

ORGANIZATIONAL SLACK AND MANAGERIAL
ATTENTION TO RISK: IMPACT ON AN
ORGANIZATION'S EXPERIENCE WITH HARMFUL
SURPRISES

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Abstract: Many organizations today are faced with an increasing number of risks related to their internal and external environments. When these risks manifest, the results can be disastrous. Recently, as these disasters have increased in frequency and scale, researchers have tried to understand what role risk management plays in helping companies withstand the impact of these 'risk events.' In this study, I explore two theoretical domains in management research which are amenable to understanding risk management from a managerial perspective. Drawing upon research in organizational theory and managerial cognition, I formulate a model which examines whether a company's slack resources or the managerial attention allocated to matters of risk, impact the likelihood that companies experience a 'risk event.' I gather data on over 400 companies over six years to test my assertions. Results suggest that facets of managerial attention--mainly how many diverse categories of risk managers attend to as well as the amount of attention devoted to their external environment--reduced the likelihood of experiencing a 'risk event.' The findings of my study contribute to research in management in two ways. First, my research extends existing theory in management by exploring how organization's handle risk. Second, I test my assertions by using a data source previously unexplored in research on risk in the field of management--suggesting that this new data source may be fruitful in future research endeavors.

My dissertation is organized as follows. First, I introduce my research topic and research question. Second, I review the literature on risk management, slack and the attention-based view of organizations. Third, I introduce my theoretical arguments and hypotheses for testing. Fourth, I discuss my method for testing my hypotheses as well as discuss my data source, variables and analytical technique. Fifth, I present the results of my analysis. Last, I conclude with an overview of my findings, the limitations of my research and areas for future research as a result of my study.

TABLE OF CONTENTS

| Chapter | Page |
|--|------|
| I. INTRODUCTION | 1 |
| Motivation of study..... | 1 |
| Research question and contribution | 7 |
| II. REVIEW OF LITERATURE..... | 10 |
| Risk management..... | 10 |
| Recent developments | 10 |
| Risk management process..... | 12 |
| Benefits of risk management | 14 |
| Empirical work in risk management | 16 |
| Limitations of existing risk management research | 17 |
| Organizational slack..... | 21 |
| Attention-based view | 24 |
| Empirical work on attention..... | 26 |
| Theoretical arguments and hypotheses | 28 |
| III. METHODOLOGY | 34 |
| Sample..... | 34 |
| Measures | 35 |
| Dependent variables..... | 35 |
| Independent variables | 39 |
| Preliminary data check..... | 44 |
| Missing data analysis | 44 |
| Outlier analysis | 46 |
| Analysis..... | 47 |
| IV. FINDINGS..... | 50 |

| Chapter | Page |
|----------------------------------|------|
| V. DISCUSSION & CONCLUSION | 53 |
| Discussion of findings..... | 53 |
| Limitations | 57 |
| Future research..... | 59 |
| Conclusion | 63 |
| REFERENCES | 65 |
| APPENDICES | 78 |

LIST OF TABLES

| Table | Page |
|--------|------|
| 1..... | 78 |
| 2..... | 79 |
| 3..... | 82 |
| 4..... | 83 |
| 5..... | 84 |

LIST OF FIGURES

| Figure | Page |
|--------|------|
| 1..... | 85 |
| 2..... | 86 |

CHAPTER I

INTRODUCTION

How companies handle the catastrophic impacts of downside risk has become a hot topic for organizations in recent years. Numerous high profile companies have either incurred catastrophic losses or outright failures as a result of their strategies in response to risk. These cases have called attention to the role that risk plays in organizations and the importance of strategies to mitigate risk. As a result of these events, government regulators, as well as other institutions such as stock exchanges and ratings agencies, are urging (and in some cases requiring) organizations to focus more attention on how they handle risk. For example, after the highly publicized collapse of Enron, the Sarbanes Oxley Act (SOX) of 2002 was formulated and a year later, the New York Stock Exchange (NYSE) updated its corporate governance rules for listing companies. These new rules required audit committees to discuss the strategies the organization is using to assess and manage risk (NYSE, 2003). More recently, the collapse of companies like Bear Stearns and Lehman Brothers in the financial sector has reinvigorated the debate about the importance of managing risk. Rating agencies such as A.M. Best, Moody's, and Standard & Poor's have started including a component in their rating system which grades companies on their risk management strategies.

Although the topic of risk and how organizations handle risk is a timely one, scholars would be hard pressed to find much in the way of empirical academic research on this specific topic in the management literature. This is peculiar given that how organizations respond to risk lies at the very heart of strategic management concepts like organizational alignment and adaptation (Andrews, 1980). Managing risk has, instead, been examined in more detail in other fields such as finance under the terms ‘risk management’ or ‘enterprise risk management.’ While research in fields like finance has begun to probe the surface on managing risk in organizations, scholars exploring this new line of research have run into a number of challenges which has constrained the dissemination of results to other fields. One such limitation is that the research questions which are explored answer questions specific to the domain of finance, such as whether risk management is valued by financial markets and how stock prices react to the announcement of risk management personnel. Recent research, as well as newer conceptualizations of risk management however, has suggested that one of the chief benefits of managing risk is to help organizations avoid being surprised by changes in its environment which can cause harm to the organization. I explore the latter in this study building on concepts from organization theory and strategic management.

Risk has a storied past, not only in organizational research but in social science in general. Once thought to be a matter of fate, humans have recognized over time that uncertain future events are something that can be planned for, and hence their outcomes can be managed (Bernstein, 1996). One difficulty in studying risk is that there are numerous definitions of risk (Aven, 2010). Many of these definitions are dependent upon the context and discipline from which risk is being examined. For example, risk from an economics standpoint differs from that of a finance standpoint. In economics, Knight (1921)

distinguished risk from uncertainty. Risk, he suggested, is measurable uncertainty. Risks are uncertain in their occurrence but decision makers know the probabilities of their occurrence and the outcomes associated with each occurrence. Uncertainty, on the other hand, is immeasurable uncertainty where decision makers do not know probabilities of events or the outcomes associated with them. In finance, risk is commonly associated with volatility, or variance—a statistical artifact, where the more volatile the asset (e.g. an investment or a portfolio), the more risky it is (and hopefully the more return gained) (Markowitz, 1952). In both fields, risks can result in either gain or loss. These definitions are consistent with the notion that risk is objective and something which is quantifiable.

The conceptualizations of risk used in economics and finance have been criticized because they fail to take into account the subjective, and behavioral aspect of risk (Miller & Leiblein, 1996). Those in charge of organizations are limited in their abilities to process the vast amount of information that they are confronted with from their environments (Cyert & March, 1963). The environment that managers operate within is never certain and not always amenable to probability calculations and quantification (Miller, 2009). Organizations operate in a highly complex and integrated system where new contingencies are always emerging as a result of changes in the firm's internal and external environments (Mintzberg & Waters, 1985). This makes it difficult for managers to predict what other managers and organizations are going to do, and almost impossible to develop a probability distribution of the potential outcomes associated with those actions. In this sense, risk is subjective—it is shaped by the context managers operate within and by the situations that managers experience (Miller, 2009).

As a result, a manager's definition of what constitutes risk differs from many academic conceptualizations of risk. In addition to uncertainty, managers also associate risk with poor performance, adverse outcomes, or losses (MacCrimmon & Wehrung, 1986; March & Shapira, 1987; Miller & Leiblein, 1996; Ruefli, Collins & Lacugna, 1999). Top managers in organizations are tasked by shareholders with one overarching objective—to create and achieve competitive advantage in order to attain an aspired level of performance. A failure to achieve these levels can result in unfavorable consequences for both the organization and the manager(s) that operate them. Thus, managers are preoccupied with loss aversion, not variance aversion (Miller & Leiblein, 1996). To managers, a risk represents something which is uncertain to occur but that can result in the organization failing to reach a certain level of performance, or incurring a loss. This type of risk has been referred to as downside risk and is also consistent with how lay people define risk and how risk is defined in the dictionary (Merriam-Webster, 2012). In this study I will define downside risk as the potential for loss as a result of uncertain contingencies in the organization's environment. Similar definitions have been used in the field of strategy as well as recent empirical work that has focused on developing more accurate measures of risk (Miller & Leiblein, 1996; Ruefli et al., 1999). In this study, I use the words 'risk' and 'downside risk' interchangeably.

Managing risk has been posited to be one of the most important functions of managers (Fayol, 1949). Managers, and particularly top managers, are counted on to make decisions about strategies the organization should implement given their analysis of the numerous contingencies in the organization's environment. Managers are counted on to make decisions that are consistent with what they believe will help them achieve competitive

advantage and help them continue operations (Andrews, 1980). One important decision is how to handle risk. While research in finance has scratched the surface of risk management, existing studies have done an inadequate job of empirically examining how organizations withstand and avoid downside risk, and more specifically the impact of harmful surprises. A new viewpoint is needed to answer this question.

The traditional viewpoint from the world of finance is that risk management should be left to individual security holders and not to managers of organizations (Markowitz, 1952). However, theoretical arguments have disputed this view and have argued that managing risk from within the organization can be valuable (Amit & Wernerfelt, 1990; Bettis, 1983; Meulbroeck, 2002; Nocco & Stulz, 2006; Stulz, 1996). One of its most important benefits is that risk management should help an organization achieve its goals by helping managers avoid pitfalls and surprises, and by extension the costs and losses associated with them (Aven, 2010). From an empirical perspective however, this premise has never been tested. Existing studies have focused more on whether or not financial markets react to the announcement of companies hiring chief risk officers (CRO) (Beasley, Pagach & Warr, 2008), the impact of risk management programs on Tobin's Q (Hoyt & Liebenberg, 2011) and risk management's impact on earnings volatility (Pagach & Warr, 2010). Results of these studies have been inconclusive.

The lack of empirical support in existing studies may come from numerous sources. As I will explain more thoroughly in the literature review, current research is problematic because of measurement issues, construct validity, and industry-specific samples. Furthermore, the outcome variables used in the current studies fail to address one of the most touted benefits of risk management. Risk management should help organizations avoid

being harmed by surprises that are the result of shifts in the organization's environment (Committee of Sponsoring Organizations (COSO) 2004). Organizational surprises are sudden encounters with a phenomenon which the organization had not previously given much consideration. To be taken by surprise means that organizations are taken "unawares," or without preparation (Cunha, Clegg & Kamoche, 2006).

Harmful organizational surprises, better termed 'risk events' (Kasperson, Renn, Slovic, Brown, Emel, Goble, Kasperson & Ratick, 1988) are the manifestations of risk which can surprise a company and which may result in catastrophe, such as large losses or company failure. Large losses and failure are problematic for organizations because they drain the organization of important resources which can be used to make investments that can improve shareholder value over the long run (Nocco & Stulz, 2006; Sprecher & Pertl, 1983; Stulz, 1996). Harmful organizational surprises, or risk events, occur because organizational and managerial knowledge is necessarily always incomplete (Hayek, 1945) and the environment in which organizations operate is always changing, often uncertain, and mostly ambiguous (Cunha et al., 2006). Uncertainty in the organization's environment introduces an element of risk for managers. When these risks introduce the possibility of loss for organizations, they are considered downside risks. When these downside risks materialize, organizations can experience adverse consequences. The key for managers is to figure out how to minimize the impact that these events have on their organizations. One way to do this is to understand how companies are best able to withstand and avoid these surprises.

Early work in organization theory, as well as more recent work in managerial cognition, provides a starting point for such an analysis. Early organization theory scholars (e.g. Cyert & March, 1963; Thompson, 1967) have suggested that organizations attempt to

reduce uncertainty and build up buffers around its technical core to insulate itself from changes in its environment. One such buffer is organizational slack (Bourgeois, 1981). In addition to slack resources, managers can make more informed decisions and formulate better plans about risk by allocating more attention (Ocasio, 1997) to potential downside risks. Drawing on these two literatures, I argue that both slack and managerial attention devoted to risk will help us understand which companies are best able to withstand and avoid harmful surprises.

Research Question and Contribution

In this study I look to address the following research question:

How can organizations withstand or avoid risk events?

I believe this research makes several contributions to the existing literature in management as well as work exploring risk management. First, this is an initial attempt at empirically testing new theoretical ideas surrounding the effectiveness of risk management. Existing research on managing risk from other fields, such as finance, has important limitations which reduce its generalizability. As a result of these existing limitations (which are outlined in more detail below), the empirical findings in these studies have been inconclusive. I apply a management lens to this important topic by examining the role that slack resources, as well as managerial attention, play in helping organizations withstand the effects of downside risks. By doing this I provide a new perspective built on management theory which has been missing from the existing literature.

Second, in conjunction with examining risk management utilizing a management lens, I examine an outcome variable not examined before in the existing literature. Existing research looking at this topic has focused on the value that markets place on having dedicated

personnel to oversee risk (Beasley et al., 2008) and changes in firm performance (Pagach & Warr, 2010). As important as these outcomes are they only assess the valuation of risk management. One of the most critical measures for examining whether strategies to handle risk are effective has been unexamined. An important benefit of developing strategies to mitigate the potential negative effects of risk is to help organizations avoid harmful surprises, or risk events (COSO, 2004). In this study, I address this shortcoming in the existing literature and examine risk events.

Finally, I also believe this study makes a methodological contribution. I expand upon this in more detail in the methods section, but the data source I use for testing several of my predictions is new to the field of strategy. In 2005, the SEC required organizations to start divulging to its shareholders the key risks that managers believe may cause the organization to fall short of its performance objectives. Companies have used section 1A of the yearly 10-K filings with the SEC to satisfy this requirement. While prior work in strategy has used contextual data from company 10-K filings, no management research has utilized the unique information that is contained in this section, and only a handful of papers across all of the business related fields have examined the information contained in this section (e.g. Campbell, Chen, Dhaliwal, Lu & Steele 2012; Huang, 2011). While some financial analysts have argued that the risk factors divulged to investors in annual reports are merely window dressing and boilerplate, empirical work has found that the information contained within this newly created section does provide unique and important information to shareholders about company risk and paints an accurate picture of the risks that organizations face (Campbell et al., 2012). My study is the first that I am aware of in the field of strategic management that uses this information source to assess managerial attention to risk.

To examine my research question in more detail, my study is laid out as follows: first, I briefly review some of the early organization theory literature on slack in organizations, risk management, and relevant literature from the attention-based literature. Second, I formulate my hypotheses using research from the attention-based view and prescriptive work in the risk management domain. Finally, I discuss my method for data collection and the variables I will use in my study to test my hypotheses.

CHAPTER II

REVIEW OF LITERATURE & HYPOTHESES

Risk Management

In order to understand how companies avoid the perils of downside risks, I will briefly review research from existing risk management literature that is strongly rooted in the field of finance. This literature is currently the best source scholars have for understanding how managers should handle risk in organizations. In this section, I will briefly review some important developments in risk management research, the process by which organizations manage risk, the benefits of managing risk, and current findings from empirical work. I will also discuss the limitations of existing risk management research which will highlight the importance of introducing a new perspective.

Recent Developments

The practice of risk management has been around for centuries (Bernstein, 1996) but only recently (the past decade or two) has it caught the attention of academics and those in the popular press. According to a recent review by Verbano & Venturini (2011), risk management originated as a way for organizations to reduce the costs associated with insurance. The risks managers tended to focus on were pure risks, or risks that could be

insured. Changes in the insurance market in the 80's caused managers to rethink risk management as being purely based in the world of insurance as insurance rates began to rise dramatically. In the 90s the evolution of financial markets and the increasing scrutiny on corporate profits caused managers to once again reassess their views on risk and what risk management entailed. Financial and strategic risks became the soup de jour, while insurable risks faded into the background. Managers began looking to financial instruments such as futures, options, and swaps to manage risk. After the corporate failures of the late 90s and early 2000s, risk management was again in the spotlight. While financial and strategic risks still occupied the attention of managers, the discipline of risk management had matured and expanded to now incorporate the domain of operational risks.

Much of the early prescriptive work focusing on risk management in business organizations saw managers formulating risk management plans around individual risks—such as insurable risks and financial risks, in isolation from one another. This approach to risk management was considered to be the 'silo' approach of managing risk (Fraser & Simkins, 2010) where risks were seen as disparate and unconnected to each other. This was problematic because over time researchers and practitioners saw that many risks that seemed to be unique were actually correlated. Thus, managing one type of risk was having an impact on other risks that happened to be related. In some instances, risk management efforts were being duplicated which caused an increase in expenses associated with risk management. In other cases, different functional areas were each operating alone and developing separate strategies to handle the same risks.

On occasion, this resulted in strategies that cancelled each other out instead of working together to manage risk.

Scholars and practitioners realized that to successfully manage risk, risk management processes needed to take the correlated nature of risks into account (Miller, 1992). This called for a more complex and holistic alternative for managing risk. Numerous holistic risk management initiatives have been developed. For instance, enterprise risk management (ERM) has caught on in work on risk management in finance (e.g. Fraser & Simkins, 2010) while integrated risk management (IRM) and strategic risk management (SRM) has found a (albeit very small) following in some management circles (e.g. Clarke & Varma, 1999; Miller, 1998; Miller & Waller, 2003). Regardless of the name, it has been relatively well accepted that for the best results, risk should be managed across the organization, in a more holistic way, with input from all organizational members in both a top down and bottom up process. Nevertheless, despite this widely held perception in risk management practice, the development and testing of related theories to test this topic has been lacking in management research.

