible role that a high-quality ERM program could have in the financial reporting process and, ultimately, on the financial statements of companies.

Internal Control Structures and Earnings Quality

In 2013, COSO issued a revised version of its Internal Control-Integrated Framework. This framework, which was initially developed in 1992, guides organizations as they design and implement internal control structures to meet organizational risk management goals developed using the ERM process. 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" (COSO Internal Control-Integrated Framework, 2013, p.3). ERM and the Internal Control-Integrated Framework have consistent conceptual underpinnings. However, the ERM-Integrated Framework is a broader framework that incorporates the

internal control framework (COSO, 2004). In other words, COSO's ERM framework is a way to think about identifying risks and setting strategic objectives for acceptable risk levels. The COSO Internal Control-Integrated Framework is a way to implement the strategic goals developed using the ERM framework by creating an effective internal control structure (COSO, 2004).

Previous research has investigated the relationship between internal control structures and earnings quality of organizations. Li and Wang (2006) found that organizations that receive an adverse auditor's opinion on SOX section 404 internal control over financial reporting disclosures are more likely to restate their future financial statements than companies who receive clean internal control over financial reporting. Likewise, Ashbaugh-Skaife et al. (2008) observed that relative to companies with no internal control deficiencies (ICD), companies with ICD exhibit higher abnormal accruals, higher abnormal working capital accruals, and poorer working capital accruals.

Overall, it can be argued that the underlying internal control structures and procedures of organizations are mechanisms that facilitate quality financial statement reporting, and that a weak internal control structure increases the risk of intentional or unintentional errors in financial statement reporting caused by incorrect accruals or real activities manipulation. The internal control risks affecting financial reporting quality are some of the risks that ERM seeks to minimize, resulting in a lower risk of accrual errors and real activities manipulation. However, this possibility has not been examined in prior research, thereby leading to the following proposed hypotheses:

H_1: *High-quality ERM programs are negatively associated with discretionary accruals.*

H_2: *High-quality ERM programs are negatively associated with REM.*

Auditor Behavior, Enterprise Risk Management, and Internal Control Structures

Audit fees represent one of the auditor actions that is extensively studied in the auditing literature. Traditionally, research concerning the determination of audit fees has been based on the theory of the audit pricing model developed by Simunic (1980). Typically, audit fees or costs consist of the per unit cost of audit resources and the quantity of resources invested by the auditor in performing the audit, as well as costs resulting from, for example, potential losses attributable to future litigation or reputation damage. The auditor's assessment of litigation risks coming out of the financial condition of the client is accounted for in audit plans and fees. Thus, the higher the perceived risk of litigation, the more audit procedures are performed, resulting in higher audit fees (Pratt & Stice, 1994).

With the adoption of SOX sections 302 and 404, several studies have investigated the association between ICD and audit fees. Hoitash et al. (2008) found a strong association between audit fees and disclosures concerning material weaknesses in internal controls under SOX section 404. They also show that the audit fee premium is driven more by entity-level material weaknesses than account-specific shortcomings. Thus, companies continue to pay higher audit fees for internal control problems disclosed under section 302 even if there are no disclosures of weaknesses under section 404.

Another way in which auditors respond to their risk assessments of audit clients is audit report lags. Audit report lags are the number of days between the fiscal year-end date and the date of the audit report. Ettredge et al. (2006) show that material internal control weaknesses disclosures under SOX section 404 are associated with longer audit report delays. On the other hand, Munsif et al. (2012) demonstrate that organizations remediating prior disclosed internal control weaknesses experience a significant decline in audit report lags.

In summary, prior research has found that business and internal control risks of audit clients increase the extent of audit work performed and fees charged by auditors as well as the time elapsed to issue audit reports. Given that ERM facilitates the minimization of enterprise-wide risks, the issue of auditors' opinions on ERM adoption by organizations is empirically relevant. Assuming auditors consider the extent of audit clients' ERM deployment, it is reasonable to assume that the quality of the ERM programs should make a difference in auditors' risk evaluation. Thus, if quality ERM programs affect auditor

actions, it is conceivable that costly substantive audit testing and procedures may be reduced, resulting in lower audit fees and shorter audit lags as proposed by the following hypotheses:

H_3: *Auditor fees are negatively associated with high-quality ERM programs.*
H_4: *Audit report lags are negatively associated with high-quality ERM programs.*

RESEARCH METHODOLOGY AND DESIGN

Sample Data Development

The initial sample for this study includes 92 (461 firm-years) publicly-traded insurance companies with coverage in the S&P's Ratings Direct Database. Data on ERM ratings for the study came from published S&P's ERM scores from 2010 to 2015; these ERM ratings have been published since 2008. However, concentrating on 2010 to 2015 for the sample was appropriate for the study because this represents years beyond the initial phase of S&P's ERM rating implementation as well as avoids the 2008 and 2009 financial crisis years that may be associated with some potential bias.

The ERM ratings from S&P's are derived from an independent investigation completed annually by S&P's to assess the quality of ERM adoption among insurance companies. The insurance companies are evaluated on five components (Dubois-Pelerin, 2013). Each of these components is rated by S&P's as being positive, neutral, or negative. As a result of the assessment, ERM scores ranging from *very strong*, *strong*, *adequate with strong controls*, *adequate* to *weak* are assigned to the insurance companies[2].

