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# Three Essays on Strategic Risk Taking

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THREE ESSAYS ON STRATEGIC RISK TAKING

by

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DOCTOR OF PHILOSOPHY  
STRATEGIC MANAGEMENT

OLD DOMINION UNIVERSITY  
December 2012

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**ABSTRACT****THREE ESSAYS ON STRATEGIC RISK TAKING**

Krista Burrill Lewellyn  
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The three essays that comprise this dissertation collectively explore strategic risk taking. The dissertation is underpinned by the notion that corporate executives take strategic risks not randomly, but based on the expectation that outcomes are more likely to be positive rather than negative. Each essay examines how and why decision makers come to vary in their cognitive evaluation of the acceptability of strategic risk taking.

Essay 1 draws from the approach/inhibition theory of power, to explore how power not only provides the means for CEOs to exert their risk preferences, but actually affects what the risk preferences are. Power is theorized to influence CEO cognitions, such that there is a prevailing focus on the upsides of strategic risk taking and a tendency to underestimate the downsides, increasing the proclivity to engage in such actions. Focusing on upsides as opposed to downsides is also evoked in explaining why stock options induce risk taking, thus the possibility that there are interaction (complementary or substitutive) effects with CEO power is also explored in a sample of firms listed in the S&P 1500 from 2003– 2007.

Essay 2 uses the behavioral agency model, to examine how the risk bearing attributes of specific CEO compensation elements affect the decision to engage in cross-border acquisitions. This subsequently increases the proclivity to engage in cross-border acquisitions. Moderating effects of managerial discretion are also evaluated. The

theoretical model is tested in a sample of US firms operating in four industries from 2007 – 2011.

Essay 3 combines the behavioral theory of the firm idea that firm behavior is goal directed and history dependent with arguments from national social culture literature. A multilevel model is presented and tested with a multinational sample of firms operating in the paper products industry. Findings demonstrate outperforming competitors in the past motivates firm R&D investment and that various cultural dimensions (future orientation, institutional collectivism, power distance and uncertainty avoidance) of a firm's home country either encourage or discourage firm R&D investment.

## **DEDICATION**

This dissertation is dedicated to my family, for without their love and support I never would have embarked upon and achieved this goal. To my dad, Carl ‘Jimmy’ Burrill – his love for me and belief in my capabilities is felt always even though he is no longer here with us. To my mom Ellen Burrill, who is always proud of me and my work, as well as my mother-in-law, Nora Lewellyn. Our conversations as I travelled back and forth to campus did so much to help me keep the proper perspective and believe in my resilience. To my brother Jim Burrill for his willingness to always listen; it gave me the encouragement that was so often needed along the way. Finally, to my husband and best friend Ted and children Kayleigh and Reece, who gave me unconditional love and support throughout this process, their conviction that I would persist was often stronger than my own.

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It truly does take a global village to raise a PhD graduate!

## TABLE OF CONTENTS

	Page
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
Chapter	
1. INTRODUCTION.....	11
2. FOCUSING ON UPSIDES AND DOWNPLAYING DOWNSIDES: THE ROLE OF CEO POWER AND STOCK OPTIONS IN STRATEGIC RISK TAKING.....	23
2.1 INTRODUCTION.....	23
2.2 THEORY AND HYPOTHESIS DEVELOPMENT.....	27
2.3 METHODS.....	45
2.4 RESULTS.....	53
2.5 DISCUSSION.....	56
3. GOLD FOR NOW AND THE GOLDEN YEARS: THE INFLUENCE OF CEO RETIREMENT PAY AND STOCK OPTIONS ON CROSS-BORDER ACQUISITIONS.....	65
3.1 INTRODUCTION.....	65
3.2 THEORY AND HYPOTHESES DEVELOPMENT.....	69
3.3 METHODS.....	84
3.4 RESULTS.....	90
3.6 DISCUSSION.....	94
4. FIRM LEVEL R&D INVESTMENT, ATTAINMENT DISCREPANCIES AND NATIONAL SOCIAL CULTURE: A MULTILEVEL ANALYSIS IN THE PAPER PRODUCTS INDUSTRY.....	99
4.1 INTRODUCTION.....	99
4.2 THEORY AND HYPOTHESES DEVELOPMENT.....	103
4.3 METHODS.....	115
4.4 RESULTS.....	122
4.5 DISCUSSION.....	125
5. CONCLUSIONS.....	132
6. REFERENCES.....	137



**LIST OF TABLES**

<b>Table</b>	<b>Page</b>
1. Correlations and Descriptive Statistics – Essay 1.....	162
2. Results of Generalized Least Squares Regression Models for Strategic Risk Taking.....	163
3. Mean Values of Variables by Industry.....	165
4. Correlations and Descriptive Statistics – Essay 2.....	166
5. Results of Negative Binomial Regression for Cross-border Acquisition Activity.....	167
6. Correlations and Descriptive Statistics with GLOBE Measures – Essay 3.....	169
7. Correlations and Descriptive Statistics with Hofstede Measures – Essay 3.....	170
8. Results of Hierarchical Linear Modeling for R&D Investment.....	171

**LIST OF FIGURES**

<b>Figure</b>	<b>Page</b>
1. Model for Direct and Interactive Effects of CEO Power and the Accumulated Value of Exercisable and Unexercisable Stock options.....	173
2. Interaction between CEO Power and the Accumulated Value of Exercisable Stock Options.....	174
3. Interaction between CEO Power and the Accumulated Value of Unexercisable Stock Options.....	175
4. Model of the Relationship between CEO Retirement Pay and in-the-money Stock Options with Cross-border Acquisitions.....	176
5. Moderating Influence of Industry Discretion on the Relationship between CEO in-the-money Stock Options and Cross-border Acquisitions.....	177
6. Moderating Influence of CEO Duality on the Relationship between CEO in-the-money Stock Options and Cross-border Acquisitions.....	178

## CHAPTER 1

### INTRODUCTION

Risk taking is an integral part of business and arguably an important element in the job descriptions for the powerful men and women leading corporations in today's competitive arena. Risk taking by executives on behalf of their firms has long been a focus area of strategic management research (Bromiley, Miller, & Rau, 2001). The strategic decisions corporate executives are likely to initiate and participate in, involve investing in and committing resources prior to fully understanding the potential performance outcomes, making them inherently risky (Baird & Thomas, 1985; Chatterjee, Lubatkin, & Schulze, 1999).

Risk is a multidimensional concept and has been defined in numerous ways often causing confusion and misunderstanding (Chiles & McMackin, 1996). "Studies of risk tend to traverse disciplinary boundaries... as they often involve technology, politics, nature, culture, cognitive schemata, and many other phenomena that the traditional divisions of academic labor try to keep separate" (Arnoldi, 2009:16).

In classical economic decision theory, risk and uncertainty are defined as two distinct entities. Traditional views of risk refer to situations where decision makers experience all possible outcomes (positive and negative relative to expectations) as well as knowing the probability distributions of their occurrence (Knight, 1921; Luce & Raiffa, 1972). Uncertainty refers to situations where possible outcomes and the probability distribution of their occurrence are unknown (Bromiley et al., 2001).

Viewed from a sociological perspective, organization and management scholars have generally considered risk to be more than just probabilities (Arnoldi, 2009) and tend to

blur the distinction between risk and uncertainty. As Bettis (1982: 22) observed, “Technically there is a distinction between risk and uncertainty... Almost all authors after noting this distinction ignore it and use risk and uncertainty interchangeably.” This probably is not surprising since most strategic decisions, i.e., those involving significant investment of firm resources and which impact long term performance (Judge & Zeithaml, 1992) , involve a level of uncertainty, or unpredictability about their future consequences (Bromiley et al., 2001). Providing a fitting example, is Baird and Thomas’ (1985) definition, where, strategic risk entails 'venturing into the unknown, [making moves] that may result in corporate ruin—moves for which the outcomes and probabilities may be only partially known and where hard to define goals may not be met' (Baird & Thomas, 1985:231-232).

Researchers (MacCrimmon & Wehrung, 1986; March & Shapira, 1987; Shapira, 1995) have demonstrated that managers do indeed conceptualize risk as situations where they do not know if a positive or negative outcome will result from a choice to take action (e.g., investing and allocating resources), and perceive that potential losses could be significant. In this fashion, risk is often referred to as a hazard, loss, damage, or threat, essentially an unwanted event (Zinn, 2008).

Yet within management literature, risks are not only viewed as a negative force, but also as being an important element for success, such as in the case of creativity, entrepreneurship, and needed strategic change (Grant & Berry, 2011; Ling, Simsek, Lubatkin, & Veiga; Shimizu, 2007; Zahra, 1996). With this in mind, management research on risk taking tends to distinguish between organizational risk and managerial risk taking (Bromiley et al., 2001; Palmer & Wiseman, 1999).

Organizational risk is often depicted as income/financial stream variance or systematic and unsystematic stock return estimates from the capital asset pricing model (Bromiley et al., 2001; Palmer & Wiseman, 1999). Managerial risk taking has been conceptualized as actual investment decisions that are known to have uncertain outcomes (Chatterjee & Hambrick, 2011; Devers, McNamara, Wiseman, & Arrfelt, 2008; Hoskisson, Hitt, & Hill, 1993; Miller & Bromiley, 1990; Pablo, Sitkin, and Jemison, 1996; Sanders, 2001; Sanders & Hambrick, 2007). Since the outcomes are uncertain, managers evaluate and make judgments about the level and acceptability of risks associated with firm strategic decisions (Sitkin & Pablo, 1992). It is this process, which is the focus in this dissertation.

Collectively, the three essays seek to address the overarching research question of how and why firm decision makers vary in strategic risk taking, defined to be making decisions involving investment and commitment of resources prior to fully understanding the potential performance outcomes, which may be positive or negative (Chatterjee, Lubatkin, & Schulze, 1999).

Because strategic risk taking is a phenomenon that reflects a variety of strategic decisions and is influenced by factors at multiple levels of analysis, it is an area of research that has been examined through numerous theoretical perspectives. Research grounded in agency theory, assumes managers will be more risk averse than shareholders would prefer and unless incentivized or monitored appropriately, will avoid taking risks on behalf of their organizations in order to protect their firm specific human capital (Eisenhardt, 1989). Indeed a large body of interdisciplinary research has demonstrated that equity incentives, particularly stock options induce risk taking as holders of stock

options benefit from increases in stock price but do not incur losses when stock prices fall, thus, they are perceived to offer only upside benefits with respect to risk taking (Devers et al., 2008).

Relatedly, in the behavioral agency model (Wiseman & Gomez-Mejia, 1998), prospect and agency theories are integrated, and managers rather than being risk averse, are assumed to be loss averse. Therefore different types of compensation impart different levels of risk bearing (i.e., threats to personal wealth). Variance in risk bearing is theorized to exert different effects on decision makers' perceptions. When perceived threats to one's wealth are low, risk taking is more likely.

Another theoretical perspective often used in strategic risk taking research is Cyert and March's (1963) behavioral theory of the firm. This perspective suggests risk taking arises when decision makers engage in search processes, which are motivated by comparing current or expected performance to an aspiration level. Behavioral theory of the firm posits that decision makers take risks when they believe that by doing so they will achieve gains that bring them closer to their aspired target or when they have sufficient slack resources to protect them from severe losses.

These dominant theoretical frameworks used in risk taking research (Audia & Greve, 2006; Bromiley et al., 2001) diverge on their basic underlying assumptions and support different antecedents of risk taking. However, they all converge on the notion that risk taking is more likely to occur when decision makers expect the risk taking will achieve positive outcomes, whereas if negative outcomes are expected, risk taking is rejected.

This observation aligns with ideas put forth by cognition scholars (e.g., Bandura, 2001) who suggest individuals cognitively represent future outcomes in the present,

which results in choices being motivated and directed by anticipated outcomes. Drawing from this premise, I conjecture that decision makers vary in their strategic risk taking because they vary in their cognition processes, where “cognition is a forward-looking form of intelligence that is premised on an actor's beliefs about the linkage between the choice of actions and the subsequent impact of those actions on outcomes.” (Gavetti & Levinthal, 2000: 113). All three essays are underpinned by this fundamental notion that corporate executives engage in strategic risk taking not randomly, but based on the expectation that the outcomes are more likely to provide positive rather than negative outcomes for their organizations and themselves.

Each essay seeks to explicate how and why decision makers come to vary in their cognitive representations of the acceptability of strategic risk taking. Collectively, the essays strive to develop a cognitive-based model that deepens and expands understanding of micro and macro antecedents of strategic risk taking. In doing so, the goal is to provide new theoretical insights that not only extend current theory but also challenge the logic underpinning previously used theoretical frameworks. This will hopefully give organizational scholars greater flexibility in their research.

In the first essay of this dissertation, I bring together research streams from strategic management, organizational theory, and social psychology to focus on the constructs of risk taking and power in organizations. I develop and test theory that seeks to examine how and why CEOs vary in their tendencies to take risks on behalf of their organizations. Although recognizing that many risky decisions will also be influenced by preferences of other executives, there is sufficient precedent in the literature supporting the view that the

CEO is the most influential and powerful actor within the firm (Bigley & Wiersema, 2002; Childs, 1972; Daily & Johnson, 1997; Jensen & Zajac, 2004

Implicit in scholarly research examining risk taking by CEOs on behalf of their firms, is the notion that CEOs have the means of exerting their will, or in other words, the power to pursue their penchant for taking or avoiding risks. From an agency theory perspective, CEO power arises from inadequate monitoring by shareholders and boards of directors (Grabke-Rundell & Gomez-Mejia, 2002), and with the primary theoretical assumption of risk aversion, powerful CEOs (those not subject to adequate monitoring) will be inclined to do just that (Carpenter, Pollock, & O'Leary, 2003; Miller & Chen, 2004).

Despite extensive research, agency theory based predictions concerning risk taking have proven to be weak and inconsistent (Finkelstein, Hambrick, & Cannella, 2009). Scholars (e.g., Carpenter et al., 2003; Sanders & Hambrick 2007; Wiseman & Gomez-Mejia, 1996), have suggested the lack of distinct relationships may be due to the agency theory assumption that managers will have stable risk preferences, being either risk averse or risk-neutral, failing to consider that there may be contexts in which they may be risk seekers. By informing the research with the approach/inhibition theory of power, I advance and test an alternative argument that power not only provides the means by which CEOs are able to exert their preferences, but actually motivates what the preferences are.

The approach/inhibition theory of power posits that when an individual experiences power, his or her behavioral approach system is activated whereas when there is a lack of power, the behavioral inhibition system is triggered (Keltner, Gruenfeld, & Anderson,



2003). When the approach system is dominating, the individual's focus is directed to the potential upsides and reward aspects of risky actions and away from downsides or potential threats, subsequently leading to a greater likelihood of risk taking (Keltner et al, 2003).

This logic that focusing on upsides and downplaying downsides is similar to theorizing about why stock options encourage risk taking. A number of studies (e.g., Deutsch, Keil, & Laamanen, 2010; Devers et al., 2008; Sanders, 2001; Sanders & Hambrick, 2007) demonstrating stock option compensation is positively related to risk taking argue that stock option compensation makes CEOs attentive to upsides associated with increasing their personal wealth to the detriment of considering possible downsides. This suggests the constructs of CEO power and stock options may act as complements or substitutes for encouraging CEO strategic risk taking. I test this proposition by evaluating interaction effects, to determine if increasing levels of the accumulated value of CEO stock options amplify or diminish the influence of CEO power on risk taking.

A key contribution of this work is that by exploring the possibility of a “dual causal structure between power and compensation that has not been investigated” (Finkelstein et al., 2009: 322), by strategy researchers, an important gap in the literature is addressed. Secondly, by informing the research with the approach/inhibition theory of power, I demonstrate that rather than power merely providing the means by which CEOs are able to exert their preferences, it is a force that also motivates their preferences for risk taking. The theoretical framework contributes towards addressing a key issue concerning agency theory, as highlighted by scholars (e.g., Carpenter et al., 2003; Wiseman & Gomez-Mejia, 1998): the lack of development of the risk taking construct, most notably the

prevailing assumption that managers have stable risk preferences, being either risk averse or risk-neutral.

In the second essay, I also use theories that consider how individuals are motivated or dissuaded from engaging in risks on behalf of their organizations, therefore, again the focus is on the CEO as the primary organizational decision maker of interest. Drawing from the behavioral agency model (Wiseman & Gomez-Mejia, 1998) and the accumulated executive compensation research, I generate new theoretical insights on how the under-analyzed elements of retirement pay in conjunction with stock options, influence a CEO's risk bearing (perceived threats to his/her wealth) and ultimately the propensity for undertaking cross-border acquisitions.

Acquisitions entail significant investment and commitment of firm resources prior to fully understanding the potential performance outcomes, which may be positive or negative (Sanders, 2001). They also often result in significant variance in returns and therefore have been characterized as risky decisions (Grinstein & Hribar, 2004; Jensen & Ruback, 1983; Sanders, 2001).

An extensive body of research has demonstrated executive compensation arrangements influence firm decision making including those associated with acquisition activity (Bliss & Rosen, 2001; Bodolica & Spraggon, 2009; Grinstein & Hribar, 2004; Matta & Beamish, 2008; Sanders, 2001). Previous executive compensation research undertaken from an agency theory perspective (O'Reilly & Main, 2010; Tosi, Werner, Katz, & Gomez-Mejia, 2000), has prescribed awarding equity based compensation in order to align the interests of risk averse managers and risk neutral shareholders (Jensen & Murphy, 1990; Tosi et al., 2000). Stock options in particular have been positively

associated with both domestic acquisition activity (Sanders, 2001; Sanders & Hambrick, 2007; Wright, Kroll, Lado & Van Ness, 2002) and cross-border acquisitions (Datta, Iskandar-Datta, & Raman, 2001; Datta, Musteen, & Herrmann, 2009; Matta & Beamish, 2008).

However, as demonstrated in previous research (e.g., Larraza-Kintana, Wiseman, Gomez Mejia, & Melbourne, 2007; Sanders, 2001) and summarized in a recent review by Devers, Cannella, Reilly, & Yoder (2007), equity-based compensation research has revealed much more complex relationships with firm outcomes than previous agency arguments suggest. This has led scholars to move away from applying classical agency theory centric reasoning, to behavioral models (e.g., Wiseman & Gomez-Mejia, 1998; Devers et al., 2008) in order to more deeply examine how individual elements of executive compensation influence strategic decision making. The current study endeavors to add to these efforts by developing and testing theory concerning how stock options and the understudied compensation element of retirement pay motivate CEOs to engage in cross-border acquisitions.

In the wake of new SEC disclosure rules, the business media and academic scholars have begun to highlight the substantial levels of retirement pay (pensions and deferred compensation) many U.S. CEOs have garnered. The study is among the first to examine the effect CEO retirement pay may have on corporate strategic decisions and therefore contributes insights to both the executive compensation and strategic risk taking literature, in particular that associated with cross-border acquisition research. The research also serves to extend the predictive applicability of the behavioral agency model as well as refines the boundaries of the theory by explicating the role of managerial

discretion in moderating the relationships between compensation elements and CEO risk taking.

In essay 3, the behavioral theory of the firm (Cyert & March, 1963) is used to frame the conceptual reasoning along with national culture constructs (Hofstede, 2001; House et al., 2007). For this reason, the focus is on firm level, or the collective risk propensities of decision makers, as determinants of strategic risk taking within the cross-national context. In this study, I investigate how national social cultural dimensions of a firm's home country create a context that either encourages or discourages firm level risk taking in a sample of paper product industry firms from 11 countries.

There is a long tradition of attributing the variation in strategic investments (e.g., R&D, capital investments) across firms to past performance, both positive and negative (Chen, 2008; Greve 2003). Scholars drawing from Cyert and March's (1963) behavioral theory of the firm suggest that firms compare their performance relative to an aspiration level, not just on an absolute value. The comparisons, serve to motivate the firm to engage in search processes that either solve short-term problems or provide innovative new technologies and/or products (Cyert & March, 1963).

Behavioral theory of the firm contends firm behavior manifested as strategic choices is goal directed and history dependent (Levitt & March, 1988), and since much of behavioral theory of the firm research has been conducted in single country settings, little consideration has been given to how the values, beliefs and assumptions that constitute the culture within national boundaries may encourage and enable pursuing some types of goals while discouraging and hindering others. In this study I seek to address this gap.

The study strives to make a significant contribution to the literature in four specific ways. First, while there has been a considerable work investigating determinants of strategic investments with single country samples, my analysis using data from firms operating in a single industry in 11 countries, provides the opportunity to tease out the relative importance of various firm and national culture variables. Second, I present new evidence on how a firm's home country cultural dimensions motivate and inhibit firm level investments thus addressing concerns raised by scholars (e.g., Venaik & Brewer, 2011) of the scarcity of studies looking at national cultural dimensions and firm level decisions. Third, I provide empirical support that behavioral theory of the firm predictions may be influenced by national cultural context, as different cultures may place different weights on goal directed behavior and risk taking. Fourth, by using both GLOBE and Hofstede cultural measures in the analysis, a more comprehensive understanding of the effects of culture on firm level R&D investments results. In addition, I contribute to the debate and the efforts to further understand how and why these sets of national culture measures converge and diverge with respect to firm level decisions.

The development and design of the three studies that comprise this dissertation reflect the multifaceted nature of strategic risk taking. Each essay utilizes different representations of strategic risk taking that have been used in the extant literature and examines an overlooked or understudied determinant of strategic risk taking in conjunction with previously studied constructs. Multiple theories are used to develop the conceptual logic driving each analysis. Empirical testing of the hypotheses using three different pooled cross-sectional time series data sets and various statistical techniques

(generalized least squares with random effects, negative binomial regression with random effects, and hierarchical linear modeling) demonstrates support for the theoretical models.

## **CHAPTER 2**

### **FOCUSING ON UPSIDES AND DOWNPLAYING DOWNSIDES: THE ROLE OF CEO POWER AND STOCK OPTIONS IN STRATEGIC RISK TAKING**

#### **2.1 INTRODUCTION**

Risk taking is an integral part of business and is arguably one of the most important elements of the job descriptions for the powerful men and women leading corporations today. Consequently, risk taking by executives on behalf of their firms has long been a focus area of strategic management research (Bromiley, Miller, & Rau, 2001).

Implicit in scholarly research examining risk taking by CEOs on behalf of their firms, is the notion that CEOs have the means of exerting their will and the power to pursue certain risky options while avoiding others. From an agency theory perspective, CEOs are generally considered to be risk averse and their power arises from inadequate monitoring by shareholders and boards of directors (Grabke-Rundell & Gomez-Mejia, 2002). Hence, powerful CEOs will be disinclined to engage in risk taking in order to protect their individual interests (Carpenter, Pollock, & O'Leary, 2003; Miller & Chen, 2004).

Despite extensive research, agency - based predictions concerning risk taking have proven to be weak and inconsistent (Finkelstein, Hambrick, & Cannella, 2009). Scholars have suggested the lack of distinct relationships may be due to the agency theory assumption that managers will have stable risk preferences, being either exclusively risk-averse or risk-neutral, and failing to consider that there may be some contexts in which they may be risk seekers (e.g., Carpenter et al., 2003; Sanders & Hambrick 2007; Wiseman & Gomez-Mejia, 1998). We agree with this critique and advance an

alternative argument that CEO power relative to the board not only provides the means by which CEOs exert their preferences; it actually influences what their preferences are.