Risk Management Process

There are many scholars and practitioners, particularly in the field of finance, who have put forth processes for helping managers manage risk more effectively. For instance Shortreed (2010) has suggested the risk management process consists of establishing the context where the process will be carried out, assessing the appropriate risks, treating those risks that are considered important, continually monitoring and reviewing risks and the risk management process in general, and communicating the risk management process with others in the organization. Shenkir and colleagues (2010) have

suggested the process consists of first clarifying the organizations strategic and financial objectives, work to identify important risks, assessing the risks that have been identified, taking action on the risks, monitoring risks over time, and communicating with managers across the organization to ensure the process is up to date. Frame (2003) has also articulated a process for managing risk that similarly includes the steps of planning for risk, identifying key risks, examining the impact of potential risks, developing risk-handling strategies, and finally monitoring and controlling risks.

Chapman (2011) has suggested that risk management follows a similar process as Shortreed (2010) where the process consists of establishing the context where risk management is going to take place, risk identification, analyzing the risks that have been identified and classifying them, evaluating the potential impact of the risks that have been identified, generating strategies to treat the risks, monitoring and reviewing risks and the risk treatment strategies over time making change when necessary, and finally, communicating and consulting with those responsible for carrying out risk management to make it more effective over time.

Examining just these few works on risk management it is readily apparent that the process is fairly broad and contains several well accepted and universal steps. For instance, each scholar has acknowledged the importance of first identifying the key risks facing the organization and addressing how they fit with the organization's current objectives. Second, some type of assessment and analysis of the identified risks is undertaken to determine which risks should be managed. Third, strategies are developed and implemented to manage these risks. Finally, the process is reviewed over time to ensure that it is still working with its intended purpose. While these steps may be similar

across firms, each firm's risk management strategy is going to be unique to that organization. This is because organizations have very different resource bases (Barney, 1991) which a) will be impacted differently by the numerous internal and external contingencies the organization faces, and b) which allow them to react and carry out risk management strategies. Additionally, since risk management is supposed to be highly intertwined with the organization's overall strategy (Beasley & Frigo, 2010; Dickinson, 2001; Mehr & Forbes, 1973) it will invariably be different and unique for each firm, dependent upon how each firm hopes to achieve a competitive advantage.

Benefits of Risk Management

Scholars in finance have argued that managing risk helps reduce the variability of corporate earnings, reduce the organization's tax liability, and provides decision makers with important information about its environment for making better future decisions (Meulbroek, 2002; Nocco & Stulz, 2006). However, from a managerial perspective, one of the most important benefits of risk management is to help organizations minimize or avoid surprises that can hurt the organization (Mehr & Forbes, 1973). These surprises usually assume the form of low probability, high impact events that can result in catastrophe for organizations and can result in financial hardships. More specifically, these surprise events can negatively impact the organization's financial position such that internally generated funds will be drained and will no longer be available to invest in positive net present value projects which aspire to enhance shareholder wealth (Amit & Wernerfelt, 1990; Nocco & Stulz, 2006; Stulz, 1996). These funds are important for organizations because they are often times the least expensive and most flexible form of funding for company projects.

Frame (2003) has suggested that the reasons the aforementioned benefits (i.e. fewer adverse surprises and preserved value creating resources) accrue to organizations that implement risk management programs are two-fold. First, when organizations have risk management processes in place, managers can make higher quality decisions because they have more information at their disposal than managers that do not take part in the risk management process (Mehr & Forbes, 1973). Managers undergo a detailed process of scanning their environment (Hambrick, 1981) for important pieces of information. This information is brought together and expanded upon with activities like brainstorming sessions with department heads (Frame, 2003) and doing exercises like creating risk checklists (Chapman, 2011). As a result, managers can formulate strategies that are built on a broader base of information with particular attention paid to possible sources of harm from the organization's internal and external environment. Managers can then choose to implement strategies that preemptively avoid or transfer risk, or they can draw upon general courses of action designed before an event occurs that may be more appropriate given the situation.

Research has suggested that these activities designed to broaden the base of information for managerial decision making can be beneficial regardless of whether they result in formal or informal risk management plans. Scholars have found evidence that just being mindful of the multitude of potential risks in the environment can enhance managerial confidence when it comes to making decisions and can serve as an important source of information to make better informed decisions when a risk materializes (Christopher, Mena, Khan & Yurt, 2011; Miller, 1998; Shenkir, et. al., 2010).

Second, as a result of more intelligent decisions about risk, having risk management plans in place helps those responsible for taking action on risk to act swiftly and confidently since they have undergone a rigorous analysis with other decision makers. Without at least a general plan or strategy in place (formal or informal), managers are left to choose the first best alternative in the heat of the moment as opposed to organizations where managers have a general idea of the appropriate and acceptable actions to take (Simon, 1947). This can help to reduce the impact that a risk can have if it does materialize. For instance, decision makers in organizations that do not discuss potential risks and how to handle them may lack information about alternatives if an event occurs. As a result, they may hold off on making any decisions to deal with risk, thus allowing the risk to result in even greater damage to the organization.

In theory then, risk management has some very important benefits for organizations. Unfortunately, empirical work examining what if any, the actual benefits of risk management are, has not confirmed the value that risk management has been posited to create (Beasley, Pagach & Warr, 2008; Pagach & Warr, 2010)¹.

Empirical Work on the Benefits of Risk Management

Empirical work examining the benefits of risk management has been sparse and the results have been inconclusive. For example, Hoyt & Liebenberg (2011) examined insurance companies located in the United States and found that the stock of companies that had risk management policies in place was given a risk management “premium” (i.e.

¹ There is a separate literature which looks at specific risk management tactics, such as hedging, which has been more conclusive (e.g. Campello et al., 2011; Carter et al., 2006; Smithson & Simkins, 2005). However, the interest here is on the overall risk management function in organizations and the multitude of strategies which look at more than hedgeable risks.

the stock was more valuable) of up to 20% more than those companies that did not have those policies. In the field of management, Amit & Wernerfelt (1990) found that reducing business-related risk benefits stockholders by helping firms operate more efficiently, thus improving the organization's cash flows and value. This is similar to the theoretical argument made by Stulz (1996) and Nocco & Stulz (2006) in that risk management is important to preserve internally generated cash so that organizations can invest in positive net present value creating projects. Unfortunately, they could only confirm their predictions through an indirect method which did not specifically test the link between business risk → and improving cash flow.

Alternatively, there are several studies that seem to refute the posited benefits of risk management. For example, Beasley and colleagues (2008) examined equity market reactions to announcements made by organizations stating they had placed an executive in charge of overseeing risk management. Through their analysis they found that the market did not react to these announcements, calling into question whether shareholders found risk management to be beneficial for organizations. Similarly, Pagach & Warr (2010) examine risk management adoption and firm performance. They find that while some firms experience reduced earnings volatility, there is no value enhancing impact from adopting a risk management program. Not only do these studies give a mixed message about the value of risk management, but they do not examine a central prediction in risk management research—does risk management assist firms in avoiding risk events so that they can continue to invest in value creating projects?

Limitations of Existing Risk Management Studies

I believe there are two levels of problems within existing risk management research which has made it a difficult topic to empirically test. On one level, there is an inherent difficulty in measurement of key constructs. More specifically, it is difficult to assess whether organizations are using risk management processes in the first place. This problem cascades into the problems of existing empirical studies on the topic. I will briefly outline these two issues below.

Risk management by its nature is very difficult to study for two reasons. First, the presence of risk management can be difficult, if not impossible to identify through secondary data sources. This issue arises because risk management is going to be highly intertwined with the organization's strategy and thus, difficult to untangle and isolate (Beasley & Frigo, 2010; Dickinson, 2001). For example, risks presented by a competitor expanding into an organization's market space should be identified by management. Managers should then take this information and incorporate it into the organization's existing strategy (Andrews, 1980; Porter, 1980). Viewing this move from outside of the organization via traditional secondary data sources, there is no way to assess that managers made changes to strategy based upon their assessment of downside risk presented by the competitor or for other reasons. This makes it difficult to single out what is being done explicitly to handle risk and what is done for other motivations.

The second issue is that for some organizations, managing risk may be a valuable capability which helps create competitive advantages (Barney, 1991). For these organizations, risk management is a way to gain a competitive edge over industry peers (Clarke & Varma, 1999) and thus it is highly unlikely that information about its risk management practices will be divulged. For example, Southwest Airlines was notorious

for having an enormously successful fuel hedging program in the 2000s (New York Times, 2008). While the company disclosed very general information (only that which was required by law) in their annual reports, they never went into great detail about how and why they decided to take the positions they did and how they went about implementing their positions. That information was proprietary and a source of competitive advantage over other industry participants. To this point, most other airlines hedged their fuel price but none were as successful at managing the risk associated with fuel price as Southwest.

These two issues, the difficulty of measurement and the desire to retain proprietary knowledge, create circumstances which make it difficult to empirically examine risk management. Specifically, scholars interested in exploring this topic have to be creative in their way of identifying risk management in organizations. Unfortunately, their creativity has introduced additional problems. First, it can be argued that construct validity is fairly weak in existing studies. Risk management is argued to exist when the company has an executive(s) explicitly in charge of risk. In research using that approach, the most commonly used proxy for risk management is whether the organization has a Chief Risk Officer (CRO) or specific personnel that handle risk (e.g. Beasley et al., 2008; Liebenberg & Hoyt, 2003; Pagach & Warr, 2010, 2011). Liebenberg & Hoyt (2003) have argued that because risk management programs are often times not disclosed, simple measures of risk management are used as signals of risk management usage. One of those simple measures is the announcement of the CRO. This is problematic however, because using CROs leaves out the possibility that organizations are doing something with risk management but not explicitly identifying

one executive to be in charge of that initiative. Organizations can shift risk management responsibilities to personnel throughout the organization, from other members of the top management team or to everyday employees. This is a limitation of current risk management studies (Liebenberg & Hoyt, 2003).

An additional problem with using CRO announcements, or trying to identify specific risk management personnel, is that these positions are constrained to a relatively few industries. The CRO position originated in the insurance and financial industries and has only recently begun to expand to other industries such as energy and manufacturing. As a result, most of the companies in these studies are from these relatively few industries (Beasley et al., 2008; Colquitt, Hoyt & Lee, 1999; Pagach & Warr, 2011) and sample sizes are very small (typically less than 150 organizations). This lack of variability in industries creates external validity issues such that results can be misleading and insights gained can be quite limited.

A final limitation of existing studies is that they fail to address some of the most important theorized benefits of risk management. One of the important benefits of risk management is to help organizations avoid being surprised by things which can cause harm to the organization. Risk events that result in harmful surprises can drain the organization of important resources which can be used for investing in positive net present value (NPV) projects (Nocco & Stulz, 2006). These resources are often the most cost effective and readily deployable resources that organizations have. Not having them can be the difference between investing in projects that can improve shareholder wealth over the long-term and not investing in them. Additionally, not having these resources can cause disruption to value creating activities and hurt the organization's ability to

continue its operations. Empirical work assessing the benefits of risk management has overlooked its impact on an organization's experience with harmful surprises.

Instead, existing research has looked at other firm level outcomes such as firm performance. For example, recent empirical work examining the benefits of risk management has used outcome variables which examined changes in firm performance (Hoyt & Liebenberg, 2011; Pagach & Warr, 2010) and equity market returns around the announcement of a CRO (Beasley et al., 2008). Simply assessing firm performance and firm value is inappropriate for concluding that risk management is or is not doing what it is intended to do. Risk management may be working but it would not necessarily show up in improved financial performance or short-term stock return data. Research looking at the benefits of risk management should be focusing less on risk management's contribution to firm performance and more on how organizations are able to withstand the impact of catastrophic downside risk. Two streams of research in management have elements which are flexible for accommodating a risk management perspective. Research on organizational slack as well as managerial attention suggest that their presence may have risk-management properties--I explain this link in more detail next.

Organizational Slack

Early work in the field of organizational theory has suggested that organizations have ways of shielding itself from the unpredictable changes in its environment. It is well accepted that organizations operate in complex and dynamic environments and that organizations face numerous contingencies from both inside and outside its boundaries. Indeed, Cyert & March (1963) argued that one of the organization's key objectives was to take action to reduce the uncertainty it faces from its environment, where the

environment consists of the market, the organization's suppliers, competitors, government agencies and the like. Additionally, Thompson (1967) has posited that in order for organization's to maintain their effectiveness, it was important for organizations to buffer its technical core from threats emerging as a result of environmental shifts. The technical core consists of the key processes and routines in organizations which surround its value creating activities. It is important to keep the technical core intact and operating smoothly without interruptions so that organizations can carry out their strategies to achieve competitive advantage. A changing environment threatens the technical core and represents a risk to the organization.

In the literature, one of the ways that organizations avoid uncertainty and buffer its technical core is through the accumulation of slack resources (Bourgeois, 1981). According to Cyert & March (1963), organizational slack resources are resources that are left over when the total amount of firm resources exceed the total necessary payments to sustain the organization's operations. Bourgeois (1981:30) has defined slack as "...that cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment." In essence, slack is like an insurance policy for organizations against unforeseen change. Cyert & March (1963:43) have argued that "when the environment becomes less favorable, organizational slack represents a cushion....More important, the cushion provided by organizational slack permits firms to survive in the face of adversity."

Existing research examining slack has moved away from the traditional viewpoint that slack acts as a buffer against environmental change. Newer research has instead

looked at how slack motivates search and the upside potential which can ensue. In this research stream, slack has been viewed as an important source of organizational risk-taking and change. When organizations have slack resources they can use those resources to experiment with new activities and strategies (Bourgeois, 1981; Cyert & March, 1963) which are often considered risky. For example, several studies have found a positive relationship between slack resources and research and development intensity in organizations (Chen & Miller, 2007; Greve, 2003; O'Brien, 2003). Others have found that slack has a positive relationship with product exploration and exploitation (Voss, Sirdeshmukh & Voss, 2008) as well as with acquisition activity (Iyer & Miller, 2008). The underlying premise is that when organizations have excess resources they have more strategic flexibility to engage in risky activities that they normally might not.

While much work has focused on the slack--performance relationship (Daniel, Lohrke, Fornaciari & Turner, 2004), far less research has focused on slack and its role as a buffer against threats posed by risks. To this point, very little research has examined the original intent explicated in early organization theory about the benefits of a build-up of slack resources in organizations. For instance, Miller & Leiblein (1996) have argued that slack may have an impact on organizations' downside risk over medium-term time horizons, while Iyer & Miller (2008) have hinted that one of the reasons slack allows organizations to engage in risky behavior is because the slack resources protect organizations in case the decision to take risk turns out badly. These studies do not, however, empirically examine the idea that slack buffers organizations and helps them withstand the impact from risk events.

Attention-Based View (ABV)

In addition to the traditional organization theory suggestion that organizations have elements which can be used for buffering itself from risk, research in the managerial cognition literature may also be informative in helping to understand how organizations can avoid the impact of risk. Managerial cognition research takes the stance that managers can significantly impact the value of organizations. The underlying argument is that since important strategic decisions are made by a relatively small group of individuals at the top of the organizational hierarchy (Daft & Weick, 1984), it is important to understand how the cognition of these individuals can impact organizations (Hambrick & Mason, 1984). From a managerial cognition perspective, managers spend their time processing the vast amount of information that confronts them from both the internal and external environment (Walsh, 1995) in order to make decisions about an organization's strategy. Unfortunately, as human beings, managers are cognitively constrained as opposed to completely rational in their ability to process and attend to all of the information they take in when trying to solve problems (Beck & Plowman, 2009; Cyert & March, 1963; Simon, 1947).

Kiesler & Sproull (1982) have argued that to solve problems, managers engage in problem sensing. Problem sensing is the cognitive process of noticing and constructing meaning about changes occurring in the organization's environment so that managers can make decisions and take actions. Along these lines, Daft & Weick (1984) have argued that organizations are interpretive systems in which managers must make sense of, and interpret, the numerous different events that organizations encounter when trying to achieve its goals. Managers take stimuli and events and attach meaning to these events

which then help them decide which types of actions to take (Dutton & Jackson, 1987). Daft & Weick (1984) have conceptualized this managerial activity as a tripartite information processing sequence that includes attention, interpretation, and action.

Ocasio (1997) however, argued that the three processes are so intertwined that trying to untangle them is not meaningful. Instead, Ocasio (1997) encased these different processes in a multidimensional concept of attention. The attention-based view (ABV) of organizations sees managers as boundedly rational information processors (Cyert & March, 1963; Simon, 1947). Managers do not have unlimited cognitive abilities and resources and thus, are limited in how much attention they can devote to all of the different stimuli confronting the organization. When trying to make decisions about the most appropriate strategies to implement, top decision makers in organizations are constantly being bombarded with numerous pieces of information from their internal and external environment (Kabanoff & Brown, 2008). Because of the limits of managerial attention, managers must pick and choose which stimuli will be given more attention and which will receive considerably less attention (Cyert & March, 1963).

According to Ocasio (1997: 189), attention is “the noticing, encoding, interpreting, and focusing of time and effort” by the organization’s top decision makers on strategic issues (such as threats, opportunities, and problems) faced by the organization, as well as the solutions (responses) to those issues. One of the key principles of the attention-based perspective is that what managers focus their limited attention resources on will impact the decisions and strategies they will enact. This principle is called ‘focus of attention’ and has been examined in numerous empirical studies. Nadkarni & Barr (2008) argued that managerial focus of attention could be

defined as the degree to which manager's focus on some aspect(s) of the organization's environment as opposed to focusing on other aspects. Furthermore, they argue that attention focus is important because it is a determinant of which issues, such as risk, will be included in the organization's future strategic decisions.

