Incorporating Risk Considerations into Planning and Control Systems: The Influence of Risk Management Value Creation Objectives

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Abstract

Using data on a broad international sample of listed, private, and non-profit entities, we explore the influence of risk management value creation objectives on the incorporation of risk considerations in planning and control systems. The combination of detailed survey responses and archival data allow us to provide evidence on the adoption of a wide variety of risk-focused planning and control practices, to examine how these practices vary with risk management objectives, and to shed light on the performance implications of risk-focused planning and control practices and risk management objectives. Our results highlight the important influence that risk management value creation objectives can have on the use and benefits from risk-focused planning and control practices. Organizations that primarily focus on minimizing risks within budget or reducing the total cost of risks tend to make less use of these practices, have higher stock price volatility, and achieve lower firm value than those that have taken greater steps to holistically consider both the upsides and downsides of risk.

1. Introduction

Formal, top-down planning and control lies at the heart of enterprise risk management (ERM). ERM frameworks developed by the Committee of the Sponsoring Organizations of the Treadway Commission (COSO, 2004), International Standards Organisation (2009), and others present structured risk management processes that begin by linking ERM activities to organisational strategies and objectives through the establishment of accountabilities and incentives for risk management. The processes continue through the identification, assessment, and categorization of all types of risks across the enterprise, and the use of risk information to optimize risk responses (i.e., avoid, mitigate, share, transfer, or accept). Finally, ongoing risk monitoring and reporting ensures that decisions fall within the enterprise's chosen risk appetite (the amount of risk exposure the firm is willing to accept to achieve its objectives) and risk tolerances (the acceptable variation in outcomes related to each risk), and that emerging risks are not overlooked. By applying these steps in a consistent, integrated fashion across functions and decision contexts, enterprises are said to be in a position to effectively identify, manage, and respond to material risks of all kinds.

Contingency theory suggests that the extent to which an enterprise adopts these practices should be a function of cost-benefit tradeoffs that vary with the organisation's strategic and environmental context (e.g., Gordon, Loeb, and Tseng, 2009; Woods, 2009). Although prior research provides evidence on some of the contextual factors associated with the adoption or maturity of ERM processes, the vast majority of large-sample studies examine aggregate measures of overall ERM use rather than the adoption of individual risk-focused planning and control practices. Similarly, most research on the performance implications of enterprise risk management focuses on measures of overall ERM adoption or maturity, overlooking the

possibility that some risk-focused planning and control practices have greater effects on enterprise decision-making and performance than others. [1]

More importantly, research examining the determinants and performance implications of ERM has not investigated the enterprises' strategies for creating value through risk management. Risk management value creation objectives can include mitigating downside risks or their effects within a given budget, minimizing the total cost of risk by trading off investments in risk control and the costs of risk failures, and/or using the organisation's greater understanding of both the upsides and downsides of risk to create value by optimizing the entity's risk-return tradeoffs. Practitioner-oriented publications contend that the benefits from different risk-focused planning and control practices vary with specific risk management value creation objectives pursued by the enterprise, with greater integration of risk considerations into the organisation's performance management practices becoming more beneficial as the focus shifts from compliance and mitigation to increasing stakeholder value through the consideration of both the upsides and downsides of risk (EY, 2013; KPMG, 2009; McKinsey, 2014; Wallis, 2012).

In this chapter, we explore the influence of risk management value creation objectives on planning and control systems using survey data from a broad international sample of listed, private, and non-profit entities. The detailed survey responses allow us to provide evidence on the adoption of a wide variety of risk-focused planning and control practices, to examine how these practices vary with risk management objectives and other contingency factors, and to investigate whether enterprises that make greater use of these practices are more likely to have changed strategic direction as a result of new information or understanding concerning a major

[1] See Gatzert and Martin (2015) for a review of large-sample empirical studies on the determinants and performance implications of ERM.

risk. In addition, we extend prior large-sample ERM studies by examining the performance implications of risk-focused planning and control practices and risk management objectives using survey-based and publicly-reported proxies for enterprise risk-taking and value.

2. ERM and Risk-Focused Planning and Control Systems

Risk management traditionally has operated within functional silos, with a strong focus on regulatory compliance and loss mitigation through the financial instruments such as derivatives and insurance. Enterprise risk management differs from traditional risk management by taking a more integrated, holistic approach that (i) considers the potential impact of all types of risks across the enterprise's processes, functions, and stakeholders; (ii) incorporates a strategic perspective that assesses both upside risk (opportunities) and downside risk (potential losses or damage) in the context of strategic objectives; and (iii) makes risk considerations part of the organisational fabric by embedding them in all decision-making.

The enterprise risk management literature contends that risk considerations must be incorporated into the organisation's planning and control systems if ERM is to become an integral component of performance management. According to ERM advocates, formal accountability and incentives for risk management processes and outcomes must be established to set the appropriate "tone at the top" and encourage and reward the identification and management of risk-related opportunities and challenges. The use of quantitative techniques for assessing risks and risk interdependencies relative to the organisation's risk appetite and tolerances can then be applied to measure the likelihood and impact of each potential risk event and risk response (Mun, 2010; Curtis and Carey, 2012).

Incorporating the risk assessment results into financial and strategic planning processes ensures that ERM becomes an established component of operational and strategic decision-making (Aberdeen, 2012; Deloitte, 2012). Risk-based budgeting supports resource allocations that are consistent with the desired risk-return profile and within the organisation's financial capacity to bear the desired risks (Alviniussen and Jankensgard, 2009). Incorporating risk assessments into capital budgeting ensures that interactions between risks that are shared across multiple business units, projects, and time periods are considered, and promotes improved coordination of capital requirements, cash flow potentials, and risk exposures (Froot and Stein, 1998; Ai, Brockett, Cooper, and Golden, 2012). Including risk assessment results in the strategic planning process allows organisations to evaluate whether one strategic initiative introduces risks that conflict with the goals of another, and to consider whether the combined risks of the various strategic choices fall within the organisations risk appetite and collectively support its strategic objectives (Beasley and Frigo, 2010).

Performance measurement and monitoring complete the ERM feedback loop. At the board of directors level, frequent reporting of key and emerging risks, risk management activities, and risk outcomes provides the information needed to fulfill the board's risk oversight responsibilities. Management-level identification and reporting of key risk indicators and goals can foster greater accountability, facilitate effective implementation of risk management processes and activities, promote the evaluation of the contribution being made by risk management and the appropriateness of the control mechanisms that have been selected, and enhance the monitoring of emerging risks.