We build our theoretical framework from a rapidly growing stream of research by social psychologists (Anderson, & Berdahl, 2002; Anderson & Galinsky, 2006; Keltner, Gruenfeld, & Anderson, 2003; Magee, & Galinsky, 2008; Magee, Galinsky, & Gruenfeld, 2007) that has theorized and shown experimentally that possessing power, is associated with an increased proclivity to take risks. This conceptualization of how power affects cognitions and behavior with respect to risk taking is referred to as the approach/inhibition (A/I) theory of power (Keltner et al., 2003). It posits that when an individual possesses power his or her behavioral approach (as opposed to inhibition) system is activated. This leads the individual to primarily focus attention to the potential upsides and reward aspects of risky actions, while downplaying downsides or potential threats, subsequently leading to a greater likelihood of risk taking (Keltner et al, 2003).

The idea that a focus on upside potential outcomes and away from downsides associated with risk taking, leads to greater likelihood for engaging in such actions, aligns with ideas put forth by cognition scholars (e.g., Bandura, 2001; Gavetti & Levinthal, 2000) who suggest individuals cognitively represent future outcomes in the present. Consequently, individual choices are motivated and directed by anticipated outcomes (Bandura, 2001).

This notion that powerful corporate executives engage in strategic risk taking based on the expectation that the outcomes are more likely to provide positive rather than negative outcomes has also been evoked in explaining relationships between stock options and risk taking. Holders of stock options benefit from increases in stock price but



do not incur costs or losses when stock prices fall, thus, stock options are argued to induce risk taking as they are perceived to offer only upside benefits (Devers McNamara, Wiseman, & Aarfelt, 2008; Poteshman, Parrino, & Weisbach, 2005). Numerous empirical studies have demonstrated stock options do indeed promote risk taking (Bromiley et al., 2001; Devers, Cannella, Reilly, & Yoder, 2007).

Building on the observation that both power and stock options may influence CEOs to focus on the potential upsides of risky ventures and downplay the potential magnitude and likelihood of downsides associated with risk taking, we surmise that possessing power and stock options affects the CEO's cognitive framing of potential outcomes. Cognitive framing is the means by which a decision maker infers meaning and understanding of the choice situation (Tversky & Kahneman, 1981), emphasizing or filtering out certain aspects thereby influencing interpretations of future outcomes as being either favorable or unfavorable (Bateman & Zeithaml, 1989; Walsh, 1995).

This notion that both power and stock options influence cognitive processes such that there is a predominant focus on the upsides of risk taking leads to some interesting new questions. First, does the experience of power impact CEO risk taking in a similar fashion as stock options, such that it encourages strategic risk taking? Second, are there interaction effects, such that increasing levels of CEO stock option compensation amplify or diminish the influence of CEO power? Or more specifically, do CEO power and stock options compensation interact as substitutes or complements, to impact the degree of risk taking by CEOs on behalf of their firms?

In examining these important questions, our theory and subsequent empirical findings make several contributions to the literature. First, to guide our analysis, we draw from

social psychology literature to enrich theoretical perspectives concerning phenomena scholars have highlighted as warranting further understanding and study: how decision makers' cognitive processes may motivate variance in their proclivity for risk taking on behalf of their organizations (Shapira, 1995) and the socio-cognitive implications of the experience of power by those who lead organizations (Finkelstein et al., 2009). By grounding our research within the A/I theory of power, we empirically demonstrate that rather than power merely providing the means by which CEOs are able to exert their preferences, it is also a substantive force that can motivate their risk preferences. This provides a theoretical alternative to the much critiqued (e.g., Carpenter et al., 2003; Wiseman & Gomez-Mejia, 1998) logic of agency theory models, whereby managers are assumed to prefer to avoid risk taking for their firms.

Second, we heed calls for increasing understanding of how decision makers' cognitive processes impact firm level phenomenon (Fiol & Huff, 1992; Porac & Thomas, 2002) by arguing and demonstrating empirically that the possession of power and of stock options similarly influence the way executives perceive future outcomes for themselves and their firms, which then drives their risk taking initiatives. Furthermore, as highlighted by Finkelstein et al., (2009: 322), the possibility of a "dual causal structure between power and compensation... has not been investigated" by strategy researchers. Therefore, this study's focus on the overlapping cognitive mechanisms that power and stock option compensation share with respect to risk taking addresses an important gap in the literature.

Additionally, our findings that different types of stock options interact with CEO power in different ways provide a novel contribution to executive compensation research,

which advocates consideration of the nuanced role individual pay elements have in eliciting actions executives take on behalf of their organizations (e.g., Devers et al., 2008; Sanders, 2001; Wiseman & Gomez-Mejia, 1998).

Finally, our integration of the A/I theory of power with research on strategic decision making in organizations, extends the boundaries of this theory. In doing so, it may offer opportunities for it to emerge as a viable means for further explaining, predicting and understanding how individual behaviors impact organizational phenomena.

## **2.2. THEORY AND HYPOTHESES DEVELOPMENT**

### **Strategic Risk Taking**

Strategic risk taking by CEOs refers to making decisions on behalf of their organization, where the outcomes of the decision are highly uncertain, unpredictable and have the potential of generating large gains or losses (Baird & Thomas, 1985; Chatterjee Lubatkin, & Schulze, 1999; Palmer & Wiseman, 1999; Shapira, 1995).

This formal definition is compatible with how practicing managers view risk in decision making (e.g., MacCrimmon & Wehrung, 1990; March & Shapira, 1987; Shapira, 1995). Specifically, research has shown that managers conceptualize risk taking as referring to situations where they do not know if a positive or negative outcome will result from a choice to take action (e.g., investing and allocating resources), contrary to depictions in classical decision theory that makes a clear distinction between risk and uncertainty.<sup>1</sup> A choice that has a more certain expected outcome is considered less risky

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<sup>1</sup> In classical economic decision theory risk refers to situations where all possible outcomes and the probabilities of their occurrence are known while uncertainty refers to situations where possible outcomes and the probability distribution of their occurrence are unknown (Knight, 1921; Luce & Raiffa)

from a manager's perspective (March & Shapira, 1987). In addition, the riskiness of decisions has more to do with the possible threat of loss than opportunities for gains. This is in contrast to viewing risky decisions as those where known probability distributions of outcomes exhibit greater variance both positive and negative (Shapira, 1995).

CEOs rarely if ever have complete information about outcomes associated with decisions they are likely to initiate or be engaged in on behalf of their organizations, i.e., strategic type ones involving significant allocation of resources intended to affect long term performance (Judge & Zeithaml, 1992). It is also unlikely that information about the possible outcomes is so scarce that subjective probability estimates are impossible (Sitkin & Pablo, 1992). Decision makers can and do assess the likely consequences of pursuing various strategies

In experimental studies with managers, Bateman and Zeithaml (1989) found that when risky investment decisions were framed as offering potential gains, they were viewed more attractively and thus more likely to be taken. Also, Palich and Bagby (1995) found that entrepreneurs have greater tendencies than non-entrepreneurs to focus attention on the likelihood of favorable outcomes and to categorize or frame situations as opportunities. They theorize this positive framing, rather than an inherent risk taking disposition, is what drives the often observed risk taking propensity that is associated with entrepreneurial activities. Furthermore, in a review of extant risk taking research, Sitkin and Pablo (1992: 25) come to the conclusion that "risk behavior is ultimately determined by the label attached to a risky situation." In other words, decision makers vary in their strategic risk taking because they vary in their cognitive framing of the expected outcomes of their strategic risk taking decisions.

### **Cognitive Framing of Strategic Risk Taking Outcomes**

Cognitive framing of strategic risk taking outcomes essentially affects how decision makers infer meaning and understanding of a choice situation (Tversky & Kahneman, 1981). By framing, we are not referring to the use of language and labels to express understanding of the decision (Dutton, Fahey, & Narayanan, 1983) as often employed by behavioral decision theory researchers in risk taking experiments. Rather, our use of the concept of cognitive framing refers to an individual CEO's cognition process, where "cognition is a forward-looking form of intelligence that is premised on an actor's beliefs about the linkage between the choice of actions and the subsequent impact of those actions on outcomes." (Gavetti & Levinthal, 2000: 113). Thus, CEOs' cognitive framing processes reveal or highlight certain aspects while filtering out others, thereby influencing their perceptions and interpretations of what the outcome of a decision may be (Benford & Snow, 2000). This suggests that an inherently risky strategic decision, such as an acquisition might be viewed by one CEO as an opportunity for gains, while another might see it as unnecessary risk taking that could lead to substantial losses.

The notion that variation in cognitions and interpretations by decision makers subsequently influence the choices they make on behalf of their organizations is well established in organizational research (Gavetti & Levinthal, 2000; Kaplan, 2011; Nadkarni & Barr, 2008) beginning with Simon's (1947) bounded rationality argument and empirical work on information processing subsequently advanced by others such as Daft and Weick (1984), Hambrick and Mason (1984) and Porac, Thomas, and Baden-Fuller (1989).

Hambrick and Finkelstein (1987) argued that the extent to which biases and cognitions of top executives affect organizational outcomes is dependent upon the level of discretion or latitude of action, they have. Discretion is similar to power, in that “it exists when there is an absence of constraint” (Hambrick, 2007: 335), but has been described as being a “more diffuse construct” (Quigley & Hambrick, 2012: 854). Specifically, discretion is a function of how much the environmental factors permit variety; or how much the CEO is able to perceive “multiple courses of action” and the extent to which the organization “empowers the chief executive to formulate and execute those actions” (Hambrick & Finkelstein, 1987: 379). Therefore, an important precursor to CEO discretion will be the level of power the CEO possesses. This is consistent with the resource dependency view of power, whereby an organizational actor derives power from two conditions: (1) the actor has minimal dependence upon others, such that he or she is not constrained in pursuing preferences, and (2) others’ dependence on the actor is maximized (Brass, 1984; Pfeffer & Salancik, 1978).

In sum, the constructs of power and managerial discretion have been treated as theoretically distinct in previous research (e.g., Daily & Johnson, 1997; Haleblan & Finkelstein, 1993; Quigley & Hambrick, 2012) and we do the same. Hence in the current study in assessing the capacity to which the CEO’s preferences are reflected in the choices he or she makes for the organization, we focus on the more fundamental construct of power, which captures the internal organizational sources of discretion, though we do consider how the external environmental discretion affects risk taking in our empirical analysis, above and beyond internal organizational explanations.

### **CEO Power and Strategic Risk Taking**

Power is a central feature of organizational life and the idea that powerful people think and act differently about themselves and others is prevalent in a variety of social science disciplines (Boulding, 1989; Magee & Galinsky, 2008). CEOs are generally considered to be the “most powerful member of the corporate elite” (Jensen & Zajac, 2004:513). However, the level of CEO power varies from organization to organization.

Power allows a CEO to secure and control resources that others in the organization are dependent upon, thus reducing uncertainty for the organization (Pfeffer, 1981). This in turn increases the CEO’s capacity to exert his or her preferences, as power enables the CEO to influence and control others as well as having freedom from other’s influence and control (Brass, 1984; Galinsky et al., 2008). In the case of CEOs, the relevant others, are those most likely to be involved in the initiating and approving of firm level decisions involving risk, other members of the board of directors (Finkelstein et al., 2009; Pearce & Zahra, 1991; Westphal & Zajac, 1995). In organizational literature, CEO power is often conceptualized as a relational construct, whereby the level of CEO power is relative to the board of directors and/or top management team (Finkelstein et al., 2009).

Much of the research considering the association between a CEO’s power and the risk taking he or she takes on behalf of the organization has been framed theoretically by agency theory with its assumptions of self-interested and risk averse CEOs (Finkelstein et al., 2009). Agency theory, based on the potential divergence of interests when ownership and control of the firm are separate, argues that unlike shareholders who are able to diversify their personal wealth across various firms, managers in order to shield their non-diversifiable human capital will be more risk averse than shareholders would prefer

them to be (Amihud & Lev, 1981; Eisenhardt, 1989; Jensen & Meckling, 1976). Agency theory argues when CEOs are powerful, they may “prevent or forestall board involvement in strategic actions” gaining implicit control over the board and the ability to pursue self-interested actions (Johnson, Hoskisson, & Hitt, 1993: 35).

Agency theory prescriptions for mitigating the likelihood of managerial opportunism, which can result from the combination of differences in risk preferences and information asymmetry, call for monitoring systems which reduce a CEO’s power to pursue his or her risk averse preferences (Beatty & Zajac, 1994; Carpenter et al., 2003; Miller & Chen, 2004) and instituting incentive “mechanisms that alter the risk orientation of agents to align them with the interests of the principals” (Wiseman & Gomez-Mejia, 1996: 133). However, these underlying predictions that CEOs will use their power to pursue their own self-interests, which are assumed to include avoiding risks have led to the conclusion that “risk remains an underdeveloped concept within agency theory” (Wiseman & Gomez-Mejia, 1998: 133) and that “power is a more comprehensive variable than what agency theorists have implied” (Grabhe-Rundell & Gomez-Mejia, 2002:14).

To further the saliency of these critiques and to address concerns that in the extant literature, conceptualizations of “power only tells us whose interests are likely to be pursued not what those specific interests are” (Finkelstein et al., 2009: 375) we draw from social psychology where an “exploding body of research has confirmed that power fundamentally alters how an individual construes and approaches the world” (Galinsky et al., 2008:1451).



The work by Keltner et al., (2003) has been particularly influential, operating under the perspective of the A/I theory of power. Specifically, this theory argues that the possession or lack of power differentially activates either the neurobiological approach or inhibition behavioral systems driving differences in attention, cognitions, motivations, and behaviors (Magee & Galinsky, 2008). Activating the behavioral approach system leads individuals to focus primarily on positive outcomes. In contrast, when the behavioral inhibition system is activated, the focus is on avoiding negative outcomes (Karniol & Ross, 1996; Keltner et al., 2003).

The A/I theory of power (Keltner et al., 2003) argues that the experience of power triggers the behavioral approach system generating a cognitive bias with respect to the way an individual frames and perceives the riskiness of certain decisions such that the upside potential is given maximum focus and the downside consequences are minimized or ignored (Anderson & Berdahl, 2002; Keltner et al., 2003; Magee & Galinsky, 2008). A lack of power increases the activation of the behavioral inhibition system, leading the powerless to act in a constrained manner (Carver & White, 1994). Furthermore, the two behavioral systems are antagonistic to each other's functioning such that increasing activation of the approach system leads to deactivation of the inhibition system (Hirsh, Galinsky, & Zhong, 2011). Several series of experimental studies confirm that those with power were more likely to engage in risk taking as they perceived the expected outcomes to result in rewards not losses compared to those without power (Anderson & Galinsky, 2006; Galinsky et al., 2008).

Researchers testing A/I theory predictions consider power to be the capacity to “impose influence and constraints on others” as well as being relatively free “from the

influence of external forces” (Galinsky et al., 2008: 1450). In our research context, this definition aptly applies to CEOs. It is also compatible with definitions used in previous organizational research, i.e. the capacity to exert influence to modify the behavior of others in some intended way (Pfeffer, 1981) and “the capacity of individual actors to exert their will” (Finkelstein, 1992: 506). Therefore we extend the notion that power is the means by which a CEO fulfills his or her preferences by applying the A/I theory of power to explain how power also motivates the cognitions driving the preferences.

The idea that power may impact CEO’s cognitive processes also finds support in organizational cognition literature. In a review of this body of work, Walsh (1995) concludes the research suggests the development of cognitive frames is influenced by individual, social and informational factors. The experience of power is personal yet arises from social interaction patterns (Pfeffer, 1992), which have been shown to influence the variance in the content of cognitive frames (Rentsch 1990). In addition, research has demonstrated an individual’s location in an organization's hierarchy, indicative of structural power (French & Raven, 1959; Finkelstein, 1992), also influences cognitive frames (Hauenstein & Foti 1989).

The few empirical studies assessing the influence of various CEO power measures on strategic risk taking actions, while not applying the theoretical logic we put forth in this paper, implicitly support our theory and could be informed by our theoretical perspective. For example, in a recent study, Haynes and Hillman (2010) test the direct effects of board capital on the deviation from industry norms of several resource allocation decisions as well as moderating effects of CEO power. They ground their hypothesized moderating effects of CEO power in agency theory, arguing power permits the CEO to pursue his or

her (risk averse) preferences by mitigating “the independent judgment of the board...[and to] dampen the effect of the board” (Haynes & Hillman, 2010: 1150).

Contrary to the hypothesized prediction, they find that CEO power *lessens* the negative relationship between board depth and strategic change. Additionally, their results indicate (counter to agency predictions) a direct positive relationship between CEO power and strategic deviation from industry norms, which could be construed as risk taking. Applying the A/I theory of power provides a salient explanation for addressing these anomalous findings.

Similarly, a study by Tang, Crossan, and Rowe (2011) also implicitly supports our theory and could be informed by applying our logic. They find that CEOs who dominate their top management teams are more likely to have firm level strategies that deviate from the industry average. Their theoretical argument, based on an integration of neo-institutional theory (DiMaggio & Powell, 1983), the behavioral theory of the firm (Cyert & March, 1963) and political perspectives (Allison, 1971), is that top management team members will generally prefer to follow industry norms as this will be less risky and more legitimate and that for deviance to occur there must be a dominant CEO (Tang et al., 2011: 4). Thus, they explain how a CEO may be able to exert his/her will for strategic deviance, but not why a CEO would be inclined towards such activities that other executives deem as too risky. In contrast, our theory would suggest that power provides not merely the means, but also the motivation for taking the risky actions that deviate from industry norms.

As previously described, we expect strategic risk taking will be more likely when the CEO is focused on the positive aspects rather than negative ones associated with the

outcomes of strategic risk taking. Essentially, by ignoring potential downside outcomes, the risky venture is viewed as being less risky when the CEO is relatively powerful. Applying the A/I theory of power provides a coherent, parsimonious and relatively nuanced explanation for why a CEO foresees that strategic risk taking will result in upsides and not downsides, making the risk taking more acceptable. Therefore, we propose:

*Hypothesis 1: CEO power is positively related to strategic risk taking.*

### **CEO Stock Options and Strategic Risk Taking**

We have proposed that CEOs engage in strategic risk taking because the experience of power leads them to cognitively frame the potential outcomes of a given decision more positively than negatively. The upside focus logic is similar to that used to explain why a large body of empirical research has shown CEO stock options encourage strategic risk taking.

Stock options are contracts that grant shares at a certain price and after a period of time (known as the “vesting period” typically lasting three to five years), but before an expiration date (usually 10 years) allow the recipient to choose when he or she wishes to exercise, i.e., sell the stock at the current market price (Hall & Murphy, 2002).

Underpinned by the portfolio assumption of risk and return being positively correlated, agency theory predicts awarding equity type bonuses should incentivize managers to take risks in order to increase stock price and therefore their own personal wealth. Since stock options do not impose costs on the recipients even if stock prices decline, they have been theorized to reduce risk aversion in executives as “CEOs are assumed to perceive limited downside risk” associated with these compensation elements (Devers et al, 2008:551).

CEO stock option compensation for the most part has been shown to be positively associated with strategic risk taking initiatives, such as R&D spending (Devers et al., 2008; Sanders & Hambrick, 2007), capital expenditures (Deutsch, Keil, Laamanen, 2010), greater use of long-term debt (Devers et al., 2008), exploration in oil and gas industries (Rajagopal & Shevlin, 2002), long term investments in the cable television industry (Souder & Shaver, 2010), undertaking a greater number of acquisitions (Sanders, 2001), and making larger investments in acquisitions (Sanders & Hambrick, 2007).

Much of the extant research has considered stock options as an aggregate variable and assessed the incentive effects of awarding stock options (e.g., Harris & Bromiley, 2007; Sanders, 2001; Sanders & Hambrick, 2007). However, over time a CEO's stock option wealth changes, since the payout from stock options to the recipient is the difference between the price the stock was awarded at and the current market price of the stock. When the current stock price is greater than the awarded price, the stock options are considered to be 'in-the-money.' Therefore at any given time some of the in-the-money options will be exercisable (having met the vesting requirements) and others will be unexercisable.

Given these nuances associated with stock options, recent studies (e.g., Devers et al., 2008; Souder & Shaver, 2010) have drawn distinctions between exercisable and unexercisable options, theorizing these characteristics may have differential effects on strategic risk taking. We theorize that these differences, which essentially represent current wealth (exercisable) and future wealth (unexercisable) will be particularly relevant in interaction with CEO power, because of the joint impact on cognitive processes. Therefore, consistent with recent research (Devers et al., 2008; Deutsch et al.,

2010), we distinguish between exercisable and unexercisable stock options in developing our hypotheses on the relationship between stock options and risk taking.

**Exercisable stock options.** Devers et al. (2008) drawing from Wiseman and Gomez-Mejia's (1998) behavioral agency model, which incorporates prospect theory logic and Thaler's (1980) concept of an instant endowment effect, argue that CEOs endow the accumulated value of exercisable stock into their assessments of personal wealth. With the behavioral agency assumption that CEOs are loss averse, their choices will reflect a stronger desire to shield the accumulated value of stock options as opposed to possibly increasing the value. Because of this increased risk bearing (i.e., perceived threats to this wealth) associated with strategic risk taking, Devers et al. (2008) hypothesizes a curvilinear relationship between the accumulated value of exercisable options and strategic risk taking, whereby the greatest risk taking occurs at moderate levels. The empirical analysis showed a significant positive relationship between the accumulated value of exercisable options and the combined strategic risk taking activities of R&D investments, capital expenditures, and long term debt levels, with the relationship becoming insignificant at higher levels rather than significantly dropping off.

Contrary to Devers et al. (2008), we theorize that the endowment mechanism is less salient than processes that motivate strategic risk taking by CEOs. Specifically, we argue that since exercisable stock options can be cashed in at any time allowing the CEO to amass wealth immediately or at any desired time of his or her choosing, having this flexibility to increase current wealth may impart feelings of power. In other words, the power associated with exercisable options may activate approach mechanisms further augmenting a CEO's focus on the upsides and reward aspects associated with risk taking.

In addition, CEOs have the ability to bring their overall level of stock option wealth that is at risk back to a moderate level, by exercising a portion of the options, as stock options are usually issued in different lot sizes. This will empower the CEO as s/he is likely to experience feelings of greater control over the status of his or her current wealth,

Empirical support for our prediction is also found in work by Malemender and Tate (2008). Their results indicate a significant positive association between the value of exercisable stock options held by a CEO and the firm's acquisition activity. Acquisition investments are likely to be a form of strategic risk taking that a CEO perceives may impact stock price (Shleifer & Vishny, 2003) increasing the importance of perceptions of control over when to cash in the options. Therefore we hypothesize the following:

*Hypothesis 2: The accumulated value of exercisable stock options held by the CEO is positively related to strategic risk taking.*

**Unexercisable stock options.** With unexercisable options, the value is attained at a future date when the options become vested. Therefore even though they are in-the-money and have cash value, this value represents future wealth. Devers et al. (2008) argues that CEOs will be less likely to endow the value of these types of stock options into their current wealth, and therefore they will be positively related to strategic risk taking. Their results demonstrate support for this prediction. Furthermore, Souder and Shaver (2010) also find a positive relationship between the value of unexercisable stock options held by managers and their proxy for risk taking, adding systems and new channels in a sample of cable television firms.