Empirical Work on Attention

Numerous empirical studies have examined managers' focus of attention and found support for the general idea that strategic decisions are made, and actions are taken, on the basis of where managers focus their attention. Levy (2005) found that managerial attention devoted to the external, as opposed to the internal environment, was associated with a more expansive global strategic posture. He argues that a global strategy requires management to look at potential opportunities that reside outside of the organization's local environment. When managers focus more of its attention on outside opportunities it can take steps to exploit those opportunities through greater global expansion. This results in a broader global market position. Focus of attention is a necessary first step in this process, as is supported in many other studies of managerial attention.

For instance, Cho & Hambrick (2006) found that the greater the increase in managerial attention toward an entrepreneurial orientation, the greater the change in an organization's strategy towards a more entrepreneurial strategy. Kaplan (2008) found evidence that when CEOs in the communications technology industry focused more heavily on new optics technology, greater changes in the organization's patenting activity in optics occurred. These results persisted even when considering organizational characteristics such as incentives and firm capabilities. Similarly, Nadkarni & Barr (2008) found that focusing on different aspects of the organization's external

environment, for example its task versus general environment, influenced the speed with which the organization responded to major changes in its external environment. They argued that top managers will be more likely to respond and act quickly because they recognize, understand, and have responses ready to enact when changes are occurring in sectors that are central to their cognition.

Bouquet and colleagues (2009) examined top managers' international attention and whether that had an impact on performance of multinational enterprises (MNEs). They found that international attention—the extent to which top managers invested their time and energy into activities and communications aimed at improving their understanding of the global marketplace, was significantly related to MNE performance. Finally, Egger & Kaplan (2009) found that CEO attention to emerging technologies was associated with an accelerated entry into a new product market, while attention focused on existing technologies was associated with slower movement into a new product market.

The findings of these studies validate the importance that managerial attention plays in organizations. These studies provide evidence that where, and what, managers focus their attention on impacts the subsequent strategic decisions they make. While these studies provide us with support for managerial focus of attention (Ocasio, 1997), no existing work examines the importance that managerial attention devoted to potential downside risks play in organizations. I outline below the impact that managerial attention to risk, as well as organizational slack, may have for organizations and why it is important in the context of avoiding risk events.

Theoretical arguments and hypotheses

Early organization theory work has suggested that slack resources can be important for helping organizations withstand the effect that downside risks can cause. According to Thompson (1967) slack can serve as a buffer for organizations. This buffer should insulate the organization's value-creating activities from changes in the organization's environment so that the organization can operate free from interruption. Similarly, Cyert & March (1963) argued that slack resources act as an insurance policy against abrupt changes in the organization's environment. When changes occur that can negatively impact the organization, slack is the cushion that organizations can lean on. Similarly, Cheng & Kesner (1997) have argued that slack can serve as a shock absorber and assist organizations when facing environmental contingencies by giving managers more strategic options and flexibility.

I argue that slack is beneficial for organizations because it allows organizations to absorb the impact of surprises that can hurt the organization. When organizations have more slack they are able to weather contingencies and changes in their environment. Slack resources soften the blow should an unexpected event occur—slack serves as a buffer, insulating the organization's vital operations from being impacted. Alternatively, organizations with fewer slack resources have a much smaller cushion and, as a result, will experience much more harm should a change in the environment introduce downside risk to the organization. These arguments coincide with Thompson's (1967) idea of

slack as a buffer of the organization's technical core. This suggests the following hypothesis:

Hypothesis 1: There will be a negative relationship between an organization's available slack resources and the likelihood that the organization experiences a risk event.

In addition to slack resources, I also argue that managerial attention plays a role in how organizations are able to withstand downside risk. Bettis (1983) has argued that organizational missteps may result from managerial inattention to important risks facing the organization. Drawing from an attention-based perspective (Ocasio, 1997), strategic actions taken by organizations are largely a function of what managers have focused their limited attention upon (Cho & Hambrick, 2006; Eggers & Kaplan, 2009; Nadkarni & Barr, 2008). In the context of this study, I argue that when managers are more focused on strategic issues that have been classified as risks, they are more likely than managers who focus less attention on risk to withstand the effect of downside risk. I argue that when managers devote more attention to risk, they are more likely to develop responses and strategies to handle those risks.

This general idea is not only supported by an attention-based theory but is also consistent with research in the organizational threats literature (Dutton & Jackson, 1987). Threats have been defined along similar lines as risk and, in some instances, the terms threat and risk are used interchangeably (e.g. Andrews, 1980). Jackson & Dutton (1988) have suggested that threats are stimuli from the organization's environment that have the potential to harm the organization, or are likely to result in a loss for the organization. In this literature, it has been argued that when managers have categorized a strategic issue as

a threat, managers will formulate responses to ensure that the threat (threats) is (are) handled to avoid harm to the organization (Dutton & Jackson, 1987).

I argue that these responses can consist of risk management measures. The success of risk management is built on the notion that managers are aware of, and have identified, the key sources of risk facing the organization (Chapman, 2011; Frame, 2003; Shenkir, Barton & Walker, 2010). The risk management process allows managers to rigorously identify the key contingencies in the organization's external and internal environments, analyze and evaluate these risks to understand how they may be related to one another and how they might impact the organization, formulate strategies to respond to the risks, and incorporate those responses into the overarching organizational strategy.

As a result, these risk management measures help managers do several things. First, managers can make decisions about risk management more intelligently. Risk management processes require managers to perform a thorough analysis which highlights the likely downside risks facing organizations. This information can be used to preemptively handle downside risk through strategies aimed at avoiding specific risks altogether or transferring those risks to other parties (Frame, 2003). Second, managers can formulate better strategies for when risks are inevitable. When risk is unavoidable for organizations, managers can formulate strategies aimed at mitigating the impact that the risk has on the organization (Chapman, 2011). Due to these benefits, organizations are less likely to be harmed when risk management strategies are in place.

This line of reasoning suggests that managerial attention to risk forms the basis for helping organizations avoid risk events through the use of risk management activities and planning. More specifically, this suggests the following:

Hypothesis 2: There will be a negative relationship between the amount of managerial attention allocated towards risk and the likelihood that the organization experiences a risk event.

Organizations can be surprised as a result of a risk event from many sources. Risk is a complex and multi-dimensional construct. Research from a number of fields has contributed to illuminating the many sources of risk organizations face. For example, management and finance researchers have recognized the importance of taking into account strategic risks (e.g. Collins & Ruefli, 1992; Miller & Bromiley, 1990), operational risk (e.g. Del Bel Belluz, 2010; Wiseman & Catanach, 1997), and financial risks (e.g. Miller, 1998; Rogers, 2010). These risk categories represent just a few of the many categories advanced in the business literatures. In this study, I examine a set of eight categories of risk (which are discussed in more detail in the Methods section).

Each category of risk presents a unique challenge for managers. Furthermore, each type of risk requires different strategies for successful management of that risk. For instance, financial risks may be more effectively handled through hedging strategies while operational risks may be more effectively handled by changes in existing operational practices and routines, such as quality control programs. The right mix of strategies to respond to these various risks will depend upon the correlation of these risks and the organization's existing goals and objectives.

Keeping with an attention-based perspective, I argue that for organizations to be able to withstand the impact of downside risks, such as avoiding risk events, managers must allocate attention to a broad range of risks. By casting a wide net, managers are ensuring that they are informed of all possible sources of downside risk that may impact

the organization and thus have better information for decision making. By attending to a wider and more diverse group of risks, managers can limit potential surprises because they are less likely to have “risk” blindspots—where blindspots result from management having an incomplete picture of their environments. With greater diversity in information, managers can formulate strategies directed at handling multiple sources of potential contingencies.

Levy (2005) found that when managers of MNEs devoted attention to more diverse elements in its external environment, it led to more expansive global postures where managers were less likely to overlook and be taken by surprise by changes in its environment. Similarly, I argue that when managers allocate attention to a greater array of downside risks, they are less likely to overlook any one source of risk when developing plans and strategies. As a result, they should be less likely to be impacted by a downside risk. This suggests the following:

Hypothesis 3: There will be a negative relationship between the variety of risks managers allocate attention towards and the likelihood that the organization experiences a risk event.

While I posit that paying more attention to a greater array of potential risks helps organizations avoid risk events in general, it also may logically follow that when organizations focus on specific types of risks they should also be able to avoid risk events associated with those risks. I argue that when managers channel their attention resources on fewer sources of risk, for instance they are focusing more attention on operational contingencies as opposed to financial or legal contingencies, they are more likely to develop more detailed and comprehensive

strategies and responses that are aimed at these specific sources of risk. As a result, the organization should experience fewer risk events related to these areas where it has devoted a greater degree of attention. This suggests the following hypothesis:

Hypothesis 4: There will be a negative relationship between the amount of attention managers devote to a specific downside risk (e.g. general, competitive, operational, legal, etc.) and the likelihood that the organization experiences a risk event due to that specific type of risk.

(See table 1 for summary of hypotheses and figure 1 for hypothesized model)

CHAPTER III

METHODOLOGY

Sample

To test the hypotheses, I started by collecting an initial sample of all the companies that appeared in the S&P 500 index anytime in 2006. This includes companies that entered into the index anytime during the year or left the index at any point during the year. This yielded an initial sample of 532 companies. Of those 532 companies, I was able to obtain matching unique identifiers across the different data sources used for this study on 529 companies. From those 529 companies, I excluded all of the financial and insurance companies as well as investment holding companies and trusts (such as REITs). I excluded these companies since they have different reporting requirements and are held to a different standard of disclosure than non-financial companies. They are also subject to different rules, regulations and laws than companies in other industries. I located these companies by examining two digit Standard Industry Classification (SIC) codes and eliminating companies that had SIC codes between 60 and 69. A total of 98 companies fit into one of these categories. As a result, the initial sample of companies was reduced from 529 to 431 companies. For these 431 companies I collect data from

2007 until 2012.

Once all data has been collected I also exclude companies whose stock price was below \$10 (more information for why this is done can be found in my discussion of the dependent variables used for this study) and any company that did not have any available data for at least one of the hypothesized independent variables. This final step results in a sample size of 417 unique companies. Unfortunately, not every company remains a part of the sample over this time span due to things like privatization and bankruptcy, thus my panel dataset is an unbalance panel whereby there are an unequal number of time periods in which each company appears in the sample. Also, since my dependent variable occurs on a daily basis I test my hypotheses using a monthly datapoint system whereby I assign the value of the yearly data to each monthly observation for the following fiscal year. Thus I am able to capture 'risk events' that would otherwise be lost by condensing the data into a yearly format. Additionally, constructing the data in the monthly format also results in a much more fine-grained control for time related effects. The final number of observations is 27,874. However, due to the issues mentioned above as well as the way the data are grouped together for analysis, the sample size varies with each hypothesis tested.

Measures

Dependent variables

In this study, the dependent variable is 'risk event.' To operationalize this variable, I look for evidence that companies have experienced a large, negative, unexpected and discrete event. In doing this, I look for abrupt declines in a company's stock price as providing evidence that something unexpected happens (Akhigbe, Larson & Madura, 2002; Yu &

Leistikow, 2011). Stock prices are supposed to encompass all available information and thus changes in stock price only occur when new information becomes available that may alter what is currently known about the future cash flows (or growth prospects) of the company. Large abrupt changes suggest that new information not previously taken into account has come into existence which causes an immediate revaluation of the equity security (Fama, 1970).

Stock price information was gathered using the Center for Research in Securities Prices (CRSP) database. To operationalize this variable, several steps were taken. First, stock prices are collected for every trading day during the year for every company in my sample. Second, I look at the return of the stock (without dividends) over the course of one trading day (from the close on day 'd-1' to the close on day 'd'). To classify a change in stock prices as an 'event' I draw on work in the field of finance which examines stock price events. These studies commonly use a minimum decline of 10% as the cutoff point for determining whether a stock has experienced an event or not (Bremer & Sweeney, 1991; Cox & Peterson, 1994). Therefore, I look for declines of 10% or more from the close on day 'd-1' to the close on day 'd' to find 'risk events.'

I take several additional steps to try and ensure that the 'risk events' found are true events and not trading anomalies. More specifically, I apply the following set of criteria. First, as suggested above, the stock must decline 10% from consecutive day closing prices. Second, I correct for the return of the stock market. Stocks must decline 10% in excess of the average return for its peers -- companies in the S&P 500. I make this correction because for days when the market trades lower as a whole, declines may be skewed by overall negative market sentiment. Thus, declines are only classified as an

event if on days when the S&P 500 declines, the stock declines in excess of 10% of the market return. Third, I want to make sure that the decline is due to an event and not profit taking due to a run up in the price of the stock. I look at percentage returns over the course of the seven days and three days preceding the decline as well as the day preceding the decline. In order to be classified as an event, the stock could not have run up by more than 50% over the previous seven, three, or one day time periods before the event takes place. Fourth, I also ensure that there are no large retracements in the price of the stock. A large retracement of the entire move may suggest an overreaction or misinterpretation of the information by the market or a market rumor about the company. Thus, I make sure that the price of the stock on the next day, as well as the third and seventh day after the event, is not trading higher than its pre-event closing level. Fifth, low volume in the stock can exacerbate price movements and declines. Thus, only declines that occur on days where the volume traded of the stock is greater than 10,000 shares are used. I believe that these criteria help me to narrow down the field of events to those most likely to be a result of a shock, or risk event, to the organization.

Finally, there is some evidence to suggest that as the price of the stock becomes cheaper, stock events become more frequent because it takes less capital to drive down the price of the stock and because smaller price changes result in larger changes in percentage terms. Thus, I use a common cutoff by research in the field of finance which examines stock price events (e.g. Yu & Leistikow, 2011). The research on stock events tend to discount events where the stock price is under \$10 and only examine the events where the stock has traded above \$10 on the day preceding the event. For my analysis I apply this metric and classify an event as occurring only if the close of the stock price on

the day preceding the event is greater than \$10. Companies who are not eligible to experience an event due to stock price have also been excluded from the analysis. I also use this cutoff for a more practical reason. Initially I looked at events that occurred regardless of stock price. A preliminary analysis of these instances revealed that companies whose stock traded below \$10 had very poor media coverage thus making it very difficult to gather any meaningful data on reasons for an event. Further, declines on the very low priced stocks were increasingly not due to any company specific news.

Any stock that met the aforementioned criteria was given a '1' as having experienced an event, otherwise the company received a '0' signaling no event. This dependent variable was used to test hypotheses one, two and three. In my final sample there were 499 events that satisfied the criteria.

For hypothesis four, I create a second dependent variable that categorizes each event according to a specific type of risk. While there are numerous risks that companies encounter (Chapman, 2011), I am interested in a parsimonious set of risks that have been recognized across disciplines, and prior studies, as important sources of risks for organizations. I have created a list of eight risks that appear across the finance, risk management and strategic management literature on risk--general environment related risks, competitive environment related risks, operational risks, legal risks, strategic risks, financial (internal vs. external) risks, and other risks (for instance weather events like hurricanes). The list of categories used for this study, distinctions between categories and examples of each can be found in Appendix 1.

I categorize each event as residing in one of these eight categories. To do this I search for each event by the company name (or ticker) the two days before and after the

event. I used both LexisNexis and Factiva to find news articles related to the event to uncover a specific cause(s). For items where LexisNexis or Factiva contained no information, I ran a Google search to try and find a cause. This approach is similar to the textual approach offered by Gephart (1993) in that variables for the analysis are collected from various text documents which include newspaper stories, company documents released to investors, and transcripts of conference calls and television reports to construct the reasoning behind a specific event. Collecting texts from multiple sources gives researchers the opportunity to learn about the event from the different perspectives of the parties observing the event. For this study, I looked for common themes that emerged from the different data sources. When multiple sources could corroborate the reason for the 'risk event' the reason was recorded and coded.

Independent Variables

Slack. In this study I am interested in slack resources that are readily available and deployable. Thus, I collect data on available, otherwise known as financial, slack. Prior research has operationalized this type of slack as the current ratio (e.g. Bromiley, 1991; Cheng & Kesler, 1997). The current ratio consists of current assets divided by the current liabilities. I collect this information from the COMPUSTAT database.

Managerial attention to risk. Researchers examining a number of theoretical domains in strategy have alluded to the “black box” problem in organizational research (e.g. Baum & Ingram, 1998; Hambrick, 2007; Pettigrew, 1992; Priem & Butler, 2001). This problem arises due to the difficulty of observing some of the intricacies of organizational behavior occurring inside the confines of the organization. Because of constraints on resources (such as financial and time), it is difficult for researchers to collect large and diverse

samples by going into numerous organizations and observing internal processes. Making matters worse, especially in the case of large organizations, executives responsible for formulating and implementing strategy tend to not respond in large numbers to requests for interviews or to fill out questionnaires (largely because of their responsibilities and resource constraints).

Measuring constructs like managerial attention presents further difficulty since these things are embedded within the minds of individual managers (Huff, 1990; Lant & Shapira, 2001). As a result of these issues, researchers attempt to use unobtrusive methods to develop measures which represent reasonable proxies for organizational and managerial cognition and behavior. For instance, researchers utilizing an attention-based framework look for places that managers share their views with external constituents and argue that these sources of data are a representation of managerial cognition and attention (e.g. Cho & Hambrick, 2006). Collecting and analyzing data of this nature can be done through content analysis.

Content analysis is a research methodology which is particularly useful in strategy research because of its unobtrusive nature (Krippendorff, 1980; Morris, 1994; Weber, 1990). The idea behind content analysis is that an individual's cognition and thoughts about the world can be deduced from the words that individuals use (Sapir, 1944; Whorf 1956). Thus, analyzing written content which is forged by those in charge can help organizational researchers open up the 'black box' by gaining some insight into the cognitions of the organization's decision makers. Content analysis involves examining pieces of text, usually from company documents such as company filings (such as 10-Ks,

10-Qs, Proxy statements, etc.), annual reports (e.g. letters to shareholders), or official company statements, and pulling out information that relates to the research question.

