

TESTING VALUE CREATION THROUGH ERM MATURITY

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Adapted from a study by Mark Farrell and Ronan Gallagher first published in The Journal of Risk and Insurance entitled “The Valuation Implications of Enterprise Risk Management Maturity” in March 2014.

Enterprise Risk Management (ERM) is the discipline by which enterprises monitor, analyze and control risks from across the enterprise, with the goal of identifying underlying interrelationships and thus optimizing risk-taking decision making at all levels, utilizing a portfolio-based approach. This study analyzes the valuation implications of ERM maturity.

Our results suggest that firms that have reached mature levels of ERM exhibit a higher firm value, as measured by Tobin’s Q. We find a statistically significant positive relation to the magnitude of 25%. Upon decomposition of the maturity score, we find that the most important aspects of ERM from a valuation perspective relate to the level of top-down executive engagement and the resultant cascade of ERM culture throughout the firm. Firms that have successfully integrated the ERM process into both their strategic activities and everyday practices display a superior ability to uncover risk dependencies and correlations across the entire enterprise and as a consequence enjoy enhanced value when undertaking the ERM maturity journey *ceteris paribus*.

The study contributes to the emerging field of research on ERM by analyzing the valuation implications of ERM using a detailed ERM maturity assessment score from the widely utilized RIMS Risk Maturity Model (RIMS RMM). Data from the RIMS RMM, used within the study, was collected over a five-year period from 2006 to 2011.

The complete results of the statistical evidence for the value connection of mature enterprise risk management practices in organizations can be found in the article “*The Valuation Implications of Enterprise Risk Management Maturity*” published by *The Journal of Risk and Insurance*.

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About

As the preeminent organization dedicated to advancing the practice of risk management, RIMS, *the Risk Management Society*™, is a global not-for-profit organization representing more than 3,500 industrial, service, nonprofit, charitable and government entities throughout the world. Founded in 1950, RIMS brings networking, professional development and education opportunities to its membership of more than 11,000 risk management professionals located in more than 60 countries. For more information on RIMS, visit www.RIMS.org.

About Logic Manager™

LogicManager is a leading developer of ERM solutions and creator of its own innovative risk maturity model. LogicManager, based in Boston, donated its intellectual property, expertise and services for the development of the RIMS Risk Maturity Model for Enterprise Risk Management. For more information about LogicManager, visit www.logicmanager.com.

About the RIMS Risk Maturity Model

RIMS Risk Maturity Model for Enterprise Risk Management™ (RIMS RMM), developed in 2005 by risk professionals, RIMS and LogicManager, is a free assessment tool for risk professionals and executives to develop and improve sustainable enterprise risk management programs. This online resource allows organizations to score their risk programs on a five-level scale, and receive an immediate downloadable report, which provides information not only on current maturity levels, but also offers ideas on what it may take to achieve a higher level of maturity in each of seven attributes. The RIMS Risk Maturity Model provides an actionable internal guide that corporations of all sizes, industries and geographies can use to improve their enterprise risk management maturity from whatever level they are at today. For more information about the RIMS RMM, visit www.rims.org/resources.

THE ERM VALUE HYPOTHESIS

For those entities that have not yet embraced ERM, the arguments to do so are compelling. For those entities that have already embarked on the journey, the arguments to invest in more mature ERM practices are equally compelling. This report discusses the Farrell and Gallagher ERM Value Study methodology and detailed results.

Risk management remains at the top of publicly traded firms' agendas as the business landscape continues to evolve at a rapid rate. New emerging risks, the disruptive effects of the 2008 financial crisis and subsequent recession, as well as regulatory reform continue to alter the way in which organizations manage their risks.

In recognition of the evolving landscape, ERM has arisen as a new paradigm and framework by which organizations are attempting to deal with the management of their portfolio of risk exposures, in a holistic manner. In fact, ERM has been recognized as one of the most important issues in today's business environment (Olson and Wu, 2010). The definition of ERM provided by RIMS is as follows: "Enterprise risk management (ERM) is a strategic business discipline that supports the achievement of an organization's objectives by addressing the full spectrum of its risks and managing the combined impact of those risks as an interrelated risk portfolio."

