Enterprise Risk Management and the Internal Audit Function

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SUMMARY

Despite the recent emergence of enterprise risk management (ERM) processes within organizations globally, there is a paucity of empirical research about ERM. This study provides evidence about factors associated with the impact of ERM on the internal audit function, an issue under considerable debate within the profession (IIA 2004). We find that ERM has had the greatest impact on internal audit's activities when (a) the organization's ERM process is more completely in place, (b) the CFO and audit committee have called for greater internal audit activity related to ERM, (c) the chief audit executive's (CAE) tenure is longer, (d) the organization is in the banking industry or is an educational institution, and (e) the internal audit function has provided more ERM leadership. We address specific areas of internal audit focus in ERM, and we offer implications and future research directions.

Key Words: Enterprise risk management, Internal audit, Corporate governance, Risk, Control

Data Availability: Contact the third author.

Enterprise Risk Management and the Internal Audit Function

Enterprise risk management (ERM) has received unprecedented attention in the past few years. In response to growing expectations for effective risk management, leading companies are abandoning their traditional approach to managing risks by silos, where risks areas are managed in isolation from one another, and are adopting an enterprise risk management approach (Lam 2000; Liebenberg and Hoyt 2003).

Heightened awareness of risk management is largely due to recent catastrophic events and unexpected business failures (Walker at al. 2002). In fact, a recent survey of global CEOs found that ERM is a priority among more than one-third of CEOs (39 percent strongly agree) and their boards (38 percent) (PwC 2004). In addition, recent empirical research finds that over one-third of Canadian firms have adopted ERM, largely due to board of director and stock exchange corporate governance expectations (Kleffner et al. 2003).

Liebenberg and Hoyt (2003) state, "Despite the heightened interest in ERM, little empirical research has been conducted on the topic." This is especially true in accounting. Academics know remarkably little about corporate risk management practices, even though most organizations are adopting various risk management practices to address risk exposures (Tufano 1996). The lack of research is largely due to a lack of meaningful data about risk management practices (Tufano 1996). Existing studies on ERM are generally limited to small sample sizes within a limited set of industries. These studies call for future research to better understand the determinants of ERM and the method of its implementation within organizations.

One of the controversial issues surrounding ERM is the role of internal auditors in ERM processes. Because internal audit professional standards take a risk-based approach, the internal audit function has a significant interest in the enterprise's risk management process, as it affects their professional responsibilities (IASB 2004). Despite internal audit's natural interest in ERM, there is considerable debate as to the role of the internal audit function in ERM. In fact, the internal audit profession recently issued a call for research about the role of the internal audit function in ERM in its 2003 *Research Opportunities in Internal Auditing* (IIARF 2003), and the Institute of Internal Auditors (2004) has issued guidance on internal audit's proper role in ERM. In addition, the environment for internal auditing has changed drastically in recent years, largely due to the involvement of the internal audit function in Sarbanes-Oxley compliance efforts. Thus, while internal audit may have a desire to be a part of ERM processes, internal auditors may be limited in their ability to be involved, and the nature of their involvement may vary across organizations.

Our study contributes to existing empirical research on multiple dimensions. First, the study examines the current state of ERM practices spanning a broad range of firms in numerous industries in the post-Sarbanes-Oxley time period. Based on a sample of 122 firms, we find that 56 percent of sample firms have adopted ERM to some extent, with an additional 29 percent investigating implementation of ERM. Second, the current study empirically examines the impact of ERM adoption on the internal audit function's activities. We find that the impact of ERM on internal audit is affected by the organization's stage of ERM development, the extent of explicit calls for internal audit's involvement in ERM from other corporate governance participants, the tenure of the

organization's chief audit executive (CAE), the nature of the organization's industry, and internal audit's ERM leadership efforts. Finally, we examine the nature of internal audit's involvement in ERM and find that internal audit's primary roles in ERM are coordinating ERM efforts and suggesting control activities to ensure a risk response is in place. Internal audit is least likely to be involved in identifying risk responses.

The next section provides a brief overview of recent developments in the ERM paradigm, followed by separate sections containing background information leading to our research questions, our research methodology, and our results and conclusions.

OVERVIEW OF ERM DEVELOPMENTS

Fraud prevention and detection are top corporate governance priorities in today's post-Sarbanes-Oxley world. One of the keys to effective fraud prevention and detection is for organizations to be proactive in risk management activities. Much of the focus on ERM is attributable to recent corporate financial reporting scandals. For example, one of the components of the settlement between the secondary mortgage market giant, Fannie Mae, and U.S. federal regulators was the appointment of a chief risk officer (Carpenter 2004). Many organizations are rapidly embracing the ERM paradigm not only in the United States, but globally (Carpenter 2004).