Content analysis has been used in numerous studies in strategic management and, more specifically, in research examining managerial cognition. For instance, Cho & Hambrick (2006) and Nadkarni & Barr (2008) both used content analysis on letters to shareholders to examine managerial attention, while Mishina and colleagues (2004) used written narratives from private databases. Further, and more relevant to my study, several studies have used company 10-K filings as sources for managerial attention (e.g. Angriawan & Abebe, 2011; Maula, Keil & Zahra, 2012; Mishina et al., 2004). In addition to the face validity of content analysis, prior academic studies have worked to empirically confirm and validate that company documents can be used as proxies for managerial cognition (e.g. D'Aveni & MacMillan, 1990; Huff & Schwenk, 1990).

To construct my measures of managerial attention to risk, I examine the 10Ks of all the companies in my sample. By law, organizations are required to disclose information related to specific risks that may impact their organization in their year-end filing with the Securities and Exchange Commission (SEC). More specifically, the SEC has instructed companies to disclose risks specific to their company which may result in material losses for their shareholders, in section 1A of their annual 10K filing under the heading of 'Risk Factors.'² Several complete examples from sample companies can be found in Appendix 2.

² Starting in 2005 the SEC has required that companies must provide a discussion of risk factors in “plain English” to investors, consistent with the Securities Act of 1933 and established by Rule 503(c). Rule 503(c) reads as follows (taken directly from the SEC website): Where appropriate, provide under the caption “Risk Factors” a discussion of the most significant factors that make the offering speculative or risky. This discussion must be concise and organized logically. Do not present risks that could apply to any issuer or any offering. Explain how the risk affects the issuer or the securities being offered. Set forth each

Research in both accounting and finance have validated the importance of the mandatory disclosure of key risks as providing important information by the organization's management to its stakeholders (Campbell, et al., 2012; Huang, 2011; Kravert & Muslu, 2011). While some financial analysts have suggested that perhaps the mandatory disclosures are nothing more than boilerplates used by the organization to cover their bases for legal reasons, research has shown that this is not the case and that they do provide important information about key threats (Campbell, et al., 2012). Figure 2 has a graphical representation of changes in company word count reporting during the sampling time frame to illustrate the differences between firms. Three firms from two different industries are plotted and the contrasts within industry and across industry in terms of number of words and trends in word counts are noticeable upon a visual inspection of the information.

Hypothesis two utilizes the independent variable *managerial attention to risk*. To gauge the amount of managerial attention devoted to risk, I examine section 1A of the 10K filings for my sample companies and calculate the total number of words that appear in that section. Since managers are given great discretion over what they determine is appropriate or relevant to include in section 1A, larger counts should correspond to greater levels of attention to risk. The word counts are generated by using the Direct

risk factor under a subcaption that adequately describes the risk. The risk factor discussion must immediately follow the summary section. If you do not include a summary section, the risk factor section must immediately follow the cover page of the prospectus or the pricing information section that immediately follows the cover page. Pricing information means price and price-related information that you may omit from the prospectus in an effective registration statement based on §230.430A(a) of this chapter. The risk factors may include, among other things, the following: (1) Your lack of an operating history; (2) Your lack of profitable operations in recent periods; (3) Your financial position; (4) Your business or proposed business; or (5) The lack of a market for your common equity securities or securities convertible into or exercisable for common equity securities (SEC website, Accessed on July 19, 2012).

Edgar Section Extraction Tool found on the Direct Edgar website. This is a relatively new tool developed by Direct Edgar and this study is one of the first to use output from this tool.

Diversity of managerial attention to risk. To test hypothesis three, I formulate a variable which measures the diversity of risks that managers devote their attention. For this variable, I utilized a proprietary software coding which pulled out the subheadings (each risk listed by the company) in section 1A of the 10K. I then classify each of these subheadings within the section using the same categorization which was developed to classify a 'risk event' as stated in the section discussing my dependent variables above.

Attention diversity was constructed in two steps. First, I generated a list of key words associated with each of the risk categories (please see Appendix 3 for the list of key words). Second, for any subheading that was not categorized by key word, I read through and coded each by hand according to the descriptions given in Appendix 1.

Once this is done I create a ratio of the total number of risk categories which are mentioned in section 1A for that company versus the total number of risk categories (eight possible categories).

Depth of managerial attention to specific risks. Finally, to test hypothesis four, I formulate a variable which measures the amount of attention to which top managers focus on one specific risk. Similar to Cho & Hambrick (2006) in their study of attention, I calculated a series of variables which represented each risk category. For each risk listed in section 1A I generated a count variable which was equal to the number of headings that were used to describe risks that belonged to the same category. The more headings for a specific risk category, the greater the attention devoted to that risk.

Control variables.

In addition to my constructs of interest, I also include several control variables. Larger firms, as well as those that perform better, have the resources to increase their attentional capacity and have more resources at their disposal to dedicate towards mitigation strategies. This could result in a greater level of attention to risk as well as fewer 'risk events.' Thus, I control for this possibility by including the organization's total dollar amount of assets as a proxy for firm size. To control for company performance I use return on assets (RoA). I also control for the equity price risk of the stock. To construct a measure of equity price risk, I calculate the standard deviation of the return on the stock for the prior month. This measure is preferred to Beta since Beta is dependent on the market portfolio it is being compared. All control variables were calculated using data from the COMPUSTAT and CRSP databases and were calculated for time 't-1.'

Preliminary Data Check

Missing data analysis

Before beginning the analysis, a preliminary check of the data was done to determine the extent of missing data as well as the presence of outliers, or leverage points. Missing data can be problematic for two reasons: first, from a practical perspective it can reduce the sample size and hurt power; second, it could lead to biased results if the missing data process results in systematic missing data (Hair, Black, Babin & Anderson, 2010). Thus, it is important to understand the degree of missing data to determine if it can be ignored (when it is deemed to be missing completely at random) or if some remedy needs to be applied (missing not at random).

First, I looked at a general summary of the missing data by examining frequencies and percentage of missing data for each variable. Generally, most variables had less than 15% missing data, however, several variables associated with the *attention diversity* and *attention depth* measures had close to a third missing data. Next, I looked at any patterns of missing data. Aside from the missing data associated with the *diversity* and *depth* measures, the patterns appeared to be random in nature when examined visually. I then proceeded to empirically diagnose the missing data. I broke all of my variables of interest into groups (missing versus non-missing). I then performed multiple t-tests of the means between those two groups on key variables like firm size, firm performance, capital expenditures, and total revenue. While select t-tests did indicate that the means on several of these variables were equivalent, the majority suggested that they were not. Finally, I also performed Little's MCAR test (Little, 1988) and it was non-significant indicating the data are not missing completely at random.

After these analyses, while the missing data do not appear to be missing completely at random, the majority of the missing data are relatively small in number (less than 15% in most instances) and thus will not materially impact power for my statistical tests given the large number of cases with non-missing values. Further, there is no reason to suspect that the pattern of missing data is due to a *systematic error* which is consistent across missing data points. The areas where there are larger amounts of missing data are due to random, unique formatting decisions in the reporting of the 10-K filings by individual companies. Thus, the decision was made to use pairwise deletion such that only cases with non-missing values are used for hypothesis testing.

Outlier analysis

In addition to missing data, I also looked for outliers, or leverage points, in my data.

Outliers are observations which are markedly different from the other observations in the sample. According to Hair et al. (2010: 65), "Outliers cannot be categorically characterized as either beneficial or problematic, but instead must be viewed within the context of the analysis and should be evaluated by the types of information they may provide." Typically outliers occur due to a procedural, or data entry, error; an extraordinary event with a well known cause; an extraordinary event with no explanation; or have a unique combination of values across different variables in the analysis. They are problematic to the extent that if they are not representative of the population, they can skew the results of the analysis.

To explore my data for outliers I used a three step process for detecting any potential outliers as suggested by Hair et al., (2010). First, I performed a univariate detection analysis. I generated the standard deviation of each variable considered for the analysis and calculated plus and minus four standard deviations from the mean. Any value that was greater than four standard deviations from the mean was flagged for further analysis. Second, I performed a bivariate detection analysis. Since the number of variables is large (greater than 10), Hair et al. (2010) suggest looking at only the bivariate relationships between the dependent variable and independent variables. I generated box plots to examine these relationships. Last, I performed a multivariate detection analysis. I performed a logit regression with my variables of interest and then predicted and plotted the residuals and delta betas (dbetas). From this analysis I also flagged any extreme values and then compared those values to the potential outliers flagged in the univariate

and bivariate analysis. There were four specific observations that looked particularly problematic so I examined each case manually. The underlying cause of the deviations stemmed from the variable used to proxy 'equity price risk.' Upon review, there was no error in the data entry and none of these observations were extreme on a sufficient number of key variables to be considered a poor representation of the population, I retained all variables for the analysis.

Analysis

My hypothesized models test four direct relationships, but imply that the independent variables precede the dependent variable in time. As such, I collect my dependent variable at time 't' and all independent and control variables at time 't-1.' The dependent variable used for analysis is a dichotomous variable. Dichotomous dependent variables violate several assumptions needed to obtain unbiased and efficient estimates for hypothesis testing using ordinary least squares (OLS) regression (Maddala, 1983; Wiersema & Bowen, 2009). More specifically, dichotomous dependent variables result in error terms that follow a binomial distribution as opposed to a normal distribution; the variance of dichotomous variables are not equal across observations, thus creating heteroskedasticity; and dichotomous dependent variables violate normality and linearity assumptions (Hair, et al., 2010). As a result, a technique designed to overcome these limitations is necessary. The most common method employed for examining binary dependent variables is logistic regression analysis. Logistic regression does not face the strict assumptions needed for OLS regression--mainly normality, homoskedasticity, and linearity of the error term.

The nature of the data by which some firms experience events in certain time periods while many do not lends itself to a case-control type of research design. When the dependent variable is binary, this type of design can be analyzed using conditional logistic regression (McFadden, 1974), also known as a fixed effects logistic regression model. Conditional logistic regression is similar in nature to ordinary logistic regression with the exception that the data are grouped. The idea is to fit a logistic model which explains why any given company has a positive outcome (a "1", or experiences a risk event) conditional on the other outcomes in the group. Conditional logit analysis is common for estimating models with zero/one dependent variables such as that in this study (Bowen & Wiersema, 2004; Harris & Bromiley, 2007). For this analysis, I grouped companies by month and industry to control for external variables that influence the underlying probability of a risk event for firms in an industry at a particular time. Essentially, this specification is equivalent to the inclusion of dummy variables for each combination of month and industry to control for unobserved drivers of risk. Of all the firms in a particular industry at a particular time, the model estimates the effect of firm attributes on the probability that a firm will experience a risk event. The equation used for this analysis is given by equation 1.

Equation 1:

$$Prob(Risk\ Event_{imj} = 1) = Exp(\beta' X_{jim}) / \sum_{j \neq k} Exp(\beta' X_{kim})$$

The numerator of this expression is a function of the attributes of company j in industry i in month m , and the denominator is a function of the attributes of all companies that could potentially experience an event in industry i in month m . Variables related to industry and time period that might affect the likelihood of a company experiencing an

event appear both in the numerator and denominator and so cancel each other out leaving the firm specific variables of interest.

If a coefficient is positive and significant, this indicates that an increase in the value of the variable of interest increases the likelihood that a company experiences a risk event. If a coefficient is negative and significant, this indicates that an increase in the value of the variable of interest decreases the likelihood that a company experiences a risk event. The disadvantage to using the conditional logistic regression approach is that it typically results in a smaller sample size. A smaller sample size can occur because when there is no variance in the dependent variable for some group (i.e. if no companies in a particular industry experience a risk event in a particular month), then all those observations drop out of the analysis since they provide no useful information for estimating what effects the probability of an event.

I estimated all models using robust standard errors. Finally, I checked the variance inflation factors (VIF) for extreme collinearity between covariates. The individual VIFs ranged from 1.08 to 1.86, with an average VIF of 1.25. Since all the VIFs are well below the commonly accepted cut-off level of 10 (Cohen, Cohen, West & Aiken, 2003), multicollinearity should not present problems for the analysis.

CHAPTER IV

FINDINGS

The means, standard deviations and pairwise correlations of the variables used in this study are reported in Table 2. Correlations significant at the .05 level are designated as such by a star in the matrix. The results of the conditional logit regression analyses appear in Tables 3 and 4. Model 1 in Table 3 contains only the control variables and the likelihood that a company experienced an event conditioned on the time variable and membership in its industry. The second model adds available slack to the control model. The third model adds managerial attention to risk to the model while the fourth model adds attention diversity to the model. To test hypothesis four which posited that managerial attention depth was negatively associated with the likelihood of experiencing a risk event, multiple models were run -- one for each category of risk. Table 4 contains each of the models testing attention depth.

Across the models, several control variables have significant effects on the likelihood that a company experienced an event. Firm size, as measured by assets, exhibits a consistent negative relationship with the likelihood that a company experiences an event. Additionally, firm performance is negatively associated with the likelihood that

a company experiences an event, although this relationship is significant when considering only the controls and when adding available slack. Thus it appears that larger companies are less likely to experience an event, as are companies that are better performers.

Hypothesis one suggested a negative relationship between a company's available slack resources and the likelihood of experiencing a risk event. Model 2 in Table 3 shows the results for the test of hypothesis one. According to the analysis, the coefficient on available slack is negative but not significant. Thus, hypothesis one is not supported. Hypothesis two suggested a negative relationship between managerial attention to risk and the likelihood of experiencing a risk event. Model 3 in Table 3 shows the results for the test of hypothesis two. The coefficient on managerial attention to risk is positive and significant ($\beta = .00006$; $p < .001$). Thus, hypothesis two is not supported. Hypothesis three suggested a negative relationship between managerial attention diversity and the likelihood of experiencing a risk event. Model 4 in Table 3 shows the results for the test of hypothesis three. The coefficient on managerial attention diversity is negative and significant ($\beta = -.96524$; $p < .10$), providing some support for hypothesis three.

Hypothesis four was tested using eight separate models – one for each category of risk. Hypothesis four suggested a negative relationship between managerial attention depth and the likelihood of experiencing a risk event. Table 4 has the results for each category of risk. The coefficients on managerial attention depth for the general, competitive, financial-external, and other risk categories are negative as hypothesized but not significant. The coefficients for the operational, strategic, financial-internal and legal risk categories are positive. The coefficients for the operational ($\beta = .08820$; $p < .05$) and

strategic ($\beta = .25716$; $p < .01$) risk categories were significant. Overall, the results provide no statistically significant support for hypothesis four.

Aside from the individual tests of hypothesis four, I undertook an additional analysis which sought to test a more parsimonious model of managerial attention depth. For this analysis, I condensed the eight risk categories into two categories – internal and external risks. External risk consisted of risks outside the boundary of the company. The risk categories of general, competitive, financial -- external, and other fit this designation, thus these risks and risk events were grouped together. Internal risk consisted of risks that are within the boundary of the company. The risk categories of operational, strategic, financial – internal, and legal fit this designation, thus these risks and risk events were grouped together. Table 5 has the results of these analyses. The coefficient for managerial attention depth as it relates to external risks was in the hypothesized direction and significant ($\beta = -.04418$; $p < .10$), thus providing some support for hypothesis four. However, the coefficient for managerial attention depth as it relates to internal risks was positive and significant ($\beta = .07266$; $p < .001$), opposite of what was predicted in hypothesis four. Overall, the results were mixed in their support for hypothesis four.

In sum, hypothesis one and two were not supported by the statistical analysis. Hypothesis three was supported (at the .10 level of analysis) while hypothesis four received no support in initial tests but mixed support in subsequent, more parsimonious tests.

CHAPTER V

DISCUSSION AND CONCLUSION

In this dissertation, the goal was to answer one central question: Does having slack and managerial attention devoted to risk, both necessary for successful risk management, help reduce the likelihood that organizations experience risk events? This was done by exploring several assertions made about slack and managerial attention that argued these organizational and managerial resources, when possessed, may confer a greater proclivity towards managing risk and avoiding 'risk events.' As suggested earlier in this dissertation, risk events are particularly troublesome for organizations, often times draining them of important financial resources that would otherwise serve as the foundation for creating future value (Stulz, 1996). The underlying premise was that when organizations had an increasing amount of slack resources or when managers' attention was more focused on potential risks facing the organization, that these things would result in a decreased probability of experiencing a 'risk event'--hence, having a risk management type of effect.

In the case of slack, this would be due to its ability to shield the technical core of the organization and absorb any negative effects of the event before it could hurt the key

value creating resources of the organization (Thompson 1967). With respect to managerial attention, the underlying idea (and consistent with Ocasio's (1997) attention-based perspective) was that managers who dedicate more of their attention to risk should be more likely to recognize potential disasters in their environment and take action to ensure they can navigate around and avoid these things. In a way, managerial attention served as a proxy for who might be more likely to manage risk in general. Further, it was suggested that by paying attention to a broader array of potential risk sources that organizations would be more likely to formulate more comprehensive plans and avoid risk 'blindspots.' Finally, it was also suggested that when managers focus on a specific risk and give it more attention, they can help their company avoid being impacted by that one specific kind of risk.