3. Existing Evidence

Although risk-focused planning and control practices are argued to be essential elements of ERM in both for-profit and not-for-profit organisations, surveys indicate that their adoption is relatively limited (AFP, 2014; Milliman, 2014; PwC, 2015). One potential explanation for the limited adoption is that these practices, on average, are not beneficial. Difficulties in defining a firm's risk appetite and tolerances, limitations in quantitative risk assessment and forecasting practices, and the inability to anticipate infrequent or extreme events can limit the effectiveness of risk-focused planning and control practices (Taleb, 2007; Danielsson, 2008; Power, 2009; Mikes, 2009). Incorporating risk considerations into planning and control systems may also hinder performance if they provide managers with a false sense of security or cause overconfidence in tenuous assumptions and forecasts (Kahneman and Lovallo, 1993; Durand, 2003).

Even if some or all of the suggested risk-focused planning and control practices are not appropriate in every circumstance, their use may still be beneficial in certain settings. Empirical studies have identified a number of contingency factors that are significantly associated with the adoption or maturity of enterprise risk management processes, including organisational size and complexity, ownership and governance structures, industry, and country (Gatzert and Martin, 2015). In addition, the risk management literature suggests that the value creation objectives that organisations set for their ERM processes have a strong influence on the potential benefits from specific risk-focused planning and control practices. Field research finds that organisations adopt a variety of risk management value creation strategies (Shenkir, Barton, and Walker, 2010). Some focus on improving compliance and avoiding or minimizing losses. Others take a broader perspective on the value of down-side risk reduction by evaluating the "total cost of risk" or TCOR. TCOR represents the aggregate cost of managing risks, including the costs of risk

management controls, retained losses, external insurance costs, and external risk management costs. By focusing on measuring and reducing the total cost of risk ownership, organisations attempt to identify internal inconsistencies in risk management practices, highlight areas where too many resources are dedicated to certain risks relative to others (allowing the organisation to reallocate its risk management budget), pinpoint inefficiencies in the risk management process (generating direct cost savings), and determine where additional investments in risk management can increase value by reducing overall insurance premiums, risk control costs, administrative costs, and self-retained losses over time.

Surveys indicate that a smaller set of organisations take a more strategic approach to value creation that considers both the upsides and downsides of risk. These enterprises seek to align their risk appetites and tolerances with organisational strategy by identifying events that could have an adverse effect on the achievement of strategic goals, as well as identifying strategic but risky opportunities that, if undertaken, can facilitate the achievement of organisational goals. By accepting and managing risk, these enterprises seek to increase stakeholder value by limiting some risks and exploiting others.

Practitioner-oriented ERM publications contend that the required level and sophistication of risk-focused planning and control practices increase as organisations move from cost-focused compliance objectives to more strategic objectives that consider both the upsides and downsides of risk (EY, 2013; KPMG, 2009; McKinsey, 2014; Wallis, 2012). However, evidence on the influence of risk management objectives on planning and control systems is limited. Although field research has begun to investigate the roles of budgeting (Arena and Arnaboldi, 2013), performance measurement (Woods, 2007), and quantitative risk assessment (Mikes, 2009) in ERM, large-sample empirical studies have primarily focused on the determinants or performance

implications of aggregate measures of ERM use or maturity, shedding little light on individual risk-focused planning and control practices.[2] Moreover, none of these studies examines how differences in risk management value creation objectives affect the use or performance implications of risk-focused planning and control practices. We investigate these issues in this chapter.

4. The Use of Risk-Focused Planning and Control Practices

We conduct our analyses using data from Aon's Risk Maturity Index (RMI) survey. Aon, a leading provider of insurance brokerage, risk management, and human resource services, designed the RMI as a self-assessment tool for organisations to evaluate and benchmark their enterprise risk management capabilities.[3] The on-line survey was developed in collaboration with academics and industry risk experts, and covers the major elements of the COSO (2004) ERM framework. Respondents are high-level risk management and C-suite executives who are actively involved in their firms' risk management activities.[4] Potential participants must contact Aon prior to receiving authorization to complete the survey in order to confirm they have the requisite knowledge of the firm's risk management practices to accurately answer the questions. Participants are informed that their responses will be used for Aon and academic research purposes.

[2] Exceptions include performance studies by Cassar and Gerakos (2013), Farrell and Gallagher (2014), and Paape and Speklé (2012). Each of these studies finds that some risk-focused planning and control practices are positively associated with performance while others are not. The authors do not examine the determinants of these practices or the influence of value creation objectives.

[3] The authors have received no compensation or funding from Aon.

[4] Risk Management Directors or Managers represent the largest concentration of respondents (48.6%), followed by Chief Risk Officers (14.1%), Chief Financial Officers (10.7%), Treasurers or Vice Presidents of Finance (6.6%), Chief Executive Officers (4.8%), Internal Audit Heads (3.5%), and General Counsels or Corporate Secretaries (3.2%), with other positions comprising the remainder.

We examine data from RMI surveys taken between 2011 and 2013. Our sample contains 313 listed firms, 250 private firms, and 123 not-for-profit organisations; 10.8 percent are government-affiliated. Table 1 lists the respondents' countries and industries. Slightly more than half (54.8%) are headquartered in North America, 27.4 percent in Europe, 12.3 percent in Asia Pacific, and 5.5 percent in other regions. A wide variety of industries are represented, with no sector comprising more than 12 percent of the sample.

4.1 Risk Management Value Creation Objectives

The survey asked respondents to indicate executive management's objectives for creating value through risk management, from the following list (with multiple responses allowed): preventing negatives within a set budget; minimizing the total cost of risk; and identifying opportunities where the organisation is the natural owner of a risk, enabling return generation from more risk-taking. Across the entire sample, 70.7 percent listed preventing negatives within a set budget, 68.9 percent listed minimizing the total cost of risk, and 39.2 percent listed generating returns from greater risk-taking. Of the 44.0 percent of respondents who identified only one objective, the most frequent was preventing negatives within a set budget (45.4%), followed by minimizing the total cost of risk (36.8%). One-third provided two responses, of which only 25.6 percent listed return generation from risk-taking. Less than a quarter (22.9%) indicated that executive management views all three as mechanisms for value creation through risk management. The only significant difference across ownership types is a greater proportion of listed firms that emphasize return generation from greater risk-taking, relative to the proportions of not-for-profit, private, or government-affiliated organisations providing this response.