This makes it abundantly clear that an over-riding aim of ERM within an enterprise is to enhance shareholder value through supporting organizational objectives, thus embracing both the protection of value as well as the exploitation of risk for further value creation. Furthermore, RIMS highlights that the enterprise risk management approach has transitioned beyond the traditional realms of risk management in that it:

1. Encompasses all areas of organizational exposure to risk (financial, operational, reporting, compliance, governance, strategic, reputational, etc.);
2. Prioritizes and manages those exposures as an interrelated risk portfolio rather than as individual "silos";
3. Evaluates the risk portfolio in the context of all significant

internal and external environments, systems, circumstances and stakeholders;

4. Recognizes that individual risks across the organization are interrelated and can create a combined exposure that differs from the sum of the individual risks;
5. Provides a structured process for the management of all risks, whether those risks are primarily quantitative or qualitative in nature;
6. Views the effective management of risk as a competitive advantage; and
7. Seeks to embed risk management as a component in all critical decisions throughout the organization.

As evidenced in PwC's 2012 worldwide audit survey, ERM continues to gain momentum as a perceived effective risk discipline, by which an organization can improve and enhance their risk management in an increasingly complex business environment. Of the 1,530 executives who participated in the PwC survey, 74% reported having formal ERM processes in place, further highlighting the current appetite for and expenditure on ERM.

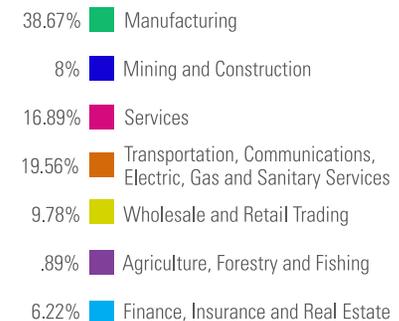
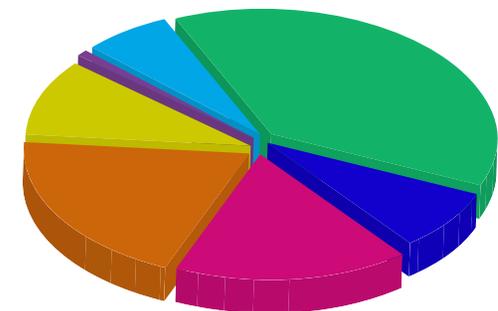
If ERM maturity improves risk-return optimization at the enterprise level in a cost effective manner, it is reasonable to conjecture that it should indeed be value additive. In the study, we sought to ascertain whether firms with more mature ERM programs experience enhanced value.

THE DATA

The following figures provide a breakdown of the study sample data along several key characteristics, including industry, country, sample year, overall ERM maturity and individual ERM attribute maturities.

Traditionally, academic ERM studies have focused on the financial and insurance sectors, which have led the way in ERM. This study was unique in that it also focused across different industry classifications as shown in Figure 1.

Figure 1: Industrial Breakdown



The vast majority of the sample companies were based in the United States, although Canada, the United Kingdom and Australia made up almost a quarter of the total sample as shown in Figure 2.

Figure 2: International Breakdown

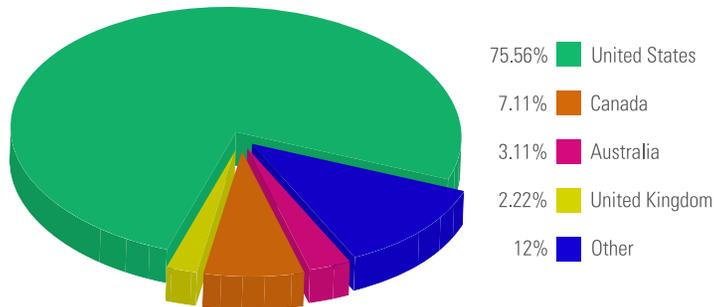


Figure 3 shows how the overall ERM maturity scores for the sample were split across the five levels described in Table 1 (right). It is clear that the majority of firms within the study sample are at the “repeatable” stage of maturity with very few yet to realize full ERM maturation.