There are many reasons for using S&P's ERM ratings focused on insurance companies. First, using an independent evaluation of the quality of ERM adoption, such as S&P's ERM scores, is preferable to the self-assessments by companies that have been employed in prior studies with mixed findings. Second, focusing only on insurance companies avoids possible spurious correlations resulting from unobservable differences in risk programs across multiple industries. Third, the nature of the business activities of insurance companies makes them an ideal fit to examine the variations in ERM program outcomes (e.g., Hoyt & Liebenberg, 2011; Pagach & Warr, 2010). Fourth, ERM ratings are factored into the overall credit ratings of insurance businesses (Dubois-Pelerin, 2013), thereby making the ERM ratings a suitable measurement variable to use for the evaluation of ERM programs among insurance companies.

This study uses financial data on companies' income statements, cash flows, balance sheet statements, and other pertinent financial information to measure variables included in the research models. All the financial information data were obtained from COMPUSTAT files available in the Wharton Research Data Services. Data on audit fees, audit report lags, and other audit-related information were obtained from the Audit Analytics Database. Additional data on corporate governance characteristics were manually obtained from 10-K filings and proxy statements. The period of information related to financial and audit data retrieved for the study ranged from 2009 to 2016 because the calculations for some of the variables required information from years before 2010 and/or years after 2015.

In this study, all the company-year data on ERM scores were merged with the financial information from COMPUSTAT and Audit Analytics. Companies with missing information from COMPUSTAT and/or Audit Analytics were deleted, resulting in a final sample of 89 companies (443 firm-years). The sample size is consistent with that of similar studies on insurance companies, such as the Baxter et al. (2013) study which utilizes a sample of 165 firm-years between 2006 and 2008 to examine determinants of ERM adoption among insurance companies. Likewise, McShane et al. (2011) has a sample of 82 insurance companies during 2008 to consider the relationship between ERM and shareholder value.

RESEARCH METHODOLOGY

To investigate whether quality ERM programs influence financial reporting quality and auditor actions, this study estimates a fixed effects regression model with year-specific dummy variables and sub-industry dummy variables based on the four-digit SIC codes (6311-Life Insurance; 6321-Accident and

Health Insurance; 6324-Hospital and Medical Insurance; 6331-Fire, Marine, Casualty Insurance; 6351-Surety Insurance; 6361-Title Insurance). Using the fixed effects regression approach helps to control for systematic time-period and omitted variables effects that could have affected organizational-level accrual quality, audit fees, and audit report lags, and is consistent with the prior literature on financial reporting quality, audit fees, and audit report lags (Kim, Li, & Li, 2015).

First, to measure financial reporting quality, a fixed effects model was estimated for two primary variables of interest: accrual quality and REM. Secondly, to determine auditor actions, a fixed effects model was estimated for these two variables: audit fees and audit report lags.

Independent Variable: Enterprise Risk Management Quality (ERMQ)

The quality level of ERM is determined using S&P's ERM ratings. In prior research, both McShane et al. (2011) and Baxter et al. (2013) use S&P's ERM rating to measure the quality of ERM adoption. However, a review of the data shows that the majority of the companies are categorized as *adequate*. Consistent with the approach used by Baxter et al. (2013), this paper further divides *adequate* into three subcategories based on the S&P's domestic long-term issuer credit-worthiness opinion. Using S&P's domestic long-term issuer credit ratings to subdivide the *adequate* category is appropriate because of S&P's decision to factor ERM ratings into the credit ratings of companies (Dubois-Pelerin, 2013).

The S&P's domestic long-term issuer credit ratings are obtained from COMPUSTAT. Companies with credit ratings of "A" are grouped into a *higher adequate* category. Likewise, companies with credit ratings of "B" or "C" are respectively grouped into the *moderate adequate* and *lower adequate* categories. After that, values are assigned to the ERM scores from the lowest to highest as follows: *weak* (1), *low adequate* (2), *moderate adequate* (3), *high adequate* (4), *adequate with strong controls or trends* (5), *strong* (6), and *excellent or very strong* (7). Insurance companies with an ERM score equal to 7 are assumed to have a high-quality ERM program, whereas companies having an ERM score of 1 are considered to have a low-quality ERM program.