4.2 Risk-Focused Planning and Control Practices

We examine the incorporation of risk considerations into four major components of planning and control systems: accountability and incentives, risk assessment, planning and budgeting, and performance measurement and reporting. In addition, we investigate the extent to which the respondents' planning and control systems take into consideration both the potential cost reduction benefits from eliminating, mitigating, or sharing downside risks, and the potential upside benefits from improved risk management. The survey contains information on multiple risk management practices within each of these broad categories; the specific questions and their response frequencies are provided in the appendix.

4.3 Accountability and Incentives

The sample exhibits wide variation in the extent to which the organisations have adopted the formal planning and control practices advocated in the risk management literature. With respect to risk-focused accountability and incentives, the vast majority of respondents state that executive-level risk ownership and accountability have been developed, but these responsibilities are frequently informally understood or assumed (56.7%) rather than being formally documented in job descriptions (33.2%). Organisational leaders communicate expectations for the execution of risk management activities by their teams to some extent, though these expectations are typically communicated on an inconsistent or ad-hoc basis for selected risks, not regularly and consistently for key risks.

The incorporation of risk management activities into performance evaluations and incentive structures is informal or inconsistent in most organisations. Only 13.7 percent of the organisations formally incorporate risk management results in their executive- and management-level incentive structures. In 36.3 percent, execution of risk ownership responsibilities is rarely or never incorporated into performance reviews. A further 45.9 percent incorporate execution of

risk ownership responsibilities inconsistently or informally, with performance reviews in only 17.8 percent formally and consistently addressing these responsibilities. Similarly, 18.4 percent of respondents rarely or never incorporate continuing development of the risk management framework into the risk management leader's performance reviews. An additional 45.8 percent do so informally or only with reference to selected risk management activities, and just 36.2 percent formally and consistently evaluate framework development with measurement of progress. Although surveys indicate that many organisations worldwide now evaluate their board members' performance (due in part to regulatory requirements or pressure from governance advocates to do so), just 30 percent of our sample incorporate the execution of risk management roles and responsibilities into board member performance evaluations.

4.4 Risk Assessment

Despite the importance the risk management literature places on defining the organisation's risk appetite and risk tolerances, executive management in more than a third of the organisations in our sample have not established risk appetite statements for their organisations or risk tolerances for key risks. Risk appetite is formally defined and documented in only 19.2 percent of the enterprises, with the same percentage developing risk tolerances for all key risks,.

Risk assessment scales are not used in 17.1 percent of the organisations' risk management exercises and, when used, are primarily qualitative in nature (44.2%). The majority of respondent (63.6%) have developed their risk assessment criteria to align with management's risk tolerance perceptions rather than with quantified risk appetite and risk tolerance statements, and 16.9 percent have not developed any risk assessment criteria at all. Respondents tend to consistently identify and document the drivers or causes of their key risks. However, identifying

interdependencies *between* risks is far less common, with just 13.3 percent formally leveraging common risk driver information to identify correlations and assess risk profiles.

4.5 Planning and Budgeting

Given the inconsistent and/or informal application of risk assessment practices in many of the respondents' organisations, it is not surprising that similar uneven practices characterize their risk-based planning and budgeting activities. Explicit and consistent reference to quantified risk appetites and tolerances when making significant project or investment decisions occurs in fewer than a quarter of the entities. Formally applying the concepts of risk appetite and tolerance to strategy development is even less frequent (13.6%).

The application of risk assessment results in planning and budgeting is also inconsistent. Risk profiles, which capture the number, types, and potential effects of threats facing the enterprise, are typically developed for units or functions informally or through management gut-feel (59.0%) or not at all (16.3%). Only 35.0 percent of respondents state that risk identification exercises during the strategic planning process are used to develop an emerging risk profile, and more than a third (38.5%) rarely or never explicitly reference risk assessments or analysis plans in their budgeting and resource allocation processes. Similarly, only 13.3 percent consistently evaluate project risk profiles against the organisation's overall risk profile when making significant capital investment decisions. The evaluation of risk management expenditures for effectiveness (i.e., cost savings vs. exposure reduction) is rarely or never included in the budget allocation processes of 42.1 percent of the organisations, and just 23.6 percent explicitly set different risk-based return expectations for different business units and incorporate the different expectations in budget and resource allocation decisions.

4.6 Performance Measurement and Reporting

The risk-based performance measurement and reporting practices of our sample vary along several dimensions, including their content, frequency, and level of quantification. They also fall into two statistically distinct reporting levels: executive/management and board of directors. With respect to executive- and management-level reporting, the majority of the organisations report risk management information on a routine basis, though the focus in more likely to be reactive (40.5%) than proactive (20.0%). At the executive level, the risk information is primarily qualitative in 22.4 percent of the entities, primarily qualitative with inclusion of selected quantitative measures in 52.8 percent, and primarily quantitative with supporting qualitative information in 39.5 percent. Risk metrics and indicators for key risks are identified and tracked consistently in roughly 40 percent of the units, with 55.2 percent tracking risk management activity implementation and completion and 33.4 percent tracking the resources used to implement and complete these activities. Quantitative thresholds and tolerances have not been established in 27.1 percent of the sample, have been established inconsistently or on an ad-hoc basis in 43.4 percent, and have been established consistently for key risks in only 29.4 percent.

The full board of directors, as well as board committees with risk oversight responsibilities, receive risk reports at least annually in more than three-quarters of the entities. Board reporting on the organisation's risk profile most commonly includes key risks and risk management activities (86.6 percent), with more quantitative information on risk performance metrics and trends (39.4%) and risk tolerances and thresholds (37.5%) least common.

4.7 Incorporating Risk Upside Considerations into Planning and Control Systems

Two questions in the survey address the extent to which planning and control systems incorporate not only the concept of downside risk, but also the potential value creation upside from risk-taking and risk management that is embodied in many ERM frameworks. The potential upside of risk is rarely or never acknowledged in the enterprise-level risk assessment approaches and tools employed by 25.2 percent of the respondents, occasionally with a primary focus on downside in 54.5 percent, and consistently (where applicable) in 20.3 percent. Similarly, communication from executives and management does not incorporate the concept of risk upside in 23.6 percent of the organisations, inconsistently incorporates both upside and downside risk potential in 52.8 percent, and consistently incorporates the concepts of upside and downside risks in just 23.6 percent.