As unexercisable options are likely to represent those that have been awarded in the more recent past, they may serve as a cue to the CEO of his/her past successful

performance. If, they do indeed reflect past success, this is likely to increase the board's esteem of the CEO as he or she may be viewed as being particularly adept and skilled, and thus may be subject to less scrutiny by directors (Daily & Johnson, 1997). Together this situation is likely to trigger a greater sense of power, leading to increased activation of the behavioral approach system and in turn, greater strategic risk taking. While not disagreeing with Devers et al.'s (2008) theoretical arguments that CEOs may be less concerned with protecting the potential value associated with this type of options, we strengthen the argument by suggesting reasons why CEOs' perceptions about the potential for gains are particularly salient. Therefore we also hypothesize a positive association between this type of stock option and strategic risk taking.

*Hypothesis 3: The accumulated value of unexercisable stock options held by the CEO is positively related to strategic risk taking.*

### **Interactive Effects of CEO Power and Stock Options**

We have argued that CEO power triggers the approach behavioral system to the deference of the inhibition system thereby orienting the CEO to focus on opportunities for gain and reducing perceptions of potential losses associated with strategic risk taking. Likewise, we have asserted that having greater accumulated value of exercisable and unexercisable stock options leads to greater risk taking, as stock options are perceived to offer upsides while shielding the holder from losses. Additionally, amassing current or future wealth from these seemingly costless elements may increase a CEO's sense of power, further activating approach tendencies.

In the psychology literature, wealth has long been associated with the experience of power as it allows one to exert influence over others with less wealth and imparts feelings



of being less constrained in securing desired resources (Furnham & Argyle, 1998).

Building on this logic and the nuanced differences between exercisable and unexercisable stock options, such that they reflect current and future wealth respectively, we develop theoretical arguments that the different types of stock options interact with power in different ways in eliciting strategic risk taking.

**Interaction effects of CEO power and exercisable stock options.** We suggest the incentivizing effects of exercisable stock options, which are viewed as current wealth, will be stronger in interaction with CEO power. Likewise a CEO's focus on upsides due to power will be stronger with high levels of exercisable stock options. We surmise that the activation of approach tendencies by the experience of power may counteract any inhibition tendencies arising from concerns about losses to the level of current wealth, or what is sometimes characterized as endowment effects (Thaler & Johnson, 1990). Similarly, because this type of option may be cashed in at any time, and the CEO has elected not to do so, it implies that powerful CEOs may indeed be less concerned about downside losses, anticipating the stock price will increase even more. In essence, we propose that a CEO's power and current wealth attributed to exercisable stock options interact as complements in a mutually reinforcing way to promote strategic risk taking.

Stock options have been argued to encourage CEOs to take risks by focusing their attention on the upside potential to increase their own personal wealth while not incurring losses (Hall & Liebman, 1998). The upside focus induced by power may or may not be exclusively associated with personal wealth gain, particularly if we allow for a more socialized view of CEOs. Social psychology research has demonstrated that powerful people exhibit greater goal oriented focus during the setting of, initiating of and striving

towards goals (Guinote, 2007). Therefore power may trigger approach tendencies, promoting an upside focus towards achieving organizational goals (e.g., revenue growth, sales from new products). When combined with the motivational effects of the stock options, which make risk taking activities desirable for personal wealth gain, the cognitive tendencies for focusing on the upsides of risk taking are likely to be even more salient. Furthermore, because of the “costless” nature of stock options, such that losses are not incurred when stock prices decrease; a CEO’s inhibition tendencies are likely to be even further diminished. This in turn intensifies the acceptability of strategic risk taking.

It is generally accepted by social psychologists that the approach behavioral system is linked to inflated sensitivity to rewards (Carver & White, 1994; Smith & Bargh, 2008). Therefore, relatively high-powered CEOs, who are already primed to be in an approach mode, are even more likely to be focused on the potential rewards associated with their stock options and the associated opportunities for influencing stock performance. Relatedly, social psychology researchers have demonstrated that activation of the approach behavior system by the experience of power also leads to greater positive affect in individuals (Keltner, Young, Heerey, Oemig, & Monarch, 1998), which in turn facilitates heightened expectations and judgments about their level of effectiveness in achieving successful outcomes (Erez & Isen, 2002).

In line with this reasoning, Becker (2006) empirically demonstrated that powerful CEOs were more willing to have compensation that was largely comprised of stock options. This implies powerful CEOs may expect they will be able to positively influence stock prices, increasing the monetary rewards associated with their stock

options. Dunford, Boswell, and Boudreau (2010) find that the higher a manager's hierarchical level, or structural power, the more he or she believes they can influence the firm's stock price. In sum, these studies suggest a complementary relationship between CEO power and exercisable stock options on strategic risk taking.

Findings by Devers et al. (2008) with respect to the moderating effects of *reloading* (i.e., awarding replacement options for those which had expired or been exercised) and/or *repricing* (i.e., decreasing the exercise price) of a CEO's stock options by boards of directors also lend support for complementary effects. Specifically, reloading and repricing of stock options are shown to positively moderate the effect of stock options on their measure of strategic risk taking (i.e., R&D spending, capital expenditures, and long-term debt). These types of board actions that increase CEO stock option wealth could arguably be indicative of greater CEO power relative to the board, again suggesting mutually reinforcing relationships. Taken together the presented arguments lead us to hypothesize the following:

*Hypothesis 4: CEO power and the accumulated value of his or her exercisable stock options function as complements in explaining strategic risk taking, such that the value of exercisable stock options positively moderates the relationship between CEO power and strategic risk taking.*

**Interaction effects of CEO power and unexercisable stock options.** The argument that CEO power and unexercisable stock options function in a substitutive manner in eliciting CEO strategic risk taking is based on the idea that CEOs possessing either significant amounts of these type of options or high levels of power may be sufficiently biased towards the gains and away from the losses that might accrue from risk taking. Therefore

the added effects of the other, contribute very little to influencing cognitive tendencies towards taking risks.

Our logic for proposing that unexercisable stock options, representing future wealth, will substitute for power in influencing how a CEO views the acceptability of strategic risk taking is based on an established notion in psychology literature. Scholars from this discipline (e.g., Bjorkman, 1984; Jones & Johnson, 1973; Wright & Weitz, 1977) have long noted that the longer a decision maker has before experiencing the outcome or consequences of risk taking, the more willing he or she will be to take risks. The relevant outcome being, how the stock options' accumulated value changes in the future. As Devers et al. (2008) argues, because the unexercisable options cannot be cashed in (exercised) yet, CEOs do not endow the potential value into their current wealth assessments. It is only at the time the options become exercisable, that CEOs consider drops in stock prices to actually cause personal losses. Therefore, since unexercisable stock option awards have on average three to five year vesting periods (Hall & Murphy, 2002; Souder & Shaver, 2010) the consequences of strategic risk taking on the value of the CEO's unexercisable stock options, via stock price fluctuations, will occur in the future.

Yates (1990) suggested that decision makers have less concerns with the downsides of risk taking when the impact of such risk taking is further away because they believe they can exert control over potential negative events. In the case of unexercisable stock options, this would allow more time to increase stock price and/or rebound from drops in the prices. Shepperd, Ouellette, and Fernandez (1996) demonstrate that individuals' subjective confidence for achieving desired outcomes increases when the consequences

are further into the future. In addition, a CEO with low power may perceive risk taking as a way of enhancing his/her power position, and if he or she has stock options that will not be exercisable until sometime in the future, any inhibition they may have due to their lack of power, may be diminished by the fact that they still have time to take actions that will allow the stock price to increase.

The tendency to accept more risk for decisions whose outcomes occur in the future is consistent with the A/I theory of power, in that the concerns about the downsides (loss of wealth) are mitigated, with focus on the potential upsides emphasized. Indeed, Nisan and Minkowich (1973) found that decision makers actually perceived that the probability of success was higher for outcomes that occurred in the future. Thus we hypothesize:

*Hypothesis 5: CEO power and the accumulated value of his or her unexercisable stock options function as substitutes in explaining strategic risk taking, such that the accumulated value of unexercisable stock options negatively moderates the relationship between CEO power and strategic risk taking.*

Figure 1 summarizes the hypothesized relationships.

[Insert Figure 1 about here]

## 2.3 METHODS

### Sample and Data

The sample for testing our hypotheses is drawn from the firms listed on the Standard & Poor's (S&P) 500, Mid-Cap, and Small-Cap indices representing the 70 industries at the four-digit Standard Industrial Classification (SIC) code and 36 at the two digit SIC code, for which Finkelstein et al. (2009: 29 – 30) reports discretion scores, so that we may control for industry sources of discretion. After excluding financial firms (SIC 6021,

6022, 6035, 6141, 6211, 6411) since they often do not report investments (e.g., R & D) used in our strategic risk measure and are subject to special regulations, as well as SIC codes without firms reporting compensation data in the S&P's ExecuComp database, 61 industries at the four-digit Standard Industrial Classification (SIC) code and 32 at the two digit SIC code are represented. We extracted information related to firm directors and CEOs from 2003 to 2006 from the S&P's ExecuComp database and DEF14A Proxy statements filed with the Securities and Exchange Commission (SEC). Annual company financial data came from the Reuters' Thomson One Financial and COMPUSTAT database.

We chose to commence the study in the years after the implementation of the Sarbanes-Oxley Act (i.e., 2002), taking into account our lagged model structure, to filter out any effects of the major institutional changes brought about by the passage of the act (Haynes & Hillman, 2010), that may have impacted power, compensation, and/or risk taking in corporate organizational settings. The time frame also precludes the years constituting the global financial crisis (i.e., 2008 onwards) to further minimize confounding effects. After merging and matching the data collected from the various archival sources, the resulting panel data set consists of 1,574 CEO-year observations which were associated with 500 different companies operating during the sample time period.

### **Dependent Variable**

Consistent with Sanders and Hambrick (2007), we used the summed aggregate of three strategic investments considered to represent risky investments by previous researchers in the extant literature (e.g., Beckman & Haunschild, 2002; Hoskisson, Hitt,

& Hill, 1993) as the measure of *strategic risk taking*. The strategic investments used were R&D investments, capital investments, and acquisition investments and were measured as the total expenses for these categories as reported in Thomson One Financial and COMPUSTAT databases.

### **Independent Variables**

As suggested by Finkelstein et al. (2009) and exemplified by recent risk taking research (e.g., Adams, Almeida, & Ferreira, 2005; Haynes & Hillman, 2010; Tang et al., 2011) we take into account that CEO power arises from multiple sources (Daily & Johnson, 1997; Finkelstein, 1992). Therefore, we use several indicators representing the various sources of formal and informal power as suggested by Finkelstein (1992) to construct an index of CEO power.

Duality (coded 1 if the CEO is also the chair of the board) is used to capture a CEO's structural power (Adams et al., 2005). Duality has long been used as a proxy for structural power, as it provides the CEO the opportunity to set meeting agenda's and play a role in nominating outside directors (Finkelstein et al., 2009).

Owning equity bestows voting rights and may increase a CEO's ability to influence board strategic actions (Sanders & Carpenter, 1998). CEO ownership power is a function of the level of equity held by other directors as this may balance or even counteract the effects of a CEO's ownership stake (Finkelstein, 1992). CEO ownership power is represented by the ratio of CEO to board equity holdings of the focal firm (Haynes & Hillman, 2010).

For a CEO's expert power, we use the proportion of board members appointed during the CEO's tenure (Haynes & Hillman, 2010). The measure captures the degree of

information asymmetry, as board members with less firm experience will be more likely to rely upon the CEO for knowledge about strategic investments (Grabke-Rundell & Gomez-Mejia, 2002).

Power has also been shown to accrue to CEOs due to their prestige (Daily & Johnson, 1997). CEOs with prestige power are often subject to less monitoring by outside directors (Hengartner, 2006) as a CEO's prestigious image is associated with successful leadership. Consistent with Adams et al., (2005) we include a dummy variable indicating whether a CEO is a founder as this may also confer prestige power on the CEO (Finkelstein, 1992).

To create the aggregate CEO power index, all of the CEO power variables were standardized and summed together, similar to Haynes and Hillman (2010). Contrary to the measure used by Haynes and Hillman (2010), our CEO power index includes founder status of the CEO (to capture the possibility of prestige power) and excludes the ratio of nonaffiliated to total number of directors, since we already have a measure representing structural sources of power (duality), and in a factor analysis, this variable had very low loadings compared to the other measures. However, we do include it as a control variable.

*CEO exercisable stock options* and *CEO unexercisable stock options* are measured as the natural log (to assure normality) of the accumulated cash value reported in the ExecuComp database, that multiplies the average option spread (the market price of stock options minus the exercise price) by the number of each type of options held (Larraza-Kintana et al., 2007, Devers et al., 2008). All independent variables precede the dependent variable by one year.



### **Control Variables**

Control variables measured at CEO, board, firm, and industry levels that could be associated with CEO power, stock options and/or strategic risk taking were included to rule out alternative explanations. Like the independent variables, control variables are measured one year prior to the dependent variable.

A CEO's ownership stake in the firm has been shown to influence risk taking (Palmer & Wiseman, 1999; Sanders, 2001) thus we controlled for the CEO's wealth associated with his/her ownership in the firm measuring *CEO ownership* as the value of the CEO's shareholdings excluding options (Sanders & Hambrick, 2007) transformed into its natural log to correct for skewness. We also control for the level of cash compensation, measured as the natural log of the sum of cash salary and cash bonus variables in the ExecuComp database (Devers et al., 2008). Cash compensation has been argued to offer a level of protection against the uncertainties associated with equity based compensation (e.g., Devers et al., 2008).

Risk aversion has been associated with gender and age in previous research (MacCrimmon & Wehrung, 1986) therefore we include these variables, using a dummy variable for *CEO gender*, coded as 1 for females and 0 for males. *CEO age* is the difference between the study year and year of birth (Tihanyi, Ellstrand, Daily, & Dalton 2000).

The literature suggests CEOs are sometimes fired/hired in order to institute strategic change (Finkelstein et al., 2009), therefore we also control for whether the firm has a *new CEO* by including a dummy variable coded 1 if the CEO was hired within two years of the focal year (Greve & Mitsuhashi, 2007). We also control for *CEO tenure*, the number

of years he or she has held the CEO position, as researchers have theorized and demonstrated that CEOs with long tenure are able to enhance their social and human capital as they have had more opportunities to develop firm specific knowledge and relationships with internal and external constituents (Greve & Mitsuhashi, 2007) potentially increasing control over their boards (Zajac & Westphal, 1996).

As CEO power is most often considered relative to the board of directors (Finkelstein et al., 2009) we also include several board level control variables. Previous research on the influence of *board size* has been mixed (Tuggle, Schnatterly, & Johnson, 2010) with some studies suggesting larger boards are preferable as it provides an abundance of directors offering expertise and counsel to the CEO (Dalton, Daily, Ellstrand, & Johnson, 1998) while other studies (Judge & Zeithaml, 1992) demonstrate that larger boards were less involved with strategic decision making in firms. *Board size* is included as a control variable, computed as the number of directors on the board.

We also include two other variables cited in the literature as being associated with board involvement in the strategic decision making process. The proportion of non-executive directors to total number of directors was used to represent *proportion of outside directors* (Haynes & Hillman, 2010). Non-executive directors are those who are not current or past managers (Kor & Sundaramurthy, 2009). *Outside directors' average board tenure* was measured as the total number of years served on the focal firm board by each outside director divided by the total number of outside directors. This measure has been used by researchers to portray the firm-specific human capital and experience of the board which may influence how they monitor or advise the CEO on his or her risk taking initiatives (Kor & Sundaramurthy, 2009).

We also include several firm level control variables. We control for *prior firm performance* using total shareholder results (TSR) at t-1 (Deutsch et al., 2010; Sanders & Hambrick, 2007). The use of return-on-assets (ROA) along with TSR or in place of did not give different results. The prior year performance is included as CEO power (Daily & Johnson, 1997) and risk-taking may be influenced by prior performance (Bromiley, 1991).

Organizational slack, both unabsorbed and potential has been shown to be associated with risk-taking initiatives (Greve, 2003; Iyer & Miller, 2008). Thus, we measured *unabsorbed slack* as the current ratio (current assets divided by current liabilities) and *potential slack*, as the ratio of debt to equity (Deutsch et al., 2010; Iyer & Miller, 2008).

*Firm size* has been argued to affect a number of organizational outcomes (Porter, 1980) and in particular firm level risk taking (Audia & Greve, 2006) *Firm Size* was operationalized as the natural log of sales to correct for skewness (Devers et al., 2008; Sanders & Hambrick, 2007). We also include *firm age*, as it may affect both CEO power and risk taking behavior (Carpenter, et al., 2003). CEOs in older firms have been shown to have less power resulting in a greater likelihood they may be removed (Fredrickson, Hambrick, & Baumrin, 1988). The age of a firm has also been shown to be positively associated with the level of board involvement in strategic decision making (Judge & Zeithaml, 1992).

Clearly, industry context can also influence the strategic decision making process. Therefore, we also controlled for *industry discretion*, specifically, we use the discretion scores reported by Finkelstein et al. (2009: 29 -30) at the four-digit SIC code level. The discretion scores were generated in a study by Hambrick and Abrahamson (1995) using a

panel of academic experts based on the industry determinants<sup>2</sup> put forth by Hambrick and Finkelstein (1987). Alternatively, we ran models with dummy variables for the 32 two-digit SIC codes and the results were similar to those we report using the discretion scores.<sup>3</sup> Finally, we also include year dummies to control for any differences across time that could lead to the possibility of contemporaneous correlation, which is sometimes an issue with panel data when the cross section variation is significantly larger than that across time (Certo & Semadeni, 2006).

### **Statistical Analysis**

The study uses panel data, (a pooled cross-sectional time series). With panel data, fixed or random effects models are commonly used to avoid issues of heteroskedasticity of error terms and autocorrelations, which can lead to biased and inconsistent estimates when ordinary least squares regression is used (Certo & Semadeni, 2006). Following previous researchers studying similar strategic risk taking initiatives (e.g., Sanders & Hambrick, 2007; Deutsch et al., 2010) we employed cross sectional time series regression models using generalized least squares (GLS) estimation with controls for autoregressive autocorrelation, the “xtregar” command in STATA. We used random effects estimation as our main interest was in explaining variance in strategic risk taking between firms and “fixed effects estimation ignores the possibility that unit-to-unit variation sheds light on the relationship between  $x$  and  $y$ . “(Worrall, 2008: 235) Also, the use of fixed effects

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<sup>2</sup> These determinants include: product differentiability, market growth, demand instability, capital intensity, industry structure (monopolistic or competitive), absence of regulations and absence of powerful outside forces such as large concentrated buyers.

<sup>3</sup> Only one SIC code 2911 (Petroleum Refining) was found to have a significant effect. Subsequent analysis without these firms did not change the reported results in any significant manner.

models precludes the use of time invariant variables, such as gender and industry controls, which are theoretically justified for inclusion. Additionally, the Hausman (1978) test indicated a lack of correlation (the chi-square statistic was not significant even at the 10% level) between the independent variables and the individual random effects suggesting a random effects specification would be statistically appropriate. For testing hypotheses examining the interactive effects of CEO power and exercisable and unexercisable stock options, we mean centered the variables before forming the interaction variables to reduce the likelihood of multicollinearity.

## 2.4 RESULTS

Table 1 presents the means, standard deviations, variance inflation factors (VIFs), and correlations for the study variables. Significant correlations were found among some variables, but as the mean VIF was 1.48 and the maximum value was 2.71 (CEO tenure), all well below the conventional cutoff value of 10.00 (Ryan, 1997) and the more stringent recommendation of 4.0 (O'Brien, 2007) we concluded multicollinearity was not an issue.

[Insert Table 1 about here]

Table 2 reports the results of the random effects GLS estimation with controls for autocorrelations. Model 1 examines the effects of the control variables. Firm size, board size and CEO stock ownership levels had positive effects on strategic risk taking, and these effects are seen consistently across the various models. Being CEO of a larger firm or one with a large board, could arguably be a source of power, as is the level of ownership in the firm, thus these results are compatible with the theoretical logic we put forth.

In model 2 we tested the three direct effects hypotheses. Hypothesis 1 predicted CEO power would be positively related to the level of strategic risk taking. The regression coefficient for CEO power is positive and statistically significant ( $\beta = 0.08, p < .01$ ) indicating support for hypothesis 1. Hypotheses 2 and 3 predict the accumulated value of exercisable and unexercisable stock options, respectively, are positively related to strategic risk taking. Both were supported ( $\beta = 0.04, p < .05$  for Hypothesis 2;  $\beta = 0.05, p < .05$  for Hypothesis 3). Notably, inclusion of these main effect variables also resulted in a significant change in the overall model's Wald chi square.

[Insert Table 2 about here]

In models 3 and 4, we tested our hypotheses concerning the interaction effects between CEO power and the accumulated value of a CEO's exercisable (model 3) and unexercisable stock options (model 4). The interaction term coefficient is positive and significant ( $\beta = 0.05, p < .01$ ) in model 3, indicating support for hypothesis 4 that CEO power and the accumulated value of a CEO's exercisable stock options are functioning as complements. Figure 2 graphs the regression slope of the interaction effect that depicts the change in strategic risk taking based on changes in CEO power for low and high accumulated value of exercisable stock options. The slope is steeper, when the accumulated value of exercisable stock options is high; indicating the effect of increasing power is reinforced with higher levels of this type of stock option awards.

[Insert Figure 2 about here]

In model 4, the coefficient for the interaction term is negative and statistically significant ( $\beta = -0.04, p < .05$ ) indicating CEO power and the accumulated value of a CEO's unexercisable stock options interact in a substitutive manner, supporting

hypothesis 5. Figure 3, illustrates how the influence of CEO power on strategic risk taking differs under low and high levels of unexercisable stock options. The slope of power on strategic risk taking is greater when the value of unexercisable stock options is low rather than high, demonstrating that having a higher value of unexercisable stock options diminishes the influence of increasing CEO power on strategic risk taking. This negative moderating effect is consistent with our hypothesis that power and unexercisable stock options function as substitutes in explaining strategic risk taking variance.

[Insert Figure 3 about here]

We further test the interaction hypotheses by entering the interaction effects jointly in model 5. We find similar results to those in models 3 and 4. The interaction term for CEO power and the accumulated value of exercisable stock options is significantly positive ( $\beta = 0.05$ ,  $p < .01$ ) while the interaction term for CEO power and the accumulated value of unexercisable stock options is again found to be negative and significant ( $\beta = -0.04$ ,  $p < .01$ ). Evidence that the set of interaction terms account for significant residual variance in the dependent variable is seen by a significant change in the Wald chi square statistics between models 2 and 5 ( $p < .01$ ).