Figure 3: ERM Maturity Breakdown

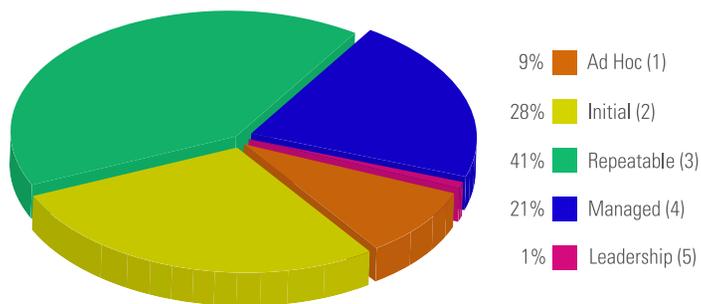


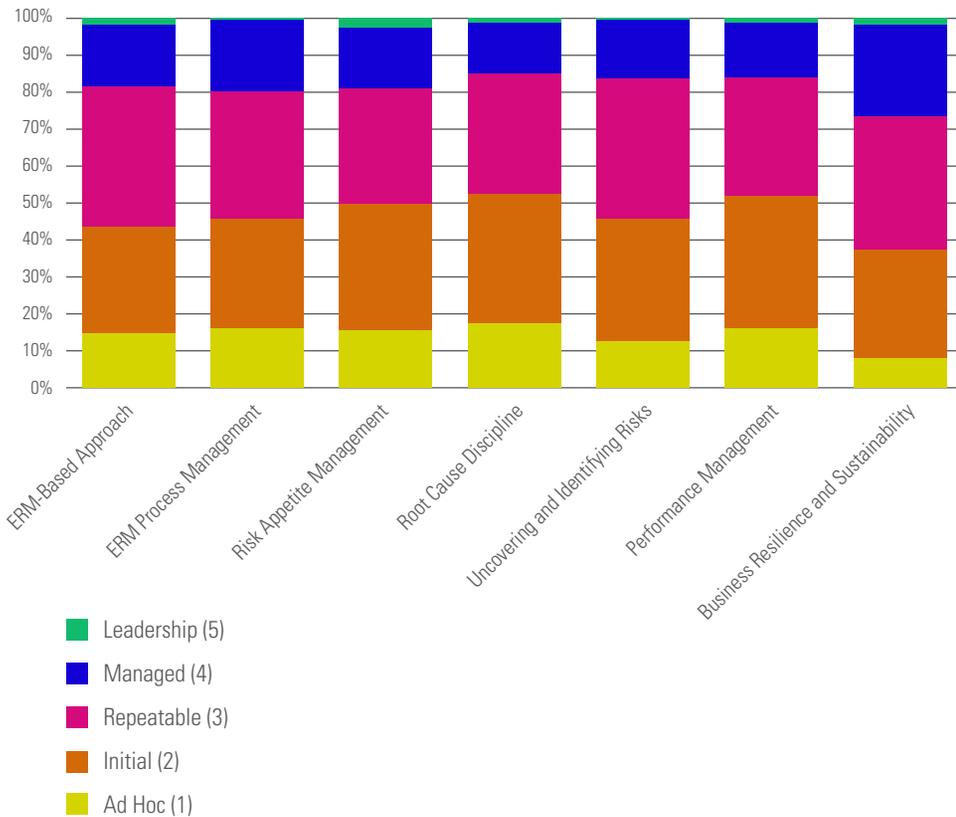
Table 1: RIMS Risk Maturity Model Levels

Maturity (level)	Maturity Level Characteristics
Ad hoc (1)	Implies an extremely primitive level of ERM maturity where risk management typically depends on the actions of specific individuals, with improvised procedures and poorly understood processes.
Initial (2)	Risk is managed in silos, with little integration or risk aggregation. Processes typically lack discipline and rigor. Risk definitions often vary across the silos.
Repeatable (3)	A risk assessment framework is generally in place with the board of directors being provided with risk overviews. Approaches to risk management are established and repeatable.
Managed (4)	Enterprise-wide risk management activities, such as monitoring, measurement and reporting are integrated and harmonized with measures and controls established.
Leadership (5)	Risk procedures are communicated and fully understood throughout the organization with the risk management principles integrated fully within the management process. Risk based discussions are embedded to a strategic level, such as long-term planning, capital allocation and decision-making. Risk appetite and tolerances are clearly understood with alerts in place to ensure the board of directors and executive management is made aware when risk thresholds are exceeded.