5. Determinants of Risk-Focused Planning and Control Practices

So what explains the large variations in our sample's incorporation of risk considerations into planning and control systems? And to what extent are these differences related to executive management's risk management value creation objectives? In particular, do organisations that consider the upside value creation potential from risk management activities, as well as the risk elimination, mitigation, and sharing benefits, adopt more extensive and consistent risk-focused planning and control systems than those that only concentrate on minimizing the downside?

We begin addressing these questions by examining the determinants of the planning and control system components discussed above. We construct separate overall measures for the incorporation of risk considerations into accountability and incentives, risk assessment, planning and budgeting, management performance measurement and reporting, and board-level reporting, as well as a variable capturing the incorporation of risk-upside considerations in management communications and risk assessments. Each construct represents the first principal component

factor score for the questions related to that planning and control component. All of the questions associated with a given construct load on a single factor (with all loadings exceeding 0.40). The composite reliability for each of the constructs, as measured using Cronbach's alpha, exceeds 0.73, supporting the variables' statistical reliability.

In addition to examining the relation between these constructs and indicators for the three risk management value creation objectives, our analyses include several other potential risk management determinants identified in prior studies. These include organisational size (the log of revenues), the number of geographic regions in which the entity operates (a proxy for organisational complexity), ownership (listed, private, or non-profit, with private firms the omitted category), and indicators for government affiliation, industry, and regional location of the entity's headquarters. Studies also indicate that board of director involvement in risk oversight influences risk management practices. Following Ittner and Keusch (2015), we proxy for board involvement using the location of risk oversight responsibilities within the board (no formal assignment of responsibilities, committee-level assignment only, overall board-level assignment only, responsibilities assigned to both the both the overall board and one or more individual committee, with no formal assignment of board oversight responsibilities the omitted category). Year fixed effects are included in all of our models to control for the year the survey was completed, and standard errors are clustered by country to account for the error terms being correlated within nations.

The determinant model results are presented in Table 2. The evidence suggests that risk management value creation objectives are significant drivers of risk-focused planning and control practices. When executive management sees risk management as creating value by preventing negatives within budget, the extent and consistency of risk-based accountability and

incentives are significantly *lower*, as is the incorporation of upside risk considerations in management communications and risk assessments. However, board risk reporting is significantly greater, consistent with survey evidence that many boards' risk oversight priorities are improving compliance and reducing downside risks (Grant Thorton, 2015). In contrast, when organisations seek to create value by minimizing the total cost of risk (even if it requires additional investment), risk considerations play a *greater* role in each of the planning and control practices. The incorporation of risk considerations into planning and control systems increases even further when senior excutives believe that one mechanism for value creation through risk management is the identification of opportunities to generate returns from greater risk-taking. Not only are the coefficients on the greater risk-taking variable positive and highly significant, they are significantly larger than the coefficients on the indicators for preventing negatives within budget and minimizing total cost of risk. These results are consistent with the incorporation of risk into planning and control systems increasing when organisations take a broader view of the potential benefits from risk management activities.

Consistent with prior studies, larger organisations tend to implement more sophisticated risk management practices. However, our geographic diversity variable is only significantly associated with the incorporation of risk into budgeting and planning practices. Listed firms exhibit lower risk-focused planning and control than private firms. This includes less emphasis on the upside potential of risk in management communications and risk assessments *after* controlling for differences in risk management value creation objectives across the organisations. The lower risk focus in listed firms' planning and control practices may reflect these entities belief that their shareholders can minimize risks on their own through diversified share holdings (Modigliani and Miller 1958). The reduced emphasis on risk upside in listed firms'

communications and risk assessments is also consistent with these organisations' need to focus on minimizing downside risks due to more stringent regulatory compliance requirements (e.g., the internal control requirements of the United States' Sarbanes-Oxley Act and its equivalents in other countries). The practices of not-for-profit organisations are not significantly different than those of private firms. Government-affiliated organisations report more sophisticated and consistent risk assessment practices, but are not significantly different on the other planning and control dimensions.

The greatest industry differences are increased emphasis on risk considerations in the construction and energy sectors (both of which face significant operational and market risks) and financial institutions (which are subject to numerous risk-related regulatory requirements), and lower emphasis in the education sector. Relative to North American organisations (the omitted category), European respondents report greater focus on risk in budgeting and planning and more sophisticated and consistent risk assessment. Organisations headquartered in the Asia Pacific region also report stronger risk assessment, along with greater risk-focused accountability and incentives and board reporting. In contrast, South American entities report lower risk-focused performance measurement and reporting, board reporting, and communication and assessment of upside risk potential.

6. Influence on Strategic Decision-Making

One of the primary tenets of the enterprise risk management literature is the need to integrate risk management into strategic planning and decision-making. Yet surveys indicate that the level of interaction between risk management and strategic planning is often limited (Deloitte, 2013), with only 20 percent of the firms surveyed by Marsh and RIMS (2014) believing that risk management has a significant impact on their setting of business strategy. We

provide further evidence on the relation between risk-focused planning and control practices and strategic decision-making using a question in the survey asking, "In the last 2 years, has your organisation shifted the focus of its strategic plan or changed strategic direction as a result of new information or understanding concerning a major risk?". Of the 686 organisations in our sample, 26.4 percent responded yes. We estimate linear probability models with the dependent variable coded one if the respondent answered yes to this question, and zero otherwise. Independent variables are the individual planning and control constructs and the other predictor variables included in our earlier tests. We examine each of the planning and control system constructs separately to avoid problems with multicollinearity.[5] The exception is the upside risk potential construct, which is included together with the other planning and control system variables in some of our tests.

If organisations change their plans and decisions based on improved information from their planning and control systems regarding key risks, their drivers, and their potential impacts, we would expect the planning and control constructs to be positively associated with the strategic change indicator. The results in Table 3 generally support this prediction. When we estimate the models without controlling for the extent to which the upside potential of risk is incorporated into management communications and risk assessments, all of the coefficients on the planning and control constructs are positive, with budgeting and planning, performance measurement and reporting, and board reporting statistically significant. We find no association between our risk assessment construct and strategic change, implying that more consistent and sophisticated risk

[5] Correlations between the planning and control constructs range from 0.45 to 0.76 (median = 0.59). The smallest correlation is between board reporting and budgeting/planning and the largest between accountability/incentives and performance measurement/reporting.

assessment activities have little impact on strategic change when their results are not incorporated into resource allocation and strategic planning processes.