We also examined whether there were nonlinear effects for our explanatory variables, in particular, we wanted to ascertain, per theorizing by Devers et al. (2008), if endowment effects appeared to be present at high levels of exercisable stock options. We did not find any statistical evidence of curvilinear relationships. To further check the robustness of our findings, we re-ran the estimations using other measures for stock

options<sup>4</sup> employed in compensation and risk taking studies and the results using these alternative measures were very similar to the results of our reported models.

## 2.5 DISCUSSION

This study examined how CEO power and the accumulated value of CEO stock options separately and interactively affect strategic risk taking. We found that CEO power had a positive direct effect on our composite measure of strategic risk taking as did the accumulated value of both exercisable and unexercisable CEO stock options. These findings are consistent with our overall theoretical model, which proposed that CEO power and the accumulated value of stock options influence a CEO's cognitive processing such that s/he is focused predominantly towards potential upsides and away from downsides associated with strategic risk taking, increasing the proclivity to engage in such activities.

In exploring the interactive effects of CEO power and the accumulated value of exercisable and of unexercisable stock options on the degree of risk taking, we hypothesized and demonstrated empirically that CEO power significantly interacted with both types of stock options, but in different ways. We found CEO power and the accumulated value of exercisable stock options interact positively, suggesting they function as complements in impacting the degree of strategic risk taking. Whereas the interaction effect of CEO power and the accumulated value of unexercisable stock

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<sup>4</sup> Alternative measures were: 1) value of exercisable and unexercisable stock options granted to the CEO, where the values are based upon the standard Black and Scholes option valuation calculations as reported in the Execucomp database (Deutsch et al., 2011) and 2) the proportion of total compensation paid as stock options, where the value is based upon the standard Black and Scholes option valuation calculations as reported in the ExecuComp database (Sanders & Hambrick, 2007).



options was negatively related to strategic risk taking; supporting our hypothesis that CEO power and this type of stock option function as substitutes.

Arguments for complementary effects focused on the notion that in combination the cognitive framing effects of power and exercisable stock options are stronger than those of either one separately. Exercisable stock options are those which can be cashed in at any time, providing the holder (CEO) the ability to amass wealth immediately or at any desired time, thus constituting part of a CEO's current wealth. As such, this may impart feelings of power, further augmenting a CEO's focus on the upsides of risk taking. Also if CEOs are concerned about possible losses (downsides) to the accumulated value of exercisable stock options associated with risk taking ventures, the approach tendencies activated by increasing power may counteract or diminish these concerns.

Our findings that CEO power and the accumulated value of unexercisable stock options interact negatively, serving as substitutes for one another, suggest that each are equally strong in influencing how a CEO thinks about the acceptability of strategic risk taking. Unexercisable stock options, as opposed to exercisable, are those which cannot be cashed in immediately but rather at a date sometime in the future, thus representing future wealth. We suggest that possessing these type of options will like power, as suggested by A/I theory direct focus to upsides associated with risk taking and negate the downsides, more so than exercisable ones. The arguments are consistent with research in psychology that has shown that the longer a decision maker has to experience the outcome or consequences of risk taking, the more willing he or she will be to take risks (Bjorkman, 1984).

This research has several theoretical implications for the study of strategic risk taking, CEO power, and CEO compensation. First, the conceptual model and empirical results fill a gap in the literature. Past studies using the power construct as a predictor of strategic choices have focused on how power predicts whose preferences will be exerted not what the preferences are. By employing the A/I theory of power, we demonstrate that rather than power merely providing the means by which CEOs are able to exert their preferences, it also substantively motivates their risk preferences.

Indeed, theorizing and demonstrating empirically that strategic risk taking increases with increasing CEO power is a direct challenge to agency theory logic, which argues that CEOs, who are powerful relative to boards of directors, will be able to exert their risk-averse preferences. While we do not reject the notion prevalent in the literature that power provides CEOs the ability to exert their preferences (Eisenhardt & Bourgeois, 1988; Finkelstein, 1992), what we offer is a relatively new explanation for why the preferences may be for taking not avoiding risky initiatives. By drawing from social psychology's A/I theory of power our theorizing and supporting empirical results contribute a plausible justification for why powerful CEOs may be inclined to undertake strategic risks on behalf of their organizations. In so doing, we offer a theoretically based alternative to the much critiqued (e.g., Carpenter et al., 2003; Wiseman & Gomez-Mejia, 1998) pervasive agency theory assumption of risk averse managers.

The application of the A/I theory of power emphasizes that power, a fundamental attribute of CEOs, alters their psychological and cognitive processes, and thus provides an avenue for our work to add to the literature that stresses how cognitive schemas of corporate executives affects their firm level risk taking (e.g., Chatterjee & Hambrick,

2007; Hiller & Hambrick, 2005; Li & Tang, 2010). In particular, our study aligns with recent work (e.g., Chng, Rodgers, Shih, & Song, 2012; Hirshleifer, Low, & Teoh, 2012; Simsek, Heavey, & Veiga, 2010; Wowak & Hambrick, 2010) that stresses how situational contingencies along with an individual executive's personality traits, impacts how he or she responds to incentive compensation elements. The experience of power is a common and important situational contingency within organizations,

By highlighting that having power and exercisable/unexercisable stock options similarly influences the way CEOs perceive future outcomes of their strategic risk taking, which then impacts how they act based on that understanding, we attempt to help fill gaps in the literature about how cognitive framing by managers affects firm level phenomenon (Fiol & Huff, 1992; Porac & Thomas, 2002). Furthermore, integrating the A/I theory of power with research on strategic risk taking, extends the theoretical boundaries of the theory and in conjunction with our empirical support hopefully provides opportunities for it to emerge as a viable means for further explaining, predicting and understanding how individual cognitions may impact firm level phenomena.

Our findings that different types of stock options interact in dissimilar ways with CEO power, to explain strategic risk taking, broadens previous research (e.g., Deutsch et al., 2010; Devers et al., 2008; Sanders & Hambrick, 2007) that has demonstrated that stock option compensation is a significant determinant of strategic risk taking activities. In particular, we extend the line of inquiry recently advanced by Devers et al. (2008) that stresses the importance of considering the nuances of individual pay elements in eliciting actions executives take on behalf of their organizations.

Early strategy literature defined risk as income stream variance and found it to be negatively related to performance (e.g., Bowman, 1980; Bromiley, 1991). More recently, Sanders and Hambrick (2007) theorize and demonstrate that increasing awards of CEO stock options leads to more extreme performance, as CEO attention is focused predominantly to the upside potential of risk taking (increasing their own personal wealth via stock price increases) while practically ignoring the possible downsides, promoting risk taking that leads to the high variability of performance. This is in the same vein as our theorizing on the influence of power, and while our study does not examine the performance outcomes or quality of risk taking that is induced by power, future studies may want to consider whether risk taking encouraged by power leads to wise or unwise risk taking decisions. Incorporating our findings with those of others emphasizing the relevance of top managers' psychological traits (e.g., Chatterjee & Hambrick, 2007; Hirshleifer et al., 2012; Li & Tang, 2010) could inform understanding of the boundary conditions of when the exercise of power is used to undertake wise risks, versus satisfying hubristic or even narcissistic tendencies.

Our study also has implications for practicing managers and boards of directors. Risk taking is a key aspect of decision making with far-reaching performance ramifications, ultimately determining whether a firm succeeds or fails. As the "levers of power are uniquely concentrated in the hands of the CEO" (Nadler & Heilpern 1998: 9), acknowledging that increases in power may lead to overly focusing on upside potential associated with strategic risk taking may lead powerful CEOs to increase their perspective taking. Specifically, it may motivate them to consider others' viewpoints on

the proposed risk taking initiatives, which may ultimately result in better overall investment decisions benefitting a wide range of firm stakeholders.

Likewise, our research offers guidance to boards of directors as they undertake their monitoring role and make decisions concerning compensation contracts of the CEO and other powerful top executives. By understanding that individual elements of compensation work jointly with the level of power afforded to the individual CEO, boards could increase their effectiveness in carrying out their various responsibilities.

As with most research, our results should be viewed within the context of its limitations, which also serves to highlight potential opportunities for future research. The sample consists of U.S. firms that met data reporting criteria, thus possibly limiting generalizability of the findings. As both risk taking and power may be understood and enacted in very different ways in other national cultures (Zhong, Magee, Maddux, & Galinsky, 2006) as well as legal environments (Brenner & Schwalbach, 2009), future studies may provide additional insights by investigating how cultural differences in the understanding, experience and exercising of power differentially influences risk taking by non-Western corporate decision makers.

Despite our theoretical justification and precedence in the literature for focusing on the CEO rather than other top management team members, consideration of other powerful executives involved in firm level decision making offers opportunities for future research. In addition, recent research has even found that middle managers level of equity incentives influences firm risk taking and outcomes (Marler & Faugere, 2010). We do note that the emphasis on the CEO did allow for consistency in the sample, as the

SEC disclosure rules require compensation reporting for the five highest paid executives, which may represent different positions in the different firms.

While in line with other researchers (e.g., Greve, 2003; Palmer & Wiseman, 1999; Sanders & Hambrick, 2007) who have used actual strategic decisions as a proxy of managerial risk taking, we recognize our use of the aggregated sum of R&D, capital, and acquisition investments may limit the generalizability of our findings. The type of decision may affect the power and risk taking relationship, thus future studies may wish to consider different types of decisions.

Likewise, there are other proxies of CEO power or for a lack of CEO power which might be considered from the A/I perspective in future research. For example, Carpenter et al. (2003) find, contrary to their hypothesis that IPO firms who have directors representing venture capitalist (VC) firms, exhibit less global risk seeking. The IPO literature suggests the presence of VC directors serves as a governance mechanism as they tend to be actively involved in monitoring of management and strategies and are expected to encourage risk taking (Carpenter et al., 2003; Van den Berghe & Levrau, 2002). However, as firms with VC directors could be argued to have less powerful CEOs, because of increased monitoring, and therefore reduced risk seeking by these firms, per our theorizing, could be due to the lack of power accruing to these CEOs. Having low power triggers the CEOs' behavioral inhibition system, resulting in a focus on threats and therefore leads to diminished risk taking. Future studies could explore the consequences of low power and/or the loss of power.

Similar to previous research we used a composite measure of CEO power, thus we did not consider that some power dimensions may be more salient for motivating a focus

on upsides. In a recent work, Lewellyn and Muller-Kahle (2012) find CEO expert and ownership power are significantly associated with decision to specialize in risky subprime mortgages. It would be interesting to consider not only how various sources of CEO power directly impact risk taking but also how they interact with compensation elements to influence undertaking risky ventures. Additionally, we suggest there may be other social-psychological variables that might interact with power, like a CEO's level of organizational identification (e.g., Boivie, Lange, McDonald, & Westphal, 2011) offering avenues for future inquiry.

As all of our measures came from archival data, we suggest research that can capture a CEO's subjective perception of his or her level of power and riskiness of decisions would add significantly to managerial risk taking knowledge. Additionally, the process by which CEOs develop power is likely dynamic and iterative. Although quantitative analyses of CEO power are appealing in that they can establish systematic relationships, they are limited in their ability to capture the underlying mechanisms that connect power and incentives with cognition such that it influences strategic risk taking. As such, researchers employing qualitative methods may be able to further tease out the underlying mechanisms connecting power and incentives with risk taking. Finer grained analysis might also prove beneficial in helping future researchers address the question of how powerful CEOs diffuse their risk taking proclivity throughout their firms.

Despite these limitations, this study provides new theoretical explanations and empirical support for explaining strategic risk taking. Specifically, the current study has provided theory and empirical results that indicates CEO power is an important determinant of the level of strategic risk taking a CEO engages in on behalf of his or her

firm. Having greater accumulated value of exercisable stock options appears to complement the effect of CEO power in influencing the level of strategic risk taking. Whereas, the accumulated value of unexercisable stock options seems to serve as a substitute for focusing on the potential upsides of risk taking, increasing the proclivity to engage in such activities. We think these results are important because they afford greater flexibility to scholars interested in studying how corporate executives may differ in their strategic risk taking because of their variation in how they cognitively assess the anticipated outcomes of such initiatives. Thus our study provides an avenue for future researcher to allow for the possibility that risk preferences of decision makers may vary with respect to situational and organizational contingencies.



**CHAPTER 3**

**GOLD FOR NOW AND THE GOLDEN YEARS: THE INFLUENCE OF CEO  
RETIREMENT PAY AND STOCK OPTIONS ON  
CROSS-BORDER ACQUISITIONS**

**3.1 INTRODUCTION**

Cross border acquisitions have been and continue to be a popular strategy for firm decision makers (Firstbook, 2008). In 2011 the global volume of mergers and acquisitions was \$2.54 trillion USD (Rusli, 2012). In recent years almost half of all acquisitions made worldwide have been made across national borders (Firstbrook, 2008; Shimizu, Hitt, Vaidyanath, & Pisano, 2004) Cross-border acquisitions provide important tangible and intangible assets as well as being arguably the quickest way to access a large portion of international markets (Anand & Delios, 2002; Hitt & Pisano, 2003; Shimizu et al., 2004).

Despite these trends, engaging in cross-border acquisitions is a strategy that entails significant investment and commitment of firm resources prior to fully understanding the potential performance outcomes, which may be positive or negative, and often result in significant variance in returns (Hitt & Pisano, 2003; Lee & Caves, 1998; Lu & Beamish, 2004; Shrader, Oviatt, & McDougall, 2000; Shimizu et al., 2004). For this reason they have been characterized as ‘risky’ decisions (e.g., Carpenter, Pollock, & Leary, 2003; Haleblian, Devers, McNamara, Carpenter, & Davison, 2009; Herrmann & Datta, 2006; Matta & Beamish, 2008; Shimizu et al., 2004; Shrader et al., 2000).

Along with the various positive and negative firm level outcomes associated with acquisitions, CEOs also face the possibility of more direct personal outcomes. On the

positive side, enlarging firm size by acquisitions has been shown to lead to permanent increases in CEO compensation (Bliss & Rosen, 2001; Harford & Li, 2007; Schmidt & Fowler, 1990). Increasing the size and multi-nationality of firms are also associated with greater prestige and visibility being conferred on the CEO (Jensen & Murphy, 1990). On the negative side, CEOs making value destroying acquisitions may have a greater likelihood of job loss (Lehn & Zhao, 2006). Taken together, when a CEO chooses to engage in cross-border acquisitions, he or she is exhibiting a willingness to engage in significant risk taking.

A large body of interdisciplinary research has demonstrated CEO risk taking is influenced by compensation elements (Devers, Cannella, Reilly, & Yoder, 2007; Haleblan et al., 2009). However, one element, retirement pay, which has been reported to have increasing economic significance in compensation packages of U.S. CEOs (Bebchuk & Fried, 2005; Cassell, Huang, Sanchez, & Stuart, 2012; Edmans & Liu, 2011; Silver-Greenberg, Kalwarski & Leondis, 2010) has been given minimal theoretical and empirical attention by organizational scholars. This study attempts to begin to close the gap in the literature by examining how the accumulated value of CEO retirement pay influences risk taking, specifically the decision to engage in cross-border acquisitions.

In doing so, I draw from Wiseman and Gomez-Mejia's (1998) behavioral agency model (BAM). In particular the notion that variance in risk bearing (perceived threats to current wealth) exerts varying effects on decision makers' risk perceptions and ultimately risk taking behavior. Specifically I argue that the accumulated value of CEOs' retirement pay, which is comprised of pension and deferred compensation, reduces a CEO's risk

bearing, which lessens CEOs' perceptions of downside risks associated with undertaking risky investments such as cross border acquisitions.

There is a considerable body of research, primarily underpinned by agency theory (O'Reilly & Main, 2010; Tosi, Werner, Katz, & Gomez-Mejia, 2000) demonstrating that equity holdings and in particular, stock options, influence decision making including those associated with acquisition activity (e.g., Bliss & Rosen, 2001; Bodolica & Spraggon, 2009; Grinstein & Hribar, 2004; Sanders & Hambrick, 2007; Matta & Beamish, 2008; Sanders, 2001; Wright, Kroll, & Elenkov, 2002).

Agency theory suggests CEOs tend to be less risk seeking than investors would prefer because the current and potential wealth of a CEO is less diversified than that of shareholders (Amihud & Lev, 1981; Jensen & Meckling, 1976). Therefore by avoiding risk taking on behalf of their firms CEOs reduce threats to their personal wealth. Agency theory prescribes that compensation contracts be designed such that risk-averse CEOs will be encouraged to make decisions on behalf of their firms in ways that will mitigate the costs associated with this misalignment of interests and risk preferences (Fama & Jensen, 1983; Jensen and Murphy, 1990).

Stock option awards, in particular have been suggested as a means of aligning risk preferences (Fama & Jensen, 1983). As the payout from stock options is the difference between the price the stock was awarded at and the current market price, the holder's (e.g., CEO) personal wealth benefits when stock price increases; but because he/she has not had to purchase ownership of the option, his/her personal wealth will not suffer if stock price decreases. In other words, by taking firm-level risks a CEO's personal wealth

has the potential to gain, but will be insulated from losses, thus decreasing his/her level of risk bearing and increasing the acceptability of risk taking.

In contrast, researchers using a BAM approach, argue that 'in-the-money' stock options, those with current market prices greater than grant prices, are instantly endowed (Thaler & Johnson, 1990) into estimates of a CEO's current wealth. Together with the assumption that CEOs, rather than being risk averse are loss averse, BAM reasoning suggests a CEO's risk bearing increases as the accumulated value of his/her unexercised stock options increases. Consequently, in order to protect that value CEOs will be less likely to engage in risk taking on behalf of their firms. Empirical results have been mixed showing both positive (Chen, Steiner, & Whyte, 2006; Wu & Tu, 2007) and negative (e.g., Larraza-Kintanna et al., 2007; Sawers, Wright, & Zamora, 2011) associations between the value of unexercised in-the money stock options and risk taking.

In the current analysis in the context of cross-border acquisitions and CEO pay, it is theorized, contrary to the BAM that CEOs will not instantly endow the wealth associated with future increases in stock prices. Theoretical arguments are developed based on previous stock option - acquisition research, findings about stock price expectancy effects (Dunford, Boswell, & Boudreau, 2010) and the tendency for decision makers to accept more risk for decisions whose outcomes occur in the future (Shepperd, Ouellette, & Fernandez, 1996; Yates, 1990)

Since the risk taking by the CEO is on behalf of his/her organization, in order for the CEO's motivation to engage in cross-border acquisitions to manifest as action, he or she must have the discretion, or latitude of action (Hambrick & Finkelstein, 1987) to enact this motivation. Therefore, I also hypothesize that the strength of the relationships

between the studied compensation elements and strategic risk taking will be strengthened when CEOs have greater discretion as compared to CEOs possessing less discretion.

In summary, as the study is among the first to examine the effect CEO retirement pay may have on corporate strategic decisions, it contributes insights to both the executive compensation and strategic risk taking literature, in particular that associated with cross-border acquisition research. Testing of the hypotheses grounded in the BAM contributes to expanding the applicability of this theoretical perspective, by demonstrating how CEO retirement pay along with in-the-money stock options influences risk bearing, and ultimately risk taking choices. The study also extends the BAM by explicating the role of managerial discretion arising from the industry context and organizational sources in moderating the outcomes associated with CEO compensation influenced risk taking.

The theoretical model is tested in a longitudinal sample from 2006 – 2011 of U.S. public companies operating in four industries with differing levels of industry discretion. Results indicate that both CEO in-the-money stock options and retirement pay are positively related to cross-border acquisition activity. The findings also demonstrate that managerial discretion, arising from the firm's external industry context and internal organizational leadership structure accentuate the relationship between the value of CEO in-the-money stock options and cross-border acquisition activity.

### **3.2 THEORY AND HYPOTHESES DEVELOPMENT**

Cross boarder acquisitions provide tangible resources (e.g., manufacturing facilities, distribution channels) and important intangible assets (e.g., employees with local knowledge and relationships) as well as being arguably the quickest way to access a large portion of international markets. However it is a strategy that comes with challenges that

reflect the riskiness scholars have ascribed to this strategy (Hitt & Pisano, 2003; Matta & Beamish, 2008; Shimizu et al., 2004)

Acquisitions tend to require significant commitment of firm resources and are associated with high switching/exit costs (Agarwal & Ramaswami, 1992). Foreign environments pose unique and complex challenges to acquiring firms before during and after taking ownership. Negotiating agreements in accordance with host country legal and regulatory requirements may be problematic as well as obtaining accurate assessments of target value due to increased information asymmetry (Reuer & Koza, 2000) increasing the costs associated with the acquisition (Datta, Musteen, & Herrmann, 2009). Acquiring firms immediately have decision-making responsibility in the context of not only a differing corporate culture but also national culture, which may encompass drastically different social norms and practices (Sanders & Carpenter, 1998). With respect to announcement period returns, empirical studies have failed to reach consensus, with some studies indicating shareholders of acquiring firms benefit (e.g., Morck & Yeung, 1991, 1992; Harris & Ravenscraft, 1991) while other studies have reported negative or insignificant value creation for acquiring firm shareholders (e.g., Datta & Piua, 1995; Denis, Denis, & Yost, 2002; Eckbo & Thourburn, 2000).

In sum, previous research demonstrates cross-border acquisition activity may increase uncertainty concerning future income returns, hold the possibility of large losses or gains occurring, as well as threaten or enhance short-term market returns (Carpenter, Pollock, & Leary, 2003; Hitt & Pisano, 2003; Shimizu et al., 2004; Shrader et al., 2000). Along with the various positive and negative firm level outcomes associated with acquisitions, CEOs also face the possibility of more direct personal outcomes. From a positive

standpoint enlarging firm size by acquisitions has been shown to lead to permanent increases in CEO compensation (Bliss & Rosen, 2001; Harford & Li, 2007; Schmidt & Fowler, 1990). Increasing the size and multi-nationality of firms are also associated with greater prestige and visibility being conferred on the CEO (Jensen & Murphy, 1990). On the negative side, a study by Lehn and Zhao (2006) found evidence that CEOs of U.S. firms making value destroying acquisitions from 1990 – 1998 had a greater likelihood of job loss.

Taken altogether, when a CEO chooses to engage in cross-border acquisitions, he or she is exhibiting a willingness to engage in risk taking. However, from a traditional agency theory perspective, based on the potential divergence of interests when ownership and control of a firm are separate, CEOs in order to shield their non-diversifiable human capital are assumed to be more risk averse than shareholders would prefer (Amihud & Lev, 1981; Eisenhardt, 1989; Jensen & Meckling, 1976). Based on the assumption of a risk return correlation, i.e., bigger risks increase the chance for bigger returns (Fama, 1976) shareholders are assumed to be risk neutral as they are able to hold portfolios of equity from an assortment of firms and therefore are able to diversify away firm-specific risk (Eisenhardt, 1989). Agency theory prescribes rectifying this agency problem by designing and implementing incentives to “alter the risk orientation of agents to align them with the interests of the principals” (Wiseman & Gomez-Mejia, 1998: 133).