Financial Reporting Quality Model

Financial reporting quality is measured using accrual quality and REM models. To test the relationship between quality ERM programs and accrual quality (H_1), a fixed effects regression model is run such that the variable of interest (*ERMQ*) is included in Equation 1 as a continuous variable where 7 indicated a high-quality ERM program and 1 signified a low-quality ERM program.

$$AQ = \beta 0 + \beta_1 Log\_ERMQ + \beta_2 Lag\_Log\_Asset + \beta_3 ROA + \beta_4 Growth\_Rate + \beta_5 Log\_Segment + \beta_6 Loss + \beta_7 Leverage + \beta_8 Cashflow\_TAssets + \beta_9 Log\_CashflowV + \beta_{10} Big4\_Auditor + \beta_{11} Int\_contrlWkness + \beta_{12} Foreign\_Ops + \beta_{13} Merger + \beta_{14} BM\_Ratio + \beta_{15} PPE\_GrowthR + \beta_{16\text{-}17} Fixed\_Effects + e \quad (1)$$

Two different measures of accrual quality were used in this study: the modified Jones model (*Abs_Disacr_JM*) developed in Dechow, Sloan and Sweeney (1995), and the Dechow and Dichev model (*Abs_Disacr_DD*) developed in Dechow and Dichev (2002) to mitigate potential bias that could be introduced into the findings of this paper by relying on a single accrual quality model. Notwithstanding the power of the modified Jones model, studies have indicated that the model may contain some bias estimates (Dechow, Ge, & Schrand, 2010). The Dechow and Dichev model, on the other hand, considers cash flow's impact on accrual quality, but it does not distinguish between intentional and unintentional financial manipulations or errors (Stubben, 2010). The lower the values of these accrual measures, the better the accrual quality, and vice versa.

To further address the relationship between quality ERM and REM (H_2), this study runs two separate fixed effects regression models covering abnormal cash flows from operations and abnormal discretionary expenses. The REM model is based on Roychowdhury's (2006) REM estimation model and contains total assets, market-to-book ratio, and return on assets as control variables. However, additional control variables are added to the model to account for factors known to influence the financial reporting quality.

$$REM = \beta 0 + \beta_1 ERMQ + \beta_2 Lag\_Log\_Asset + \beta_3 ROA + \beta_4 BM\_Ratio + \beta_5 Growth\_Rate + \beta_6 Log\_Segment + \beta_7 Leverage + \beta_8 Log\_CashflowV + \beta_9 Merger + \beta_{10} Foregin\_Ops + \beta_{11} Loss + \beta_{12} Big4\_Auditor + \beta_{13} Int\_contrlWkness + \beta_{14\text{-}15} Fixed\ Effects + e \quad (2)$$

The control variables in equations 1 and 2 are defined in the Appendix.

Audit Fees Model

A fixed effects regression model for audit fees based on client and auditor attributes is used to test the association between quality ERM and audit fees (H_3). Audit fees are determined as the natural log of audit fees (*Log_Audit_Fees*) paid to auditors for the audit of financial statements consistent with existing literature (Hoitash et al., 2008).

$$Log\_Audit\_Fees = \beta 0 + \beta_1 ERMQ + \beta_2 Log\_Asset + \beta_3 Log\_Segment + \beta_4 Foreign\_Ops + \beta_5 ROA + \beta_6 Lag\_Loss + \beta_7 Leverage + \beta_8 Big4\_Auditor + \beta_9 Audit\_Opinion + \beta_{10} Audit\_Lag + \beta_{11} Growth\_Rate + \beta_{12} Receivable\_Ratio + \beta_{13} Int\_contrlWkness + \beta_{14} Ratio\_AuditFees\_Indust + \beta_{15\text{-}16} Fixed\ Effects + e \quad (3)$$

Control Variables are defined in the Appendix.

Audit Report Lags Model

To measure the relationship between ERM quality and audit report lags (H_4), this study adopts an audit report lags model approach similar to the model from Ettredge et al. (2006) and Munsif et al. (2012) that looked into the relationship between audit report lags and internal control weaknesses. Audit report lags (*Audit_Lag*) are measured as the length of time from a company's fiscal year-end to the date of the auditors' opinion letter.

$$Audit\_Lag = \beta_{0+} \beta_1 ERMQ + \beta_2 Log\_Asset + \beta_3 ROA + \beta_4 Log\_Segment + \beta_5 Ext\_Items + \beta_6 Loss + \beta_7 Leverage + \beta_8 Audit\_Opinion + \beta_9 Big4\_Auditor + \beta_{10} YE + \beta_{11} Log\_Audit\_Fees + \beta_{12} Merger + \beta_{13} Foreign\_Ops + \beta_{14} Int\_contrWkness + \beta_{15} BM\_Ratio + \beta_{16\text{-}17} Fixed\ Effects + e \quad (4)$$

Control Variables are defined in the Appendix.

Robustness Analysis

As a robustness test, this study relies on the dynamic GMM estimator to test hypotheses. The GMM estimator utilizes the dynamic nature of the relationship between dependent and independent variables to address issues of endogeneity and possible omitted variable bias. In the case of this study, there are potential endogeneity issues that could arise in the outcomes of the hypothesis testing. For instance, it is possible that financial reporting quality is a function of the quality of ERM implementation and that higher quality ERM could result in higher financial reporting quality. However, the reverse case could be that the quality of ERM implementation is a function of financial reporting quality such that a poor financial reporting quality could result in a need for a more efficient ERM program. Consequently, the GMM estimator is utilized to address some of these issues[3].

In the research design, the quality of ERM adoption was measured using S&P's ERM ratings after modifying the *adequate* category into sub-categories (as discussed in section III, iii). Therefore, as a further robustness test, this study ran the models using the original ERM ratings from S&P's ranging from 5 (*high quality*) to 1 (*weak quality*) to measure the quality of ERM adoption without modification.