Despite the recent focus on risk management, there has been little guidance on effective ERM practices until recently. The lack of a widely-accepted ERM framework led the Committee of Sponsoring Organizations of the Treadway Commission (COSO), widely known for its *Internal Control-Integrated Framework* (COSO 1992), to initiate an effort to develop common terminology and an accepted framework for ERM. In

September 2004, COSO (2004) issued its *Enterprise Risk Management - Integrated Framework* that provides a model of the ERM process and defines ERM as:

> *[A] process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.*

In concept, the COSO framework views ERM as an ongoing, systematic process that involves board and senior management understanding of future events that can strategically affect the organization, either positively or negatively. ERM assists boards and senior management in the determination of how the organization should manage risk within stakeholder "appetite" for taking on risk. Walker et al. (2002, xi) describe ERM as "a new paradigm for managing business risks. ERM manages all risks using an integrated and holistic approach." The difference between ERM and more traditional ways of managing risks is in how the entity oversees its entire risk portfolio. ERM calls for high-level oversight of the company's entire risk portfolio, rather than having many different individual managers overseeing specific risks in isolation (e.g., the "silo" or "stove pipe" approach) (Banham 2004).

Exhibit 1 summarizes the key elements of COSO's ERM Framework. The primary emphasis is on managing risks affecting the enterprise's objectives, including those related to strategy, operations, reporting, and compliance. To manage risks affecting these objectives, the Framework includes eight core components that comprise effective ERM processes.

Insert Exhibit 1 here

The extent of internal audit involvement in ERM is receiving attention and is the focus of recent controversy (Banham 2004; IIA 2004). The COSO ERM framework calls on the internal audit function to "assist management and the board of directors or audit committee by examining, evaluating, reporting on and recommending improvements to the adequacy and effectiveness of the entity's enterprise risk management" (COSO 2004, 88). Some argue that enterprise risk management should be managed by traditional risk overseers from management disciplines such as finance or insurance, and that the role of the internal audit function in ERM should be limited to the last component in COSO's ERM framework – monitoring.

Others believe the internal audit function plays a vital role in overseeing all eight components of the ERM Framework, given internal audit's natural focus on risks and controls. Thus, there is no precise method or "silver bullet" for the role of internal audit in ERM (Walker et al. 2002). In fact, the controversy led The Institute of Internal Auditors (IIA) to issue a September 2004 position statement addressing specific ways internal audit should and should not be involved in ERM to maintain their objectivity and independence (IIA 2004). The position statement states that "organizations should fully understand that management remains responsible for risk management. Internal audit should provide advice and challenge or support management's decisions on risk, as opposed to making risk management decisions" (IIA 2004, 2). The IIA's position allows for numerous types of internal audit activities related to ERM. However, at some point, internal audit's involvement may extend beyond those activities deemed appropriate. This allows for extensive variation in internal audit involvement in ERM.

These professional developments – the rise of ERM and the emerging role of internal audit in ERM – raise the following question, "To what extent is ERM impacting the internal audit function, and what factors are associated with variations in the impact?" We examine six research questions related to this issue. Our research builds upon the work in the Walker et al. (2002) case study, which examined the role of the internal audit function in ERM within five major companies, by analyzing internal audit involvement in ERM in the post-Sarbanes-Oxley environment for a larger number of entities in several industries.

RESEARCH MOTIVATION

Because the emergence of ERM is relatively recent and there is a lack of available data on ERM practices, empirical academic literature on ERM is quite limited.[1] In the insurance field, two studies have addressed ERM usage. First, Kleffner et al. (2003) examined descriptive information about characteristics of Canadian companies and the extent of their ERM adoption. They found that companies adopting ERM most commonly cited "the influence of the risk manager (61 percent), encouragement from the board of directors (51 percent), and compliance with Toronto Stock Exchange (TSE) guidelines (37 percent)" as the main factors underlying their adoption of ERM. Second, Liebenberg and Hoyt (2003) also addressed the determinants of ERM adoption. The authors compared matched samples of companies with ERM versus those apparently without ERM. They found that companies appointing a Chief Risk Officer to oversee ERM had higher leverage, but did not find other fundamental differences between the groups. Neither study considers the involvement of internal audit in ERM.

[1] Leech (2002, 54) states, "Most of the current research studies on enterprise risk management have been driven by consultant firms, professional accounting associations, or internal auditors, rather than by the academic community."

Two studies published by the IIA Research Foundation offer some descriptive insight into the role of the internal audit function in ERM. First, Tillinghast-Towers Perrin (2001) performed a survey in 2000 of approximately 130 executives, including both internal audit and other management executives, and found that internal audit was involved in ERM committees / working teams in 32 percent of the responding organizations. While this survey provided some initial descriptive information about internal audit's involvement in ERM, the primary focus was on ERM deployments, with only minimal focus on internal audit's involvement. The study did find that internal audit performed ERM risk assessments in 32 percent of the organizations. This study did not empirically evaluate factors associated with variations in internal audit involvement in ERM.