Sources: Adapted from RIMS (2006), Marks (2011) and Lindberg and Seifert (2011)

As well as an overall ERM maturity scoring, the RIMS Risk Maturity Model data provided a score for each of the seven attributes that define ERM maturity (see sidebar). The level of maturity within these seven attributes is shown in Figure 4. There is lack of full ERM maturation at the attribute level.

Figure 4: Maturity Distribution by Attribute



ATTRIBUTES OF ERM MATURITY

The RIMS Risk Maturity Model deconstructs a firm's overall ERM maturity into seven key attributes. These are defined as follows:

Attribute 1: ERM-Based Approach

The ERM-based approach attribute denotes the extent and level of executive support that exists within the organization toward the implementation of an ERM program. Scoring highly on this attribute represents a mature risk organizational culture moving beyond merely conforming to required regulatory compliance toward a value extraction focus from risk activities. The attribute scoring measures if the “tone from the top” is embedding an ERM-based approach into the organization's culture through communication of the importance of risk management in daily decision making across different business functions and ensuring risk management competency is a prerequisite for promotion to all leadership positions.

Attribute 2: ERM Process Management

The ERM process addresses both the downside of risk and the potential upside or opportunity aspect that risk creates and can be defined as a sequential series of steps that support the reduction of uncertainty and promote the exploitation of opportunities (“RIMS State of ERM Report,” 2008). This attribute assesses how well the ERM process is being integrated into everyday practices. The extent to which repeatable and scalable risk management processes have been incorporated into the various business units aided by qualitative and quantitative risk management analyses (via appropriate tools and models, routinely reviewed and recalibrated), strong risk management reporting and clear roles and hierarchy of risk related responsibility. Key aspects of this attribute also include a further embedding of risk culture within the organization

such as encouraging employees to take a more risk-aware approach to their business activities and tasks as well as enterprise-wide communication of risk-based initiatives and finally true employee risk management accountability.

Attribute 3: Risk Appetite Management

The concepts of corporate risk appetite and risk tolerance have received much recent attention in the business consulting environment. IBM, for example, recommends that risk appetite should be given a heightened emphasis going forward (“Risk Appetite: A Multi-Faceted Approach to Risk Management,” 2008). This attribute, within the RIMS' RMM, assesses the organization's degree of understanding and accountability toward the risk-reward trade-off which forms the cornerstone of setting the risk appetite for an organization. The risk appetite of an organization is defined by the quantity of risk exposure that the organization is willing to undertake and the optimal maximization of value or opportunity from the appointed risk amount.

Attribute 4: Root Cause Discipline

The root cause discipline attribute denotes the extent of discipline and effort that is directed toward understanding the source of a problem through a process of examining the implications of risks throughout all areas of the business, deciphering the true source of relevant risks and opportunities, and measuring the effectiveness of risk controls. The root cause discipline attribute is scored highly if deconstruction of past events is carried out along with thorough analysis of likelihood and frequency of identified risks as part of routine risk management activities. An important aspect of the attribute is the organization's ability to proactively identify critical trends in order to both minimize or prevent impact of adverse events and maximize value extraction from opportunities.

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The overall maturity score and individual attribute maturity scores are scored across five distinct levels of maturity as shown in Table 1. This provides a framework to analyze the ERM maturity roadmap in terms of progression across different defining ERM progression parameters and characteristics noted in Table 2 below.

Table 2: RIMS Risk Maturity Model for ERM Summary

Attributes	Maturity Levels				
	Level 5 Leadership	Level 4 Managed	Level 3 Repeatable	Level 2 Initial	Level 1 Ad hoc
1 Adoption of ERM-based approach	Competency Drivers: Degree of <ul style="list-style-type: none"> Executive support for ERM Business process definition and risk ownership Far-sighted risk management vision Front line and support process owner participation 				
2 ERM process management	Competency Drivers: Degree of <ul style="list-style-type: none"> Repeatability and scalability ERM process oversight ERM process steps Risk culture, accountability and communication Risk management reporting 				
3 Risk appetite management	Competency Drivers: Degree of <ul style="list-style-type: none"> Risk portfolio view Risk-reward tradeoffs 				
4 Root cause discipline	Competency Drivers: Degree of <ul style="list-style-type: none"> Dependencies and consequences Indicator classifications Risk and opportunity information collection Root cause consideration 				
5 Uncovering risks	Competency Drivers: Degree of <ul style="list-style-type: none"> Formalized risk indicators and measures Adverse events as opportunities Follow-up reporting Risk ownership by business areas 				
6 Performance management	Competency Drivers: Degree of <ul style="list-style-type: none"> ERM information and planning Communicating goals ERM process goals and activities 				
7 Business resiliency and sustainability	Competency Drivers: Degree of <ul style="list-style-type: none"> Analysis-based planning Resiliency and operational planning Understanding consequences 				