Based on data from over 400 S&P 500 companies across multiple time periods, this dissertation provides evidence that possessing these resources had little to no effect on reducing the likelihood of experiencing a risk event. However, several interesting findings did emerge from the analysis, which I will address here. More specifically, I find that (1) greater attention diversity does reduce the likelihood of experiencing a risk event; (2) that attention to internal versus external risks impacts the likelihood of an internal and external event; and (3) more "attention" to risk results in a greater, not reduced, likelihood of experiencing a risk event.

The first finding that emerged was consistent with hypothesis three – greater managerial attention diversity, as it relates to risk, appears to have reduced the likelihood that a company experiences an event. This finding was significant at the .10 level of analysis. This finding suggests that when it comes to identifying the potential risks

facing the company, managers should be casting a very wide net which spans multiple functional areas as well as both the internal and external environment. When managers have a more complete picture of the many different risks their companies face, they are impacted by fewer negative surprises. This is consistent with Levy (2005) in that more diversity in attention leads managers to not overlook and be taken by surprise by changes in their environment.

While this result should be interpreted with caution, this finding supports the idea that risk management programs should be holistic in that managers from all across the company should be involved with the risk management process – especially when it comes to identifying potential sources of risk. Having a select group of managers in charge of identifying and evaluating risks may leave the organization open to risks that managers from various functional areas within the company can readily identify. This lends some support to the enterprise risk management (ERM) arguments (Fraser & Simkins, 2010) that the risk management process needs to evolve into an organization-wide phenomenon.

With respect to attention depth, while the individual tests of the original eight categories yielded no statistical support for the original hypothesis, the supplemental analysis did yield statistically significant findings. According to the analysis, attention depth as it relates to the internal and external environment had an impact on the likelihood of experiencing an internal or external event.

When managers' attention to internal risks was greater, their company had a higher likelihood of experiencing an internal event. Whereas when managers' attention to external risks was greater, their company had a lower likelihood of experiencing an

external event. Nadkarni & Barr (2008) found something similar with respect to the external environment in that where managers devoted their attention had an impact on the strategic actions they took. This suggests that when managers are dealing with their external environments, attention was associated with reduced risk. This is consistent with the argument that greater levels of attention, at least directed at the external environment, may result in greater risk management activities and a reduced likelihood of experiencing an event due to that type of risk. However, the same conclusion cannot be drawn for the internal environment.

Perhaps this has something to do with managers' locus of control. It could be that while managers recognize internal risks, they feel that they have a higher level of control of these risks and thus do not act quickly, or at all, in response to these things. However, when it comes to the external environment where they may feel that they have much less control, they are more diligent and respond by enacting risk management, or contingency planning. Regardless of the underlying reasoning, these results add to what we know currently about attention devoted to the external environment and company action, and should be explored in more detail both theoretically and empirically.

Finally, my analysis uncovered an unexpected but interesting relationship. It was hypothesized that managerial attention to risk would be negatively associated with experiencing a risk event. However, the results suggested a positive and significant relationship. Thus, when managers were displaying more attention to risk they were actually more likely to subsequently experience an event. This result seems to contradict traditional tenets of the attention based view (Ocasio, 1997) – mainly, greater attention given to an object results in a greater likelihood of action aimed at that object (e.g. Cho &

Hambrick, 2006; Nadkarni & Barr, 2008). In this case, greater attention given to risk should result in management taking actions aimed at those risks which hopefully results in a reduced likelihood of experiencing a risk event.

Instead, the results suggest that perhaps managers use the risk factor sections in the 10-K to signal and communicate to outsiders the riskiness of the company. Indeed, greater risk disclosure (in terms of simple word counts) was associated with a greater likelihood of experiencing an event. This does not necessarily mean that managers do not take actions aimed at reducing or eliminating risks that they recognize and disclose. However, companies are entities with limited amounts of resources and thus resource constraints make it unrealistic for managers to be able to reduce or eliminate every risk.

It is also worth noting that it does not appear that the companies where management attention to risk is high have fewer resources with which to enact some kind of action to guard against risk events. Looking at the pairwise correlation, slack and managerial attention to risk are positively and significantly correlated which suggests that companies with more available resources are also giving more attention to risk.

Taken together, the findings uncovered here contribute to our understanding of managerial attention, risk and risk management. However, these findings should be considered in light of the limitations of the current study.

Limitations

As with any study there are several limitations that may hinder the external validity of these findings. First, my sample is drawn from the population of companies in the S&P 500 index. The S&P 500 index constitutes the largest, public companies in the United States. Thus, the findings here may be well suited and tailored to larger companies as

opposed to smaller companies. Further, one of the criteria used for inclusion into the sample was having a stock price that was greater than \$10 – typically associated with firm size as well, thus further restricting the sample to larger companies.

Second, all of the companies in the sample are publicly traded companies. No privately held companies were used as part of the analysis. There are important differences between publicly traded companies and privately held companies. One such difference is in the regulatory and media scrutiny that publicly traded companies, whose stock trades on an exchange, receive that privately held companies do not. This additional scrutiny may play a role in the level of risk management activities companies undertake. Another such difference is the reporting requirements between publicly traded and privately held companies. Thus, availability of information was also a consideration when collecting data for this study. As a result, the findings are based upon only publicly traded companies and their application to privately held companies is cautioned.

Third, this sample is specific to publicly traded companies in the United States. Different countries have different institutional environments. Hence attitudes on risk and risk management are likely to be diverse across countries and cultures. Also, reporting requirements are going to be different between countries, which make collecting data on risk and risk management activities exceedingly difficult. Thus, the results are limited in their validity beyond samples based on U.S. based companies.

Fourth, there was a limitation as a result of the data gathering process. As mentioned in the analysis above, there were some systematic missing data as a result of the written computer program to gather some of the data used in the analysis. Unfortunately with this particular source of data, there has been no proven, or simple,

way to collect the data. Since there is no universally required reporting format (aside from listing risks under the heading of risk factors), companies are at liberty to decide how to display that information. This creates problems for any program designed to locate the risk factor subheadings and pull that information out for analysis. While I believe that the computer code written and used was able to obtain a great deal of information not previously available for analysis, the reader should be mindful that this is the first step of a lengthy process that hopefully other scholars will help to advance. I would be remiss however, not to mention that the results concerning this data (especially for hypothesis three and four) should be interpreted with caution.

A further complication comes from the limitation in the reporting by the companies themselves. There seems to be at least a small amount of confusion across companies and management teams by what is meant by the word risk in general. There is a substantive difference between identifying sources of potential risk, risk events themselves, and outcomes of risk events. This makes the process of deciphering what is contained in these risk factor sections much more difficult. Unfortunately, aside from the SEC clearly delineating between these three things and diligently enforcing these definitions, this will remain a problem for this line of research.

Future Research

Several future research directions could be taken as a result of the limitations surrounding the sample and data gathering process in this study alone. For instance, the sample in this study was limited to large, public and domestic companies. Future research might consider exploring whether or not these results generalize to a population of companies that are smaller, private or international. The attention related data used in this study

would be attainable for smaller companies that are public but other proxy variables would need to be formulated to gauge attention to risk by managers of private companies or international companies. This would be especially true for international companies where reporting requirements are likely much different as it relates to risk disclosure. Further, future research might also explore how cultural differences in attitudes toward risk and risk management impact managerial cognition and firm behavior as it pertains to managing potential risks.

A second potential research direction involves the dependent variable used in this study and the overall framing of this paper as it pertains to risk management. As suggested in the introduction to this paper, risk management is a difficult phenomenon to study because there is a general lack of good proxy variables for managing risk. While "attention to risk" was used here as a proxy for companies that might be more likely to be doing something about potential risks, there are really no existing variables to accurately gauge the level of risk management happening within the organization. Furthermore, the outcome variables used to assess the effectiveness of risk management are similarly lacking. While studies in finance use variables like improved performance and standard deviation of returns over time, these measures are failing to capture one of the chief benefits of risk management -- avoiding what I have termed 'risk events.' Future research should focus on better ways to measure both risk management and risk management benefits. Standard and Poor's has started to do some work on the former by incorporating ratings on risk management into its overall security rating for companies, but much more work exists for scholars studying the importance of a risk management program.

Qualitative work may be most appropriate to understand the degree to which firms are managing risk as well as how they go about identifying and evaluating such risks.

A third potential area of research concerns the data itself. Section 1A of the 10-K is relatively new and there has been minimal work on quantifying its potential for research studies. Prior studies have suggested that it contains useful pieces of information (e.g. Cambell et al., 2012; Kravert & Muslu, 2011), however these studies have only scratched the surface of potential data. Future research could delve much deeper into the subheadings contained within the section. For instance, research could explore to what extent the subheadings are meaningful. Are the subheadings generic or specific, do they have a positive or negative tone, can they be classified as belonging to a specific source of risk, or is the ordering of the subheadings important? Researchers interested in this line of inquiry might also work with researchers in computer science or management information systems to develop a simple and parsimonious way to extract complete cases for each company-year combination so that they can be readily analyzed. The developers at DirectEdgar have begun to look at these issues but much more work remains.

A fourth avenue of future research results from the findings uncovered in this analysis. While there was some support for hypothesis three, more research could be done on understanding how managers classify risks – what categories do they use and why. Perhaps the categories we have come up with in organizational research like operational (Wiseman & Catanach, 1997), strategic (Collins & Ruefli, 1992) and financial (Miller, 1998) have different meanings for managers than we prescribe to them. Or perhaps, they use a much more detailed or broad classification system (such as

internal versus external). Further, research could also explore, from a theoretical perspective, why attention to internal risks and external risks results in different likelihoods for experiencing risk events. Why is it that more focus on external risks resulted in a decreased likelihood while focus on internal risks increased the likelihood of experiencing an event? Do managerial characteristics have something to do with this (e.g. locus of control or overconfidence)?

Finally, future research could explore in more detail the situations in which information disclosures are poor predictors of company action, thus challenging tenets of attention-based research. For instance, while the ABV suggests that action will be initiated as a result of greater attention directed towards a stimulus, other theoretical perspectives such as signaling theory (Spence, 1974), might suggest that information disclosures are used more for reducing information asymmetry and sending a signal to outsiders about qualitative firm qualities such as riskiness. In this study, perhaps greater attention actually signals to outsiders a heightened level of risk associated with the company's environment.

It is also possible, although fairly cynical, that companies who are more risky actually disclose as much as they can to (A) avoid legal ramifications should something happen and they not take action; or (B) to "bury the lead." As Rawlins (2008) has suggested, disclosure without transparency can serve to confuse as opposed to "enlighten" when it comes to releasing information. Essentially, the organization may be "burying the lead" by including so much information about risk that nobody knows which is particularly worrisome and which is particularly benign. This can serve to give the organization cover in case a 'risk event' was to occur. Either way, future research could

explore when information disclosures are good predictors of company action and when they are simply used to send a signal.

Conclusion

In closing, this study makes several contributions to existing research streams. First, this study makes a contribution to research on managerial cognition and attention (Ocasio, 1997). While the analysis did not find support for the contention that greater attention to risk would result in a decreased likelihood of experiencing a risk event, results did uncover some relationships which extend what we know about attention. Greater attention diversity for instance, resulted in a decreased likelihood of experiencing a risk event. Although managers have limited attention resources, a more holistic approach to exploring potential risks has important benefits. This may be due in fact to having fewer 'risk blindspots' and thus a more complete picture of their environment. Additionally, results also suggest that managerial attention results in different outcomes dependent upon whether that attention is directed at the company's internal or external environment. This suggests a much more complex relationship between attention and firm outcomes than previously found.

A second contribution this study makes is in the use of section 1A of the 10-K as a data source. As of the initiation of this study, no published research in the field of management had used this data source to test theory. While recent research in areas like Finance and Accounting have just started to explore this data, this study provides evidence of its utility. By finding significant relationships between variables created from this data and an important firm level outcome, my research serves as validation that this section of the 10-K may provide important data that our field has yet to take

advantage of. Furthermore, this section of the 10-K may be particularly important as we further refine what we know, as well as theory, about risk and how managers perceive risk in their environments.

To conclude, the purpose of this dissertation was to examine the determinants of "harmful surprises" or better termed, risk events. While the popular press is littered with examples and stories about companies that have failed to address risk in substantive ways, others have managed to avoid experiencing these harmful events. In this study, the intent was to look at potential resources that might tell us something about how companies attempt to manage and stave off risk. Two such resources posited in the literature from both management and finance are financial resources and managerial resources. While the results were not as supportive as hoped for, they do provide some optimism in terms of the importance of managerial cognition as it relates to risk. There are a number of future research opportunities as a result of this study and my hope is that research on risk, and risk management, will benefit from an increased scrutiny of new sources of information like that used here.

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APPENDICES

Table 1. Summary of Hypotheses

| Hypothesis | Independent Variable | Dependent Variable | Hypothesized Relationship |
|-------------------|---|--|----------------------------------|
| Hypothesis 1 | Available Slack | Experience a Risk Event | Negative |
| Hypothesis 2 | Attention to Risk | Experience a Risk Event | Negative |
| Hypothesis 3 | Attention Variety (Diversity) | Experience a Risk Event | Negative |
| Hypothesis 4 | Attention Amount to Specific Risk (Depth) | Experience a Specific Type of Risk Event | Negative |

Table 2. Correlation Matrix

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|------------|------------|----------|----------|----------|----------|----------|----------|
| 1. Experience Event | 0.0179 | 0.1236 | 1 | | | | | |
| 2. General Event | 0.0075 | 0.0861 | 0.6422* | 1 | | | | |
| 3. Competitive Event | 0.0071 | 0.0838 | 0.6249* | 0.2664* | 1 | | | |
| 4. Operational Event | 0.0052 | 0.0722 | 0.5375* | 0.2998* | 0.3202* | 1 | | |
| 5. Strategic Event | 0.0025 | 0.0497 | 0.3690* | 0.1215* | 0.1337* | 0.1264* | 1 | |
| 6. Financial (Internal) Event | 0.0007 | 0.0268 | 0.1985* | 0.0911* | 0.0937* | 0.0537* | 0.1335* | 1 |
| 7. Financial (External) Event | 0.0030 | 0.0551 | 0.4096* | 0.3052* | 0.1662* | 0.1763* | 0.0758* | 0.0714* |
| 8. Legal Event | 0.0010 | 0.0322 | 0.2390* | 0.0619* | 0.1036* | 0.1210* | 0.0880* | 0.0407* |
| 9. Other Event | 0.0006 | 0.0247 | 0.1830* | 0.1329* | 0.1714* | 0.1190* | 0.0280* | -0.0007 |
| 10. Available Slack | 1.8067 | 1.1382 | 0.0106 | 0.0000 | 0.0174* | 0.0105 | 0.0075 | -0.0018 |
| 11. Attention to Risk | 4659.4320 | 3201.5380 | 0.0266* | 0.0047 | 0.0251* | 0.0120 | 0.0219* | -0.0037 |
| 12. Attention Diversity | 0.8042 | 0.1469 | 0.0022 | 0.0044 | 0.0060 | -0.0075 | 0.0110 | -0.0057 |
| 13. General Headings | 4.2969 | 2.7188 | -0.0016 | -0.0079 | 0.0017 | -0.0026 | -0.0083 | -0.0136 |
| 14. Competitive Headings | 4.2664 | 2.8034 | 0.0286* | 0.0144 | 0.0285* | 0.0208* | 0.0138 | -0.0095 |
| 15. Operational Headings | 5.6248 | 3.2499 | 0.0260* | 0.0125 | 0.0086 | 0.0163* | 0.0295* | -0.0061 |
| 16. Strategic Headings | 1.5091 | 1.7778 | 0.0127 | -0.0093 | 0.0031 | 0.0042 | 0.0177* | 0.0025 |
| 17. Financial (Internal) Headings | 2.2373 | 2.2939 | 0.0017 | 0.0001 | 0.0073 | -0.0076 | 0.0021 | -0.0046 |
| 18. Financial (External) Headings | 1.3608 | 1.3473 | -0.0038 | 0.0029 | -0.0067 | -0.0051 | -0.0010 | -0.0006 |
| 19. Legal Headings | 2.4913 | 2.0277 | 0.0145* | 0.0019 | 0.0124 | 0.0153* | 0.0160* | -0.0154* |
| 20. Other Headings | 0.5042 | 0.7399 | -0.0244* | -0.0081 | -0.0165* | -0.0202* | -0.0104 | -0.0014 |
| 21. Firm Size (assets) | 23779.2300 | 50518.6300 | -0.0228* | -0.0097 | -0.0177* | -0.0125* | -0.0098 | -0.0038 |
| 22. Firm Performance (RoA) | 0.0544 | 0.0977 | -0.0215* | -0.0079 | -0.0222* | -0.0112 | -0.0178* | -0.0116 |
| 23. Equity Price Risk | 0.0220 | 0.0155 | 0.0866* | 0.0628* | 0.0252* | 0.0226* | 0.0294* | 0.0335* |