Second, Walker et al. (2002) provided descriptive information about the role of internal auditing in ERM processes at five leading companies (FirstEnergy Corporation, General Motors, Unocal, Wal-Mart, and Canada-Post Corporation). The study identified the major foundational elements in an ERM implementation and highlighted the role internal auditors have played in these five organizations on a case-by-case basis. The authors found that the internal audit function was heavily involved in ERM in each company, but in different ways. Across these five companies, the internal audit function "assisted in identifying risks, facilitated risk workshops, integrated and aggregated information from the workshops, helped develop ERM processes, and generated risk reports" (Walker et al. 2002, 16). The authors also noted that the chief audit executive played a significant ERM leadership role in each company – including such roles as

spearheading the ERM effort, being the "ERM process owner," and being given the role of "risk champion" (Walker et al. 2002, 13).

Since these prior studies on internal audit's involvement in ERM were conducted, the emphasis on the ERM paradigm has continued to grow. This is largely attributable to increasing corporate governance expectations following recent corporate scandals and the focus on ERM due to COSO's ERM framework project. In addition, the issuance of the Sarbanes-Oxley Act of 2002 (SOX 2002) has affected internal audit's activities. Some argue that such demands have caused corporations to focus "excessively on the minutiae of financial systems and procedures, perhaps at the expense of enterprise-wide risk mitigation" (Sammer 2004). Thus, we do not currently know how ERM is impacting internal audit functions in today's environment. This study examines several research questions regarding the relationship between ERM and internal audit, as described in the next section.

Research Questions

The present study extends the literature on ERM, particularly those studies addressing the role of the internal audit function (Tillinghast-Towers Perrin 2001; Walker et al. 2002), by using multivariate regression to explore the impact of ERM on the internal audit function in a large sample of organizations. In this study, we examine the relation between various organizational characteristics and the impact of ERM on the internal audit function.

First, we address the entity's stage of ERM development and its relation to the impact of ERM on the internal audit function. As documented by Kleffner et. al. (2003), not all companies have embraced ERM, and those that have often turn to various internal

groups to assist in their ERM implementation. Logically, we expect that organizations farther down the path toward complete ERM adoption will have placed greater ERM-related responsibilities on their internal auditors. For example, more extensive ERM processes may require greater monitoring by internal audit. Thus, our first research question examines the following:

RQ1: Is the impact of ERM on internal audit activity positively associated with the entity's stage of ERM development?

Second, we address the role of ERM-related demands placed on the internal audit function by the audit committee and senior management. Most proponents of ERM argue that the board of directors and senior management must fully embrace ERM for ERM to be effective. Walker et al. (2002) note that an ERM initiative cannot succeed without strong support in the organization from senior management. While senior management support is a necessary condition for effective ERM, we currently do not know the extent to which senior management's ERM support impacts the internal audit function.

Kleffner et al. (2003) found that the board of directors is becoming more involved in risk management activities, and the board's influence was related to ERM adoption. The COSO ERM framework (COSO 2004, 27, 29) notes that the "internal environment is the basis for all other components of enterprise risk management, providing discipline and structure . . . An entity's board of directors is a critical part of the internal environment." In addition to mandating that all New York Stock Exchange (NYSE) registrants have an internal audit function, recent changes in listing requirements for NYSE registrants now place risk management oversight responsibilities on the audit committee. The NYSE requires the audit committee to "discuss policies with respect to

risk assessment and risk management" (NYSE 2004). In addition, the NYSE mandates that the audit committee oversee the entity's internal audit function. Given the audit committee's increasing responsibilities for risk management and oversight of internal audit, we expect audit committee demands for internal audit involvement in ERM to affect internal audit's ERM-related activities.

In addition to the board's involvement, prior research also has documented that certain senior management characteristics are associated with the extent of risk management activities within an enterprise (Tufano 1996). Walker et al. (2002) found strong top management support for ERM in each company they studied. Similarly, Kleffner et al. (2003) found that 61 percent of their survey respondents said the influence of top risk managers within the firm led to ERM adoption. Many studies (e.g., Ivancevich et al. 1998) have found that top management support is crucial to the success of a variety of initiatives.

While there is documented evidence that the board of directors and management influence the ERM adoption decision, little is known about the extent to which the audit committee and management influence internal audit's involvement in the ERM process. This leads to the second research question:

RQ2: Is the impact of ERM on internal audit activity positively associated with ERM-related demands placed on the internal audit function by management and the audit committee?

Third, given the importance of the chief audit executive in directing internal audit's activities and the leadership role of the chief audit executive in ERM (see Walker et al. 2002), we examine whether the CAE's tenure is associated with internal audit's role

in ERM. It is possible that chief audit executives with longer tenure (i.e., more formal or informal status and influence) are more likely to lead the internal audit function into significant ERM-related roles. Conversely, it is possible that chief audit executives with longer tenure may be more "set in their ways" and may not embrace a new initiative such as ERM. Thus, we examine the third research question:

RQ3: Is the impact of ERM on internal audit activity associated with chief audit executive tenure?