This has led to advocating in theory and in practice, for the use of equity based compensation as a means of achieving risk alignment by essentially making managers shareholders. However scholars have discerned that research examining relationships between various equity compensation elements and acquisition activity have produced

mixed findings (Devers et al., 2007; Haleblian et al., 2009; Sanders, 2001; Sanders and Hambrick, 2007). Divergent findings for the different equity based compensation elements have been explained by drawing from the BAM , which asserts decision makers perceive different types of compensation have different risk characteristics (Devers et al., 2008; Sanders, 2001; Wiseman & Gomez-Mejia, 1998).

The BAM, integrating premises from agency and prospect theories (Wiseman & Gomez-Mejia, 1998) presents risk taking as a function of problem framing and risk bearing, both of which are may be differentially influenced by elements of compensation. The incorporation of problem framing from prospect theory changes the underlying agency theory assumption that managers have stable risk averse preferences to the notion that managers are loss averse. Loss averse CEOs are expected to have a greater sensitivity to decreases in wealth rather than to gains in wealth (Wiseman & Gomez-Mejia, 1998). The notion of risk bearing, refers to perceived threats to current and future wealth (Wiseman & Gomez-Mejia, 1998) and in the BAM, lower risk bearing would increase the likelihood that CEOs would be more willing to engage in risk taking.

The logic is complementary to theorizing put forth by Sitkin and Pablo (1992) in their model of risky decision-making and later extended to acquisition decisions by Pablo, Sitkin, and Jemison (1996). These scholars stress the role decision makers' risk perceptions play in determining whether risk taking is deemed acceptable and thus undertaken. Pablo et al. (1996:725) theorize in the context of acquisition decisions, risk perceptions channel "such major cognitive processes as information gathering and sense-making" that subsequently impact the choices made. If a CEO perceives the riskiness of a



cross-border acquisition is lower, or less likely to result in losses, he or she will be more likely undertake it.

In Wiseman & Gomez-Mejia's (1998) conceptualization of the BAM they explicitly consider the different influences of base pay and performance contingent pay on risk bearing (perceived threats to wealth) and thus risk taking. While they do not consider how retirement pay would fit into the framework, I suggest these elements will have implications for risk bearing and therefore perceptions of the risk associated with strategic choices, which will ultimately impact whether cross-border acquisitions are undertaken.

#### **Retirement Pay and Cross-border Acquisitions**

The accumulated value of U.S. CEOs' retirement pay, comprised of pensions and often deferred compensation contributions, has been shown to represent vast amounts of wealth and to have increasing significance in their compensation packages (Bebchuk & Fried, 2005; Sundaram & Yermack, 2007). In a study of 237 Fortune 500 firms over the period from 1996 to 2002, Sundaram & Yermack (2007) found the pension value for CEOs averaged \$4.2 million. Bebchuk and Jackson (2005) report that 51 departing CEOs of S&P 500 firms during 2003 and the first 6 months of 2004 left with pensions that were on average equivalent to 44% of the total compensation (including equity portions) they earned during their tenure as CEO. More recently, *Bloomberg BusinessWeek* in an examination of 81 firms in the S&P 500-stock index found that in 2009, pensions were the fastest growing compensation category for CEOs, increasing an average of 15.4 percent or \$1.3 million USD annually (Silver-Greenberg, Kalwarski, & Leondis, 2010). Despite the size and ubiquity of these compensation arrangements, they have received

minimal theoretical and empirical attention in the literature (Cassell et al., 2012; Sundaram & Yermack, 2007).

CEO pensions often provide life annuities that are worth upwards of 60 percent of final average salary plus bonus (Sundaram & Yermack, 2007) and when coupled with deferred compensation contributions comprise a significant level of wealth that a firm promises to provide the CEO when he/she retires (Bebchuk & Fried, 2005). Because CEO pensions are typically well above the maximum amount that is federally insured, they are referred to as supplemental executive retirement plans (SERPs) (Sundaram & Yermack, 2007). SERPs represent a fixed cash portion of compensation that will be paid to the CEO in the future regardless of firm performance, and will only be at risk for non-payment if the firm goes bankrupt as it will be treated just like any other obligation to a creditor (Edmans & Liu, 2010).

Retirement pay is somewhat analogous to the BAM concept of base pay, in that unlike performance contingent pay, it is less uncertain, as it is often specified as part of the compensation contract. However, unlike base pay, it will not be at threat for loss if the CEO's employment ends voluntarily or for poor performance. A recent anecdotal report from the business press offers a striking illustration:

*Ken Lewis doesn't have a golden parachute, but he's all set for a comfortable landing – unlike his long-suffering shareholders. The Bank of America chief executive officer said Wednesday he'll step aside at year-end after eight years at the helm. Based on the company's most recent proxy statement, he will have \$53 million in pension benefits waiting for him when he leaves. That should give him about \$3.5 million a year in pension payouts for the rest of his life – at a time when people who bought the stock when he took the reins in 2001 are underwater on their investments. (Barr, 2009)*

Therefore unlike other compensation elements, retirement pay is a form of CEO wealth that is highly insulated from threats of loss suggesting reduced risk bearing, which according to the BAM should make CEOs more willing to take risks.

As discussed previously, cross-border acquisitions offer the possibility for upsides and downsides at both the firm and individual level. Following increases in firm size and international scope, CEOs often experience permanent increases to their cash compensation (Bliss & Rosen, 2001; Sanders & Carpenter, 1998), therefore, an acquisition may very well be perceived as a means for achieving gains to not only current compensation but also retirement pay. If a CEO is focused on the upsides, perceiving these are more likely to occur than downsides, he or she is more likely to conclude undertaking the risky strategic choice is warranted (Shapira, 1995). Having large values of accumulated retirement pay may deflect the focus off the possible downsides, providing a CEO with a sense of having a safety net for minimizing any personal wealth losses if the acquisition outcomes are not successful. Therefore even if downsides occur for other stakeholders, large values of accumulated retirement pay provide assurance to CEOs that their risk bearing will be minimal.

The logic is similar to that used to explain the implications of compensation protection devices, such as severance packages and golden parachutes, which have been shown to motivate risk taking behavior with respect to acquisitions (Bodolica & Spraggon, 2009). Having the guarantee of retirement pay may diminish perceptions of uncertainty and/or extreme personal wealth losses resulting in the CEO feeling a sense of control over possible outcomes associated with an acquisition. When CEOs feel a sense of control over possible outcomes, they are likely to perceive lower levels of acquisition

risk and therefore have an even greater willingness to undertake acquisitions (Pablo et al., 1996). Therefore, based on the theoretical arguments put forth, I predict that the greater the level of retirement pay, the lower a CEO's perception of risk bearing and this in turn leads to increases in acquisition activities.

*Hypothesis 1: CEO retirement pay is positively related to firm cross-border acquisition activity.*

### **CEO Stock Options and Cross-border Acquisition**

Acquisitions are risky investments that often result in significant variance in market returns (Jensen & Ruback, 1983). The value or future pay-out of accumulated retirement pay is not tied to how the market reacts to such strategies, however CEO stock options, could be dramatically affected by acquisitions. Stock options are contracts that grant shares at a certain price and after a period of time, the "vesting period", allow the recipient to choose when he or she wishes to exercise, i.e., sell the stock at the current market price (Hall & Murphy, 2002). If the current market price is greater than the grant price, the options are said to be in-the-money, and by exercising the options, there will be a monetary gain to the holder. Undertaking risky investments such as acquisitions is desirable based on the logic that increasing risk offers the possibility of a wider variance of returns both positive and negative (Fama, 1976).

Agency theory predicts awarding equity type bonuses should incentivize managers to take risks in order to increase stock price and thus their own personal wealth. Stock options in particular have been suggested as an effective means for impacting CEOs' willingness to engage in riskier ventures, since "CEOs are assumed to perceive limited downside risk" (Devers et al, 2008:551) because he/she has not had to purchase

ownership of the option and therefore no losses are incurred if stock price decreases. In other words, by taking firm-level risks a CEO's personal wealth has the potential to gain, but will be insulated from losses, thus decreasing his/her level of risk bearing and increasing the acceptability of risk taking.

Similar to CEO retirement pay, fluctuations in stock prices or other unsuccessful outcomes due to acquisition activity offer limited threat to a CEO's current wealth. Furthermore, researchers (e.g., Harford & Li, 2007) have shown that even when acquisitions turn out poorly CEOs are awarded with higher compensation and equity awards. Additionally, if the firm's stock is performing poorly, the awarding of stock options at lower prices, offers CEOs the potential for large pay-offs in future years if and when the stock price rebounds. Recent reports in the business press, attest to how this situation might occur:

*CEOs saw the estimated future value of stock and options awards take off in 2010, with the median value gaining 32% to \$5.6 million. These stock holdings and options, many of which were granted when stock prices were much lower than they are now, stand to create a shower of wealth when CEOs cash them in. (Krantz & Hansen, 2011).*

Using BAM logic associated with risk bearing and loss aversion, I argue that stock options impose minimal risk bearing on CEOs, thus minimizing concerns about possible losses and focusing attention on potential gains. In the case of cross-border acquisitions, CEOs with significant stock options awards have significant incentive to focus on the possible gains to their personal wealth. The gains the CEO is motivated to pursue may be associated with positive firm level outcomes or be related to more direct personal outcomes, such as increasing his/her compensation (Bliss & Rosen, 2001; Harford & Li,

2007; Schmidt & Fowler, 1990) or achieving greater prestige and visibility (Jensen & Murphy, 1990).

Empirical studies have shown stock options do indeed encourage risk taking (e.g., Chen et al., 2006; Coles et al., 2006; Deutsch, Keil, & Laamanen, 2010; Devers et al., 2007; Sanders & Hambrick, 2007; Williams & Rao, Wright et al., 2007), including engaging in acquisition activity (e.g., Datta, Iskander-Datta, & Raman, 2001; Sanders, 2001; Sanders & Hambrick, 2007). Datta, Iskander-Datta, and Raman (2001) found empirical evidence that CEO stock option compensation was positively associated with the acquisition of high growth targets. Sanders (2001) demonstrated a positive relationship between the value of stock options granted during a given year and the number of acquisitions undertaken. Sanders and Hambrick (2007) in their analysis found CEOs with high proportions of stock option pay to total compensation engaged in significantly more acquisitions than CEOs who had low levels of stock options in their compensation packages. With respect to in-the-money stock options, Malemender and Tate (2008) demonstrate a significant positive association between the value of exercisable stock options held by a CEO and the firm's domestic acquisition activity.

While some BAM researchers (e.g., Devers, et al., 2008; Larraza-Kintana et al., 2007) have argued that CEOs may actually consider in-the-money stock options as part of their endowed wealth and therefore view taking risks on behalf of their firms as increasing their risk bearing (i.e., perceived threats to current wealth), the empirical evidence has been minimal. Devers et al. (2008) disaggregates in-the-money stock options into exercisable (those which are vested and therefore can be cashed in) and unexercisable (not vested) and hypothesizes an inverted U-shape relationship between the

value of exercisable options and strategic risk taking. The empirical analysis showed significant positive associations between both exercisable and unexercisable options with the combined strategic risk taking activities of R&D investments, capital expenditures, and long term debt levels. The exercisable options and strategic risk taking relationship was shown to become insignificant at higher levels rather than significantly dropping off.

Larraza-Kintana et al., (2008) in a sample of firms that recently underwent an IPO, do find that the value of in-the-money stock options is negatively related to a survey measure of CEO risk taking. Their results support the BAM premise that CEOs endow the value of stock option gains into estimates of current wealth, however, due to the particular importance of stock options in compensation packages of IPO firm CEOs (Certo, Daily, Cannella, & Dalton, 2003), these results may not be as readily applicable to more established firms.

In addition, acquisition investments are likely to be a form of strategic risk taking that a CEO perceives as having a salient causal impact on stock price (Shleifer & Vishny, 2003) again leading to a focus on upside potential for gain. Dunford, Boswell, and Boudreau (2010) find that the higher a manager's hierarchical level, the more he or she believes they can influence the firm's stock price. As the CEO is at the apex of the organization, these findings suggest he/she may have a particularly strong belief of their ability to influence stock prices by their strategic actions. Furthermore, because the stock options are in-the-money, it is an indication that the stock price has indeed risen since they were awarded; CEOs may experience over-confidence or hubris with respect to their abilities to further increase stock prices (Devers et al., 2008). Hubris has been shown to lead to increased risk taking (e.g., Li & Tang, 2010; Simon & Houghton, 2003) including

that associated with acquisition activities (Hayward & Hambrick, 2005; Malmendier & Tate, 2006; Seth, Song, & Pettit, 2000)

Finally, Matta & Beamish (2008), while not hypothesizing a direct effect of the value of CEO in-the-money stock options, find in their empirical analysis a significant positive relationship between in-the-money stock options and the likelihood that a firm engaged in a cross-border acquisition (Dichotomous dependent variable). In sum, based on stock options having low risk bearing attributes and the prevailing supportive empirical evidence with respect to risk taking, higher levels of in-the-money stock option holdings by the CEO are expected to be associated with higher levels of cross-border acquisitions.

*Hypothesis 2: CEO in-the-money stock options are positively related to firm cross-border acquisition activity.*

### **Moderating Effects of Managerial Discretion**

I have theorized that as a CEO's accumulated value of retirement pay and in-the-money stock options increases, so does the preference for and likelihood of engaging in cross-border acquisitions. Implicit in the theoretical logic is that the CEO will not be constrained in acting upon his/her preference. This "absence of constraint" assumes that the CEO will have the discretion to act, which may or may not be the case (Hambrick, 2007: 335).

Indeed, managerial discretion has been theorized to play a role in determining the extent to which biases and cognitions of top executives affect organizational outcomes (Hambrick & Finkelstein, 1987). Discretion is derived from how much the external environmental factors, conceptualized primarily in terms of industry characteristics



(Boyd & Gove, 2006; Crossland & Hambrick, 2011) permit variety in courses of action or how much the CEO is able to perceive “multiple courses of action” and the extent to which the organization “empowers the chief executive to formulate and execute those actions” (Hambrick & Finkelstein, 1987:379). Therefore, it is expected that depending on the level of discretion a CEO has, the motivating influence of retirement pay and stock options will be lessened or strengthened. Thus, contingent effects of managerial discretion arising from industry and organizational sources are considered.

**Industry discretion.** The level of CEO discretion has been shown to vary across industries (Abrahamson & Hambrick, 1997; Halebian & Finkelstein, 1993; Hambrick & Abrahamson, 1995) as the extent to which variety and change are permitted or constrained in different industries varies (Hambrick & Finkelstein, 1987). Hambrick and Abrahamson (1995) used an expert panel comprised of securities analysts and academics to rate the degree of managerial discretion in several (17) industries based on determinants, which included product differentiability, market growth, demand instability, capital intensity, industry structure (monopolistic or competitive), absence of regulations and absence of powerful outside forces such as large concentrated buyers. They found a high level of consistency and reliability among the experts’ ratings. Subsequently they ran regressions of the ratings on observable archival characteristics associated with the industries and using the regression coefficients estimated weights for the various characteristics in order to generate discretion scores for additional industries.

Adams, Almeida, and Ferreira (2005) used these scores to categorize industries as low-discretion or high-discretion in order to test whether the level of industry discretion

influenced the relationship between CEO power and stock return variability. Their results indicated CEOs impacted stock return variability more in high discretion industries.

In high discretion industries, CEOs face few restrictions and have greater latitude for maneuvering (Haleblian & Finkelstein, 1993) thus they are likely to have greater influence over decision choices, such as engaging in cross-border acquisitions. It is also likely that they will perceive that they will be able to exert greater control in post-acquisition strategy such that the acquisition will positively influence firm outcomes (e.g., stock returns). In industries where CEOs have a relatively high degree of discretion they will have a greater ability to act upon their proclivity to engage in cross-border acquisition activity because they possess the freedom to do so. In line with these arguments, I put forth the following:

*Hypothesis 3a: Industry discretion strengthens the positive relationship between CEO retirement pay and firm cross-border acquisition activity.*

*Hypothesis 3b: Industry discretion strengthens the positive relationship between CEO in-the-money stock option holdings and firm cross-border acquisition activity.*

**Organizational discretion/CEO duality.** Managerial discretion has also been theorized to arise from organizational sources (Hambrick & Finkelstein, 1987) such as internal slack and power relationships, though empirical analysis has been much more limited in evaluating this aspect of managerial discretion (Boyd & Gove, 2006). An important source of organizational discretion or a means by which a CEO is empowered to advance his/her preferences, is serving as the firm's chair of the board of directors (Finkelstein &

D'Aveni, 1994; Kesner, Victor, & Lamont, 1986; Li & Tang, 2010). This dual leadership structure affects power relationships with respect to strategic decision making and affords the CEO a great deal of discretion when it comes to decisions concerning the firm (Malette & Fowler, 1992).

CEO duality, holding both the CEO and board chair titles, imparts significant opportunity to exert political power (Finkelstein, 1992). In the role of board chair, the CEO is given authority to set meeting agendas thus significantly influencing what issues and decisions the board pays attention to (Finkelstein, 1992). In addition, the monitoring of strategic decisions by the board has been shown to be less when a CEO also serves as chair of the board (Hayward & Hambrick, 1997; Mizruchi, 1983). Less monitoring indicates the CEO will have more resistance to exerting his/her preferences for engaging in particular strategic activities such as cross-border acquisitions.

Empirical support for the moderating discretion effect of CEO duality is provided by Li and Tang (2010) who find that CEO duality strengthened the effect of CEO hubristic tendencies on firm level risk taking in a sample of Chinese CEOs. In sum, CEOs who have high levels of stock options and/or retirement pay, and who also serves as their firm's chair, will not only have greater motivations to engage in increased cross-border acquisition activity, but will also have greater means, because they possess the latitude of action to do so. Hence, the following moderating relationships are expected:

*Hypothesis 4a: CEO Duality strengthens the positive relationship between CEO retirement pay and firm cross-border acquisition activity.*

*Hypothesis 4b: CEO Duality strengthens the positive relationship between CEO in-the-money stock option holdings and firm cross-border acquisition activity.*

Figure 4 summarizes the hypothesized relationships.

[Insert Figure 4 about here]

### 3.3 METHODS

#### Sample and Data

The sample for this study is drawn from U.S. public companies operating between 2006 and 2011 in four different industry classifications, oil and gas (NAICS 211-, 213-), paper and packaging (NAICS 322-), aerospace and defense (NAICS 336- and 334-), and telecommunications (NAICS 517-) with CEO compensation data available on S&P's ExecuComp database. The industries selected have experienced significant worldwide acquisition activity in recent years (e.g., Dalziel, 2008; Datamonitor, 2011; McAdam, O'Hare, & Moffett, 2008; Misund, Asche & Osmundsen, 2008; Zarb & Noth, 2012) suggesting engaging in cross-border acquisitions would represent significant strategic decisions for the CEOs of the sample firms (DePamphilis, 2009). In addition, the four industry classifications chosen represent differing levels of industry discretion, either low (oil and gas), medium-low (paper and packaging), medium-high (aerospace and defense) or high (telecommunications), based on Hambrick and Abrahamson's (1995) analysis for which Finkelstein et al. (2009: 29-30) report discretion scores. This allows for adequately testing the moderating role of industry discretion. The time period chosen coincides with the effective date (December 31, 2006) of the SEC requiring that defined benefit pensions and deferred compensation information be reported in proxy statements (U.S. Securities and Exchange Commission, 2006).

### **Dependent Variable**

The dependent variable *cross-border acquisition activity* was measured as the number of cross-border acquisitions completed by a firm during each of the years from 2007 to 2011 (Gao, 2010; (Hitt, Hoskisson, Johnson, & Moesel, 1996; Nadolska & Barkema, 2007; Sanders, 2001). The justification for using the number of acquisitions completed rather than the value of the transaction is similar to that given by Sanders (2001). The theory being tested is concerned with the amount of activity associated with or frequency of cross-border acquisitions, thus the use of a count measure is in alignment with the theoretical framework and previous empirical research. Also, the transaction value is often not reported in the merger and acquisition databases, thus those observations without values would not be used in the analysis. Additionally using reported transaction values may result in a bias towards large value acquisitions. Data on acquisitions was collected from the Thomson One Financial Worldwide Mergers and Acquisitions database. Cross-border acquisitions are defined as those involving an acquirer firm and a target firm whose headquarters are located in different home countries. (Shimizu et al., 2004) and where the acquiring firm obtains a controlling interest in another firm (Hitt et al., 1996; Sanders, 2001).

### **Independent Variables**

*CEO retirement pay* is the natural logarithm (to correct for its skewed distribution) of the aggregate actuarial present value of the CEO's accumulated pension benefit plus the aggregate balance in deferred compensation plans at the end of the year as reported in the ExecuComp database (Cassell et al., 2012). All independent variables are lagged one year, thus data is collected for these variables from 2006 to 2010.

*CEO in-the-money stock options* is measured consistent with previous research (e.g., Devers et al., 2008; Larraza-Kintana et al., 2007) as the accumulated value of exercisable and unexercisable stock options based on variables reported in the ExecuComp database. The natural logarithm of the variable is used to meet normality assumptions.

*Industry discretion* is measured as the mean value of the discretion scores reported by Finkelstein et al. (2009: 29 -30) at the four-digit SIC code (if reported) or the two-digit level that encompassed each industry classification. The discretion scores were generated in a study by Hambrick and Abrahamson (1995) using a panel of academic experts based on the industry determinants put forth by Hambrick and Finkelstein (1987). Models were also run using a procedure similar to that of Adams et al., (2005), whereby, the sample of firms was split into high and low discretion and using a dummy variable coded 1 for high-discretion and 0 for low-discretion and also using dummy variables for each industry classification (e.g., each three-digit NAICS code). The results were similar to those reported using the discretion scores, therefore the use of the more fine-grained measure was chosen for testing the moderating hypotheses.

*CEO duality* is a dichotomous variable created by coding 0 for separated CEO and board chairperson roles, and 1 for a combined CEO/chairperson role as is commonly done by management researchers (e.g., Boyd, 1995).

### **Control variables**

Control variables that could be associated with CEO compensation arrangements, managerial discretion and/or the decision to engage in cross-border acquisitions are incorporated into the models to rule out alternative explanations.

*CEO equity ownership* is measured as the value of the CEO's ownership of shares excluding stock options. CEO equity ownership has been shown to be both negatively related to acquisition activity (e.g., Sanders, 2001) as well as positively related (e.g., Wright, Kroll, Lado & Van Ness, 2002). The value of the CEO's ownership of shares is calculated as the product of the number of stock shares that a CEO holds and closing price in the previous fiscal year (Barker & Mueller, 2002; Wu & Tu, 2007). Ownership data comes from the ExecuComp database and year end share prices from Thomson One Financial databases.