RESEARCH FINDINGS AND RESULTS

Descriptive Statistics and Correlations

Descriptive statistical data of the variables used in the accrual quality regression model and REM model are presented in Table 1. The ERM quality (*ERMQ*), which is the variable of interest in both the

accrual quality and REM models, has a mean value of 1.28, median value of 1.39 and standard deviation of 0.45. The minimum and maximum values suggest that there were no outliers of the variables used in the regression model for determining accrual quality and REM.

TABLE 1
DESCRIPTIVE STATISTICS: VARIABLES IN THE ACCRUAL QUALITY AND REAL EARNINGS MANAGEMENT MODELS

Variables	Obs	Mean	Median	SD	Min	Max
Abs_Disacr_JM	246	0.03	0.02	0.04	0.00	0.26
Abs_Disacr_DD	235	0.02	0.01	0.03	0.00	0.23
Abs_AbnCFlows	437	0.02	0.01	0.03	0.00	0.25
Abs_AbnDisExp	26	0.04	0.03	0.03	0.00	0.10
ERMQ	443	1.28	1.39	0.45	0.00	1.95
Lag_Log_Asset	438	9.89	9.82	1.56	5.78	13.71
ROA	441	0.02	0.02	0.04	-0.24	0.20
Growth_Rate	437	5.41	4.36	12.41	-18.71	39.37
Log_Segment	436	2.44	2.56	0.64	0.00	3.74
Loss	441	0.07	0.00	0.26	0.00	1.00
Leverage	441	0.07	0.06	0.05	0.00	0.29
Cashflow_TAssets	441	0.03	0.03	0.05	-0.28	0.22
Log_CashflowV	358	5.16	5.08	1.16	3.07	7.34
Big4_Auditor	441	0.98	1.00	0.16	0.00	1.00
Int_contrlWkness	441	0.02	0.00	0.15	0.00	1.00
Foreign_Ops	443	0.27	0.00	0.44	0.00	1.00
Merger	443	0.19	0.00	0.39	0.00	1.00
BM_Ratio	417	0.96	0.82	0.70	0.17	6.70
PPE_GrowthR	226	0.07	0.04	0.18	-0.44	1.90

This table provides descriptive statistics covering the period 2010-2015 of the variables used in estimating the accrual quality and real earnings management models. Obs is the number of observations; SD is the standard deviation; Min and Max represent the minimum and maximum values. Other variables are described in the appendix.

The descriptive statistics of the variables in the audit fees and the audit report lag models covering the period between 2010 and 2014 are presented in Table 2. Audit fees for the sample companies expressed in thousands has a mean value of $8,681, a minimum value of $561, and a maximum value of $145,000. The mean audit report lag (*Audit_Lag*) is 58.34 days, with a median value of 57 days and a standard deviation of 25 days. ERM quality has a mean value of 1.28, a median value of 1.39, and a standard deviation value of 0.46. The means, medians, and standard deviations of all the control variables suggest that there are no extreme values present in the model to cause bias in the regression coefficient estimates.

For the sake of brevity, correlation tables are not included in the paper but are available upon request. Correlation results show that for both the accrual quality and REM models, and the audit fees and audit

report lags models, the dependent variables are significantly correlated to ERM quality (*ERMQ*) with the appropriate signs. No two independent control variables in any of the models had correlation coefficients exceeding 0.8, implying that there were no threats of multicollinearity to the accrual quality and REM regression models (Kennedy, 2008).

TABLE 2
DESCRIPTIVE STATISTICS: VARIABLES IN THE AUDIT FEES AND AUDIT REPORT LAGS MODELS

Variables	Obs	Mean	Median	*SD*	Min	Max
Audit Fees ($'000)	288	8,681	3,944	15,700	561	145,000
Log_Audit_Fees	288	15.32	15.19	1.02	13.24	18.79
Audit_Lag	327	58.34	57.00	25.02	1.00	455.00
ERMQ	371	1.28	1.39	0.46	0.00	1.95
Log_Asset	369	9.88	9.84	1.55	5.84	13.71
Log_Segment	366	2.51	2.71	0.62	0.00	3.74
Foreign_Ops	371	0.27	0.00	0.45	0.00	1.00
ROA	369	0.02	0.02	0.03	-0.24	0.19
Lag_Loss	368	0.09	0.00	0.28	0.00	1.00
Leverage	369	0.07	0.06	0.05	0.01	0.18
Big4_Auditor	369	0.98	1.00	0.15	0.00	1.00
Auditor_Opinion	369	0.32	0.00	0.47	0.00	1.00
Growth_Rate	367	5.61	4.56	12.44	-18.71	39.37
Receivables_Ratio	367	0.15	0.14	0.08	0.01	0.42
Int_contrlWkness	369	0.02	0.00	0.15	0.00	1.00
Ratio_AuditFees_Indust	356	0.22	0.10	0.25	0.01	1.00
Ext_Items	369	0.18	0.00	0.38	0.00	1.00
YE	356	1.00	1.00	0.05	0.00	1.00
Loss	369	0.08	0.00	0.27	0.00	1.00
Merger	371	0.17	0.00	0.37	0.00	1.00
BM_Ratio	350	0.98	0.85	0.66	0.21	5.25

This table provides descriptive statistics covering the period 2010-2014 of the variables used in estimating the audit fees and audit report lags models. Obs is the number of observations; SD is the standard deviation; Min and Max represent the minimum and maximum values. Other variables are described in the appendix.