Fourth, we examine whether organizational size is associated with the impact of ERM on internal audit. As an organization's size increases, the scope of events threatening an enterprise is likely to differ in nature, timing, and extent. In fact, Colquitt et al. (1999) find that large firms are more likely to adopt ERM processes than smaller firms. We expect that larger entities also are more likely to have a more extensive internal audit presence (Carcello et al. 2004), which may allow for greater internal audit involvement in ERM. Thus, we examine the fourth research question:

RQ4: Is the impact of ERM on internal audit activity positively associated with organizational size?

Fifth, we examine whether industry is associated with the impact of ERM on internal audit. Financial institutions face significant regulation and financial reporting risks (e.g., Beasley et al. 1999). Banks (regulated industries) also are more likely to have an internal audit function (Wallace and Kreutzfeldt 1991) and to invest more heavily in the internal audit function (Carcello et al. 2004). Banks have been leaders in ERM adoption due to the emphasis on risk management in upcoming global regulation (Basel II 2004) as a way to reduce a bank's minimum capital requirements. In fact, the U.S.

Federal Reserve Board has recently announced expectations for expanded ERM processes in U.S. financial institutions (Bies 2004). Given these factors, we expect ERM to have a greater impact on internal audit in the banking industry.

Educational institutions also face significant regulation and have been strongly encouraged to adopt ERM. The higher education community is not unlike the business world regarding risks it faces, and institution-wide risk management makes good business sense for institutions of higher learning (Whitfield 2004). Furthermore, calls for ERM within the higher education note that internal audit is best positioned to champion such institution-wide initiatives if staffed with knowledgeable personnel (Whitfield 2004).

To examine the impact of industry type on internal audit involvement in ERM, we examine the fifth research question:

RQ5: Is the impact of ERM on internal audit activity greater in certain industries (i.e., banking and education)?[2]

Sixth, Walker et al. (2002) found that the chief audit executive and the internal audit function typically played a leadership role in ERM. We expect greater ERM leadership by internal audit to translate into a greater ERM impact on the internal audit function (i.e., by taking the lead on ERM, internal audit ultimately becomes much more involved in ERM). Accordingly, we address the extent to which internal audit's leadership efforts related to ERM are associated with ERM's ultimate impact on internal audit:

[2] Our analysis of industry effects is exploratory. We also tested the following industries and found no significant effects – chemicals / drugs, manufacturing, retail / wholesale, services, telecommunications, utilities, government, insurance, and healthcare. The other results were unaffected in these industry tests.

RQ6: Is the impact of ERM on internal audit activity positively associated with the extent to which internal audit provides ERM-related leadership in the organization?

METHOD

Survey

To gather information on the impact of ERM on internal audit, we developed a survey to be administered to chief audit executives. The survey provided the COSO definition of ERM and was consistent with the elements of ERM identified by COSO. The survey was pre-tested by five academics and four practitioners, and appropriate revisions were made. The survey also benefited from input provided by an IIA official who converted the survey into an online format and accumulated the survey responses. The survey was relatively lengthy, which allowed us to gather a great deal of information about the organization's ERM efforts, as well as information about characteristics of the internal audit function, the chief audit executive, and the overall organization.

Sample

This study is based on responses of primarily chief audit executives who are members of the IIA's Global Audit Information Network (GAIN). The approximately 1,800 members of GAIN have access to and agree to participate in a variety of surveys on emerging issues in internal auditing. Many of the surveys and results are publicly available on the GAIN website (http://www.gain2.org).

For the present study, the IIA sent an email cover letter in March 2004 to all of the GAIN members explaining the purpose of the study, requesting the members' participation, and providing a password to the online survey. A few weeks later, this

process was repeated to enhance the response rate.[3] To provide maximum protection to the respondents, we did not gather information on which GAIN members responded to the request. Therefore, the respondents are anonymous. The IIA is able to detect whether there are multiple responses from the same internet address, so we do not believe that there are multiple responses from any person.

The IIA electronically accumulated the raw survey responses and then provided the dataset to us for clean up and analysis. The IIA official responsible for the online survey and data collection has extensive experience in online data collection.

Model

To address the research questions, we use the following OLS regression model:

ERM Impact on IA = f (ERM Complete, ERM Partial, ERM Plan, ERM No Dec., CFO Request, AC Request, Years as CAE, LNREV, Banking, Education, ERM Leadership by IA).

The dependent variable, *ERM Impact on IA,* reflects the responses to the following question, "To what extent has your organization's adoption of or exploration of ERM affected internal audit's activities (e.g., expanded internal audit work, displaced other internal audit responsibilities, etc.)?" The respondents used a five-point interval scale from 1 = not at all to 5 = greatly.

The independent variables related to stage of ERM development are coded using a scale consistent with Tillinghast-Towers Perrin (2001) as follows:

ERM Complete – a value of 1 if a complete ERM framework is in place, 0 otherwise.

[3] The addition of an "early / late" variable to the model has no effect on the results. The coefficient on the early / late variable is not significant.