***Denotes the correlation is significant at the .05 level of analysis**

Table 2 (continued)

| | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----|
| 1 | | | | | | | | | | | |
| 0.0588* | 1 | | | | | | | | | | |
| 0.0513* | 0.0443* | 1 | | | | | | | | | |
| -0.0107 | 0.0013 | 0.0024 | 1 | | | | | | | | |
| -0.0068 | 0.0140* | -0.0005 | 0.1822* | 1 | | | | | | | |
| 0.0031 | -0.0122 | -0.0040 | 0.0713* | 0.4449* | 1 | | | | | | |
| -0.0081 | 0.0134 | 0.0003 | -0.0626* | 0.4569* | 0.3203* | 1 | | | | | |
| -0.0016 | -0.0025 | 0.0036 | 0.2923* | 0.5528* | 0.2802* | 0.2430* | 1 | | | | |
| 0.0007 | 0.0013 | 0.0043 | 0.0806* | 0.6155* | 0.4013* | 0.3251* | 0.4832* | 1 | | | |
| -0.0059 | 0.0063 | -0.0145* | 0.0032 | 0.3513* | 0.3017* | 0.2803* | 0.2061* | 0.2726* | 1 | | |
| -0.0082 | 0.0016 | 0.0057 | 0.0089 | 0.5902* | 0.4498* | 0.4228* | 0.2472* | 0.4212* | 0.2817* | 1 | |
| 0.0131 | -0.0039 | 0.0042 | -0.1270* | 0.2571* | 0.4542* | 0.3913* | 0.0911* | 0.2698* | 0.1469* | 0.3700* | |
| -0.0008 | 0.0075 | -0.0062 | 0.2052* | 0.5560* | 0.3369* | 0.3726* | 0.4108* | 0.4488* | 0.3096* | 0.3796* | |
| -0.0003 | -0.0158* | 0.0056 | -0.0702* | 0.1630* | 0.4717* | 0.2943* | 0.0390* | 0.1656* | 0.0530* | 0.2819* | |
| -0.0117 | -0.0030 | -0.0059 | -0.2105* | -0.0595* | -0.0915* | 0.0210* | -0.1209* | -0.0953* | -0.0181* | -0.0654* | |
| -0.0002 | -0.0052 | 0.0043 | 0.1125* | -0.1263* | -0.0809* | -0.0680* | -0.0465* | -0.0277* | -0.0885* | -0.1886* | |
| 0.0719* | 0.0136* | 0.0084 | 0.0427* | 0.0508* | 0.0290* | -0.0548* | 0.0653* | 0.0267* | 0.0161* | 0.0914* | |

Table 2 (continued)

| 18 | 19 | 20 | 21 | 22 | 23 |
|----------|----------|----------|----------|----------|----|
| 1 | | | | | |
| 0.1112* | 1 | | | | |
| 0.3339* | 0.0561* | 1 | | | |
| -0.0043 | -0.0994* | -0.0092 | 1 | | |
| -0.0757* | -0.0368* | 0.0089 | 0.0134* | 1 | |
| 0.0098 | 0.0091 | -0.0759* | -0.0856* | -0.2465* | 1 |

Table 3. Conditional Logistic Regression Analysis

| | Model 1 | Model 2 | Model 3 | Model 4 |
|-------------------------------|------------------------|------------------------|------------------------|------------------------|
| Firm Size (Standard error) | -0.00001 ** (0.000) | -0.00001 ** (0.000) | -0.00001 ** (0.000) | -0.00001 * (0.000) |
| Firm Performance | -1.14969 * (0.516) | -1.14853 * (0.536) | -0.81640 (0.605) | -0.98625 (0.659) |
| Equity Price Risk | 5.86030 (3.619) | 6.81603 (4.604) | 5.02568 (5.439) | 5.50710 (6.698) |
| Available Slack | | -0.00371 (0.050) | -0.06104 (0.052) | -0.07015 (0.058) |
| Attention to Risk | | | 0.00006 *** (0.000) | 0.00009 *** (0.000) |
| Attention Diversity | | | | -0.96524 + (0.563) |
| N | 6340 | 6136 | 4742 | 2757 |
| Wald Chi2 | 27.37 | 27.03 | 35.75 | 36.23 |
| Prob > Chi2 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Log Pseudolikelihood | -1103.703 | -1057.037 | -842.250 | -545.085 |

+p<.10; *p<.05; **p<.01; ***p<.001

Table 4. Conditional Logistic Regression Analysis

| | Model | | | | | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|--|
| | General | Competitive | Operational | Strategic | Financial (I) | Financial (E) | Legal | Other | |
| Firm Size | -0.00001 + (0.000) | 0.00000 (0.000) | -0.00001 (0.000) | -0.00001 (0.000) | 0.00001 (0.000) | -0.00005 * (0.000) | 0.00000 (0.000) | -0.00003 (0.000) | |
| Firm Performance | -1.03633 (0.924) | -1.49128 (1.142) | -2.29302 * (1.095) | -1.20954 (0.979) | 3.08909 (3.575) | 1.06716 (2.220) | -1.64125 ** (0.617) | -5.83357 (5.212) | |
| Equity Price Risk | 0.19860 (7.708) | -11.05689 (11.773) | -11.81071 (9.856) | 29.56411 (21.916) | 43.39832 * (19.325) | -0.77719 (13.426) | -7.65646 (13.459) | -33.52764 (22.011) | |
| Available Slack | -0.09277 (0.103) | 0.00134 (0.071) | -0.07639 (0.099) | -0.03142 (0.159) | 0.37902 (0.472) | -0.35001 (0.218) | -0.40741 + (0.245) | 1.27099 + (0.656) | |
| Attention to Risk | 0.00007 (0.000) | 0.00012 ** (0.000) | 0.00004 (0.000) | 0.00012 * (0.000) | -0.00018 (0.000) | 0.00008 (0.000) | 0.00013 + (0.000) | 0.00048 + (0.000) | |
| Attention Diversity | -0.47493 (0.915) | -0.70980 (0.965) | -1.09042 (1.029) | -0.64537 (1.220) | -3.19904 (4.450) | -0.65659 (1.964) | -5.04891 + (2.694) | -1.61425 (2.483) | |
| Attention Depth | -0.03756 (0.054) | -0.01619 (0.044) | 0.08820 * (0.043) | 0.25716 ** (0.089) | 0.07220 (0.182) | -0.11788 (0.185) | 0.12996 (0.127) | -0.12907 (0.278) | |
| N | 1117 | 1308 | 999 | 532 | 129 | 358 | 218 | 83 | |
| Wald Chi2 | 9.66 | 22.18 | 24.02 | 31.78 | 23.14 | 11.16 | 15.52 | 23.31 | |
| Prob > Chi2 | 0.2086 | 0.0024 | 0.0011 | 0.0000 | 0.0016 | 0.132 | 0.0299 | 0.0015 | |
| Log pseudolikelihood | -216.369 | -233.421 | -184.025 | -81.082 | -21.735 | -70.736 | -33.651 | -14.248 | |

+p<.10; *p<.05; **p<.01; ***p<.001

Table 5. Supplemental Analysis -- Attention Depth

| | Model (Internal) | Model (External) | Model (Internal) | Model (External) |
|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Firm Size (assets) | -0.00001 0.000 | -0.00001 ** 0.000 | -0.00001 0.000 | -0.00001 ** 0.000 |
| Firm Performance (RoA) | -1.90512 * 0.755 | -1.12434 0.764 | -1.90011 * 0.755 | -1.12136 0.765 |
| Equity Price Risk | -0.66801 8.639 | -3.84672 6.449 | -0.71262 8.723 | -4.04285 6.514 |
| Available Slack | -0.07462 0.086 | -0.05551 0.070 | -0.07569 0.089 | -0.05303 0.070 |
| Attention to Risk | 0.00001 0.000 | 0.00012 *** 0.000 | 0.00001 0.000 | 0.00011 *** 0.000 |
| Attention Diversity | -1.84014 * 0.907 | -0.51558 0.711 | -1.82741 * 0.920 | -0.63413 0.742 |
| Attention Depth (Internal) | 0.07225 *** 0.018 | | 0.07266 *** 0.018 | 0.01015 0.020 |
| Attention Depth (External) | | -0.04337 + 0.024 | -0.00225 0.030 | -0.04418 + 0.025 |
| N | 1549 | 2077 | 1549 | 2077 |
| Wald Chi2 | 44.20 | 30.02 | 44.14 | 29.84 |
| Prob > Chi2 | 0.0000 | 0.0001 | 0.0000 | 0.0002 |
| Log pseudolikelihood | -282.023 | -402.226 | -282.019 | -402.1091 |

+p<.10; *p<.05; **p<.01; ***p<.001

Figure 1. Hypothesized Model

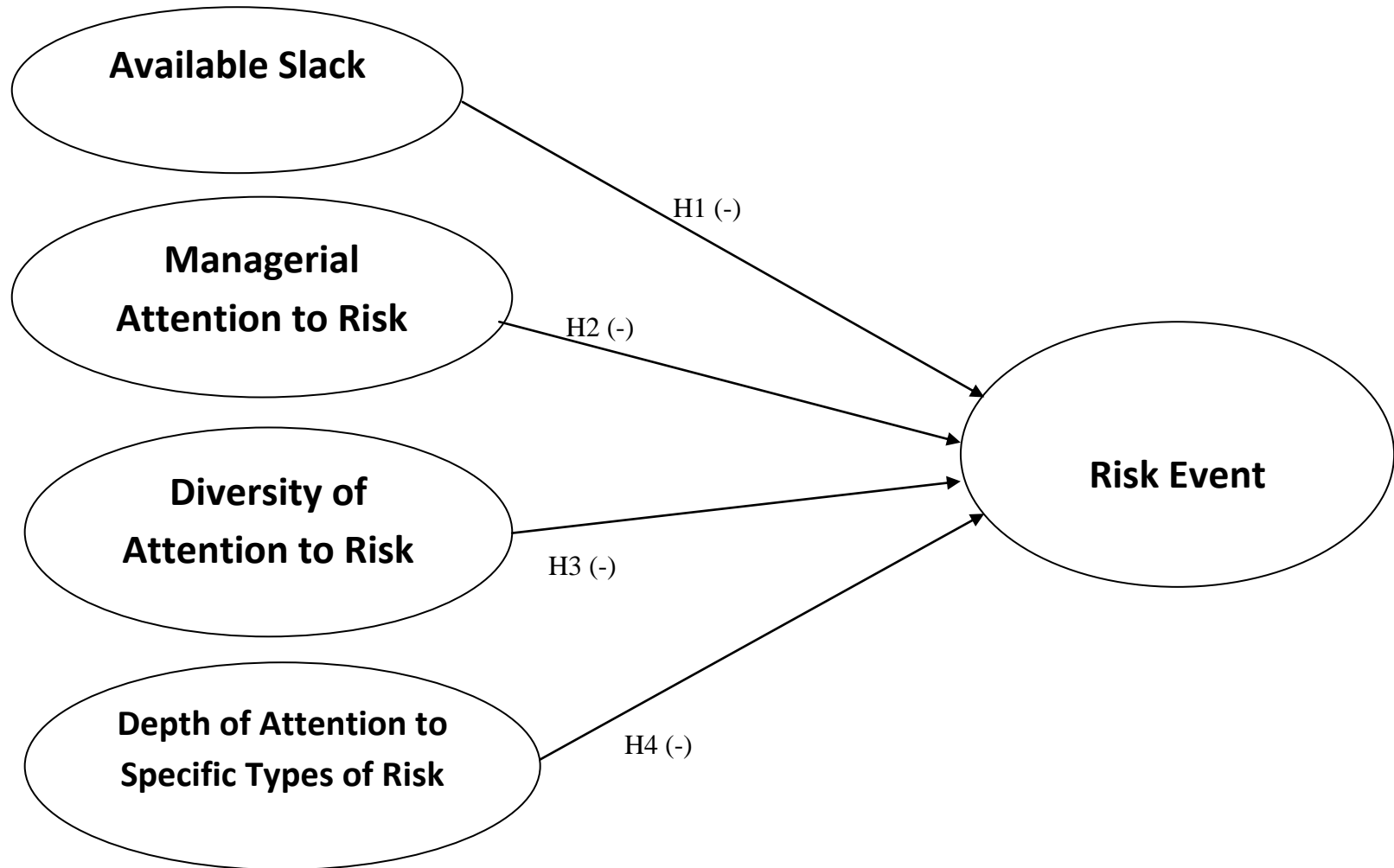
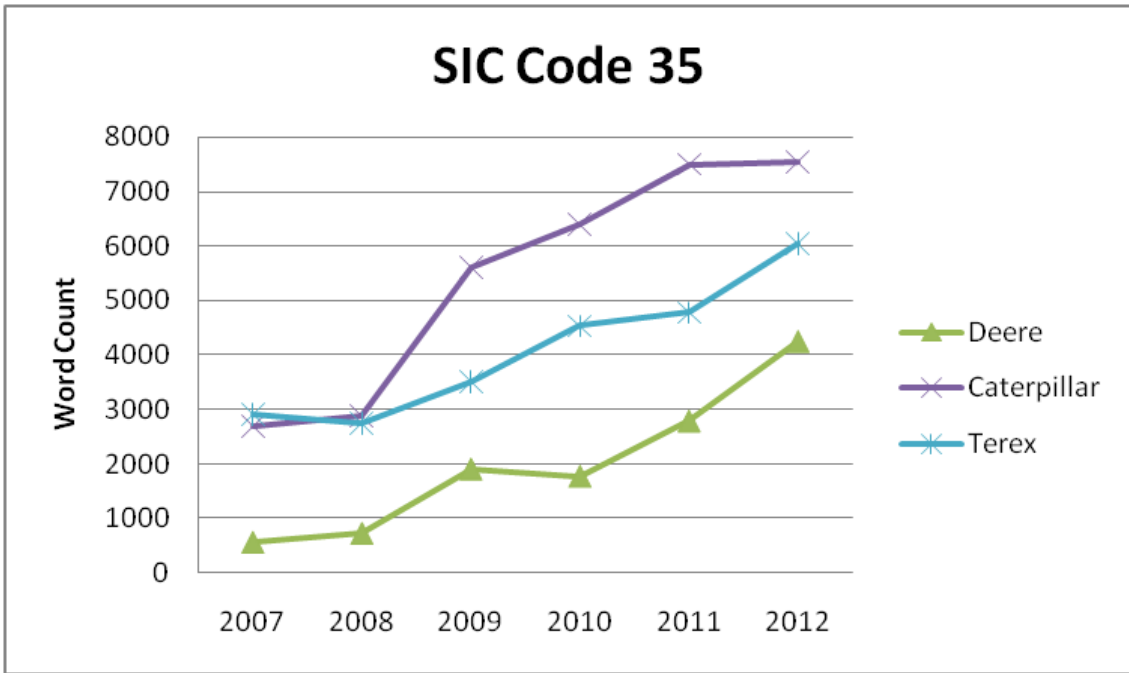
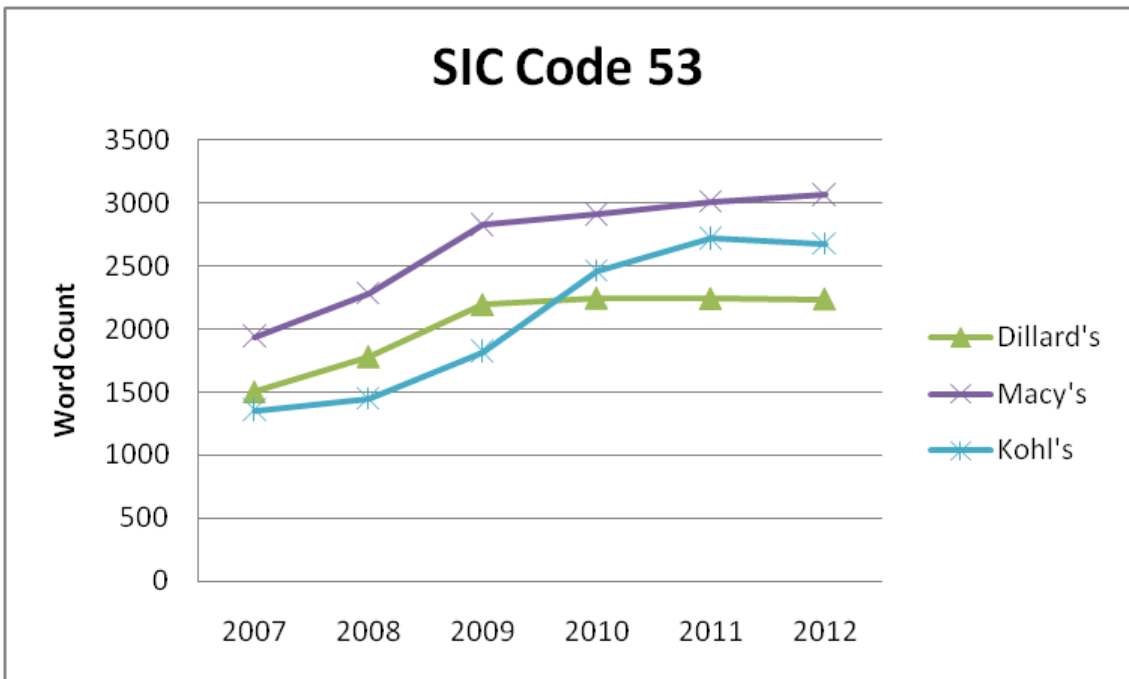


Figure 2. Section 1a Word Count Differentials

Industry 1 (Two digit SIC code 35)



Industry 2 (Two digit SIC code 53)



Appendix 1. Risk Categories

| Type of Risk | Definition | Example 10K |
|----------------------|--|---|
| Competitive | <p>Risks associated with organization's ability to compete (e.g. task, industry and competitive environment)</p> <p>Example: Industry rivalry or consolidation, reliance on few suppliers or customers, etc.</p> | <p><i>"The Company faces significant competition in the retail industry."</i>³</p> |
| Financial (External) | <p>Risks associated with financial markets and financial conditions external to the firm</p> <p>Example: Changes in interest rates, foreign exchange, commodity markets, etc.</p> | <p><i>John Deere's equipment operations and financial services segment are subject to interest rate risks. Changes in interest rates can reduce demand for equipment, adversely affect interest margins and limit the ability to access capital markets while increasing borrowing costs.</i>⁴</p> |
| Financial (Internal) | <p>Risks associated with financing of the organization</p> <p>Example: Issuance of debt or equity, ability to meet debt obligations, etc.</p> | <p><i>"We may be unable to obtain debt to fund our operations and contractual commitments at competitive rates, on commercially reasonable terms or in sufficient amounts."</i>⁵</p> |
| General | <p>Risks associated with the macro environment</p> <p>Example: Economic conditions, regulatory changes, demographic trends, etc.</p> | <p><i>"International, national and regional trade laws, regulations and policies (particularly those related to or restricting global trade) and government farm programs and policies, could significantly impair John Deere's profitability and growth prospects."</i>⁶</p> |
| Legal | <p>Risks associated with operating by rules of society as well as corporate governance related</p> | <p><i>"We have claims and lawsuits against us that may result in adverse outcomes."</i>⁷</p> |