Empirical Findings and Sensitivity Tests

Results of the fixed effects regression models estimated using Equations 1, 2, 3, and 4 to test the main hypotheses of this paper, and the results of sensitivity tests using the dynamic panel GMM estimator and the original ERM ratings from S&P's are discussed in the subsequent sections.

Multivariate Analyses: Accrual Quality Model Results

Table 3 provides the results of the fixed effects regression model estimated to test H_1. For brevity's sake, some control variables are not reported but are available upon request. Results in columns 1 and 2 of Table 3 suggest that higher the ERM quality, the lower are the measures of accrual quality (modified Jones discretionary accrual measure and Dechow and Dichev cash flow accrual model, respecively), and hence, the higher the accrual quality. In both columns, ERM quality (*ERMQ*) has a negative coefficient at a 0.01 significance level ($p < 0.01$), thus, supporting H_1.

Results in columns 1 and 2 of Table 3 indicate that the size of the company is significant and negatively associated with discretionary accruals, as it is assumed that larger companies have the resources to institute strong internal controls over financial reporting. Consistent with previous literature, the coefficients of the rate of growth, the degree of leverage, and the cash flows volatility are positive and significantly related to poor discretionary accruals. However, contrary to previous studies, weak internal controls of companies is negatively associated with discretionary accruals. The plausible reason for this negative association is that companies aware of their poor internal controls may work harder to avoid the future incidence of internal control weaknesses disclosures. In column 2 of Table 3, the return on assets, which measures the profitability of companies, has a significant positive coefficient contrary to the prediction of this paper that could indicate that profitable companies may resort to weak accruals to increase their earnings.

A dynamic system GMM estimator was run as a robustness test for the relationship between quality ERM and accrual quality. The lag of the modified Jones discretionary accrual and Dechow and Dichev cash flow accrual model were included in Equation 1 as part of the explanatory variables. Next, two lagged periods of the endogenous variables were used as instruments in the Arellano-Bond system GMM estimation. To ensure that the instruments were exogenous as part of the conditions of GMM estimation, the Hansen *J* test of over-identification, as shown in Columns 3 and 4 of Table 3, was insignificant. Further, the Arellano-Bond test for autocorrelation, denoted by *AR (2),* which detects autocorrelation levels, was insignificant as shown in Columns 3 and 4 of Table 6. Thus, we failed to reject the null hypothesis of no autocorrelation in the GMM estimator. The significant and negative coefficient on *ERMQ* using the system GMM estimator supports H_1 and confirms results reported in Columns 1 and 2 of Table 3.

As a further sensitivity test, the original ERM ratings from S&P's are used to measure quality ERM to estimate accrual quality. Results of this estimation are presented in Columns 5 and 6 of Table 3 and show that *ERMQ* is negative and significantly related to discretionary accruals. Altogether, the sensitivity test results reported in Columns 5 and 6 of Table 3 were consistent with the findings of ERM quality presented in Column 1 of Table 3.

Multivariate Analyses: Real Earnings Management Model Results

Table 4 presents results of the fixed effects regression Equation 2, testing H_2. For brevity's sake, some control variables are not reported but are available upon request. The measures of the REM model were abnormal cash flows from operations and abnormal discretionary expenditures, in columns 1 and 2, respectively. Results of the estimation show an R^2 of 0.505 and 0.577, respectively, consistent with prior literature (Doyle et al., 2007). Results show that ERM quality (*ERMQ*) is negatively related to both measures of REM, thus supporting H_2 indicating that through quality ERM programs, organizations can curtail managerial choices related to REM activities. As expected, Column 1 of Table 4 shows that the size of an organization, book-to-market, and whether an organization is audited by a Big 4 auditing firm are significant and negatively associated with abnormal cash flows from operations.