ERM Partial – a value of 1 if a partial ERM framework is in place (i.e., some, but not all risk areas addressed), 0 otherwise.

ERM Plan – a value of 1 if the entity is currently planning to implement an ERM framework, 0 otherwise.

ERM No Dec. – a value of 1 if the entity is currently investigating the concept of ERM, but has made no decision yet (no plans to implement ERM is in the intercept), 0 otherwise.

Other independent variables include *CFO Request* and *AC Request.* These measure the extent to which senior management and the audit committee have "called for greater internal audit activity in ERM-related processes." The interval scale used for each variable is from 1 = not at all to 5 = a great deal. *Years as CAE* measures the number of years the chief audit executive has been in place. *LNREV* measures the natural log of the organization's most recent annual revenues, first expressed in millions of U.S. dollars.

Banking and *Education* are dummy variables for these two industry groups. Finally, *ERM Leadership by IA* measures the extent to which internal audit has been active in providing ERM leadership in the organization. The interval scale is from 1 = no internal audit activity to 5 = extensive internal audit activity in this area.

RESULTS

Sample and Descriptive Statistics

Table 1 provides information on the sample. The IIA sent emails to approximately 1,770 members of the IIA's GAIN organization. After two rounds of emails, we received 175 responses, a rate of 10.3 percent.[4] This rate is lower than in some other surveys of

[4] Approximately 90 percent of the respondents were chief audit executives. Adding a variable for CAE versus non-CAE respondent has no effect on the results.

internal auditors, which have response rates near 30 percent (e.g., Scarbrough et al. 1998; Raghunandan et al. 2001). However, our survey response rate appears consistent with other recent surveys administered to the GAIN group.

The IIA indicated to us that there are inactive GAIN members still included in the organization (and email list), but it could not quantify the number of such individuals at this time. Such individuals would pull our response rate downward. The length of our survey, the high-level target respondents (chief audit executives), and the relatively busy time period (during Section 404 implementation for many organizations (SOX 2002)) also may have contributed to the response rate.

Fifty-three observations were deleted due to incomplete / not applicable data for one or more variables in the regression model (e.g., some organizations did not have an audit committee or did not have a CFO; therefore, questions related to the audit committee or CFO were left blank). The final sample is 122 organizations.[5]

Insert Table 1 here

Table 2 presents descriptive statistics on the variables used in the regression model. The mean of *ERM Impact on IA*, the dependent variable, reflects a moderate impact of ERM on the internal audit function. Both CFOs and audit committees appear to encourage internal audit to take a fairly active role in ERM, with mean ratings near 3.0 on a five-point scale. The typical chief audit executive has served in that role for nearly six years, and the mean organization in the sample has annual revenues of over $4.5 billion (median is $1.2 billion). Ten percent of the sample companies are banks, and 12 percent

[5] It is difficult to calculate an accurate response rate based on the 122 observations in the final sample, for it is unclear how many organizations in the group of 1,770 would have not applicable responses for certain questions, such as those relating to the audit committee or CFO.

are educational institutions. It appears that internal auditors are reasonably involved in ERM leadership efforts in their organizations.

Insert Table 2 here

We asked the respondents about their organization's stage of ERM development, from "complete ERM framework in place" to "no ERM framework in place and no plans to implement one." Fourteen of the responding organizations reported having a complete ERM framework in place, while 55 reported a partial ERM framework (some, but not all, risk areas addressed). Thus, 56 percent of the sample has adopted ERM to some extent. Eighteen of the organizations are planning to implement ERM, 17 are investigating ERM but have not made a decision yet, and 18 have no plans to implement ERM.

Our descriptive results are consistent with the view that ERM adoption is increasing. Tillinghast-Towers Perrin (2001) reported 11 percent of organizations with complete ERM and 38 percent with partial ERM based on data collected in 2000. Thus, in their study 49 percent of the organizations had adopted ERM to some extent, in contrast to our finding of 56 percent.

A correlation matrix of the variables is presented in Table 3 (indicator variables are excluded). Our dependent variable, *ERM Impact on IA*, is significantly correlated with three independent variables – *CFO Request*, *AC Request*, and *ERM Leadership by IA* – in the direction expected. ERM is perceived to have had a greater impact on internal audit when (a) the CFO and audit committee have called for greater internal audit involvement in ERM, and (b) internal audit has provided more ERM leadership in the organization.

Insert Table 3 here

The correlations among the independent variables reveal three greater than 0.20. *CFO Request* and *AC Request* are positively related (r = 0.70), suggesting that CFOs and audit committees often have consistent views on the appropriate role of internal audit in ERM. *ERM Leadership by IA* is positively related to *CFO Request* (r = 0.56) and *AC Request* (r = 0.49), suggesting that these parties may prompt internal audit to provide ERM leadership.[6]

Regression Results

Insights into research questions 1-6 are provided by the OLS regression results presented in Table 4. The model is significant ($p < 0.0001$, $F = 19.45$), with a relatively high adjusted R-square of 63 percent.