We next include the upside potential construct in the models to examine whether this key difference in risk management objectives influences strategic planning and decision-making. The upside risk potential construct has a highly significant positive relation with strategic change, with the positive coefficient on the budgeting and planning construct remaining significant. However, the two reporting variables become insignificant. This loss of significance suggests that it was not greater risk reporting that led to strategic change in these organisations, but rather greater consideration of the upside potential of risk (which tends to be higher in organisations with more extensive risk reporting). Overall, the evidence in Table 3 indicates that greater risk accountability and reporting and/or more consistent and sophisticated risk assessments, in themselves, did not lead our sample to change their strategic plans or directions based on new risk information. Instead, greater consideration of risks when carrying out planning activities and greater focus on the upside potential of risk-taking appear to have driven strategic change in these enterprises.

7. Performance Implications of Risk-Focused Planning and Control

The ultimate question is whether incorporating risk considerations into planning and control systems influences organisational performance. As discussed earlier, the answer to this question is not self-evident, with many observers arguing that the formal, top down process in ERM frameworks may be counter-productive. Moreover, existing studies on the performance implications of risk management practices provide relatively little evidence on the association between specific risk-focused planning and control practices and organisational outcomes, and

no evidence on the influence of risk upside considerations on these outcomes. Our remaining tests attempt to shed light on these issues.

One difficulty that arises when studying the performance implications of risk management practices is specifying the results variable. An extreme outcome from poor risk management is the occurrence of a major risk event that threatens the ongoing viability of the organisation. The survey asked respondents whether their organisation had experienced a risk-related event in the past two years that had the potential to threaten its viability. Over a quarter responded yes, including 23.5 percent of not-for-profit organisations, 25.3 percent of government-affiliated entities, 25.6 percent of listed firms, and 28.8 percent of private firms.

We examine the relations between responses to this question and our planning and control constructs in Table 4. Greater risk-related performance measurement and reporting has a significant negative association with the probability of experiencing a viability-threatening risk event. This result suggests that more routine, consistent, and quantitative measurement and reporting can allow entities to anticipate or respond more effectively to serious risk events. The coefficients on the variable capturing the consideration of upside risk potential are negative (but generally insignificant) in all of the models, providing no evidence that greater emphasis on the potential benefits from greater risk-taking increased the respondents' exposure to extreme risk events. The other planning and control system attributes are not significantly associated with the probability that the organisation experienced a risk event that threatened its viability.

The results in Table 4 provide only a partial picture of the performance implications of risk-focused planning and control practices. Notwithstanding the recent spate of financial crises, natural disasters, and security breaches, "black swan" or "tail" risk events that threaten an organisation's viability are rare. As a result, they are difficult to plan for or manage since the

organisation may never have experienced them in the past (Taleb, 2007). Furthermore, even an organisation with poor risk management may not experience a black swan or tail risk event in a given period given its rare occurrence. Examining these rare risk events also ignores efforts to reduce less extreme ongoing risks or their costs, or to increase value through more informed risk-taking that does not threaten organisational viability.

We provide evidence on these other potential benefits using stock market and financial information for the listed firms in our sample. Focusing on listed firms has two advantages. First, a common objective of listed firms is maintaining or increasing shareholder value, whereas the objectives of non-listed firms can be quite diverse, making it difficult to identify risk-taking or value creation measures that apply across the entire sample. Second, the publicly-available stock market and financial data provide standard, objective measures that are not influenced by limitations such as common respondent biases or the lack of comparability that are frequently encountered using self-reported or subjective outcome measures.

We first examine the relations between the various planning and control practices and stock price volatility. The enterprise risk management literature argues that one of the primary benefits from effective risk-focused planning and control practices is reduced uncertainty and volatility (e.g., Meulbroek, 2002; Nocco and Stulz, 2006). We proxy for firm volatility using the standard deviation of daily stock returns for the 292 firms with available data, computed over the year *following* the survey response. This measure of aggregate firm risk has been used by Ellul and Yerramilli (2013) and others.

We also investigate the practices' value creation implications using Tobin's *Q*, calculated for the year following survey completion. Tobin's *Q* is the ratio of the market value of a firm's assets divided by the assets' replacement value, with larger *Q* ratios signifying greater value

creation. Similar to prior risk management studies (e.g., Hoyt and Liebenberg, 2011; McShane, Nair, and Rustambekov, 2011; Farrell and Gallagher, 2015), we proxy for Tobin's *Q* in the 312 listed firms with available data using the formula (Book Value of Debt + Market Value of Common Equity) / (Book Value of Debt + Book Value of Common Equity).

7.1 Stock Price Volatility Tests

The volatility results in Table 5 indicate that each of the planning and control constructs has a significantly negative relation with stock price volatility when we do not control for the extent to which the upside potential of risk is incorporated into management communications and risk assessments. However, when we take into account the extent to which the upside potential of risk is considered, the only planning and control construct that remains significant is risk assessment. Greater consideration of upside risk potential, on the other hand, is negative and significant in each of the models. The negative relation between more consistent and sophisticated risk assessment and stock price volatility supports claims in the risk-based planning and control literature that these practices can improve understanding of current and emerging risks and help identify risks that fall outside of established tolerances, thereby allowing organisations to avoid or reduce risks that fall outside of acceptable limits (Mun, 2010; Curtis and Carey, 2012). Like the strategic change analyses, the insignificant results for the other planning and control constructs (after including the upside risk potential variable) suggest that it the consideration of both the upside and downside of risk-taking in risk assessments and communications, rather than the mere adoption of more sophisticated risk-focused planning and control, that fosters greater risk reduction.

To provide further evidence on the influence of risk management value creation objectives on risk-taking, we re-estimate the volatility models after including separate indicator

variables for (i) preventing negatives within a set budget; (ii) minimizing the total cost of risk; and (iii) enabling return generation from more informed risk-taking. We also include interactions between these indicators and the individual planning and control constructs to test whether the planning and control practices' effects on volatility are contingent on the firms' risk management objectives.