³ Macy's Department Stores 10-K fiscal year end January 28, 2012

⁴ John Deere 10-K fiscal year end October 31, 2012

⁵ Boeing Company 10-K fiscal year end December 31, 2010

⁶ John Deere (see above)

⁷ Microsoft Corporation 10-K fiscal year end June 30, 2008

| | | |
|-------------|--|---|
| | Example: Product liability, lawsuits, fraud, internal control, financial restatements, protecting intellectual property rights, etc. | |
| Operational | Risks associated with the creation and production of the good or service Example: Logistics issues, manufacturing problems, human resources, etc. | <i>"Southwest's business is labor-intensive; Southwest could be adversely affected if it were unable to maintain satisfactory relations with any unionized or other Employee work group."⁸</i> |
| Other | Risks which do not fall into the above categories Example: Natural disasters, weather patterns, etc. | <i>"John Deere's business may be directly and indirectly affected by unfavorable weather conditions or natural disasters that reduce agricultural production and demand for agricultural and turf equipment."⁹</i> |
| Strategic | Risks associated with executing the company strategy Example: Corporate strategy related (mergers, acquisitions, joint ventures), product mix, execution issues, etc. | <i>"Acquisitions and joint ventures may have an adverse effect on our business."¹⁰</i> |

⁸ Southwest Airlines 10-K fiscal year end December 31, 2007

⁹ John Deere (see above)

¹⁰ Microsoft Corporation (see above)

Appendix 2. Examples of Section 1A

Example Section 1A (John Deere, Annual Report Filed 12/18/2008)

ITEM 1A. RISK FACTORS.¹¹

Governmental Actions. The Company's agricultural business is exposed to a variety of risks and uncertainties related to the action or inaction of governmental bodies. The outcome of the global negotiations under the auspices of the World Trade Organization could have a material effect on the international flow of agricultural commodities which may result in a corresponding effect on the demand for agricultural equipment in many areas of the world. The policies of the Brazilian government (including those related to exchange rates and commodity prices) and Argentine government could significantly change the dynamics of the agricultural economy in South America. With respect to the current global economic downturn, changes in governmental banking, monetary and fiscal policies to restore liquidity and increase the availability of credit may not be effective and could have a material impact on the Company's customers and markets.

In addition, to the extent that the Company participates in governmental programs designed to address current conditions, both in the U.S. and outside the U.S., there is no assurance such programs will remain available for sufficient periods of time or on acceptable terms to benefit the Company, and the expiration of such programs could have unintended adverse effects. In addition, certain competitors may be eligible for certain programs that the Company is ineligible for, which may create a competitive disadvantage.

The Emergency Economic Stabilization Act of 2008 (the "EESA") was signed into law on October 3, 2008 to stabilize and provide liquidity to U.S. financial markets. There can be no assurance as to the actual impact of the implementing regulations of the EESA, or any other governmental program, on the financial markets. The Company's business, financial condition, results of operations, access to credit, and trading price of common stock could be materially and adversely affected if the financial markets fail to stabilize, or if current financial market conditions worsen.

The Company may also become subject to additional restrictions pursuant to participation in the EESA's specific programs. For example, John Deere's participation in the FDIC Temporary Liquidity Guarantee Program will require the payment of certain fees to the FDIC. The costs of participation or non-participation in any such program, as well as the effect of such programs on the Company's results of operations, cannot be reliably determined at this time.

Changing Demand for Farm Outputs. Changing worldwide demand for food and the demand for different forms of bio-energy could have an effect on prices for farm

¹¹ Formatted to show one continuous text as opposed to multiple smaller pages as it appears in the original 10-K document.

commodities and consequently the demand for the Company's agricultural equipment. In addition, global economic conditions may have an impact on commodity prices.

Globalization. The continuing globalization of agricultural businesses may significantly change the dynamics of the Company's competition, customer base and product offerings. The Company's efforts to grow its businesses depend to a large extent on access to, and its success in developing market share and operating profitably in, additional geographic markets including but not limited to Brazil, Russia, India and China. In some cases, these countries have greater political and economic volatility and greater vulnerability to infrastructure and labor disruptions. Operating in a large number of different regions and countries exposes the Company to multiple regulatory requirements that are subject to change; increased exposure to currency fluctuations; differing local product preferences and product requirements; differing labor regulations and differing tax laws. Simultaneously, these emerging markets are becoming more competitive as other international companies grow globally and local low cost manufacturers expand their production capacities.

Economic Condition and Outlook. Recent significant changes in market liquidity conditions could impact access to funding and associated funding costs, which could reduce the Company's earnings and cash flows. The Company's investment management operations could be adversely impacted by changes in the equity and bond markets, which would negatively affect earnings. General economic conditions can affect the demand for the Company's equipment. Current negative economic conditions and outlook have decreased housing starts and other construction and dampened demand for certain construction equipment. The Company's commercial and consumer equipment and construction and forestry segments are dependent on construction activity and general economic conditions. A significant or prolonged decline in construction activity and housing starts could have a material adverse effect on the Company's results of operations if current economic difficulties, as well as depressed housing markets, continue into the foreseeable future. If current economic conditions extend to the overall farm economy, there could be a similar effect on agricultural equipment sales.

The volatility in global financial markets has reached unprecedented levels. Global financial market downturns began in the second half of 2007, and significantly increased during the fourth quarter of 2008. Volatile oil prices, falling equity market values, declining business, weakened consumer confidence, and risks of increased inflation and deflation and increased unemployment rates have created fears of a severe recession. Conditions in the global financial markets and general economy materially affect the Company's results of operations. The demand for the Company's products and services could be adversely affected in an economic crisis characterized by higher unemployment, lower consumer spending, lower corporate earnings, and lower business investment.

Currency Fluctuations. The reporting currency for the Company's consolidated financial statements is the U.S. dollar. Certain of the Company's assets, liabilities, expenses and revenues are denominated in other countries' currencies. Those assets, liabilities, expenses and revenues are translated into U.S. dollars at the applicable exchange rates to

prepare the Company's consolidated financial statements. Therefore, increases or decreases in exchange rates between the U.S. dollar and those other currencies affect the value of those items as reflected in the Company's consolidated financial statements, even if their value remains unchanged in their original currency. Substantial fluctuations in the value of the U.S. dollar could have a continuing and significant impact on the Company's results.

Risks to Financial Services Segment. The current economic downturn and market volatility have adversely affected the financial industry in which the credit segment operates. The credit segment provides financing to a significant portion of John Deere sales worldwide. The credit segment's inability to access funds to support its financing activities to the Company's customers could have a material adverse effect on the Company's business. The credit segment's liquidity and ongoing profitability depend largely on timely access to capital to meet future cash flow requirements and fund operations and the costs associated with engaging in diversified funding activities. In recent weeks, the credit markets have reached unprecedented levels of volatility, resulting in reduced levels of liquidity and disruption of domestic and foreign financial markets. If current levels of market disruption and volatility continue or worsen, funding could be unavailable or insufficient. Additionally, under current market conditions customer confidence levels may result in declines in credit applications and increases in delinquencies and default rates, which could materially impact the credit segment's write-offs and provisions for credit losses.

Consumer Attitudes. The confidence the Company's customers have in the general economic outlook can have a significant effect on their propensity to purchase equipment and, consequently, on the Company's sales. Current negative economic conditions could significantly impair customer confidence. The Company's ability to match its new product offerings to its customers' anticipated preferences for enhanced technologies and different types and sizes of equipment is important as well.

Weather. Poor or unusual weather conditions, particularly in the spring, can significantly affect the purchasing decisions of the Company's customers, particularly the customers of the agricultural and commercial and consumer segments. Sales in the important spring selling season can have a dramatic effect on the commercial and consumer segment's financial results.

Supply Base and Raw Material Costs. Many of the Company's suppliers also supply the automotive industry. The severe downturn in automotive sales and the weak financial condition of some major automakers could cause these suppliers to face severe financial hardship and disrupt the Company's access to critical components. Changes in the availability and price of raw materials, which are more likely to occur during times of economic volatility, could have a material negative impact on the Company's costs of production and, in turn, on the profitability of the business.

Interest Rates and Credit Ratings. If interest rates rise, they could have a dampening effect on overall economic activity and could affect the demand for the Company's

equipment. In addition, credit market dislocations could have an impact on funding costs which are very important to the Company's credit segment. Decisions and actions by credit rating agencies can affect the availability and cost of funding for the Company. Credit rating downgrades or negative changes to ratings outlooks can increase the Company's cost of capital and hurt its competitive position. Guidance from rating agencies as to acceptable leverage can affect the Company's returns as well.

Environmental. The Company's operations are subject to and affected by environmental, health and safety laws and regulations by federal, state and local authorities in the United States and regulatory authorities with jurisdiction over the Company's foreign operations. Violations of such laws or regulations can lead to investigation and remediation costs, significant fines or penalties. In addition, increased requirements of governmental authorities, and claims for damages to property or injury to persons resulting from the environmental, health or safety impacts of the Company's operations or past contamination, could prevent or restrict the Company's operations, require significant expenditures to achieve compliance, involve the imposition of cleanup liens and/or give rise to civil or criminal liability. There can be no assurance that violations of such legislation and/or regulations, which could result in enforcement actions or private claims would not have consequences that result in a material adverse effect on the Company's business, financial condition or results of operations.

Climate Change. There is a growing political and scientific consensus that emissions of greenhouse gases ("GHG") continue to alter the composition of the global atmosphere in ways that are affecting and are expected to continue affecting the global climate. Various stakeholders, including legislators and regulators, shareholders and non-governmental organizations, as well as companies in many business sectors are considering ways to reduce GHG emissions. There is growing consensus that some form of regulation will be forthcoming at the federal level with respect to greenhouse gas emissions and such regulation could result in the creation of additional costs in the form of taxes or emission allowances. The impact of any future mandatory GHG legislative or regulatory requirements on the Company's businesses and products is dependent on the design of the mandate, and so the Company is unable to predict its significance at this time.

Furthermore, the potential physical impacts of climate change on the Company's customers, and therefore on the Company's operations, are highly uncertain, and will be particular to the circumstances developing in various geographical regions. These may include changes in weather patterns (including drought and rainfall levels), water availability, storm patterns and intensities, and temperature levels. These potential physical effects may adversely impact the cost, production and financial performance of John Deere's operations.

The risks identified above should be considered in conjunction with Management's Discussion and Analysis beginning on page 15 and, specifically, the other risks described in the Safe Harbor Statement on pages 17 and 18. The Company's results of operations may be affected by these identified risks and/or by risks not currently contemplated.

Example Section 1A (Microsoft Corporation, Annual Report Filed 07/28/2011)

ITEM 1A. RISK FACTORS¹²

Our operations and financial results are subject to various risks and uncertainties, including those described below, that could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common stock.

The cloud-based computing model presents execution and competitive risks. We are transitioning our strategy to a computing environment characterized by cloud-based services used with smart client devices. Our competitors are rapidly developing and deploying cloud-based services for consumers and business customers. Pricing and delivery models are evolving. Devices and form factors influence how users access services in the cloud. We are devoting significant resources to develop and deploy our own competing cloud-based software plus services strategies. While we believe our expertise, investments in infrastructure, and the breadth of our cloud-based services provides us with a strong foundation to compete, it is uncertain whether our strategies will attract the users or generate the revenue required to be successful. In addition to software development costs, we are incurring costs to build and maintain infrastructure to support cloud computing services. These costs may reduce the operating margins we have previously achieved. Whether we are successful in this new business model depends on our execution in a number of areas, including:

- continuing to innovate and bring to market compelling cloud-based experiences that generate increasing traffic and market share;
- maintaining the utility, compatibility, and performance of our cloud-based services on the growing array of computing devices, including smartphones, handheld computers, netbooks, tablets, and television set top devices;
- continuing to enhance the attractiveness of our cloud platforms to third-party developers; and
- ensuring that our cloud services meet the reliability expectations of our customers and maintain the security of their data.

Challenges to our business models may reduce our revenue or operating margins. Whether our software runs in the cloud or on a device, we continue to face challenges from alternative means of developing and licensing software. Under our license-based software model, software developers bear the costs of converting original ideas into software products through investments in research and development, offsetting these costs with the revenue received from the distribution of their products. Certain “open source” software business models challenge our license-based software model.

¹² Formatted to show one continuous text as opposed to chopped into multiple page sections as it appears in the original 10-K document.

Open source commonly refers to software whose source code is subject to a license allowing it to be modified, combined with other software and redistributed, subject to restrictions set forth in the license. Some companies compete with us using an open source business model by modifying and then distributing open source software to end users at nominal cost and earning revenue on complementary services and products. These firms do not bear the full costs of research and development for the software. In some cases, their products may infringe our patents. In addition, advertising-based business models seek revenue by delivering third party advertisements to end customers who receive the software and services at no direct costs. Gains in market acceptance of open source or advertising based software may adversely affect our sales, revenue, and operating margins.

An important element of our business model has been to create platform-based ecosystems on which many participants can build diverse solutions. A competing vertically-integrated model, in which a single firm controls both the software and hardware elements of a product, has been successful with certain consumer products such as personal computers, mobile phones, and digital music players. We also offer vertically-integrated hardware and software products; however, efforts to compete with the vertically integrated model may increase our cost of sales and reduce our operating margins.

We derive substantial revenue from licenses of Windows operating systems on personal computers. The proliferation of alternative devices and form factors creates challenges from competing software platforms. It is uncertain to what extent alternative devices will increase the number of computing devices that users own, or will substitute for users' personal computer purchases. Alternative devices also run operating systems and applications developed by our competitors. These factors could impact our revenue and margins.

We face intense competition. We continue to experience intense competition across all markets for our products and services. Our competitors range in size from Fortune 100 companies to small, specialized single-product businesses and open source community-based projects. Although we believe the breadth of our businesses and product portfolio is a competitive advantage, our competitors that are focused on narrower product lines may be more effective in devoting technical, marketing, and financial resources to compete with us. In addition, barriers to entry in our businesses generally are low and products, once developed, can be distributed broadly and quickly at relatively low cost. Open source software vendors are devoting considerable efforts to developing software that mimics the features and functionality of our products, in some cases in violation of our intellectual property rights or on the basis of technical specifications for Microsoft technologies that we make available at little or no cost in connection with our interoperability initiatives. In response to competition, we continue to develop versions of our products with basic functionality that are sold at lower prices than the standard versions. These competitive pressures may result in decreased sales volumes, price reductions, and/or increased operating costs, such as for marketing and sales incentives, resulting in lower revenue, gross margins, and operating income.

We may not be able to adequately protect our intellectual property rights. Protecting our global intellectual property rights and combating unlicensed copying and use of software and other intellectual property is difficult. While piracy adversely affects U.S. revenue, the impact on revenue from outside the U.S. is more significant, particularly in countries where laws are less protective of intellectual property rights. As a result, our revenue in these markets likely will grow slower than the underlying PC market. Similarly, the absence of harmonized patent laws makes it more difficult to ensure consistent respect for patent rights. Throughout the world, we actively educate consumers about the benefits of licensing genuine products and obtaining indemnification benefits for intellectual property risks, and we educate lawmakers about the advantages of a business climate where intellectual property rights are protected. However, continued educational and enforcement efforts may fail to enhance revenue. Reductions in the legal protection for software intellectual property rights could adversely affect revenue.

Third parties may claim we infringe their intellectual property rights. From time to time, we receive notices from others claiming we infringe their intellectual property rights. Because of constant technological change in the segments in which we compete, the extensive patent coverage of existing technologies, and the rapid rate of issuance of new patents, it is possible the number of these claims may grow. To resolve these claims we may enter into royalty and licensing agreements on less favorable terms, stop selling or redesign affected products, or pay damages to satisfy indemnification commitments with our customers. Such agreements may cause operating margins to decline. We have made and expect to continue making significant expenditures to settle claims related to the use of technology and intellectual property rights as part of our strategy to manage this risk.

We may not be able to protect our source code from copying if there is an unauthorized disclosure of source code. Source code, the detailed program commands for our operating systems and other software programs, is critical to our business. Although we license portions of our application and operating system source code to a number of licensees, we take significant measures to protect the secrecy of large portions of our source code. If an unauthorized disclosure of a significant portion of our source code occurs, we could potentially lose future trade secret protection for that source code. This could make it easier for third parties to compete with our products by copying functionality, which could adversely affect our revenue and operating margins. Unauthorized disclosure of source code also could increase the security risks described in the next paragraph.