Source: RIMS State of ERM Report (2008)

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Attribute 5: Uncovering Risks

Uncovering risks lies at the core of an organization's ability to manage risk and refers to the quality and coverage given to documenting risks and opportunities throughout the organization to aid effective risk identification and mitigation or exploitation. Hence, whereas the root cause discipline attribute was focused on a post-mortem analysis, this attribute is more forward-looking regarding risk events that may occur in the future. The attribute specifically focuses on the penetration achieved in effectively obtaining risk information from different areas such as employee expertise, databases and other electronic files with the goal of uncovering dependencies and correlation across the enterprise. Special attention is paid to critical risk indicators and the efficacy to which they are regularly reviewed along with the review of the impact and likelihood risk scoring used by various business units. This basic attribute helps ensure that the risk management process is keeping abreast with emerging and dynamic risks and facilitating identification of risk and opportunity through front-line employee engagement. Competency in this area should facilitate better protection from catastrophic losses and prevention of unchecked risks spreading throughout the organization. In essence, this attribute refers to capability in ongoing risk measurement and reporting.

Attribute 6: Performance Management

The performance management attribute denotes the degree to which the organization is able to execute on vision and strategy alongside their risk management activities. This is achieved by a strong level of communication of the business goals throughout the organization, ensuring any deviations from stated goals are measured and reported and that the goals associated with the ERM program are aligned with the organization's

strategic goals and objectives. Organizations achieving a high degree of maturity in this attribute have elevated their ERM process so that it is viewed as an integral element in strategy and planning activities.

Attribute 7: Business Resilience and Sustainability.

The RIMS' RMM defines "resilience" as "an organization's ability to recover quickly from setbacks" and "sustainability" as "an organization's ability to maintain something of value (for example, delivery of services and products to customers)" ("RIMS State of ERM Report," 2008). The attribute therefore denotes the extent to which the organization integrates these two components for its operational planning into its ERM process. This is achieved by creating an appropriate balance between short-term deliverables and longer-term value and engaging in activities such as stress-testing and scenario analysis to understand what can happen under varying scenarios and what adaptations might be necessary to allow business continuity and growth. Continuous adaptation is a key requirement to ensure an appropriate response to changing business conditions is achieved.

As the study period covered responses from 2006-2011, we represent the changes in industry and geographical location over the period of investigation in Figures 5 and 6.

STUDY RESULTS

The overall maturity regression result showed a highly significant¹ premium of 25% for firms that had been classified as having “mature” ERM programs according to the RIMS Risk Maturity Model. After analyzing the overall maturity score, we examined the individual attribute maturity scores by way of a similar approach. The resulting linear regression equation in the attribute analysis is shown in Figure 7.

When we drilled down to look at the marginal valuation impact by ERM attribute we found that the highest marginal valuation impacts are associated with attributes 6 (Performance Management) and 2 (ERM Process Management), contributing to around 23% and 20% respectively to the firms value as measured by Tobin’s Q. Sophistication in relation to attributes 1 (ERM-Based-Approach), 4 (Root Cause Discipline) and 5 (Uncovering Risks) contribute between 15% and 17% to firm value. Attributes 3 (Risk Appetite Management) and 7 (Business Resilience and Sustainability) proved to be statistically insignificant in having a marginal valuation impact in the sample (shown in red). It should be noted that firms undertaking ERM maturity do not necessarily take these steps in isolation but rather they find significant correlation between the attributes themselves. The results above support the assertion that the ERM maturity is multi-faceted and that there are valuation synergies from maturation of various aspects of ERM practice. As such, the valuation impact of the composite ERM sophistication measure is larger than that of any of the individual component attributes that make up the composite score.