TABLE 3
REGRESSION RESULTS OF ACCRUAL QUALIYY MODELS

VARIABLES	Prediction +/-	Main Model		GMM Model		Model with original ERM ratings	
		Abs_Disacr_JM (1)	Abs_Disacr_DD (2)	Abs_Disacr_JM (3)	Abs_Disacr_DD (4)	Abs_Disacr_JM (5)	Abs_Disacr_DD (6)
ERMQ	-	-0.027***	-0.013*	-0.058*	-0.026**	-0.015*	-0.011**
		(0.009)	(0.007)	(0.030)	(0.010)	(0.008)	(0.005)
Lag_Log_Asset	-	-0.013***	-0.006**	-0.016*	-0.005*	-0.010***	-0.005***
		(0.003)	(0.002)	(0.009)	(0.003)	(0.002)	(0.002)
ROA	-	0.369	0.417**	0.761***	0.345***	0.326	0.424*
		(0.229)	(0.206)	(0.189)	(0.094)	(0.245)	(0.215)
Growth_Rate	+	0.001*	0.001**	0.001	0.001***	0.001*	0.001**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Leverage	+	0.206**	0.210**	0.261	0.241***	0.096	0.181**
		(0.080)	(0.084)	(0.300)	(0.084)	(0.080)	(0.074)
Cashflow_TAssets	-	-0.205**	-0.105	-0.369*	-0.022	-0.255**	-0.133*
		(0.104)	(0.069)	(0.197)	(0.063)	(0.112)	(0.072)
Log_CashflowV	+	0.018***	0.004*	0.025***	0.006***	0.014***	0.004*
		(0.003)	(0.002)	(0.009)	(0.002)	(0.003)	(0.002)
Big4_Auditor	-	-0.013	0.000	-0.095	0.009	-0.030	-0.006
		(0.030)	(0.011)	(0.082)	(0.017)	(0.029)	(0.010)
Int_contrlWkness	+	-0.033**	-0.011	-0.041	-0.032	-0.020	-0.006
		(0.016)	(0.012)	(0.026)	(0.019)	(0.014)	(0.010)
Constant		0.103***	0.052***			0.100***	0.049***
		(0.033)	(0.015)			(0.031)	(0.014)
Sub-Industry Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		198	160	198	160	198	160
R^2		0.528	0.567			0.475	0.550
AR(1) (*p*-value)				0.101	0.051		
AR(2) (*p*-value)				0.823	0.234		
Hansen test of overidentification (*p*-value)				1.000	0.787		

This table provides results of the regression model that tested the relationship between quality enterprise risk management and accrual quality (Equation 1) using data from 2010-2015. Robust standard errors in parentheses. Control variables not reported: *Log-Segment, Loss, Foreign_Ops, Merger, BM_Ratio, PPE_GrowthR, and Lag_Abs_Disacr_JM in column 3, and Lag_Abs_Disacr_DD in column 4, respectively.* $*p < 0.1$. $**p < 0.05$. $***p < 0.01$

TABLE 4
REGRESSION RESULTS OF REAL EARNINGS MANAGEMENT MODELS

VARIABLES	Prediction +/-	Main Model		GMM Model	Model with original ERM ratings
		Abs_AbnCFlows (1)	Abs_AbnDisExp (2)	Abs_AbnCFlows (3)	Abs_AbnCFlows (4)
ERMQ	-	-0.019***	-0.095*	-0.032***	-0.020***
		(0.005)	(0.042)	(0.011)	(0.006)
Lag_Log_Asset	-	-0.009***	0.032	-0.007*	-0.010***
		(0.002)	(0.016)	(0.003)	(0.002)
BM_Ratio	+	-0.008***	-0.237	-0.006*	-0.006**
		(0.003)	(0.111)	(0.003)	(0.003)
Log_CashflowV	+	0.012***	-0.031*	0.011***	0.013***
		(0.002)	(0.013)	(0.004)	(0.002)
Merger	+	-0.010***	0.030	-0.009**	-0.009***
		(0.003)	(0.031)	(0.004)	(0.003)
Big4_Auditor	-	-0.033***		-0.012	-0.039***
		(0.012)		(0.013)	(0.012)
Lag_Abs_AbnCFlows				0.448***	
				(0.109)	
Constant		0.149***	0.136	0.105***	0.148***
		(0.020)	(0.099)	(0.028)	(0.021)
Sub-Industry Fixed Effects		Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes
Observations		343	20	343	343
R^2		0.505	0.577		0.498
AR(1) (*p*-value)				0.045	
AR(2) (*p*-value)				0.240	
Hansen test of overidentification (*p*-value)				0.184	

This table provides results of the regression model that tested the relationship between quality enterprise risk management and real earnings management (REM; Equation 2) using data from 2010-2015. Robust standard errors in parentheses. Control variables not reported: *ROA, Log-Segment, Growth_Rate, Leverage, Loss, Foreign_Ops, Int_CntrlWkness*.*$p < 0.1$. **$p < 0.05$. ***$p < 0.01$.

In column 2 of Table 4, several control variables (*Foreign_Ops*, *Loss, Big4_Auditor*, and *Int_contrlWkness*) were excluded from the estimation because of insufficient observations. Thus, caution should be exercised in using this outcome because of the small number of observations.

Column 3 of Table 4 presents the results of the robustness test estimating the impact of ERM on REM using the dynamic system GMM estimator. Because of the small number of observations in the abnormal discretionary expenditure model, robustness test was run on the abnormal cash flows from operations model only. Results from the system GMM estimation confirm earlier results reported in Column 1 of Table 4. Further sensitivity analysis estimated using the original ERM ratings from S&P's to measure quality ERM (*ERMQ*) and abnormal cash flows from operations are presented in column 4 and support H_2.

Multivariate Analyses: Audit Fees Model Results

Table 5 reports results from the fixed effects regression analysis testing H_3. For brevity's sake, some control variables are not reported but are available upon request. Column 1 of Table 5 presents results of the main audit fees model where the dependent variable is the natural log of audit fees, and shows that ERM Quality is significantly negatively associated with audit fees. The R^2 value of 0.849 is consistent with prior literature (Kim et al., 2015). This supports H_3. Column 1 also shows that audit fees are significantly higher for bigger companies, for companies that are complex in nature, for businesses that are audited by Big 4 accounting firms, for companies that have received an auditor's opinion other than an unqualified opinion, and for companies with auditors who had a greater percentage of audit fees paid in the industry.