The results (which are not reported in the tables) again suggest that companies that consider both the upside and downside of risk in decision-making have achieved lower volatility. The value creation through risk-taking *main effect* is negative and significant, indicating that firms pursuing this objective have lower stock return volatility, independent of the firms' risk-focused planning and control practices. In addition, the *interaction* between risk assessment and the value creation through risk-taking indicator is also negative and significant. One implication of the latter result is that more sophisticated risk assessments that formally incorporate statements of risk appetite and risk tolerances, are more quantitative, and are more focused on risk drivers and interdependencies have allowed organisations to reduce the volatility in existing operations while simultaneously searching for new opportunities to increase value through additional, more informed risk-taking.

Interestingly, the interaction between the accountability and incentives construct and the value creation through risk-taking indicator is *positive* and significant, while the coefficient on the accountability main effect is *negative*. Further examination of this estimated interaction indicates that greater risk-focused accountability and incentives are associated with lower volatility in firms that do not view upside risk as a value creation objective. Conversely, those viewing additional risk-taking as a potential value-enhancing objective while concurrently

establishing greater accountability and incentives for risk management exhibit higher volatility, consistent with these firms taking on more risk in pursuit of higher returns.

7.2 Firm Value Tests

We extend the analyses to examine firm valuation implications in Table 6. The dependent variable in these tests is Tobin's *Q*, with a higher *Q* ratio indicating that the firm has created greater value from its available assets. Each of the planning and control constructs is positively and significantly associated with firm value in the year following survey completion. When we control for the extent to which the upside potential of risk is incorporated into management communications and risk assessments, the upside potential variable is significantly positive while the coefficients on the other planning and control constructs remain significantly associated with Tobin's *Q*. This evidence suggests that the individual risk-focused planning and control practices can have a beneficial effect on firm value, even though the influence of some of these practices on stock price volatility is insignificant.

In untabulated tests that include indicator variables for the three value creation objectives, along with their interactions with the planning and control constructs, we find highly significant and positive main effects of return generation from more informed risk-taking on Tobin's *Q*. Interactions between this objective and the accountability and incentives, performance measurement, and board reporting constructs are also positive and significant, indicating that the valuation benefits from these risk-focused planning and control practices are greater when executives view the identification of opportunities to generate returns from greater risk-taking as one mechanism for creating value through risk management. In contrast, neither preventing negatives within a set budget nor minimizing the total cost of risk has a significant main or interactive effect on firm value. Although these insignificant relations provide no evidence that

focusing on minimizing downside risks increases firm valuation, they do suggest that ERM is not leading risk-averse executives to pass up risky but valuable investment opportunities, or to reduce firm risk-taking to a level that is too conservative from a diversified shareholder's point of view.

8. Conclusions

Our results highlight the important influence that risk management value creation objectives can have on the use and benefits from risk-focused planning and control practices. Organizations that primarily focus on minimizing risks within budget or reducing the total cost of risks tend to make less use of these practices, have higher stock price volatility, and achieve lower firm value than those that have taken greater steps to holistically consider both the upsides and downsides of risk. Our results also suggest that some risk-focused planning and control practices have greater effects on risk reduction efforts than others, though all are associated with firm value.

Like all large-sample studies, our analyses focus on central tendencies and incorporate only a small number of the potential factors that can influence ERM practices or their performance implications. Future research can extend our analyses to examine whether the implications of different risk management objectives vary across organisational, strategic, and regulatory settings. Increasing our understanding of the contextual factors that influence the costs and benefits of specific ERM practices can help refine and improve this rapidly evolving and increasingly important management process.

APPENDIX

Accountability and Incentives

Executive-level risk ownership and accountability is: Limited or not yet developed (10.1%); Informally understood or assumed (56.7%); Formally documented in job descriptions and responsibilities (33.2%)

Leaders in the organisation have communicated expectations for execution of risk management activities by their teams: In rare cases or not at all (14.1%); Inconsistently or on an ad-hoc basis for selected risks (58.3%); Regularly and consistently for key risks (27.6%)

Executive- and management-level incentive structures are tied to risk management results: Rarely or never (48.1%); Informally or in certain areas of the organisation only (38.2%); Formally incorporated into incentive structures (13.7%)

Performance reviews incorporate execution of risk ownership responsibilities:
Rarely or never (36.3%); Yes, inconsistently or informally (45.9%); Yes, consistently (17.8%)

Continuing development of the risk management framework is incorporated into the risk management leader's performance reviews: Rarely or never (18.4%); Informally or with reference to selected risk management activities (45.8%); Formally and consistently over time with measurement of progress (36.2%)

Execution of risk management roles and responsibilities is incorporated into Board members' evaluations: No (70.0%); Yes (30.0%)

Risk Assessment

Executive-management has established a statement of risk appetite for the organisation: No (39.9%); Yes, risk appetite has been informally discussed and understood (44.2%); Yes, risk appetite has been formally defined and documented (19.2%)

Executive-management has established statements of risk tolerance (i.e., acceptable levels of performance variability) for key risks: No, risk tolerance statements have not yet been developed (36.6%); Yes, for some key risks (44.2%); Yes, for key risks (19.2%)

Risk assessment criteria are developed to align with: Risk assessment criteria are not developed (16.9%); Management perceptions of risk tolerance (63.6%); A quantified risk appetite and statements of risk tolerance (19.5%)

Risk assessment scales at the organisational level are: Not used in risk management exercises (17.1%); Primarily qualitative criteria (i.e., High, Medium, Low) (44.2%); Developed with both qualitative and quantitative criteria (38.8%)

Risk drivers (causes of risks) are identified/documented: Rarely or never (6.4%); Inconsistently or on an ad-hoc basis for selected risks (42.4%); Consistently for key risks (51.2%)

The organisation leverages common risk driver information to identify correlation/relationships between risks: Analysis of correlation is not conducted (30.9%); Informally in management discussions and perceptions of risk (55.8%); Formally, and has documented the need for its consideration in risk assessment processes (13.3%)

Budgeting/Planning

Executive management applies concepts of risk appetite/tolerance to strategy development: Rarely or never (26.8%); On an ad-hoc basis (59.6%); Through formal process (13.6%)

How does information from the risk management process inform strategic planning processes?: Not included (16.8%); Informally incorporated (57.6%); Formally incorporated and integrated (25.7%)

Risk identification exercises during the strategic planning process are used to develop an emerging risk profile: Risk identification is not conducted during strategic planning (28.0%); No (37.0%); Yes (35.0%)