*CEO cash compensation* measured as the natural log of salary and bonus as reported in the ExecuComp database, is also included (Devers et al., 2008; Matta & Beamish, 2008). This element of pay tends to be paid rather reliably over time compared to equity incentives, and from a BAM perspective (Wiseman & Gomez-Mejia, 1998) managers are likely to endow their anticipated essential pay into their current wealth assessment (Larraza-Kintana et al., 2007). The pay is considered essential as it is relied upon to cover ongoing living expenses and therefore not receiving merit and/or inflation increases are likely to be viewed as losses and not merely as a non-gain, since adjustments to standards of living may have to be made (Larraza-Kintana, et al., 2007). Therefore it may impact CEO risk bearing.

*CEO age* has been shown to be negatively associated with firm internationalization (e.g., Tihanyi, Ellstrand, Daily, & Dalton, 2000). The age of a CEO may also impact his/her level of retirement pay. *CEO age* was determined from the year of birth given in the ExecuComp database and is the difference between the study year and year of birth.

Several firm level control variables shown in previous research to be related to CEO compensation and/or acquisition activity are also included. *Firm age* is included as CEOs in older firms may have less discretion due to increased organizational inertia (Tushman & Romanelli, 1985). It is computed as the number of years from founding to the study year.

*Firm size* has been shown to be positively related to the level of CEO compensation as well as structure of compensation contracts (Devers et al., 2007; Sanders & Carpenter, 1998). Firm size may be indicative of having enough resources to engage in acquisitions as well as being negatively associated due to strategic inertia (Tushman & Romanelli, 1985). The natural log of annual sales were used as a measure of *firm size* (Sanders & Hambrick, 2007; Sanders, 2001)

*Prior firm performance* may influence how much a CEO is paid in various elements of compensation (Sanders & Carpenter, 1998) and poor performing firms have been shown to undertake changes in corporate strategy as a means of improving performance (Greve, 2003). On the other hand, poor performance may also constrain the firm from acquisition activity due to a lack of financial resources (Barney, 1991). *Prior firm performance* is measured using total shareholder results (TSR) (Deutsch et al., 2010; Sanders & Hambrick, 2007). The use of return-on-assets (ROA) along with TSR or in place of did not give different results. Firm financial data is obtained from Thomson One Financial database.

The international experience of the firm has also been shown to influence cross-border acquisition activity positively (Harzing, 2002). Following previous researchers, this is measured as the percent of total firm sales that are generated outside the U.S. in the



prior year and labeled as *foreign sales* (Doukas & Kan, 2006; Matta & Beamish, 2008). The annual data comes from Mergent Online database.

The number of *domestic acquisitions* the firm undertook (Nadolska & Barkema, 2007) is included as a control variable, as this may impact the resources and experience needed to engage in cross-border acquisitions. Engaging in domestic acquisitions may occupy resources that are needed for cross-border acquisitions or the experience gained in these types of acquisitions may provide added confidence for being successful with further acquisitions (Hayward, 2002).

Also, dummy variables for each calendar year (year  $t$ ) in the study were included to control for any differences across time that could lead to the possibility of contemporaneous correlation, which is sometimes an issue with panel data when the cross section variation is significantly larger than that across time (Certo & Semadeni, 2006). As with the explanatory independent variables, all control variables are lagged one year, with data collected from 2006 to 2010.

### **Statistical Analysis**

As the dependent variable *cross-border acquisition activity* is a count variable taking integer values greater than or equal to zero in a given year, ordinary least squares (OLS) regression techniques are inappropriate as the assumption of homoscedastic, normally distributed error terms is violated. Often in this situation Poisson regression is used as the estimation technique (Hair, Black, Babin, & Anderson, 2010). However, Poisson models carry the assumption that observations occur at fixed rates over the time period of interest, and that the mean and variance are equal (Hausman, Hall, & Griliches, 1984). To address this statistical issue, following the example of other acquisition studies (e.g.,

Boeh, 2011; Nadolska & Barkema, 2007; Sanders, 2001) negative binomial regression is used. This analytical technique allows the rate to vary across observations and is most appropriate for dealing with over-dispersion problems that often arise with count dependent variables (Hausman et al., 1984; Sanders, 2001)

Because the data consists of multiple years of observation for most firms, there is a need to avoid correlated error terms, understated standard errors, and inflated t-statistics (Beck & Katz, 1995). Therefore the STATA *xtnbreg* command is used. The Hausman (1978) specification test, checking for correlation between the independent variables and the individual random effects, was run to determine whether a fixed or random effects model would be most appropriate. Lack of significant correlation indicates random effects should be used, and if correlation exists, a fixed effects model should be estimated. For all of the models, the chi-square statistic for the Hausman test is not significant even at the 10 percent level, thus indicating that the random-effects model adequately characterizes the relationships. In addition, unlike the fixed-effects regression, the random-effects estimation allows the inclusion of time invariant variables, thus permitting inclusion of the moderating variables, which do not vary across time but whose inclusion is theoretically justifiable. Also, by including dummy variables for each year in the models, the potential for within panel autocorrelation is mitigated.

### **3.4 RESULTS**

Table 3 displays means for selected variables by the industries represented in the sample. Some highlights include, firms in the defense industry, on average had the highest incidence of cross-border acquisition activity and paper and packaging industry CEOs on

average had the highest accumulated value of retirement pay. The CEOs of oil and gas firms had the highest value of in-the-money stock options.

[Insert Table 3 about here]

Correlations and descriptive statistics for the entire sample are provided in table 4. To assess if there are any multicollinearity issues, variance inflation factors (VIF) were computed. All independent and control variables have VIF values well under the suggested value of 10 (Bowerman & O'Connell, 1990) and the more stringent recommendation of 4.0 (O'Brien, 2007). With the mean VIF being 1.35 and the maximum being 1.75, multicollinearity does not appear to be an issue. Also, to diminish the potential for multicollinearity, as suggested by West and Aiken (1991), the individual variables were mean-centered prior to calculating the interaction terms.

[Insert Table 4 about here]

Table 5 presents the negative binomial regression results. Model 1 contains the control variables and moderating variables. Model 2 has the key explanatory variable added in order to test the main effects hypotheses. The coefficient for CEO retirement pay was positive and significant ( $\beta = 0.22$ ,  $p < .05$ ), indicating this variable has a positive relationship with the firm's cross-border acquisition activity, thus supporting hypothesis 1. The coefficient for CEO in-the-money stock options also shows the expected positive significant relation to cross-border acquisition activity ( $\beta = 0.21$ ,  $p < .05$ ) providing support for hypothesis 2.

Models 3 and 4 test the moderating effects of industry discretion and CEO duality respectively. Model 3 tests the interactions between industry discretion with CEO retirement pay and CEO in-the-money stock options. Hypothesis 3a fails to find support

as the interaction term for the accumulated value of retirement pay and industry discretion is not significant. The interaction term for CEO in-the-money stock options and industry discretion is positive and significant ( $\beta = 0.42$ ,  $p < .001$ ) supporting hypothesis 3b, which states that industry discretion strengthens the positive relationship between a CEO's in-the-money stock option holdings and the firm's cross-border acquisition activity.

In model 4, the interaction term coefficient for the accumulated value of retirement pay and CEO duality is not significant thus hypothesis 4a is not supported. The coefficient for the interaction term of the accumulated value of in-the-money stock options and CEO duality is positive and significant ( $\beta = 0.26$ ,  $p < .01$ ), indicating support for hypothesis 4b that CEO duality strengthens the relationship between in-the-money stock options and cross-border acquisition activity.

The moderating hypotheses are also tested by entering the interaction effects jointly in model 5. The results are similar to those in models 3 and 4. Hypotheses 3a and 4a again fail to find support as the interactions between a CEO's accumulated value of retirement pay with industry discretion and CEO duality are both insignificant. The interaction term for the accumulated value of a CEO's in-the-money stock options with industry discretion is significantly positive ( $\beta = 0.45$ ,  $p < .001$ ) as is the interaction with CEO duality ( $\beta = 0.26$ ,  $p < .01$ ). Thus this model also indicates support for hypotheses 3b and 4b. Evidence that the set of interaction terms account for significant residual variance in the dependent variable is seen by a significant change in the Wald chi square statistics between models 2 and 5 ( $p < .05$ ).

[Insert Table 5 about here]

To illustrate the significant moderating influence of industry discretion and CEO duality on the relationship between the accumulated value of in-the-money stock options and cross-border acquisition activity, the regression slopes of the significant interactions are graphed. Figure 5 depicts the change in cross border acquisitions based on changes in CEO in-the-money stock options for low and high industry discretions. The slope is steeper, when industry discretion is high; indicating the effect of the increasing value of in-the-money stock options is reinforced with higher levels of industry discretion.

Figure 6, illustrates how the influence of CEO in-the-money stock options on cross-border acquisition activity differs with and without CEO duality. Again, the slope is steeper when the CEO is also the chair of the firm's board than when he/she does not hold both positions, suggesting this indicator of organizational discretion strengthens the effects of in-the-money stock options on cross-border acquisition activity.

[Insert Figure 5 about here]

[Insert Figure 6 about here]

Two control variables were found to be significant at varying significance levels throughout the models. Consistent with the literature, a firm's previous year's foreign sales as a percent of total sales and the number of domestic acquisitions completed were both shown to be positively related to cross-border acquisition activity.

The sensitivity of the hypothesized relationships to alternate operationalizations of key variables, including separating out the accumulated value of the vested and unvested in-the-money stock options as well as separating pension and deferred compensation provided qualitatively similar results. Also, analysis done with zero-inflated Poisson was conducted, but not found to be significantly superior to the one reported here.

### 3.5 DISCUSSION

*“The size of a nest egg is no measure of a man”* (Powell, 2010)

The research presented demonstrates the magnitude of ‘nest eggs’ for a subset of U.S. public firm CEOs in four industries; and while it may not illuminate the measure or character of the holders of such levels of retirement pay or stock options, it does offer understanding and explanation of how these compensation elements may impact strategic decisions. Specifically, the findings indicate that the accumulated value of both CEO retirement pay and in-the-money stock options are positively related to cross-border acquisition activity.

The analyses also highlight the moderating effects of managerial discretion, arising from the firm’s external industry context and internal organizational leadership structure. Both types of discretion significantly strengthened the relationship between the accumulated value of CEO in-the-money stock options and cross-border acquisition activity.

Interestingly, neither of the discretion measures significantly interacted with the accumulated value of retirement pay. One possible explanation for these non-findings may be that since this compensation element is largely insulated from losses, even with endowment effects occurring, the motivating effects are sufficiently strong enough that having or not having latitude of action (discretion) has minimal impact. Secondly, as discussed previously, with stock options CEOs are likely to be much more cognizant of how acquisitions link to market reaction and thus stock price, and having greater discretion would likely be perceived as having a greater opportunity to impact stock prices.

Additionally, since the stock options are in-the-money, implying stock price has risen since the options were awarded, CEOs may experience feelings of hubris, or over-confidence in their abilities to positively impact future stock prices. Research by Li and Tang (2010) indicated the effects of hubris on a firm's decision to invest in a new, high-technology project were intensified by increases in industry discretion and CEO duality.

The theorizing and empirical findings presented in this study have a number of implications for management research. First, by focusing on an understudied, yet substantial element of executive compensation packages and demonstrating that strategic decisions may indeed be sensitive to the magnitude of a CEO's pension and deferred compensation, an important gap in the literature is addressed. As such, this work suggests ample opportunities to further elucidate the consequences of these pay elements on a variety of firm and individual level outcomes, including the ultimate performance outcomes. Examining the determinants of these elements of compensation would be a valuable addition to the literature as well.

The findings that in-the-money stock options exert a positive influence on cross-border acquisition activity broaden previous research that has primarily looked at the antecedent effects of awarding of stock option (e.g., Devers et al., 2007; 2008). It also helps to reconcile previous inconsistencies in the literature with respect to these types of options and in particular, extends the line of inquiry recently advanced by Devers et al. (2008) that stresses the importance of considering the nuances of individual pay elements in eliciting actions executives take on behalf of their organizations.

The results highlighting the moderating effects of managerial discretion, arising from factors in a firm's industry and organizational power structures, also contribute to

research on acquisitions and CEO compensation as well as that focused on understanding the role of managerial discretion in strategic decision making. Previous research on managerial discretion has primarily focused on that arising from the external industry context (Boyd & Gove, 2006) and examined its moderating effects on relationships between demographic characteristics such as top management team (Finkelstein & Hambrick, 1990) or CEO tenure (Crossland & Hambrick, 2007), and CEO dominance (Haleblian & Finkelstein, 1993), with firm decisions. The previous research has not considered how managerial discretion may moderate the motivating influence of CEO incentive compensation elements. The findings of this research suggest managerial discretion may play an important role in strengthening the influence of stock option compensation.

Early strategy literature defined risk as income stream variance and found it to be negatively related to performance (e.g., Bowman, 1980; Bromiley, 1991). More recently, Sanders and Hambrick (2007) theorize and demonstrate that increasing awards of CEO stock options leads to more extreme performance, as CEO attention is focused predominantly to the upside potential of risk taking (increasing their own personal wealth via stock price increases) while practically ignoring the possible downsides promoting risk taking that leads to the high variability of performance. This is in the same vein as our theorizing on the risk bearing effects of stock options and retirement pay and while our study does not examine the performance outcomes or quality of cross-border acquisition activity induced by the various compensation elements, future studies may want to consider this aspect.



Implications for practice also emanate from this research. As the business world becomes increasingly competitive and complex, firms face increasing pressure to grow profits by expanding their businesses across national boundaries. Hence, understanding the role that retirement pay alongside other incentives may play in motivating managers to effectively form and implement strategies that lead firms to compete effectively, is of great importance to practicing managers and other firm stakeholders. Being aware that retirement pay is a substantial portion of compensation arrangements and understanding its consequences serves as a caution to executives as well as to boards of directors who are charged with the responsibility of creating such compensation contracts.

CEO compensation has received substantial attention and provoked numerous calls for reform from both the business press and academic scholars with regards to its excessiveness as well as it not being adequately linked to value-added firm outcomes (Bebchuk & Fried, 2005; Boyd, Franco Santos, & Shen, 2012; Tosi et al., 2000). This is underscored by the fact that 89% of the CEOs in the sample, who on average had 7 years of tenure with their firms, had some type of defined benefit pension on average worth \$6.4 million dollars, while only 20% of the total private sector employees in the U.S. had accessibility to such programs in 2007 (Cushing-Daniels & Johnson, 2008). Since the SEC now requires disclosure of the value of defined benefit pension compensation paid to firm executives, this issue is likely to garner increased attention and ire from the public. Therefore, it is likely to be an issue that boards and regulators will be increasingly pressured to address.

Despite these promising results several limitations of this study warrant attention. Although I theorize that retirement pay and stock options motivate CEOs' to engage in

acquisitions, the study lacks direct measures of CEOs' motivations. The research presented here would be greatly enhanced by additional fine-grained data at the individual decision maker level.

In addition, while CEOs are expected to be highly involved in acquisition decisions, I acknowledge that other key decision makers in the firm may also play influential roles in acquisition and other strategic decisions. Opportunities therefore exist to also explore the impact of compensation, in particular retirement pay on other strategic decisions and on how they affect risk perceptions and propensities of other firm decision makers.

Finally the sample focuses only on U.S. public companies operating primarily in four industries and therefore the study may not accurately characterize relationships between the studied elements of compensation and acquisition activity in private firms, other industries or other national environments. Nevertheless, it is hoped the context I have examined provides impetus for further research that will address questions of generalizability.

## **Conclusions**

A theoretical model drawing from the BAM has been presented and tested that demonstrates how retirement pay and in-the-money stock options influence CEOs' to undertake cross-border acquisitions. It is hoped the work presented here will motivate further research, as it is believed that individual elements of compensation may serve as powerful antecedents for a plethora of strategic decisions and outcomes. Therefore, there remains many unanswered research questions about the role compensation elements play with regards to strategic outcomes.

## CHAPTER 4

### FIRM LEVEL R&D INVESTMENT, ATTAINMENT DISCREPANCIES AND NATIONAL SOCIAL CULTURE: A MULTILEVEL ANALYSIS IN THE PAPER PRODUCTS INDUSTRY

#### 4.1 INTRODUCTION

*“...whether research be originally undertaken merely because the firm is convinced that profitable new opportunities will come out of it, or because it is considered necessary for survival in a competitive world, it enables...firms to turn aside the process of ‘creative destruction’ and to thrive on the novelty which might otherwise have destroyed them.* (Penrose, 1959: 115).

Edith Penrose’s (1959) insights from over 50 years ago, of the importance of research and development (R&D) investment to firm success and survival seem particularly relevant in today’s globalized knowledge-based economy. The R&D process involves creating, disseminating and applying knowledge to generate innovations in firm technologies, products, and management systems (Greve, 2003; Hovakimian, Opler, & Titman, 2001; O’Brien, 2003; Vicente-Lorente, 2001; Wang, 2010).

Investing in R&D differs from other corporate investments in that the outcomes associated with R&D have long-term future oriented profit horizons, require input and coordinated effort from multiple hierarchical levels in the firm, and have payoffs that are often ambiguous and highly uncertain. (Bernardo, Cai & Luo, 2001; Lee & O’Neill, 2003; Shi, 2003). R&D investment is often used as a proxy for risk taking and as risk preferences may differ, the level of investment in R&D is expected to vary across firms. (Hill & Snell, 1989; Miller & Bromiley, 1990; Palmer & Wiseman, 1999; Rajgopal & Shevlin, 2002; Singh, 1986).

For example, researchers drawing from the behavioral theory of the firm (Cyert & March, 1963) suggest that firms as goal-oriented and information-processing entities, compare their performance relative to an aspiration level, not just on an absolute value. These comparisons serve to motivate the firm to engage in search processes that either solve short-term problems or provide innovative new technologies and/or products (Cyert & March, 1963). The behavioral theory of the firm contends firm behavior manifested as strategic choices, is goal-directed and history-dependent (Levitt & March, 1988). Since much of the behavioral theory of the firm research has been conducted in single country settings, little consideration has been given to how the values, beliefs and assumptions that constitute the culture within firms' home country boundaries may encourage and enable pursuing some types of goals while discouraging and hindering others. This study seeks to address that particular gap.

Indeed, sociologists (e.g., Beck, 1992; Dake, 1991; Douglas & Wildavsky, 1982; Rayner, 1992) have long concluded that the "risk perception is determined by the norms, value systems and cultural idiosyncrasies of societies" (Rohrmann & Renn, 2000:18). Since R&D investments have uncertain future outcomes and often have a low probability of success (Palmer & Wiseman, 1999) they are frequently employed to represent firm risk taking (Bargeron, Lehn, & Zutter, 2010; Bhagat & Welch, 1995; Coles, Daniel, & Naveen, 2006). This further underscores the importance of considering the influence of the national culture firms have been founded in and remain currently embedded in.

In this study, we theorize that firm level R&D investments are not only influenced by a firm's performance relative to aspirations, but are significantly constrained or enabled by what constitutes legitimate actions with respect to cultural dimensions in a firm's

home country. Specifically, we assess how the social norms operating in a firm's home country influences the perception of the saliency of the following: investing in the future (future orientation), collective coordination and decision making (institutional collectivism), maintenance of hierarchy (power distance), and dealing with ambiguous and uncertain situations (uncertainty avoidance). The theoretical framework is tested with a sample of firms from 11 countries, operating between 2002 and 2010 in the global paper products industry. In the past decade due to the rise of digital media and increasing pressures for environmental sustainability, firms competing in this industry have arguably been engaged in combating what could be aptly described as Schumpeter's (1942: 83) "gale of creative destruction."

The study seeks to make a contribution to the literature in several specific ways. First, while there has been a considerable work investigating determinants of R&D investment with single-country samples, this analysis using data from firms operating in a single industry in multiple countries allows an exploration of the relative importance of various firm- and national-level variables. In doing so, we answer calls (e.g., Gavetti, Levinthal, & Ocasio, 2007) for examining how search processes may be influenced by the environmental context in which an organization is embedded in.

Second, by focusing on national culture, an informal institution this study complements recent work by Hillier, Pindado, Queiroz, and Torre (2011) who examined the role of formal institutions such as investor protections on R&D investment in firms from 11 countries. Our examination of cultural dimensions that constitute informal institutional forces, also addresses concerns put forth by scholars (e.g., Hart, 2001; Zenger, Lazzarini, & Poppo, 2002) that studies of firm level strategic decisions has

mostly examined the role of formal institutions. Therefore, this research contributes to furthering understanding of how different elements of the institutional environments that firms are embedded in through their founding, explain variation in investment decisions across firms

This research also presents new evidence on how a firm's home country cultural dimensions can motivate and inhibit investment in firm-level R&D, thus addressing concerns raised by international business scholars (e.g., Venaik & Brewer, 2010) of the scarcity of studies looking at national cultural dimensions and firm-level decisions. Additionally, by using a multi-country sample, and accounting for the culture in which firms are embedded in, empirical support is generated for the behavioral theory of the firm prediction that when firm performance is above aspirations (positive attainment discrepancy) firms are motivated to seek out experimental and innovative activities through investment in R&D activities. Thus, we offer evidence of additional determinants of R&D investment, which may help explain the inconsistent findings concerning this behavioral theory of the firm prediction in single country studies (e.g., Greve, 2003; Miller & Chen, 2007; Wu & Tu, 2007). Also, by demonstrating the saliency of behavioral theory of the firm in a variety cultures, the boundary conditions for the theory are extended suggesting it may be an appropriate organizing theoretical framework for exploring other international business phenomena.

Finally, by using both GLOBE and Hofstede cultural measures in the analysis, the study hopes to not only provide a more complete understanding about the effects of culture, but also to add to the debate and the efforts to further understand how and why these sets of measures converge and diverge with respect to firm level decisions.

The remainder of the paper is structured as follows. In the next section, we review theory on determinants of firm level R& D investment, specifically developing theoretical arguments for how firm performance relative to aspirations may promote search processes resulting in greater R&D investment. This is followed by considering the role that the theoretically relevant national culture dimensions in a firm's home country may play in encouraging or hindering R&D investment decisions by firms. Following the development of the firm and national level hypotheses, the data and estimation method are described and the empirical results reported. Finally, the paper concludes with a discussion of the main findings and the implications for theory and practice.

#### **4.2 THEORY AND HYPOTHESES DEVELOPMENT**

In today's globalized knowledge-based economy, firm success and survival often depends on creativity, discovery, innovation, and inventiveness. R&D investment is often linked to these constructs and while concurring with other researchers (e.g., Laursen, & Salter, 2006; Kelm, Narayanan, & Pinches, 1995; Tushman & Nelson, 1990) that R&D is not the sole determinant of creating knowledge based resources, new products and markets, it is a visible manifestation that these strategies are important to firm managers who are responsible for making investment decisions.

The extant literature puts forth various arguments about what motivates or discourages firms to invest in R&D. Explanations for the variation across firms have included determinants at the firm, industry, and home country level. (Chen, 2008a,b; Cumming & Macintosh, 2000; Hillier et al., 2011; Lee & Sung, 2005; Scherer, 1982;). In this study, the aim is twofold, one, to examine how R&D investments of different firms

in a single industry are rooted in their experience with performing better than aspirations, as future choices are often influenced by past success (Laursen, & Salter, 2006) and secondly, to assess the degree to which R&D investment is encouraged or discouraged by the national culture in which the firms are embedded.