Insert Table 4 here

We found several variables to be significantly associated with *ERM Impact on IA*. First, the results ($p < 0.05$ for each) for *ERM Complete*, *ERM Partial*, and *ERM Plan* indicate, as expected, that the stage of ERM development is associated with ERM's impact on internal audit. ERM's impact on internal audit is greater in organizations farther down the path toward complete ERM adoption. Second, *CFO Request* ($p = 0.02$) and *AC Request* ($p = 0.00$) indicate that ERM has a greater impact on internal audit when the CFO and audit committee call for greater internal audit activity in ERM. Third, *Years as CAE* ($p = 0.01$) indicates that more senior chief audit executives are more likely to have internal audit play an active role in ERM.[7] Fourth, the industry results indicate that ERM has a greater impact on internal audit in the banking and education sectors. There is evidence that internal audit's ERM leadership efforts ($p = 0.01$) are positively associated

[6] Each of these three variables can be removed from the regression model with no effect on the results.

[7] If *Years as CAE* is replaced with the natural log of this variable, the p-value is 0.07.

with ERM's impact on internal audit.[8] Finally, there is no evidence of an association between *LNREV* and *ERM Impact on IA*.

Sensitivity Tests

We conducted numerous additional tests to assess the sensitivity of the regression results. First, we considered a number of additional independent variables (relating to risks, governance, organization type, etc.), each of which was not significantly related to *ERM Impact on IA* ($p > 0.05$ two-tailed).[9] The other results were similar to those presented in Table 4.[10]

Second, as a test for robustness we restricted the sample by excluding organizations that have no plans to implement ERM (deletion of 18 observations resulting in n = 104). The results are similar to Table 4 except that *ERM Partial* is no longer significant (the intercept contains organizations that have not made a decision regarding ERM) and *Years as CAE* has a p-value of 0.06. In a separate test, we further restricted the sample only to those organizations with complete ERM, with partial ERM, or planning to implement ERM (n = 87). The results are similar to Table 4 except that

[8] All of the VIFs (variance inflation factors) are less than 3.4 (the average VIF is 1.8), indicating that multicollinearity is not a concern.

[9] These variables were whether the organization has a Chief Risk Officer; the types of risks addressed by the organization's ERM or risk management system (e.g., strategic, operational, financial, etc.); the percentage of internal audit time spent on financial audits, internal controls / Sarbanes-Oxley, operational audits, etc.; the number of internal audit staff; the internal audit budget; the number of annual meetings between internal audit and the audit committee; the presence of an internal audit charter; the percentage of internal audit staff with professional certification; whether the board / audit committee is responsible for dismissing the chief audit executive; U.S. versus non-U.S.-based organization; public company versus other type of organization; the number of directors; the percentage of independent directors; the number of audit committee members; the percentage of independent audit committee members; whether the board has assigned ERM oversight to a board committee; and whether the organization has a Big 4 auditor.

[10] In two cases, *ERM Plan* was no longer significant ($p > 0.10$). Results were marginal ($0.05 < p \leq 0.10$) in some instances for *ERM Plan* (three cases) and *Years as CAE* (one case). The n's ranged from 102 to 122 in these analyses.

ERM Partial is no longer significant (the intercept contains organizations planning to adopt ERM) and *Years as CAE* has a p-value of 0.06. Finally, we restricted the sample only to those organizations with complete or partial ERM (n = 69). The results are consistent with Table 4 except that *Years as CAE* is no longer significant (p = 0.11). Overall, the results are quite stable across the different samples.

Finally, the respondents also provided information on eight specific areas of possible internal audit involvement in ERM (e.g., leadership, education, coordinating ERM efforts, etc.). Each item was rated on an interval scale from 1 = no internal audit activity to 5 = extensive internal audit activity. As an alternative to the dependent variable used in Table 4 (the respondents' overall assessments of the impact of ERM on internal audit's activities), we instead summed the scores from these eight specific activities to produce another measure of internal audit's role in ERM. When this summed measure replaces the dependent variable in Table 4 (and *ERM Leadership by IA* is deleted as an independent variable since it is part of this summed dependent measure), the results are similar, except that the *Banking* and *Education* variables are no longer significant.

We also examined the mean ratings for these eight specific areas of possible internal audit involvement in ERM for the 69 organizations with a full or partial ERM framework in place. The means ranged from 2.99 to 3.80. Internal auditors appear to be most involved in coordinating ERM efforts among internal audit and others (mean of 3.80) and suggesting control activities to ensure a risk response is in place (mean of 3.74). Internal auditors are least involved in assisting with identifying risk responses (2.99). The lower level of involvement in risk responses appears consistent with the IIA's

(2004, 2) position statement, which cautions against internal audit "taking decisions on risk responses."