Significant project or investment decisions are made with explicit reference to quantified risk appetite and tolerance: Rarely or never (34.4%); Inconsistently (41.5%); Consistently (24.1%)

The organisation's budget/resource allocation processes explicitly reference and incorporate results of established risk assessment and analysis plans: Rarely or never (38.5%); Inconsistently or on an ad-hoc basis (42.3%); Consistently through a defined process (16.8%)

The organisation's budget/resource allocation process includes evaluation of risk management spend for effectiveness, i.e. cost-savings vs. exposure reduction: Rarely or never (42.1%); Inconsistently or on an ad-hoc basis (42.3%); Consistently through a defined process (15.6%)

Does the organisation have an understanding of the risk profiles for individual units/functions?: No (16.3%); Informally or through management gut-feel (59.0%); Supported by formal quantitative analysis (24.6%)

Are different risk-based return expectations set for different business units and functions?: No (34.7%); Yes, but not explicitly considered in budget decisions (41.7%); Yes, and incorporated into budget decisions and resource allocation decisions (23.6%)

In making significant capital investment decisions, the project risk profile is evaluated against/compared with the organisation´s overall risk profile: Rarely or never (30.9%); Inconsistently or informally (55.8%); Consistently as part of a defined process (13.3%)

Performance Measurement/Reporting

Risk management information is typically communicated to the organisation: Rarely/never (7.0%); On an ad-hoc basis or only in reaction to an event (32.5%); On a routine basis, though focus may still be reactive (40.5%); On a routine basis with a proactive focus (20.0%)

Evidence/information cited in risk management reports at executive levels of the organisation is: Primarily qualitative (22.4%); Primarily qualitative with inclusion of selected quantitative measures (52.8%); Primarily quantitative with supporting qualitative information (24.8%)

Risk metrics and indicators are identified and tracked at the enterprise level: Rarely or never (20.3%); Inconsistently or on an ad-hoc basis (43.4%); Consistently for key risks (39.5%)

Risk metrics and indicators for risk management activity implementation and completion are tracked at the enterprise level (55.2%)

Risk metrics and indicators for resources used to implement and complete risk management activities are tracked at the enterprise level (33.4%)

Quantitative thresholds and tolerances have been established: No (27.1%); Inconsistently or on an ad-hoc basis (43.4%); Consistently for key risks (29.4%)

Board Reporting

The full Board receives risk reports: Infrequently or not on a predefined schedule (22.4%); At least annually (31.9%); At least twice yearly (19.2%); Quarterly or more frequently (26.4%)

Board Committees (with risk management oversight responsibilities) receive risk reports: Infrequently or not on a predefined schedule (20.7%); At least annually (20.8%); At least twice yearly (20.4%); Quarterly or more frequently (38.0%)

Board reporting on the organisation's risk profile includes: Key risks and associated risk management activities (86.6%); Risk drivers and underlying causes (53.1%); Risk ownership responsibilities and accountabilities (65.5%); Risk management action plans and outcomes (64.0%); Risk tolerances and thresholds/limits (37.5%); Risk performance metrics/trends (39.4%); Information on emerging risks (56.3%)

Including Risk-Taking Upside Considerations in Planning and Control Systems

Potential upside of risk is acknowledged in enterprise-level risk assessment approaches and tools: Rarely or never (25.2%); Occasionally, focus is typically on downside (54.5%); Consistently (where applicable) (20.3%)

Communication from executives/management: Does not incorporate the concept of the upside of risk (23.6%); Inconsistently incorporates concepts of upside and downside risk (52.8%); Consistently incorporates the concepts of upside and downside of risk (23.6%)

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Table 1 **Sample**

Survey Respondents by Industry

	Freq.	Percent
Business Equipment	24	3.51
Chemicals	40	5.86
Construction	37	5.42
Education	39	5.71
Energy	42	6.15
Healthcare	61	8.93
Logistics	17	2.49
Manufacturing	74	10.83
Financial Institutions	78	11.42
Non-Durables	35	5.12
Other	117	17.13
Professional Services	12	1.76
Shops	55	8.05
Telecommunication	16	2.34
Utilities	36	5.27
Total	683	100

Survey Respondents by Geographic Region

	Freq.	Percent
Asia Pacific	84	12.3
Central America & Caribbean	5	0.73
Europe	187	27.38
Middle East & Africa	9	1.32
North America	374	54.76
South America	24	3.51
Total	683	100

Table 2 Determinants of Risk-Focused Planning and Control Practices

	Accountability/ Incentives	Planning/ Budgeting	Risk Assessment	Performance Measurement	Board Reporting	Include Upside Risk Potential
Board Oversight: Committee	13.225***	8.195***	17.894***	17.422***	24.780***	11.623***
Board Oversight: Board Only	20.765***	12.338***	20.322***	22.868***	30.906***	11.146***
Board Oversight: Board & Committee	22.434***	15.920***	22.991***	22.553***	36.512***	13.377***
Prevent Negatives Within Budget	-3.542*	-3.399	-1.390	-0.967	2.141*	-5.586**
Minimize Total Cost of Risk	8.869***	7.079***	5.244***	9.719***	5.036***	4.278**
Create Value Through Risk Taking	15.749***	18.543***	14.041***	17.481***	12.348***	28.301***
Ln(Firm Size)	1.231***	0.831*	1.084***	1.701***	1.443***	1.655**
Non-Profit	0.895	1.975	-2.551	1.596	1.887	-0.512
Government Affiliation	-0.153	-2.034	4.861**	1.841	1.366	-1.830
Listed	-0.143	-3.861**	-2.861*	-3.173**	-4.309**	-3.464**
# Geographic Regions	0.236	0.459*	0.133	0.079	-0.424	0.217
Business Equipment	3.302	5.617	5.373	4.256	3.440	8.969*
Chemicals	4.319	0.538	3.082	4.141	0.406	-0.127
Construction	9.869**	7.060**	4.760*	7.076	-1.299	8.813**
Education	-6.549***	-4.009	-4.942**	-3.381*	-10.721***	4.097
Energy	7.952**	8.002***	7.054**	4.270	1.601	-1.238
Healthcare	1.430	-2.586	-0.563	2.347	-2.534	5.945
Logistics	1.643	2.492	0.743	-1.377	-4.183	-4.817
Manufacturing	6.982*	5.358	4.869	6.427*	-2.962	2.745
Financial Industry	5.880***	2.806	6.740***	4.767***	8.569*	5.575
Non-Durables	-3.547	-2.200	-6.646	-6.204*	-4.202	-1.464
Professional Services	-2.033	7.791	-2.357	-0.135	4.609	1.501
Shops	4.446*	5.049	2.642	6.570***	1.595	5.877*
Telecommunication	-5.654	-9.533	-4.344	0.617	-1.296	-7.515
Utilities	2.252	5.152	4.159	-0.790	4.117	0.522
Europe	1.655	2.860**	4.895**	-1.288	0.235	-0.778
South America	-3.678	-3.550*	-1.634	-9.691***	-6.674***	-6.584***
Asia Pacific	6.244***	2.102	9.454***	2.950	6.878***	-1.882
Central America & Caribbean	-0.981	3.609	0.826	-3.374	-5.759	6.940
Middle East & Africa	-7.713	-1.648	0.563	-4.897	-7.618	6.683
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	683	683	683	683	683	683
R-squared	36.90%	29.00%	33.10%	37.50%	40.50%	31.20%