### **Performance Attainment Discrepancy and Firm R&D Investment**

R&D investment decisions have a rich tradition in the extant literature of being associated with search processes. Cyert and March's (1963) behavioral theory of the firm offers a conceptual framework of organizational search determinants. The theory contends organizations, as goal-directed systems, set aspirations that are used to simplify decision-making processes. In other words, rather than using absolute measures of performance, firms consider performance relative to aspiration levels within a specific context.

The difference between the actual performance and the aspired level of performance is referred to as the "attainment discrepancy" (Lant, 1992). When actual performance exceeds the aspired performance, the firm has a positive attainment discrepancy, whereas a negative attainment discrepancy occurs when actual performance is below the aspired level. The attainment discrepancy categorizes performance as successful or failing thus simplifying interpretation by decision makers. The specific interpretations of performance relative to aspirations lead to search behavior, according to the behavioral theory of the firm (Cyert & March, 1963).

When performance is below the aspiration level (negative attainment discrepancy) search entails identifying "alternatives to current activities that resolve performance shortfalls" (Iyer & Miller, 2008: 808). Empirical analyses have generally found that firms



take greater risks, considered to be a means of searching, in order to reduce or eliminate the existing attainment discrepancy immediately (Bromiley, 1991; Bromiley, Miller, & Rau, 2001; Miller & Chen, 2004; Nickel & Rodriguez, 2002). However, when performance is so poor that there is a threat of bankruptcy or survival, less risk taking has been observed (Iyer & Miller, 2008; March & Shapira, 1987).

Empirical evidence of search, or risk taking in the situation where performance exceeds aspirations (positive attainment discrepancy) has been rather ambiguous (Miller & Chen, 2004; Iyer & Miller, 2008). As “success tends to breed slack” (Cyert & March, 1963: 278), researchers have sought to associate a variety of measures of slack with this type of search. Results with respect to innovation have also been mixed with some researchers showing various types of slack have positive relationships (e.g., Damanpour, 1991), others demonstrating non-linear (inverted U) associations (Nohria & Gulati, 1997) or even no relationships (e.g., Greve, 2003). Organizational slack has been viewed positively as a resource that facilitates innovation, by providing a cushion in case experimental and innovative projects fail (Bourgeois, 1981); and viewed negatively, as it indicates the firm has not used its resources to its full potential (Williamson, 1963).

Firms in today’s globalized competitive arena are under increasing pressures from capital markets and shareholders to effectively operate as ‘lean’ as possible. Therefore, rather than assume organizational slack is negatively or positively viewed by managers and motivates search, we suggest that it is more prudent to assume that managers clearly view their firm’s successful performance positively. While having a positive attainment discrepancy is likely to result in accumulating slack, it is also likely to facilitate search,

whereby firm managers will be more inclined to make investments so that they may seek out experimental and innovative activities.

Slack has been argued to increase with persistent performance above aspiration level (Levinthal & March, 1981), but with the heightened competitiveness brought on by globalization and technological change, it is unlikely firms will let slack accumulate over time due to pressure for efficiencies and lowering of costs. Therefore, having short-term (e.g., the previous year) successful performance versus competitors is likely to motivate similar behavior that has been attributed to possessing slack resources: relaxing of controls and a greater willingness for experimentation (Cyert & March, 1963).

When firms have performed better than competitors, the fear of failure is likely to be diminished, and decision-makers, are more likely to be willing to invest in and engage in risky initiatives according to behavioral theory of the firm. Indeed, Laursen and Salter (2006) and Chen (2008a) argue that search is motivated not only by past performance but also by expectations about the future. In sum, if firms have been successful in the past, they are also likely to be confident about future performance, and again may exhibit an increased willingness to invest in risky ventures often associated with R&D activities.

Based on the presented arguments, the following hypothesis is put forth:

*Hypothesis 1: Previous positive attainment discrepancy by the firm will be positively related to subsequent firm-level R&D investment.*

### **Home Country National Social Culture and Firm R&D Investment**

By relying on the behavioral theory of the firm perspective, we have argued firms' willingness to invest in R&D represents search strategies that are rooted in experience with past performance feedback. This builds upon the behavioral theory of the firm

assumption that firm behavior manifested as strategic choices is goal directed and history dependent (Levitt & March, 1988). However, previous behavioral theory of the firm research has been conducted primarily in single-country settings, giving little consideration to how the values, beliefs and assumptions that constitute the culture within national boundaries may encourage and enable pursuing some types of goals while discouraging and hindering others (Schwartz, 1999). In other words, how a firm experiences performance feedback, specifically its attainment discrepancy and perceives the riskiness of R&D investment is likely to be affected by the national culture of the firm's home country.

National culture has been defined in numerous ways, and in this study we use GLOBE's definition of culture: "the shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experience of members of collectives and are transmitted across age generations" (House et al., 1999: 182). With this definition, culture is seen as affecting the perceptions and interpretations of past experience and future expectations. Making it particularly relevant for understanding how firm decision makers respond to attainment discrepancies and how they view undertaking investments in risky ventures such as R&D.

The GLOBE culture scheme has nine dimensions, and following the example of others (e.g., Parboteeah, Hoegl, & Cullen, 2008) we include only those dimensions which have a theoretical rationale for being associated with the phenomena of interest, firm level R&D investments. R&D investments, unlike many other strategic investment decisions, are expected to have longer term pay-offs, with rewards expected to occur in the future (Bernardo et al., 2001, Miller & Chen, 2007). Therefore we expect the future

orientation (FO) dimension, which accounts for how a society views and values future-oriented behaviors (House, Hanges, Javidan, Dorfman, & Gupta, 2004: 282), to be associated with R&D investment decisions. Since R&D activities require input and coordinated effort from organizational members (Lee & O'Neill, 2003; Shi, 2003), we include institutional collectivism (IC), which is concerned with the importance of consensus-based behavior and focusing on interdependencies (House et al., 2004). This collaborative effort typically includes multiple hierarchical levels in the firm, suggesting power distance (PD), or the way power distribution is perceived to provide social order, may also be pertinent to R&D investment, thus it is also included. Finally, since R&D investments have payoffs that are often ambiguous and highly uncertain. (Bernardo, Cai & Luo, 2001; Lee & O'Neill, 2003; Shi, 2003), the level of uncertainty avoidance (UA) is considered as the society's sensitivity to risk and uncertainty is likely to be relevant with respect to R&D investment. In the sections which follow we draw from national social culture literature and hypothesize how firm level R&D investments are constrained or enabled by what constitutes legitimate actions with respect to the four home country cultural dimensions of FO, IC, PD, and UA.

**Future orientation (FO).** GLOBE defines FO as “the degree to which individuals in organizations or societies engage in future-orientated behaviours such as planning, investing in the future, and delaying individual or collective gratification” (House et al., 2004: 12). The theoretical foundation of GLOBE's FO is similar to Hofstede's (2001: 359) long-term orientation (LTO), which is defined as “the fostering of virtues oriented towards future rewards.”

Societies with high levels of FO focus on delayed gratification and achieving success at a later time. This dimension captures the extent to which members of a society believe that their current actions will influence their future, and therefore focuses on planning and investment in their future (House et al., 2004). GLOBE researchers found that future oriented cultures are positively associated with the capacity to invest and succeed in basic science and technology (House et al., 2004). In addition, they observed that organizational members with high FO tend to deal more effectively with future uncertainties and challenges (House et al., 2004). Since the benefits of R&D and innovation are considered to be distant and uncertain (Palmer & Wiseman, 1999), firms from countries that value investing in the future will likely be more intrinsically positive towards such futuristic investments as R&D.

Empirical support is offered by Waarts and Van Everdingen (2005) in a study of firms from 10 European countries. They find Hofstede's LTO measure has significant positive influence on firm level decisions to adopt (invest in) new systems or innovations (enterprise resource planning software). Since cultures with high FO tend to place a higher priority on long-term success over short-term satisfactions, members of these societies will more likely look further into the future for assessing the effects of their current actions (House, et al., 2004), rather than being limited in their present situations. This is an important characteristic for R&D investments. Therefore the following relationship is hypothesized:

*Hypothesis 2: High levels of future orientation in a firm's home country national culture will be positively related to firm level R&D investment.*

**Institutional collectivism (IC).** Collectivism has to do with the extent to which the group as opposed to the self, is the prime social identifier (Hofstede, 1997). The GLOBE research distinguishes between two types of collectivism dimensions: institutional and in-group collectivism, the former focusing on the societal and organizational levels (House et al., 2004) and the latter at the family and individual level (Brewer & Venaik, 2010). Because the aim of this study is to identify the relationship between country level culture variables and firms' R&D investments, IC is the more appropriate construct for the analysis. According to GLOBE, IC refers to "the degree to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action" (House et al., 2004: 12).

In cultures with high IC, individuals are more likely to build relationships and commitments within groups, with group goals often taking precedence over individual goals (House et al., 2004). Nakata and Sivakumar (1996) found that high degrees of collectivism promoted new product development by emphasizing interdependence, cooperation, and unified purpose. They argued that Japanese teams, characterized by high collectivism, demonstrated high consensus, were more likely to create a sense of belonging and to feel an obligation to contribute all of which positively affect innovation (Nakata & Sivakumar, 1996). Similarly, Lee and O'Neill (2003) found that R&D investment was higher in collectivist Japan than in the more individualistic U.S. They attributed this to collectivist Japanese culture being more conducive to the development of long-term relationships with higher levels of trust that drives R&D investments. Research using a sample of U.S. IPO firms in the medical and surgical instruments

industry indicated that top management teams with collective confidence displayed a greater proclivity for investing in R&D projects (Kor, 2006).

Taylor and Wilson (2012) add to the abovementioned research by finding that IC fosters innovation at the national level. Innovations often require enduring high-levels of uncertainty, as do societies confronting the costs and distributive effects of scientific research and technological change (Acemoglu, 2009). Societies which emphasize IC may be more likely to facilitate a social environment in which both innovators and those bearing the costs of change are more willing to endure these difficulties for the benefit of their society (Taylor & Wilson, 2012).

In countries built on collectivist values, coordination, commitment, and harmony are likely to be important values of organizational members. These attributes may produce circumstances where experimentation and risk taking initiatives have a greater level of acceptability as they perceive it will provide mutual benefits for all involved, as well as feeling they have mutual safeguards if the investment doesn't turn out as intended. In addition, decision makers operating in firms from countries high in IC are likely to feel greater confidence in the likelihood that the group (i.e., firm decision makers) will be able to achieve the intended goals associated with R&D investments, as these type of activities often require coordination throughout organizations (Lee & O'Neill, 2003; Shi, 2003) Therefore, we predict:

*Hypothesis 3: High levels of institutional collectivism in a firm's home country national culture will be positively related to firm level R&D investment.*

**Power distance (PD).** PD refers to the degree to which members of a society expect and agree that power should be distributed hierarchically (Hofstede, 2001; House et al.,

2004). In high PD countries people accept inequalities as a legitimate basis of relationships and proper societal functioning (Hofstede, 2001). In contrast, individuals in low PD societies believe that inequalities should be minimized (Hofstede, 2001).

Firms from low PD cultures tend to value a flexible organizational structure and the approach to management is thought to be associated with higher capacities for knowledge acquisition and creativity among employees (Dodgson, 1993; Lyles & Salk, 1996). Also, equally, well-motivated employees are more likely to participate in teams so as to better capture new market opportunities and develop new products for the company (Lyles & Salk, 1996). For instance, Damanpour (1991) found that participatory work environments facilitate innovation by increasing organizational members' awareness, commitment, and involvement. Similarly, work by Thompson (1965) indicated that the concentration of decision-making authority hindered innovative solutions, while the dispersion of power enabled innovation.

Researchers have linked higher innovation effectiveness to having authority and control at lower levels in the organizational hierarchy, less centralization of knowledge, increasing adjustment and redefinition of tasks through employee interactions, and lateral communication (Abbey & Dickson, 1983; Keller & Holland, 1983; Pelz & Andrews, 1976). All of these attributes are more indicative of low PD cultures. In sum, in the extant literature, low PD has been shown to be a predictor of innovation activities (Mokyr, 1991; Rothwell & Wissema, 1986;), innovation success (Jones & Davies, 2000), product and process inventions (Shane, 1992), and R&D productivity (Kedia, Keller, & Julian, 1992).



Countries high in PD tend to have societal members that have a strong propensity to resist change in new environments and situations (Harzing & Hofstede, 1996; Kirkman & Shapiro, 1997). High PD countries are more likely to have underlying rules that serve as road blocks for changes and innovations. As previous research indicates, since high PD cultures often have a great inclination to uphold rigid hierarchies, it may be more difficult to initiate and sustain creativity, as workforces in these cultures have strong dependence needs and expect superiors to behave autocratically and not to consult them (House, et al., 2004). Firms operating in this context are less likely to be supportive of investing in R&D initiatives.

As observed by GLOBE researchers, a low PD culture is characterized by a balanced power structure, where each individual is respected and appreciated for what that person has to offer (House et al, 2004). Lacking this balanced power structure would likely hinder contributions of creative knowledge and resources, which will have an imprinting effect on willingness to invest in R&D initiatives. Thus:

*Hypothesis 4: High levels of power distance in a firm's home country national culture will be negatively related to firm level R&D investment.*

**Uncertainty avoidance (UA).** As defined by the GLOBE study, UA refers to “the extent to which members of collectives seek orderliness, consistency, structure, formalized procedures, and laws to cover situations in their daily lives” (Sully de Luque & Javidan, 2004: 603). Individuals in cultures with lower UA are more tolerant of differences in behaviors and opinions, and are less threatened by new situations (Hofstede, 1983). In societies with high UA, there is a preference for consistency and structure over uncertainty and ambiguity (House et al., 2004). Because the outcomes and

benefits of R&D investment are uncertain, it is logical to expect this type of investment will be lower in high UA cultures.

In high UA societies there is a greater tendency to favor administrative structures and systems with more rules and controls (Horovitz, 1980). People in high UA countries feel the need to avoid, or manage ambiguous situations with these rules and controls, rejecting novel ideas (Kedia & Bhagat, 1988; Schneider, 1989). As a result, high UA cultures tend to have bureaucratic organizations with more structured activities and more task oriented management teams, which may lead to less creative freedom and ultimately less concern with being innovative (Aiken & Hage, 1971).

To the contrary, countries with low UA are characterized by flexibility and acceptance of nonconformity suggesting they may be more conducive to novel ideas, new behaviors, creativity and innovation (Shane, 1995). Previous research has indeed found associations between low UA national culture and national rates of innovativeness (Shane, 1995; Mueller & Thomas, 2000), innovation process activities (Shane, 1995), corporate venturing process (Venkataraman, Shane, McGrath & Macmillan 1993), and entrepreneurship (McGrath, MacMillan, Yang, & Tsai 1992).

Shane (1995) argues that people in uncertainty-accepting societies are more willing to take risks and are less in need of security and stability, as they are confident in their own beliefs, rather than what societal norms dictate. Jones and Davies (2000) theorize that lower UA is associated with individuals being more accepting of competition and colleague dissent. In these situations formalized rules are 'frowned upon', and there is greater likelihood for innovative capabilities to develop. It is generally thought in the literature (Ambos & Schlegelmilch, 2008; Nakata & Sivakumar, 1996) that high UA

impedes a firm's innovative capabilities. As discussed previously, R&D investment has been shown to have a strong association with firm innovation. (Hovakimian, et al., 2000; O'Brien, 2003; Vincente-Lorente, 2001).

While behavioral theory of the firm does not directly address how national cultural dimensions may impact the goal directed behavior of firms, Cyert and March (1963: 297) in developing their framework, "accept as a given the uncertainty avoidance motivations of the firm." Therefore, if a firm is embedded in a national context that views the cultural dimension of UA as constituting legitimate behavior, it is likely these firms will tend to avoid making large investments in activities such R&D that are characterized as having uncertain outcomes. Thus based on these arguments, when UA is high in a firm's home country, firm managers are expected to exhibit greater risk aversion and be more skeptical about investing in R&D leading to the following hypothesis:

*Hypothesis 5: High levels of uncertainty avoidance in a firm's home country national culture will be negatively related to firm level R&D investment.*

### **4.3 METHODS**

#### **Sample**

The hypotheses are tested in a longitudinal study of firms operating in the global paper products industry (SIC codes 2621 and 2631) between 2002 and 2010 that are listed in the Thomson One Worldscope database. The global paper products industry generated \$350.7 billion in revenues during 2010. Asia-Pacific accounts for 40.8% of the global market value. Europe accounts for 28.1%, North and South America make up 28%, with the rest of the world comprising the remaining 3.1%. (DataMonitor, 2011). The industry structure is very similar across the globe with respect to raw materials,

technology, suppliers, market channels, and selling practices (DataMonitor, 2011), suggesting it is an appropriate sample for teasing out the impact of the variances in national culture and performance attainment discrepancy. Furthermore, due to the rise in digital media and worldwide pressure for sustainable environmental practices (Fischer, 2012; Line, 2012), it is arguably an industry that is currently dealing with the ‘gale of creative destruction.’ As such, this reality underscores the importance of R&D investment to firms in this industry, as they will need to innovate better and faster than competitors both within and outside the industry boundaries.

The final sample consists of 67 firms from the following 11 countries: Canada, China, Finland, India, Japan, Korea, South Africa, Sweden, Taiwan, United Kingdom and United States. These countries provide a range of differing national cultural environments representing both emerging and developed economies. Not all firms are in existence or report data from 2002 -2010, so the final sample consists of 417 firm years.

### **Variables**

**R&D investment.** The dependent variable R&D investment is measured as the proportion of research and development expenditures to sales, following previous researchers (e.g., Greve, 2003; Lee & O’Neill, 2003). The natural log transformation is used to meet normality assumptions.

**Performance attainment discrepancy.** The measurement of performance attainment discrepancy is based on the social aspiration level, or average industry wide performance (Cyert & March, 1963; Greve, 1998). Other empirical studies have used linear combinations of firm historical performance and social aspirations, utilizing different weights performance (e.g., Greve, 2003; Wiseman & Bromiley 1996), however,

this assumes managers are applying the same weights (Nickel and Rodriguez, 2002).

Given this level of ambiguity, we follow other researchers (e.g., Arora & Dharwadkar, 2011; Chen & Miller, 2007; Greve, 1998; Miller & Chen, 2004) and avoid this technique. We focus on the social aspiration as this is likely to be the more salient reference for managers in the sample, as they seek to make R&D investments that are better and faster than competitors. Also, research has demonstrated managers often explain poor historical performance as being dependent on environmental factors (Clapham & Schwenk, 1991), believing they have little control over these factors (Lant & Shapira, 2008). However if performance compared to competitors is poor, it will be more difficult to blame external factors, as rivals will be exposed to similar effects and disruptions.

The performance attainment discrepancy is calculated following the procedure used by previous researchers (e.g., Arora & Dhardwadkar, 2011; Bromiley, 1991) whereby the attainment discrepancy is the difference between the focal firm's actual performance and the social aspiration level performance. To determine the social aspiration level, again following the precedence in the literature (Arora & Dhardwadkar, 2011; Bromiley, 1991), we compute the average of the performance of other firms in the industry in the prior year and use this as the social aspiration for those firms performing below the industry average. For firms with performance above the industry average, the industry average is multiplied by 1.05, to represent a 5% increase. When actual performance is above the social aspiration level, the attainment discrepancy is positive (or higher) and when it is below it will be negative (or lower).

There are various measures for firm performance and in this study Tobin's Q is employed. Tobin's Q is measured as market capitalization plus total debt divided by total

assets (McConnell & Servaes, 1990). Tobin's Q has been used by researchers as a measure that specifically reflects managerial performance for generating income from an asset base (Morck, Shleifer, & Vishny, 1988), making it a relevant measure for this study as the concern is how firm managers strategically respond to performance attainment discrepancies.

**National social culture.** The GLOBE (House et al., 2004) measures of FO, PD, UA, and IC, are used to represent the national culture constructs that are theoretically pertinent to the study. Because the study is concerned with modeling the influence of culture on managerial practice with respect to R&D investment decisions, we use the "as is" measures. The GLOBE variables have been heralded for their robust and rigorous attention to reliability and validity (Javidan, House, Dorfman, Hanges, & de Luque, 2006; Sarala & Vaara, 2010). However, similar to others (e.g., Brock, Shenkar, Shoham, & Siscovick, 2008; Parboteeah et al., 2008) we also run models with the corresponding Hofstede (2001) measures and discuss where the results converge and diverge.

**Control variables.** Several control variables at the firm level are included in the models to rule out alternative explanations. Organizational slack, a notable construct in the behavioral theory of the firm frameworks, has been shown to be associated with risk-taking initiatives (Greve, 2003; Iyer & Miller, 2008) including R&D investments (e.g., Chen, 2008; Miller & Chen, 2007; Wu & Tu, 2007). Organizational slack, is argued to provide a "cushion of actual or potential resources" that encourages exploration type activities such as R&D expenditures (Bourgeois, 1981: 30).

Slack has been categorized as absorbed, unabsorbed and potential (Bourgeois, 1981). Several researchers (e.g., Arora & Dharwadkar, 2011; Iyer & Miller, 2008) suggest

available and potential slack, which represent uncommitted available resources, provide greater discretion to managers and are more relevant to influencing investment decisions, than absorbed slack, which is not recoverable or available to managers. Therefore, we control for these two types of slack. Debt-to-assets is used as a measure of *potential slack* (Brush, Bromiley, & Hendricks, 2000; Hitt, Hoskisson, & Kim, 1997; Waddock & Graves, 1997). High debt levels have been shown to be negatively related to R&D expenditures (Hillier et al, 2011) as generally, firms with higher debt levels will have higher interest payment obligations, which may impact the level of investment they are willing to tie up in R&D projects. The free cash flow, measured as the operating cash flow minus cash dividends and capital expenditures, scaled by total assets is used as a proxy for *unabsorbed slack* (Davis & Stout, 1992; Hillier et al., 2011). Ascioğlu, Hegde, & McDermott, 2008) demonstrate that when firms have high cash flows they are more positive about R&D activity.

Relationships between R&D investment and firm size have been equivocal (Lee & Sung, 2005), with some showing positive effects of size (e.g., Cohen & Klepper, 1996) and others showing no significant relationships (e.g., Klette & Griliches, 2000). Nonetheless, firm size has been repeatedly shown to influence organizations outcomes (Audia & Greve, 2006). Hence, *Firm size* is measured as the natural log of sales (Baysinger & Kosnick, 1991).

We also include *firm age*, as it may affect firm risk taking behavior (Carpenter, et al., 2003) and younger firms have been shown to have more growth opportunities, thus this could encourage R&D investment (Filatotchev & Piesse, 2009; Kim & Lu, 2011). *Firm age* is measured as the number of years since the firm was founded.