Similar to previous models, robustness tests using GMM estimator and original S&P ERM ratings, support the original hypothesis, and are presented in columns 2 and 3, respectively.

Multivariate Analyses: Audit Report Lags Results

Table 6 presents results of the fixed effects regression Equation 4 testing H_4. For brevity's sake, some control variables are not reported but are available upon request. The R^2 of 0.375 in column is consistent with prior research (Ettredge, Li, & Sun, 2006). Results, as reported in Column 1, and support H_4 as ERM quality is negatively related to audit report lags significantly. As expected, the control variable for Big 4 audit firms was negatively related to audit report lags. Further, audit report lags were longer for companies that had reported business losses and had received an auditor's opinion other than an unqualified opinion about their financial statements.

Robustness tests in columns 2 and 3, like previous models, still support H_4.

CONCLUSIONS, IMPLICATIONS, AND LIMITATIONS

This study examines the importance of high-quality ERM program adoption in two ways. The first is an investigation into the possible relationship between quality ERM program implementation and quality financial reporting. Following established standards in the literature, this study uses accrual quality models as well as REM activities models as proxies for measuring financial reporting quality. The second examination involves a look at external auditors' actions in response to organizations with high-quality ERM programs. The actions of external auditors are observed using audit fees paid by companies and the time elapsed between the close of the fiscal calendar and the issue of the audited financial statement. The quality of ERM program in this study is measured by using the S&P's ERM ratings published annually for insurance companies. Therefore, the focus of this study covered insurance companies included in the S&P's ERM ratings direct database.

The results show that quality ERM adoption is a significant contributing factor in the financial reporting quality of organizations. The results indicate that quality ERM programs improve discretionary accruals, and minimize REM activities related to abnormal cash flows from operations and abnormal discretionary expenditures. However, the findings of the impact of ERM quality on REM related to abnormal discretionary expenditures should be used with caution because of the small number of sample observations.

TABLE 5
REGRESSION RESULTS OF AUDIT FEES MODELS

	Prediction +/-	Main Model	GMM Model	Model with original ERM ratings
VARIABLES		Log_Audit_Fees	Log_Audit_Fees	Log_Audit_Fees
		(1)	(2)	(3)
ERMQ	-	-0.224**	-0.216**	-0.138*
		(0.092)	(0.083)	(0.120)
Log_Asset	+	0.525***	0.416***	0.509***
		(0.035)	(0.080)	(0.034)
Log_Segment	+	0.169**	0.460***	0.184**
		(0.081)	(0.138)	(0.080)
Foreign_Ops	+	0.731***	0.795***	0.705***
		(0.080)	(0.179)	(0.083)
Big4_Auditor	+	0.975***	1.412**	0.847***
		(0.177)	(0.545)	(0.166)
Auditor_Opinion	+	0.150*	0.093	0.159**
		(0.076)	(0.082)	(0.077)
Ratio_AuditFees_Indust	+	0.808***	0.985***	0.784***
		(0.151)	(0.364)	(0.149)
Constant		7.636***	7.431***	7.661***
		(0.487)	(0.599)	(0.493)
Sub-Industry Fixed Effects		Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes
Observations		287	271	287
R^2		0.849		0.846
AR (1) (p-value)			0.014	
AR (2) (p-value)			0.162	
Hansen test of overidentification (*p*-value)			1.000	

Note. This table provides results of the regression model that tested the relationship between quality enterprise risk management and audit fees using data from 2010-2014. Robust standard errors in parentheses. Control variables not reported: *ROA, Lag_Loss, Leverage, Audit_lag, Growth_Rate, Receivables_Ratio, Int_ContrlWkness*. *$p < 0.1$. **$p < 0.05$. ***$p < 0.01$.

TABLE 6
REGRESSION RESULTS OF AUDIT REPORT LAGS MODELS

VARIABLES	Prediction +/-	Main Model	GMM Model	Model with original ERM ratings
		Audit_Lag	Audit_Lag	Audit_Lag
		(1)	(2)	(3)
ERMQ	-	-2.152*	-6.113*	-3.145**
		(1.230)	(3.625)	(1.417)
		(1.245)	(1.514)	(1.296)
Ext_Items	+	-2.647***	-1.586	-2.454**
		(0.980)	(1.534)	(0.976)
Loss	+	3.859***	3.910***	4.016***
		(1.385)	(1.310)	(1.387)
Leverage	+	-51.230***	-43.866	-51.952***
		(14.758)	(33.509)	(14.656)
Auditor_Opinion	+	2.003*	1.018	1.970*
		(1.026)	(1.128)	(1.036)
Big4_Auditor	-	-12.073***	-3.188	-12.606***
		(4.132)	(6.503)	(3.930)
YE	+	8.709	16.588**	8.956
		(10.431)	(7.056)	(10.314)
Lag_Audit_Lag			-72.953***	
			(14.858)	
Constant		75.350***	69.793***	75.754***
		(10.953)	(16.768)	(10.935)
Sub-Industry FE		Yes	Yes	Yes
Year FE		Yes	Yes	Yes
Observations		288	288	288
R^2		0.375		0.378
AR (1) (*p*-value)			0.602	
AR (2) (*p*-value)			0.502	
Hansen test of overidentification (*p*-value)			0.993	