CONCLUSION

Recent corporate governance scandals have significantly increased expectations about the roles of all corporate governance participants. Some of those expectations relate to calls for expanded risk management activities. Our study provides post-Sarbanes-Oxley evidence that over 56 percent of surveyed organizations have adopted ERM to some extent. This is in contrast to 49 percent of organizations adopting ERM prior to Sarbanes-Oxley (Tillinghast Towers-Perrin 2001).

Many believe that increased corporate governance activities, particularly the scope of Section 404 reporting on internal controls, is leaving little room for organizations to focus on risk-management issues (Sammer 2004). Thus, in this post-Sarbanes-Oxley timeframe, the extent of internal audit involvement in ERM is unknown. We respond to several recent calls for ERM research by examining the impact ERM is having on the internal audit function. Despite the recent professional prominence of ERM, there is a paucity of research about ERM, particularly the role of internal audit in ERM. Because internal audit professional standards are risk-based, internal audit has a natural interest in ERM. However, many argue that limitations should be placed on internal audit's involvement in ERM to preserve perceptions about its objectivity and independence (e.g., IIA 2004).

We examine organizational factors that affect the impact of ERM on the internal audit function. We find that ERM is impacting the internal audit function and that the impact is greatest when the organization has a more complete ERM framework in place.

Complete ERM adoption is a significant undertaking and can provide numerous opportunities for internal audit involvement.

We document that internal audit's involvement in ERM is associated with calls for involvement extended by the CFO and audit committee. These findings underscore the importance of top management and board-level support for internal audit's active involvement in ERM. The chief audit executive's tenure result suggests that chief audit executives with greater seniority may be in a better position to move the internal audit function quickly into ERM-related areas.

Internal audit functions in the banking and education sectors are more likely to be affected by ERM. The banking industry finding is consistent with recent regulatory calls for ERM in the banking industry. For example, Basel II (2004) is rapidly moving the banking industry toward ERM in order to reduce banks' future minimum capital requirements. In fact, a recent study by the Basel Committee on Banking Supervision notes that "risk management functions and approaches at major financial firms continue to evolve at a very rapid rate" (Basel 2003, 3). Also, the emergence of institution-wide risk management infrastructures is beginning in institutions of higher education, and the internal audit function often is best positioned to champion such institution-wide initiatives (Whitfield 2004).

Finally, the results for ERM leadership suggest that internal auditors can help to create their own destiny with ERM. By providing ERM leadership and advancing the ERM initiative, internal audit may help to create avenues for additional responsibilities and contributions by internal audit. This finding is particularly relevant to internal audit professionals.

In terms of specific ERM areas, we provide some evidence as to the nature of internal audit's involvement in ERM in those organizations with complete or partial ERM frameworks in place. We find that internal auditors are most involved in coordinating ERM efforts and suggesting control activities to ensure a risk response is in place. Internal auditors are least involved in assisting with identifying risk responses, which appears consistent with the recent IIA position statement (IIA 2004).

The results of this study are subject to three important limitations. First, we are relying on the accuracy of individuals' responses to an online survey. However, given the anonymous responses, we believe that any biases due to a demand effect would be reduced. Second, the response rate to the survey is lower than typical for surveys of internal auditors, but appears consistent with other online surveys conducted by the IIA's GAIN group. It is possible that the length of the survey, time period when administered, and high level of the target group all may have contributed to the rate. In addition, according to the IIA, it appears some members of the GAIN group are not actively participating in the surveys, which would serve to understate the response rate. Finally, there may be important organizational characteristics or dimensions of ERM involvement that were not reflected in the study.

Given the recent emergence of the ERM paradigm and the paucity of ERM-related research, particularly research on the role of internal audit in ERM, we envision several avenues for future research. First, it will be important to conduct research on ERM effectiveness and how internal audit can best contribute to ERM effectiveness. Ultimately, ERM effectiveness is arguably the dependent variable of greatest interest. Second, we encourage additional research on determinants of ERM adoption. Of

particular interest is how ERM leadership efforts by internal audit can help to drive ERM implementation. Finally, as ERM develops further, it will be important to examine companies' ERM-related public announcements and disclosures, including any information provided about the role of internal audit in ERM. The timeliness and value-relevance of such information may provide important insights into investors' views of ERM.

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Exhibit 1
COSO ERM Framework

The COSO ERM framework identifies four categories of entity objectives that could be affected by risks:

- **Strategic** – relating to high-level goals, aligned with and supporting the mission.
- **Operations** – relating to the effective and efficient use of resources.
- **Reporting** – relating to the reliability of reporting.
- **Compliance** – relating to compliance with applicable laws and regulations.