Ordinary Least Squares regressions examining the determinants of risk-focused planning and control practices. Test statistics based on standard errors clustered by country. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively (two-tailed).

Table 3 **Risk-Focused Planning and Control Practices and Strategic Change**

Panel A

Accountability	0.001				
Budgeting/Planning		0.003***			
Risk Assessment			0.001		
Performance Measurement				0.001**	
Board Reporting					0.001*
Ln(Firm Size)	0.020	0.018	0.022*	0.020	0.020
Non-Profit	0.065	0.061	0.069	0.064	0.061
Government Affiliation	-0.064	-0.051	-0.066	-0.063	-0.063
Listed	-0.003	0.002	0.001	-0.000	-0.003
# Geographic Regions	0.006	0.004	0.006	0.006	0.006
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	683	683	683	683	683
R-squared	3.70%	5.20%	3.50%	3.80%	3.90%

Panel B

Accountability	0.001				
Budgeting/Planning		0.002**			
Risk Assessment			-0.001		
Performance Measurement				0.000	
Board Reporting					0.001
Include Upside Risk Potential	0.002***	0.001*	0.002***	0.002***	0.002***
Ln(Firm Size)	0.017	0.017	0.018	0.018	0.017
Non-Profit	0.066	0.062	0.067	0.067	0.064
Government Affiliation	-0.054	-0.050	-0.051	-0.055	-0.055
Listed	-0.003	0.001	0.002	-0.000	-0.002
# Geographic Regions	0.005	0.004	0.006	0.005	0.005
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	683	683	683	683	683
R-squared	0.047	5.40%	4.70%	4.60%	4.70%

Linear Probability Models predicting the incidence of changes in corporate strategy as a result of new information or understanding concerning a major risk. Test statistics based on standard errors clustered by country. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively (two-tailed).

Table 4 **Risk-Focused Planning and Control Practices and the Incidence of Major Risk Events**

Accountability	0.000				
Budgeting/Planning		0.001			
Risk Assessment			-0.001		
Performance Measurement				-0.001**	
Board Reporting					-0.001
Include Upside Risk Potential	-0.001	-0.001**	-0.000	-0.000	-0.000
Ln(Firm Size)	-0.008	-0.008	-0.007	-0.006	-0.007
Non-Profit	-0.003	-0.006	-0.003	0.003	0.002
Government Affiliation	-0.046	-0.044	-0.044	-0.044	-0.045
Listed	-0.006	-0.005	-0.005	-0.004	-0.003
# Geographic Regions	0.006	0.005	0.006	0.006*	0.006
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	683	683	683	683	683
R-squared	3.90%	4.20%	4.00%	4.40%	4.10%

Linear Probability Models predicting the incidence of a major risk event in the prior two years that threatened the organization's viability. Test statistics based on standard errors clustered by country. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively (two-tailed).

Table 5 **Risk-Focused Planning and Control Practices and Stock Return Volatility**

Accountability	-0.002**	0.000								
Budgeting/Planning			-0.004***	-0.002						
Risk Assessment					-0.006***	-0.004**				
Performance Measurement							-0.003***	-0.001		
Board Reporting									-0.004***	-0.002
Include Upside Risk Potential		-0.005**		-0.004*		-0.003*		-0.004**		-0.004**
Ln(Firm Size)	-0.101***	-0.093***	-0.097***	-0.092***	-0.092***	-0.088***	-0.095***	-0.091***	-0.097***	-0.091***
Government Affiliation	-0.046	-0.101	-0.015	-0.073	-0.026	-0.060	-0.036	-0.086	-0.058	-0.088
# Geographic Regions	-0.026	-0.028	-0.025	-0.027	-0.029	-0.029	-0.028	-0.028	-0.027	-0.027
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	292	292	292	292	292	292	292	292	292	292
R-squared	32.00%	33.50%	32.70%	33.60%	33.40%	34.00%	32.30%	33.50%	32.50%	33.70%

Ordinary Least Squares regressions predicting future stock return volatility. Coefficient estimates are multiplied by 100 for ease of exposition. Test statistics based on standard errors clustered by country but not tabulated. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively (two-tailed).

Table 6 **Risk-Focused Planning and Control Practices and Firm Valuation**

Accountability	0.010**	0.006**								
Budgeting/Planning			0.010**	0.006**						
Risk Assessment					0.010**	0.006*				
Performance Measurement							0.012***	0.009***		
Board Reporting									0.012***	0.009***
Include Risk Upside Potential		0.007*		0.006*		0.007**		0.006*		0.007*
Ln(Firm Size)	-0.149*	-0.166*	-0.152*	-0.166**	-0.159**	-0.171**	-0.174**	-0.183**	-0.161*	-0.178**
Government Affiliation	-0.629	-0.541	-0.654	-0.552	-0.598	-0.520	-0.637	-0.568	-0.554	-0.502
# Geographic Regions	0.103***	0.106***	0.103***	0.107***	0.111***	0.111***	0.109***	0.110***	0.106***	0.108***
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	312	312	312	312	312	312	312	312	312	312
R-squared	14.30%	15.30%	14.30%	15.20%	14.10%	15.30%	15.30%	16.00%	15.00%	16.20%

Ordinary Least Squares regressions predicting Tobin's Q. Test statistics computed using standard errors clustered by country. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively (two-tailed).