This table provides results of the regression model that tested the relationship between quality enterprise risk management and audit report lag using data from 2010-2014. Robust standard errors in parentheses Control variables not reported: *Log_Asset, ROA, Log_Segment, Log_Audit_Fees, Merger, Foreign_Ops, Int_ContrlWkness, BM_Ratio.* *$p < 0.1$. **$p < 0.05$. ***$p < 0.01$.

Future research may need to collect more data to test the relationship between ERM and abnormal discretionary expenditures. Further, the results suggest that quality ERM programs play a significant role in the audit of companies by external auditors. Results indicate that companies with high-quality ERM programs have significantly lower audit fees and shorter audit report lags.

To control for potential endogeneity of the results, this study utilizes a GMM estimator as a robustness test. The results support the findings of all models.

The study contributes to the literature on ERM, quality financial reporting, and auditing in a number of ways. First, the study provides a unique insight into the mitigation power of risk management programs by linking ERM programs to financial statement reporting quality, audit fees, and audit report lag. Second, the study provides evidence of the value of the S&P's ERM ratings to highlight the importance of high-quality adoption of ERM programs. Third, this study offers evidence in support of the pressure from regulators and public investors for the need for companies to adopt enterprise-wide risk management tools to ensure transparency and efficient use of companies' resources. Ultimately, the outcome of the study would imply that ERM programs implemented at the highest level significantly add to the effectiveness of the existing internal control processes of companies.

However, the generalizability of the findings of this study is limited on two fronts. First, the analysis is limited to only insurance companies, and secondly, the sample is constrained to insurance companies with coverage in the annually published S&P's ERM risk ratings. To the extent that S&P's may have changed the procedures over the years in determining ERM ratings, the findings of this study may be affected.

ENDNOTES

1. Silo management of risk refers to management of risk individually at the department level without reference to their effect on the portfolio of risks facing the organization.
2. The descriptions of the five components and full descriptions of these levels of assessment can be found at https://www.spratings.com/scenario-builder-portlet/pdfs/ICSB_Enterprise_Risk_Management.pdf
3. The primary condition of the GMM estimation model is that the instruments used must be exogenous . Arellano and Bond (1991) suggested two tests for determining the exogeneity of the instruments used in the GMM estimation. The first is the test of the Arrelano-Bond first and second order autocorrelation, denoted repectively by *AR (1)* and *AR (2)*. The Arellano-Bond test of serial correlation has a null hypothesis of no autocorrelation. According to Arellano and Bond (1991), the test of *AR (1)* commonly rejects the null hypothesis. However, the test of *AR (2)* is the most important test to detect autocorrelation. The second test is the Hansen *J* test statistic of over-identification, which has a null hypothesis that the instruments as a group are exogenous. In a non-robust estimation, the Sargan test results are reported. Therefore, failing to reject the null hypothesis of either Arellano-Bond test of no autocorrelation or Hansen *J* static test would mean that the instruments are exogenous.

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APPENDIX

Definitions of Control Variables used in Equations 1, 2, 3, and 4

Lag_log_Asset is the natural log of total assets of the previous year;
ROA is net income divided by total assets;
Growth_Rate measures the change in year over year sales or revenues winsorized at the 5% level;
Log_Segment is the natural log of the number of business segments reported in the COMPUSTAT Segment database;
Loss denotes 1 if a company reported negative earnings, 0 otherwise;
Leverage is total debt divided by total assets winsorized at the 5% level;
Cashflow_TAssets is cash flows from operations scaled by total assets winsorized at the 5% level;
Log_CashflowV is cash flows volatility measured by the standard deviation of free cash flows from operations scaled by the average of assets of the last three years winsorized at the 5% level; *Big4_Auditor* measures whether a company is audited by one of the Big 4 accounting firms indicated by 1, 0 otherwise;
Int_contrlWkness denotes 1 if a company has reported material internal control weakness over financial reporting, 0 otherwise;
Foreign_Ops denotes 1 if the company has foreign operations, 0 otherwise;
Merger denotes 1 if the company has merger operations, 0 otherwise;
BM_Ratio measures the ratio of book value of equity to market value of equity;
PPE_GrowthR is the year over year change in property, plant, and equipment investment;
Audit_Opinion denotes 1 if a company received any opinion other than the standard unqualified audit opinion in the current year, 0 otherwise;
Audit_lag measures the number of days from the fiscal year-end date to the date the audit report on the financial statement was issued;
Receivable_Ratio measures the ratio of total accounts receivable to total assets of the current year;
Ratio_AuditFees_Indust measures the ratio of audit fees for the company to the total audit fees received by the auditor in industry *k*;
Ext_items measures whether the company reported extraordinary items for the current year, denoted by 1, 0 otherwise.