Figure 5: Industrial Distribution Over Time (by proportion of that year’s observations)

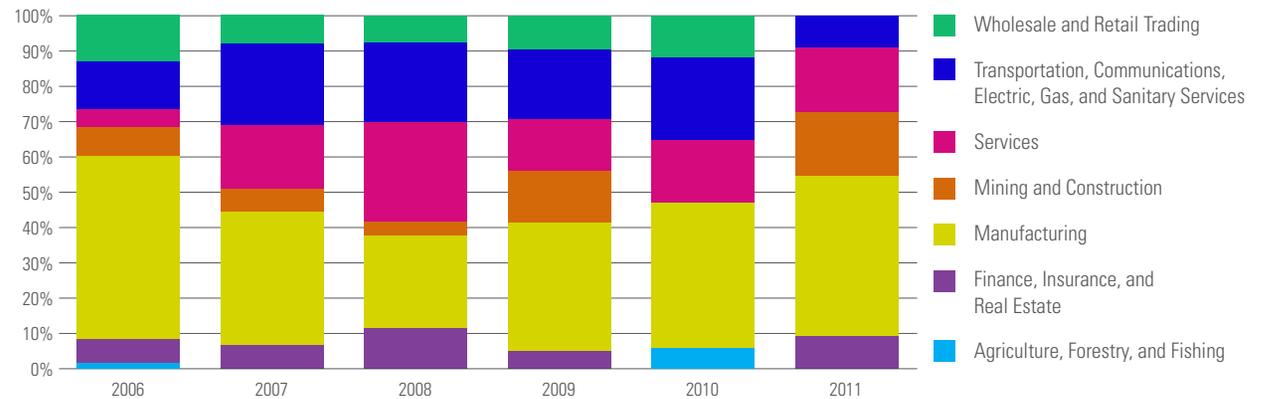


Figure 6: Geographical Distribution Over Time (by proportion of that year’s observations)

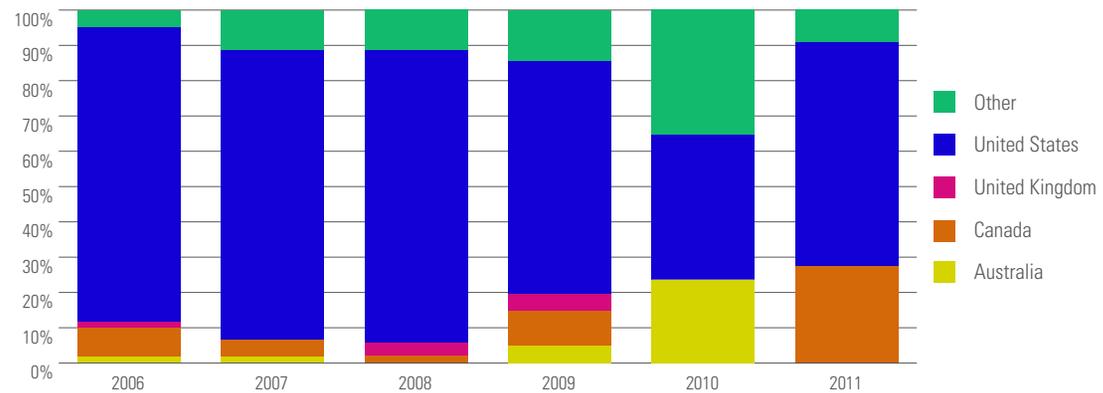
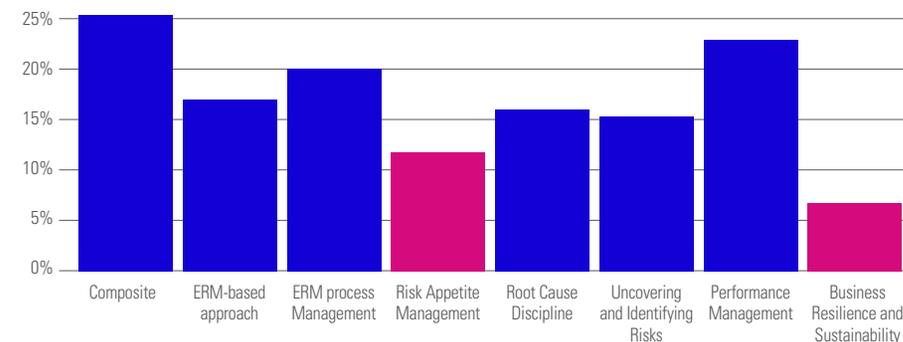


Figure 7: Marginal Impact on Firm Value (Tobin’s Q) of Sophisticated Engagement with ERM Attributes



¹ Results achieved a 1% statistical significance level.