To provide reasonable assurance of achieving objectives in these four categories, COSO identifies eight components of an effective ERM framework:

1. **Internal Environment** – encompasses the tone of an organization, and sets the basis for how risk is viewed and addressed by an entity's people, including risk management philosophy and risk appetite, integrity and ethical values, and the environment in which they operate.
2. **Objective Setting** – setting targets in the four areas (strategic, operations, reporting, and compliance) that align with the entity's mission and risk appetite.
3. **Event Identification** – identifying internal and external events that could impact (both positively and negatively) the achievement of objectives.
4. **Risk Assessment** – assessing the likelihood and impact of events on an inherent and residual basis.
5. **Risk Response** – selecting responses that include risk avoidance, acceptance, reduction, or sharing.
6. **Control Activities** – establishing policies and procedures that help ensure risk responses are effectively carried out.
7. **Information and Communication** – identifying, capturing, and communicating information throughout the entity to support ERM.
8. **Monitoring** – evaluating the entirety of ERM processes through ongoing activities, separate evaluations, or both.

Source: *Enterprise Risk Management - Integrated Framework* (COSO 2004).

TABLE 1
Sample Description

Emails sent to IIA GAIN members requesting them to complete an online survey about ERM (approx.)*	1,770
Responses received after two email requests	175
Less:	
Organizations with incomplete / not applicable data for one or more variables included in the regression model**	(53)
Final sample analyzed	122

* The total number of emails was 1,821; however, the IIA indicated that the email listing included approximately 50 addresses that were either duplicates or represented individuals who were not internal audit practitioners. In addition, the IIA noted that there are some inactive GAIN members included in the list but was not able to quantify the extent of such members.

** Some questions were not applicable to some organizations and were left blank (e.g., some organizations did not have an audit committee or did not have a CFO; therefore, questions related to the audit committee or CFO were left blank).

TABLE 2
Descriptive Statistics for Variables in Model
(n = 122)

Variable	Mean	Std. Dev.	Min.	Max.
ERM Impact on IA	2.79	1.21	1.00	5.00
CFO Request	2.97	1.52	1.00	5.00
AC Request	3.09	1.55	1.00	5.00
Years as CAE	5.97	5.32	0.25	30.00
Revenues (millions U.S. $)	4,529	8,710	1	47,962
Banking	0.10	0.30	0.00	1.00
Education	0.12	0.33	0.00	1.00
ERM Leadership by IA	3.16	1.39	1.00	5.00

ERM Stage:	n	%
Complete ERM in Place	14	11
Partial ERM in Place	55	45
Planning to Implement ERM	18	15
Investigating ERM; No Decision Yet	17	14
No Plans to Implement ERM	18	15
TOTAL	122	100

Variable Definitions:
ERM Impact on IA: scale from 1 = not at all to 5 = greatly.
CFO Request: scale from 1 = not at all to 5 = a great deal.
AC Request: scale from 1 = not at all to 5 = a great deal.
Years as CAE = the number of years the CAE has been in place.
Revenues = annual revenues in millions of U.S. $s.
Banking = 1 if organization is a bank, else 0.
Education = 1 if organization is an educational institution, else 0.
ERM Leadership by IA: scale from 1 = no internal audit activity to 5 = extensive internal audit activity.
ERM Stage = organization's stage of ERM development (scale above).

TABLE 3
Correlation Matrix of Continuous Model Variables

	ERM Impact on IA	*CFO Request*	*AC Request*	*Years as CAE*	*LNREV*
CFO Request	**0.63**				
AC Request	**0.67**	**0.70**			
Years as CAE	0.10	-0.04	-0.00		
LNREV	-0.10	-0.07	-0.08	-0.11	
ERM Leader. by IA	**0.54**	**0.56**	**0.49**	-0.02	-0.08

Bold indicates $p \leq 0.05$.

Variable Definitions:
See Table 2.
LNREV = natural log of annual revenues, first expressed in millions of U.S. $s.

TABLE 4
Regression Results

ERM Impact on IA = f (ERM Complete, ERM Partial, ERM Plan, ERM No Dec., CFO Request, AC Request, Years as CAE, LNREV, Banking, Education, ERM Leadership by IA).

Variable	Exp. Sign	Coefficient	t stat	p-value*
Intercept		0.125	0.35	0.73
ERM Complete	+	1.292	4.28	0.00
ERM Partial	+	0.566	2.29	0.01
ERM Plan	+	0.501	1.84	0.03
ERM No Dec.	+	0.294	1.10	0.14
CFO Request	+	0.143	2.11	0.02
AC Request	+	0.286	4.53	0.00
Years as CAE	?	0.034	2.62	0.01
LNREV	+	0.001	0.02	0.49
Banking	+	0.805	3.26	0.00
Education	+	0.485	2.25	0.01
ERM Leader. by IA	+	0.154	2.48	0.01

Adjusted R-Square = 63%
Model F = 19.45, $p < 0.0001$.
* p-values are one-tailed if a sign is expected.

Variable Definitions:
See Table 2.
ERM Complete = 1 if complete ERM framework in place, else 0.
ERM Partial = 1 if partial ERM framework in place, else 0.
ERM Plan = 1 if planning to implement ERM framework, else 0.
ERM No Dec. = 1 if investigating ERM concept but no decision yet, else 0.
LNREV = natural log of annual revenues, first expressed in millions of U.S. $s.