Security vulnerabilities could lead to reduced revenue, liability claims, or competitive harm. Maintaining the security of computers and computer networks is paramount for us and our customers. Hackers develop and deploy viruses, worms, and other malicious software programs that attack our products and services and gain access to our networks and data centers. Although this is an industry-wide problem that affects computers across all platforms, it affects our products and services in particular because hackers tend to focus their efforts on the most popular operating systems, programs, and services, and we expect them to continue to do so. Groups of hackers may also act in a

coordinated manner to launch distributed denial of service attacks, or other coordinated attacks, that may cause service outages or other interruptions. We devote significant resources to address security vulnerabilities through:

- engineering more secure products and services;
- enhancing security and reliability features in our products and services, and continuously evaluating and updating those security and reliability features;
- helping our customers make the best use of our products and services to protect against computer viruses and other attacks;
- improving the deployment of software updates to address security vulnerabilities;
- investing in mitigation technologies that help to secure customers from attacks even when such software updates are not deployed; and
- providing customers online automated security tools, published security guidance, and security software such as firewalls and anti-virus software.

The cost of these steps could reduce our operating margins. Despite these efforts, actual or perceived security vulnerabilities in our products and services could cause significant reputational harm and lead some customers to seek to return products, to reduce or delay future purchases or adoption of services, or to use competing products. Customers may also increase their expenditures on protecting their existing computer systems from attack, which could delay adoption of new technologies. Any of these actions by customers could adversely affect our revenue. Actual or perceived vulnerabilities may lead to claims against us. Although our license agreements typically contain provisions that eliminate or limit our exposure to such liability, there is no assurance these provisions will withstand all legal challenges.

In addition, our internal information technology environment continues to evolve. We are often early adopters of new devices and technologies. We embrace new ways of sharing data and communicating with partners and customers using methods such as social networking. These practices can enhance efficiency and business insight, but they also present risks that our business policies and internal security controls may not keep pace with the speed of these changes. If third parties gain access to our networks or data centers, they could obtain and exploit confidential business information and harm our competitive position.

Improper disclosure of personal data could result in liability and harm our reputation. As we continue to execute our strategy of increasing the number and scale of our cloud-based offerings, we store and process increasingly large amounts of personally identifiable information of our customers. At the same time, the continued occurrence of high-profile data breaches provides evidence of an external environment increasingly hostile to information security. This environment demands that we continuously improve our design and coordination of security controls across our

business groups and geographies. Despite these efforts, it is possible our security controls over personal data, our training of employees and vendors on data security, and other practices we follow may not prevent the improper disclosure of personally identifiable information. Improper disclosure of this information could harm our reputation, lead to legal exposure to customers, or subject us to liability under laws that protect personal data, resulting in increased costs or loss of revenue. Our software products and services also enable our customers to store and process personal data on premises or, increasingly, in a cloud-based environment we host. We believe consumers using our email, messaging, storage, sharing, and social networking services will increasingly want efficient, centralized methods of choosing their privacy preferences and controlling their data. Perceptions that our products or services do not adequately protect the privacy of personal information could inhibit sales of our products or services, and could constrain consumer and business adoption of cloud-based solutions.

We may experience outages, data loss and disruptions of our online services if we fail to maintain an adequate operations infrastructure. Our increasing user traffic and complexity of our products and services demand more computing power. We have spent and expect to continue to spend substantial amounts to purchase or lease data centers and equipment and to upgrade our technology and network infrastructure to handle increased traffic on our Web sites and in our data centers, and to introduce new products and services and support existing services such as Bing, Exchange Online, Office 365, SharePoint Online, Xbox LIVE, Windows Azure, Windows Live, and Microsoft Office Web Apps. We also are growing our business of providing a platform and back-end hosting for services provided by third-party businesses to their end customers. Maintaining and expanding this infrastructure is expensive and complex. Inefficiencies or operational failures, including temporary or permanent loss of customer data, could diminish the quality of our products, services, and user experience resulting in contractual liability, claims by customers and other third parties, damage to our reputation and loss of current and potential users, subscribers, and advertisers, each of which may harm our operating results and financial condition.

We are subject to government litigation and regulatory activity that affects how we design and market our products. As a leading global software maker, we receive close scrutiny from government agencies under U.S. and foreign competition laws. Some jurisdictions also provide private rights of action for competitors or consumers to assert claims of anti-competitive conduct. For example, we have been involved in the following actions.

Lawsuits brought by the U.S. Department of Justice, 18 states, and the District of Columbia in two separate actions were resolved through a Consent Decree that took effect in 2001 and a Final Judgment entered in 2002. These proceedings imposed various constraints on our Windows operating system businesses. These constraints included limits on certain contracting practices, mandated disclosure of certain software program interfaces and protocols, and rights for computer manufacturers to limit the visibility of certain Windows features in new PCs. Although the Consent Decree and Final Judgment expired in May 2011, we expect that federal and state antitrust authorities will continue to closely scrutinize our business.

The European Commission closely scrutinizes the design of high-volume Microsoft products and the terms on which we make certain technologies used in these products, such as file formats, programming interfaces, and protocols, available to other companies. In 2004, the Commission ordered us to create new versions of Windows that do not include certain multimedia technologies and to provide our competitors with specifications for how to implement certain proprietary Windows communications protocols in their own products. In 2009, the Commission accepted a set of commitments offered by Microsoft to address the Commission's concerns relating to competition in Web browsing software. The Commission's impact on product design may limit our ability to innovate in Windows or other products in the future, diminish the developer appeal of the Windows platform, and increase our product development costs. The availability of licenses related to protocols and file formats may enable competitors to develop software products that better mimic the functionality of our own products which could result in decreased sales of our products.

Government regulatory actions and court decisions such as these may hinder our ability to provide the benefits of our software to consumers and businesses, thereby reducing the attractiveness of our products and the revenue that come from them. New actions could be initiated at any time, either by these or other governments or private claimants, including with respect to new versions of Windows or other Microsoft products. The outcome of such actions, or steps taken to avoid them, could adversely affect us in a variety of ways, including:

- We may have to choose between withdrawing products from certain geographies to avoid fines or designing and developing alternative versions of those products to comply with government rulings, which may entail a delay in a product release and removing functionality that customers want or on which developers rely.
- We may be required to make available licenses to our proprietary technologies on terms that do not reflect their fair market value or do not protect our associated intellectual property.
- The rulings described above may be used as precedent in other competition law proceedings.

Our software and services online offerings are subject to government regulation of the Internet domestically and internationally in many areas, including user privacy, telecommunications, data protection, and online content. The application of these laws and regulations to our business is often unclear and sometimes may conflict. Compliance with these regulations may involve significant costs or require changes in business practices that result in reduced revenue. Noncompliance could result in penalties being imposed on us or orders that we stop the alleged noncompliant activity.

Our business depends on our ability to attract and retain talented employees. Our business is based on successfully attracting and retaining talented employees. The market for highly skilled workers and leaders in our industry is extremely competitive. We are limited in our ability to recruit internationally by restrictive domestic immigration laws.

If we are less successful in our recruiting efforts, or if we are unable to retain key employees, our ability to develop and deliver successful products and services may be adversely affected. Effective succession planning is also important to our long-term success. Failure to ensure effective transfer of knowledge and smooth transitions involving key employees could hinder our strategic planning and execution.

Delays in product development schedules may adversely affect our revenue. The development of software products is a complex and time-consuming process. New products and enhancements to existing products can require long development and testing periods. Our increasing focus on cloud-based software plus services also presents new and complex development issues. Significant delays in new product or service releases or significant problems in creating new products or services could adversely affect our revenue.

We make significant investments in new products and services that may not be profitable. Our growth depends on our ability to innovate by offering new, and adding value to our existing, software and service offerings. We will continue to make significant investments in research, development, and marketing for new products, services, and technologies, including the Windows PC operating system, the Microsoft Office system, Bing, Windows Phone, Windows Server, Windows Live, the Windows Azure Services platform and other cloud-based services offerings, and the Xbox 360 entertainment platform. Investments in new technology are speculative. Commercial success depends on many factors, including innovativeness, developer support, and effective distribution and marketing. Our degree of success with Windows Phone, for example, will impact our ability to grow our share of the smartphone operating system market. It will also be an important factor in supporting our strategy of delivering value to end users seamlessly over PC, phone, and TV device classes. If customers do not perceive our latest offerings as providing significant new functionality or other value, they may reduce their purchases of new software products or upgrades, unfavorably impacting revenue. We may not achieve significant revenue from new product and service investments for a number of years, if at all. Moreover, new products and services may not be profitable, and even if they are profitable, operating margins for new products and businesses may not be as high as the margins we have experienced historically.

Adverse economic conditions may harm our business. Unfavorable changes in economic conditions, including inflation, recession, or other changes in economic conditions, may result in lower information technology spending and adversely affect our revenue. If demand for PCs, servers, and other computing devices declines, or consumer or business spending for those products declines, our revenue will be adversely affected. Our product distribution system also relies on an extensive partner network. The impact of economic conditions on our partners, such as the bankruptcy of a major distributor, could result in sales channel disruption. Challenging economic conditions also may impair the ability of our customers to pay for products and services they have purchased. As a result, reserves for doubtful accounts and write-offs of accounts receivable may increase. We maintain an investment portfolio of various holdings, types, and maturities. These investments are subject to general credit, liquidity, market, and interest rate risks, which may be exacerbated by unusual events that have affected global

financial markets. A significant part of our investment portfolio consists of U.S. government securities. If global credit and equity markets experience prolonged periods of decline, or if the U.S. federal government budget process results in a default or downgrade of its debt, our investment portfolio may be adversely impacted and we could determine that more of our investments have experienced an other-than-temporary decline in fair value, requiring impairment charges that could adversely impact our financial results.

We have claims and lawsuits against us that may result in adverse outcomes. We are subject to a variety of claims and lawsuits. Adverse outcomes in some or all of these claims may result in significant monetary damages or injunctive relief that could adversely affect our ability to conduct our business. Although management currently believes resolving all of these matters, individually or in the aggregate, will not have a material adverse impact on our financial statements, the litigation and other claims are subject to inherent uncertainties and management's view of these matters may change in the future. A material adverse impact on our financial statements also could occur for the period in which the effect of an unfavorable final outcome becomes probable and reasonably estimable.

We may have additional tax liabilities. We are subject to income taxes in the U.S. and many foreign jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes. In the ordinary course of our business, there are many transactions and calculations where the ultimate tax determination is uncertain. We regularly are under audit by tax authorities. Although we believe our tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from our historical income tax provisions and accruals. The results of an audit or litigation could have a material effect on our financial statements in the period or periods for which that determination is made.

We earn a significant amount of our operating income from outside the U.S., and any repatriation of funds currently held in foreign jurisdictions may result in higher effective tax rates for the company. In addition, there have been proposals to change U.S. tax laws that would significantly impact how U.S. multinational corporations are taxed on foreign earnings. Although we cannot predict whether or in what form this proposed legislation may pass, if enacted it could have a material adverse impact on our tax expense and cash flow.

Our vertically-integrated hardware and software products may experience quality or supply problems. Our hardware products such as the Xbox 360 console are highly complex and can have defects in design, manufacture, or associated software. We could incur significant expenses, lost revenue, and reputational harm if we fail to detect or effectively address such issues through design, testing, or warranty repairs. We obtain some components of our hardware devices from sole suppliers. If a component delivery from a sole-source supplier is delayed or becomes unavailable or industry shortages occur, we may be unable to obtain timely replacement supplies, resulting in reduced sales. Either component shortages or excess or obsolete inventory may increase our cost of revenue. Xbox 360 consoles are assembled in Asia; disruptions in the supply chain

may result in console shortages that would affect our revenue and operating margins. These same risks would apply to any other vertically-integrated hardware and software products we may offer.

If our goodwill or amortizable intangible assets become impaired we may be required to record a significant charge to earnings. Under accounting principles generally accepted in the United States (“U.S. GAAP”), we review our amortizable intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Goodwill is tested for impairment at least annually. Factors that may be considered a change in circumstances, indicating that the carrying value of our goodwill or amortizable intangible assets may not be recoverable, include a decline in stock price and market capitalization, reduced future cash flow estimates, and slower growth rates in our industry. We may be required to record a significant charge in our financial statements during the period in which any impairment of our goodwill or amortizable intangible assets is determined, negatively impacting our results of operations.

We operate a global business that exposes us to additional risks. We operate in over 100 countries and a significant part of our revenue comes from international sales. Pressure to make our pricing structure uniform might require that we reduce the sales price of our software in the U.S. and other countries. Operations outside the U.S. may be affected by changes in trade protection laws, policies and measures, and other regulatory requirements affecting trade and investment, including the Foreign Corrupt Practices Act and local laws prohibiting corrupt payments. Emerging markets are a significant focus of our international growth strategy. The developing nature of these markets presents a number of risks. Deterioration of social, political, labor, or economic conditions in a specific country or region and difficulties in staffing and managing foreign operations may also adversely affect our operations or financial results. Although we hedge a portion of our international currency exposure, significant fluctuations in exchange rates between the U.S. dollar and foreign currencies may adversely affect our net revenue.

Catastrophic events or geo-political conditions may disrupt our business. A disruption or failure of our systems or operations in the event of a major earthquake, weather event, cyber-attack, terrorist attack, or other catastrophic event could cause delays in completing sales, providing services, or performing other mission-critical functions. Our corporate headquarters, a significant portion of our research and development activities, and certain other critical business operations are located in the Seattle, Washington area, and we have other business operations in the Silicon Valley area of California, both of which are near major earthquake faults. A catastrophic event that results in the destruction or disruption of any of our critical business or information technology systems could harm our ability to conduct normal business operations. Our move toward providing our customers with more services and solutions in the cloud puts a premium on the resilience of our systems and strength of our business continuity management plans, and magnifies the potential impact of prolonged outages on our operating results. Abrupt political change, terrorist activity, and armed conflict pose a risk of general economic disruption in affected countries, which may increase our operating costs. These conditions also may add uncertainty to the timing and budget for

technology investment decisions by our customers, and may result in supply chain disruptions for hardware manufacturers, either of which may adversely affect our revenue. The long-term effects of climate change on the global economy in general or the information technology industry in particular are unclear. Environmental regulations or changes in the supply, demand or available sources of energy may affect the availability or cost of goods and services, including natural resources, necessary to run our business. Changes in weather where we operate may increase the costs of powering and cooling computer hardware we use to develop software and provide cloud-based services. New regulations may require us to find alternative compliant and cost-effective methods of distributing our products and services.

Acquisitions, joint ventures and strategic alliances may have an adverse effect on our business. We expect to continue making acquisitions or entering into joint ventures and strategic alliances as part of our long-term business strategy. These transactions involve significant challenges and risks including that the transaction does not advance our business strategy, that we don't realize a satisfactory return on our investment, or that we experience difficulty integrating new employees, business systems, and technology, or diversion of management's attention from our other businesses. It may take longer than expected to realize the full benefits, such as increased revenue, enhanced efficiencies, or market share, or those benefits may ultimately be smaller than anticipated, or may not be realized. These events could harm our operating results or financial condition.

Appendix 3. Keywords for Classification

Competitive

Key Words: customer demand, rivalry, non-compete, vendor, subscriber, supply chain, supplier, suppliers, supplier network, new entrant, barrier to entry, barriers to entry, entry barrier, government contract, cyclical, cyclical, seasonal, seasonality

Financial (External)

Key Words: equity market, commodity price, foreign exchange, foreign currencies, foreign currency, fuel price, oil price, energy price, energy market, credit market, fuel cost, energy cost, money market, exchange rate, changes in accounting, coal price, natural gas price, gold price, silver price, copper price, accounting standard, market volatility, stock market, financial market

Financial (Internal)

Key Words: counterparty credit, dividend, investment portfolio, restatement, receivables, line of credit, hedge, credit rating, hedging, credit facility, credit facilities

General

Key Words: regulation, regulations, economic condition, economic conditions, taxes, government policy, government policies, government regulation, international economic, legislation, deferred tax, deferred taxes, global economic, global economy, geo-politics, geo-political, geopolitical, inflation, unemployment, housing market, monetary policy, fiscal policy, budget deficit, tariff, recession, economic downturn, economic weakness, our international operation, health care reform, defense budget, medicare, medicaid, terrorism, terrorist, business conditions

Legal

Key Words: lawsuit, court, internal control, litigate, litigation, fraud, corporate governance, settlement, investigation, patent, legal matter, legal proceeding, legal action, legal liabilities, legal liability, liability claim, intellectual property, criminal, bribe, prosecute, prosecution, copyright, trademark, conflicts of interest, conflict of interest

Operational

Key Words: outsource, outsourcing, outsources, input cost, human capital, human resource, labor, restructure, restructuring, product recall, product safety, product quality, cost structure, information system, IT security, employee health, manufacture, manufacturing, personnel, technology network, network technology, inventory, inventories, product liability, recall, security system, security measure, attract and retain, attracting and retaining, research and development, system failure, technology failure, union, collective bargaining, productivity, product defect, defective product, breach of privacy, breach of security, privacy breach, new product development, product development, sales network, sales force, capital expenditure, clinical trial, human trial, information technology, procure, raw material, network security, distribution, distribution channel

Other

Key Words: hurricane, weather, natural disaster, earthquake, flood, tornado, typhoon, tsunami, climate change, pandemic, virus, disease, disaster, catastrophe, catastrophic event, health crisis, epidemic

Strategic

Key Words: merger, acquisition, joint venture, alliance, partnership, buyout, corporate strategy, divest, business strategy, execute our strategy, branding, spin-off, takeover, product mix

VITA

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Completed the requirements for the Doctor of Philosophy in Business Administration (Management) at Oklahoma State University, Stillwater, Oklahoma in July, 2014.

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Experience:

International Trading Group, D.E. Trading Corporation; Jacksonville, FL & Glenview, IL (2002-2009). *Senior Derivatives Trader.*

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Strategic Management Society, 2010--present

Southern Management Association, 2010--present

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