METHOD AND SUMMARY

Statistical regressions were performed on the data by way of a two-step approach. The two-step approach was necessary due to the fact that sample selection bias may have been evident from the survey respondents.² The two-step approach necessitated that the maturity scores were split into two categories.

“Looking at the definition of ERM categories from the RIMS RMM, we can draw a clear distinction between maturity levels 1 and 2 and maturity levels 3, 4 and 5 as shown in table 2.

Maturity levels 1 and 2 feature a risk management process that lacks discipline but more specifically lacks enterprise wide coordination. Silo-based risk activities are dominant. Levels 3 to 5 have established routines throughout the enterprise with engagement coming from the top of the firm. As such, in our first stage regression, we state that firms have primitive enterprise risk management engagement until they reach level three where they move to disciplined enterprise risk management engagement.” (Farrell and Gallagher, *Value Implications of ERM Maturity*, 2014).

This process therefore resulted in the analysis of the ERM maturity scores as a binary variable—firms still lacking in ERM maturity and firms with advanced ERM maturity.

The initial regression undertaken was an analysis of the drivers of firm value using Tobin’s Q as a proxy for firm value. The overall ERM maturity score for each enterprise was included as a possible driver of firm value alongside a number of other financial variables in the regression equation modeling firm value.

We examined the voluminous valuation literature for drivers of value such that they could control for them to isolate the marginal valuation impact of ERM maturation (be it composite or at the individual attribute level). The literature search yielded a control specification that included firm size, leverage, return on equity, sales growth, systematic risk (beta), industrial diversification of revenue lines, geographical diversi-

fication of revenue lines, inside ownership and dividend payment policy. Additionally we controlled for industrial classification, primary geographical location and date of survey response.

Therefore, the resulting equation modeled in the study was essentially:

Firm Value = F(Overall ERM Maturity, Firm Size, Firm Leverage, Return On Equity, Firm Sales Growth, Firm Beta, Industrial Diversification, International Diversification, % Of Shares Owned By Insiders, Dividend Payment Status)

This approach allowed the model to control for various other corporate characteristics that may be impacting on firm value so that any possible effect of the ERM maturity variable of interest could be correctly picked up.

The overall maturity regression result showed a highly significant premium of 25% for firms that had been classified as having “mature ERM” according to the RIMS Risk Maturity Model. Additionally the model was noted as having an R-squared value of 47%. In other words, the model explained 47% of the variation in firm value (as approximated by the Tobin’s Q metric) via the variables noted above.

After analyzing the overall maturity score, we examined the individual attribute maturity scores using a similar approach.

Firm Value = F(Overall ERM Maturity for Attributes 1-7, Firm Size, Firm Leverage, Return On Equity, Firm Sales Growth, Firm Beta, Industrial Diversification, International Diversification, % Of Shares Owned By Insiders, Dividend Payment Status)

The attribute analysis provided much clearer insight into which attributes in particular appear to be contributing most to ERM.

LIMITATIONS AND FURTHER RESEARCH

Our study was limited by the number of firms that had reached the upper-most level of ERM maturity. As the discipline evolves, we expect a higher percentage of firms to have attained a high degree of ERM maturity. Similar studies in the future will therefore enhance our understanding of ERM valuation implications at the uppermost levels of ERM maturity.

² “When dealing with survey/response based data it is important to acknowledge and analyze selection bias (Heckman, 1979). Firms with ERM programs are not a random sample of all firms. Respondents to the survey have self-selected their status as an organization that has instigated at least preliminary engagement with risk management practice. Heckman (1979) notes that the least squares estimator of the population variance is downward biased under such circumstances. The solution that Heckman proposes is sometimes referred to as a two-step model.” (Farrell and Gallagher, 2014).

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