Several national level variables are also included. In a recent study of R&D investment in firms operating in nine European Union countries, the U.S. and Japan, Hillier et al., (2010) find that two formal institutional variables, level of investor protection and financial system development in a firm's home country reduce the sensitivity of R&D to internal cash flow. Countries with poor shareholder protection have also been shown to have markets that respond negatively to R&D investment (Hall & Oriani, 2006) which could discourage investing in these types of activities. Firms may need external financing in order to finance R&D projects and research has shown that external financing is more prevalent in countries with highly developed financial systems (Beck & Levine, 2002). Therefore we control for the level of *shareholder protection* and *financial system support*. The variables are measured using annual country level scores collected and reported by *World Competitiveness Report (WCR)*<sup>5</sup> published by IMD – Geneva, for the period under analysis. *Shareholder protection* is measured using the WCR indicator that represents the statement “Shareholders' rights are sufficiently implemented”. The index is coded from 0 to 10, so that higher scores correspond to higher level of investor protection. *Financial system support* is also on a 1 – 10 scale and reflect agreement with the statement, “Banking and financial services do support business activities efficiently”

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<sup>5</sup> IMD conducts an annual survey of senior and middle managers from a cross-section of firms operating in each country during the year. The sample size for each country is proportional to the GDP of each economy and the sample of respondents is representative of the entire economy. Respondents are asked a series of questions about the institutional environment evaluating it using a Likert-type scale, ranging from 1 to 6. Average values are obtained for each country on an annual basis and converted into a 0 to 10 scale.



National wealth, which has been shown to influence how a society views businesses and R&D investment (Braconier, 2000; Lichtenberg, 1993; Schneper & Guillen, 2004), is also included as a control variable. The variable is measured as the real gross domestic product (GDP) per capita normalized to purchasing power parity (Lawler, Chen, Wu, Bae, & Bai, 2011). The annual data comes from *World Competitiveness Report published* by IMD – Geneva. All independent and control variables are lagged one year in the analyses

### **Modeling and Analysis**

The data for this study is comprised of observations of firms nested in countries over time representing a multilevel data structure. As the study involves assessing the impact of country-level cultural factors on firm level R&D investment over time, the error terms associated with firms in the same country are most likely not independent of each other (hence there is autocorrelation) (Rabe-Hesketh & Skrondal, 2008). In addition, a model with both firm and country level variables implies a composite error term because it can be broken down into several error terms, some of which are dependent on the lower level variables (leading to heteroskedasticity) (Rabe-Hesketh & Skrondal, 2008). As the number of firms varies across countries, there is also the possibility that a country level variable coefficient may indicate significance due to a disproportionately larger sample size at the firm level (Rabe-Hesketh & Skrondal, 2008). Therefore to address these issues and diminish the risk of *overestimating* the precision with which the effects of different variables influence the outcome variable, and wrongly concluding that certain variables have a significant influence when in fact this is not true, we use a mixed modeling

techniques (also known as the hierarchical linear modeling or multilevel random coefficient modeling) to test the hypotheses (Rabe-Hesketh & Skrondal, 2008).

Following the example of other multilevel national culture research (e.g., Parboteeah et al., 2008) we employ intercept-as-outcomes not the slopes-as-outcomes models. As we wish to examine the effects of country level factors after controlling for all firm-level factors, a random effects model (as opposed to a fixed effect model) is employed to deal with variance in firm-level variables. The multilevel regression models are estimated using STATA's (11.0) *xtmixed* program with year-firm-country clustering to account for time effects. This technique statistically models both within groups as well as between-groups relationships taking into account the correlated nature of the data within groups and differences across groups and therefore results in less biased estimates for standard errors of regression coefficients. (Rabe-Hesketh & Skrondal, 2008; Raudenbush & Bryk, 2002).

#### 4.4 RESULTS

Correlations and descriptive statistics are given in table 6 for the GLOBE measures and in Table 7 for the Hofstede measures. As expected several of the national level variables are highly correlated with one another. To assure that multicollinearity is not an issue, variance inflation factors (VIF) were computed. For models using GLOBE measures VIFs averaged 2.88, ranging from 1.22 to 5.66, all under the suggested value of 10 (Myers, 1990). For models with Hofstede measures, the VIFs were on average higher averaging 4.90 and ranged from 1.19 to a problematic 11.41 (power distance). Because of the relatively high VIFs associated with the Hofstede measures, the models with the GLOBE measures are used for testing the hypotheses.

[Insert Table 6 about here]

[Insert Table 7 about here]

Table 8 reports the results of the hierarchical linear modeling analyses. As a preliminary analysis, the amount of between-group (country) variance in the data is first estimated, as absence of this variance would suggest that differences between groups (countries) in the data are inconsequential. The model includes no predictor variables and indicates 27% of the variance was between country groups. 48% of the variance can be attributed to differences between firms, 15% to year effects, and 9% of the variance is captured in the error term.

To discern the hypothesized effects of independent explanatory and control variables the models are built and tested in a hierarchical manner. Model 1 includes only control variables. The control variable of firm age is marginally significant ( $p < .10$ ) in all the models. To test hypothesis 1 that attainment discrepancy is positively associated with R&D investment, this variable is entered into the control model and as seen in Model 2 has a significantly positive coefficient ( $b = 0.32, p < .01$ ), thus indicating support for hypothesis 1. The regression coefficient for this variable remains significant in both of the subsequent models which incorporate the cultural dimensions, lending further support for the hypothesis.

[Insert Table 8 about here]

The results from the hierarchical linear modeling analyses for the national culture effects as measured by GLOBE on firm level R&D investment are shown in model 3. Hypothesis 2, which predicted a significant positive relationship between levels of FO in a firm's home country national culture and firm level R&D investment, fails to find

support. Hypothesis 3 testing whether the effects of high levels of IC in a firm's home country national culture will be positively related to firm level R&D investment is supported ( $b = -0.88$ ,  $p < .01$ ). Hypothesis 4 suggesting that high levels of PD in a firm's home country national culture will be negatively related to firm level R&D investment, is strongly supported as the analysis indicates this variable has a highly significant negative coefficient ( $b = -2.88$ ,  $p < .001$ ). Hypothesis 5, assessing whether high levels of UA in a firm's home country national culture will be negatively related to firm level R&D investment is also supported ( $b = -0.90$ ,  $p < .05$ ).

In order to evaluate whether the hypothesized effects significantly add to the explanation of firm level R&D investment, the change in the Wald  $\chi^2$  statistic is examined. The addition of the attainment discrepancy variable to Model 2 and the culture variables to model 3 both result in statistically significant changes in the Wald  $\chi^2$  values.

It is acknowledged that the country level sample size is fairly low indicating it could lack statistical power to detect all but the strongest effect sizes, making the analysis subject to type II error (Snijders & Bosker, 2003). However, as the analysis indicates substantial significant results for three of the four country level culture predictors, it implies that the analysis has been able to detect effects even with a small sample size.

### **Sensitivity Analysis with Hofstede Measures**

Model 4 uses the Hofstede culture measures that are associated with the GLOBE measures used in the hypotheses. However, as reported previously, the high collinearity between the Hofstede variables may be problematic, thus these results should be viewed with caution.

As with the results using the GLOBE measure for FO, the relationship between the Hofstede long-term dimension and R&D investment is not statistically significant. The Hofstede Individualism dimension is shown to have a significant positive relationship ( $b = 0.03, p < .05$ ). The PD measure does have the predicted significant negative relationship ( $b = -0.04, p < .05$ ). The regression coefficient for Hofstede's UA measure is marginally significant, but not in the expected negative direction ( $b = 0.02, p < .10$ ). These supportive and non-supportive sensitivity tests will be discussed in the next section.

#### 4.5 DISCUSSION

This study addresses the research questions of how performing better or worse than competitors and how various dimensions of a firm's home country's national culture influence firm level R&D investment decisions. We draw from behavioral theory of the firm precepts and highlight the assumptions that firm behavior with respect to firm level decisions is goal directed and history dependent. This notion underscores how differences in values, beliefs and assumptions that make up a firm's home country national culture, may motivate or constrain the pursuit of investment in R&D.

The theoretical predictions are tested using a sample of paper product industry firms from 11 countries over the period 2002 – 2010. We examine the relationships of one firm level determinant, performance attainment discrepancy, and four national culture determinants with firm level R&D investments. The findings indicate that firms with higher attainment discrepancies (performing above social aspiration level) have higher levels of R&D investments supporting theoretical arguments that positive performance relative to industry peers induces search mechanisms that would favor increased R&D











investment. R&D investment is often indicative of a firm's commitment and backing for innovative initiatives, thus contributing to behavioral theory of the firm research by providing support that innovative and experimental search is favored when performance feedback is positive.

In testing effects of the national culture dimensions from the GLOBE framework, the results failed to find support that high levels of FO have a positive influence on firm level R&D investment. The lack significance may be associated with the sample of firms used. First, all are publicly listed companies and researchers (e.g., Froot, Perold, & Stein, 1992) have shown that stock price concerns of investors can affect R&D investments. If investors have shorter time horizons, managers may be pressured to have them also (Froot et al., 1992). Second, as the paper products industry is experiencing 'creative destruction' pressures the notion that R&D is for long term payoffs or 'future' innovation may not be applicable. Managers in this industry may view R&D initiatives as a means of defending the current onslaught from digital media in order to stay in business

As hypothesized, IC in a firm's home country national culture was found to encourage firm level R&D investment, while high levels of PD and UA in a firm's home country national culture had a constraining influence. The findings suggest perceptions and interpretations of performance feedback and future expectations concerning firm level R&D investments are influenced by the firm's home country national culture. Specifically, these type of investments are significantly enabled or constrained by what constitutes legitimate actions with respect to how the society in a firm's home country perceives the importance of : 1) collective coordination and decision making (IC), 2)

maintenance of hierarchy and control (PD), and 3) dealing with ambiguous and uncertain situations (UA).

In additional testing using measures from Hofstede's (2001) culture framework, some areas of convergence with the GLOBE framework are found. Similar to the GLOBE analysis LTO fails to find a statistically significant association to R&D investments while PD is found to have a negative influence on firm R&D investment.

Individualism is shown to be positively related. This may seem to contradict the finding of a positive relationship between the GLOBE measure of IC and R&D investment, but we concur with arguments put forth by Brewer and Venaik (2011) concerning what the two constructs are actually measuring and therefore do not view Hofstede's individualism measure and GLOBE's IC necessarily as opposite poles of the individualism – collectivism continuum. Nakata and Sivakumar, (1996) also argue and demonstrate in a literature review of how the two constructs relate to product development that the two constructs are not direct opposites and both impart positive influence on new product development. Furthermore, the results provide complementary support to those found by Taylor and Wilson (2012) which showed Hofstede's individualism measure and GLOBE's IC were both positively associated with national innovation rates.

The models with GLOBE measures showed UA had a significantly negative relationship with R&D investment, while the model with the Hofstede measure indicates it had a significantly positive relationship. These results lend support to work by Venaik and Brewer (2010) who report a negative relationship between Hofstede's UA and GLOBE's "as is" UA in a number of research studies on national differences across a

range of firm- and country-level phenomena. They suggest, the GLOBE UA is most applicable when used for researching questions that relate to how rule orientation practices influence phenomena and the Hofstede UA is more appropriate when research is interested in stress. Furthermore, one of the items GLOBE uses for measuring “as is” UA specifically references innovation: “In this society, orderliness and consistency are stressed, even at the expense of experimentation and innovation.” Thus, the GLOBE UA appears to be more appropriate for the current analysis.

While scholars have examined industry- and firm-level drivers of firm R&D investment, there have been very few cross-country comparisons, a recent notable exception being Hillier et al. (2011) who demonstrated that national corporate governance elements of 11 countries decreases the sensitivity of firm level R&D to internal cash flow. This study, focusing on cultural dimensions or informal institutions of a country’s institutional environment complements their study, which focused on formal regulative institutional elements.

In addition, scholars (e.g., Hart, 2001; Zenger, Lazzarini, & Poppo, 2002) have highlighted that that previous research of firm level strategic decisions has mostly examined the role of formal institutions. Since competitive environments are comprised of both formal and informal institutions or “humanly-devised constraints that shape human interaction” (North 1990: 3) by focusing on cultural dimensions that constitute informal institutional forces, we contribute to the literature that seeks to further understanding about how the institutional environments that firms are embedded in through their founding, explain variation in investment decisions across firms. . Future researchers may wish to consider how formal and informal institutions in combination

may moderate or mediate one another in explaining variance in multinational firm investment decisions.

As with all research, the findings should be considered in the context of certain limitations. The culture variables used in the analyses are assumed to be constant over time, and while there is precedence in the literature for this assumption (Hofstede, 2001) we recognize there may be dimensions that are not as enduring as expected.

Additionally, the study was conducted within the paper products industry and the use of a single industry may limit the general applicability of the results. As mentioned before, this industry is arguably in the “gale of creative destruction” (Schumpeter, 1942:83) with the rise of digital media and environmental sustainability pressures. It would be interesting to examine the linkages between outperforming peers along with national culture in other industries and additional countries to verify the findings or to learn how different industry or country contexts affect the significant relationships.

The study evaluated direct effects of firm and country level constructs on firm level R&D investment, while accounting for the nested nature of the data, with firms embedded within countries. Our use of hierarchical linear modeling statistical techniques allowed us to simultaneously examine relationships within firms and countries as well as between firms and countries. With only 11 countries, there is not sufficient statistical power to estimate a model at the country level with cross-level interactions (Raudenbush & Bryk, 2002; Lam, Ahearne, & Schillewaert, 2012). Future researchers, with larger sample sizes may find it fruitful to assess interactions between firm-level variables such as attainment discrepancy and national culture variables. This would provide the opportunity to evaluate whether firm and national level determinants function as

substitutes or interact in mutually reinforcing ways as complements, in explaining variance in firm level phenomena.

While the culture variables used in the analysis were selected based on previous theory and empirical results, we readily recognize that other cultural dimensions may also impact R&D investment, and hope this work will motivate others to consider additional cultural dimensions. Additionally, consideration of other dependent variables that also represent high risk firm level investments, such as acquisitions, new product launches or major capital investments, may provide insights into how variation in national cultural dimensions impacts overall firm level risk taking or give insights into how the type of decision being made may affect the various relationships.

Finally, all of the measures came from archival data. We suggest research that can also capture subjective perceptions of why decision makers from a variety of national cultures perceive investing in R&D is an appropriate decision for his or her firm would add significantly to managerial risk taking knowledge and what is known about how national culture impacts firm level decisions.

Investing in R&D processes to create knowledge and generate innovation is particularly relevant for firms competing in today's increasingly competitive globalized knowledge-based economy. Consequently, this research may also serve to inform practicing managers and policy makers who wish to generate economic growth by enacting policies and regulations supporting investments in R&D and ultimately innovations. While changing culture is far from easy or quick, embracing the notion that IC supports investment in innovation and understanding that enacting policies that serve

to lower PD and UA may help motivate firms around the globe to invest more in R&D so as create, share and apply new knowledge, appears to be a very worthwhile goal.

## CHAPTER 5

### CONCLUSIONS

Collectively, the three essays seek to address the overarching research question of how and why firm decision makers vary in strategic risk taking, defined to be making decisions involving investment and commitment of resources prior to fully understanding the potential performance outcomes, which may be positive or negative. Each essay considered an overlooked or understudied determinant of strategic risk taking in conjunction with previously studied constructs. Each essay also examined different representations of strategic risk taking that have been used in the extant literature: a composite measure consisting of the monetary value of R&D, capital, and acquisition investments; the frequency of cross-border acquisitions; and R&D investments scaled by sales.

Essay 1 shows how the experience of power not only provides the means for CEOs to exert their risk preferences but actually affects what the risk preferences are. CEO power is theorized and empirically shown to influence cognitive framing such that there is a prevailing focus on the upsides of potential outcomes of strategic risk taking. Previous literature has theorized and shown that stock options have similar effects, thus I propose power and stock options may interact in substitutive or complementary ways. The analysis indicates CEO power interacts in a complementary, mutually reinforcing manner with exercisable stock options while it interacts in a substitutive way with unexercisable stock options with respect to promoting strategic risk taking. All five hypotheses are supported.



In essay 2 drawing from the behavioral agency model (Wiseman & Gomez-Mejia, 1998), and the notion that individual compensation element have particular risk bearing attributes, I examine how retirement pay and in-the-money stock options influence CEO motivations to engage in cross-border acquisitions. The moderating role of managerial discretion, disaggregated into industry and organizational discretion was also examined.

The theoretical model is tested in a sample of U.S. public companies operating in four industries from 2007 – 2011. I find support for the hypothesized direct positive effects of CEO retirement pay and in-the-money stock options with cross-border acquisition activity. Hypotheses predicting positive moderating effects of industry discretion and organizational discretion, measured as CEO duality, are only supported when interacted with CEO in-the-money stock options not CEO retirement pay.

In essay 3, a multilevel theoretical model is presented and tested with a sample of paper product industry firms from 11 countries. As the model contains both firm and country level variables, it implies a composite error term because it can be broken down into several error terms, some of which are dependent on the lower level variables (leading to heteroskedasticity). Also, because of the nested nature of the data, it is likely the error terms associated with firms in the same country are most likely not independent of each other (hence there is autocorrelation). As the number of firms varies across countries, there is also the possibility that a country level variable coefficient may indicate significance due to a disproportionately larger sample size at the firm level. To address these potential issues, multilevel statistical techniques are used.

The results support the hypothesis that outperforming competitors in the past (positive attainment discrepancy) motivates R&D investment. The hypothesis predicting

that the national social cultural dimension of institutional collectivism in a firm's home country encourages R&D investment is supported. The dimensions of power distance and uncertainty avoidance in a firm's home country, as hypothesized are found to be negatively related to firm level R&D investment. The hypothesis predicting a positive association between firm home country future orientation and R&D investment fails to find support.

The theoretical contributions for each essay have been discussed in the introduction and discussion sections for each study. Overall, by drawing from and integrating social psychology theory with organizational theory, the dissertation furthers understanding of how individual decision makers (micro level) directly and indirectly influence corporate outcomes (macro level). Essays 1 and 2 focus on how a CEO's experience of power and gaining wealth impact cognitive processing of the acceptability of risk taking on behalf of the organizations s/he leads. Thus the dissertation addresses concerns put forth by Finkelstein et al. (2009: 69), that "substantial work needs to be done on the antecedents, or determinants of managers' cognitive models" and that "the distinct influence of different types of experience in shaping cognitions needs to be understood" (2009: 70). Essay 3, by combining behavioral theory of the firm assumptions with national social culture literature, enhances understanding of how the informal institutional environment in which the firm is embedded influences firm level strategies.

In sum, the dissertation seeks to respond to calls by organizational scholars to bridge micro and macro perspectives (Aguinis, Boyd, Pierce, & Short, 2011; Rousseau, 2011), to relate the firm and its strategies to its institutional context (Wright, Filatotchev, Hoskisson, & Peng, 2005), broaden the existing scope of executive compensation

research (Devers et al., 2007), and challenge traditional assumptions about agency theory predictions (Huse, Hoskisson, Zattoni, & Viganò, 2011). I hope the insights generated will provide motivation and greater flexibility to researchers interested in exploring links between decision makers and organizational outcomes.

The theorizing and findings of the dissertation essays have implications for practice. All three essays placed emphasis on the influence of decision makers' cognitive processing of the potential outcomes of risk taking decisions. Risk taking arguably has a prominent role in the job descriptions of the powerful men and women leading corporations in today's business environment. It may be the key to success or failure for these individuals as well as the organizations they lead. Awareness that fundamental attributes associated with the experience of being a CEO, power and compensation may have significant influence on how potential outcomes of risk taking decisions are cognitively processed, may assist CEOs in making more prudent and wise risk taking decisions on behalf of the organizations they lead. In addition, understanding that a firm's home country culture may influence the way risk taking and goal directed behavior is enacted may help managers make more informed decisions with respect to their own firm strategies as well as assessing competitors' actions.

Theoretical arguments and empirical results presented in the dissertation also offer direction to policy makers and board members at a time when there is an increased focus on enhancing or modifying management systems that will facilitate appropriate managerial risk taking. The recently (February 28, 2010) enacted Dodd-Frank Act, requiring board risk management committees for all U.S. publicly traded bank holding companies with total assets of \$10 million USD or more as well as for systemically

important publicly traded non-bank financial companies, highlights the relevance the key findings of this dissertation may have. Corporate directors as well as CEOs may find it useful to take into consideration not only the types of risks their firms are undertaking but as the research presented in the dissertation highlights, considering how organizational factors affect the underlying psychological processes of decision makers. This in turn may lead to more effective evaluation of the acceptability of strategic risk taking in organizations.

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**TABLE 1**  
**Correlations and Descriptive Statistics– Essay 1**

Variables	Mean	s.d.	VIF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 Strategic Risk Taking	970.4	2457.1																				
2 CEO power	0.01	2.26	1.95	.02																		
3 CEO exercisable stock options	7.32	3.29	1.55	.11	.09																	
4 CEO unexercisable stock options	5.63	3.39	1.47	.10	-.07	.49																
5 CEO ownership	8.79	2.80	1.31	.16	.31	.21	.07															
6 CEO cash compensation	7.05	0.88	1.61	.24	-.08	.35	.32	.05														
7 CEO gender	0.02	0.14	1.03	-.01	-.03	-.04	-.00	-.01	.06													
8 CEO age	56.1	7.53	1.45	.02	.21	.05	-.05	.15	.12	-.05												
9 New CEO	0.04	0.20	1.14	-.02	-.27	-.20	-.04	-.17	-.01	.03	-.06											
10 CEO tenure	10.26	9.33	2.71	-.07	.62	.00	-.13	.32	-.10	-.07	.47	-.24										
11 Board size	10.2	3.47	1.79	.27	-.06	.05	.03	.04	.17	-.01	.03	-.00	-.13									
12 Proportion of outside directors	0.80	0.10	1.23	.09	-.13	.09	.16	-.10	.25	.06	-.04	.01	-.27	.10								
13 Outside directors' average board tenure	7.47	3.31	1.28	.03	-.05	.00	-.06	.10	.02	-.02	.13	.00	.28	.01	-.08							
14 Prior Firm Performance	25.16	43.98	1.10	-.04	.03	.13	.21	.02	.10	.02	-.04	-.04	-.03	-.03	.02	-.07						
15 Unabsorbed slack	2.49	2.56	1.22	-.11	.05	-.02	-.05	-.03	-.20	-.02	-.03	-.01	.07	-.23	-.19	.04	-.03					
16 Potential slack	0.96	1.55	1.53	-.02	.01	-.04	-.03	-.04	-.02	.03	-.02	-.01	-.01	.09	-.02	-.02	-.01	-.02				
17 Firm size	7.39	1.62	1.95	.48	-.11	.19	.20	.19	.46	.02	.07	.02	-.14	.45	.22	.03	-.04	-.36	.02			
18 Firm age	43.00	38.37	1.21	.12	-.13	.00	-.02	.02	.13	.09	.13	.01	-.03	.23	.13	.22	-.07	-.16	.01	.25		
19 Discretion	4.75	1.27	1.19	-.10	.07	.03	.02	-.00	-.13	.04	-.15	.00	.04	-.24	-.12	-.05	-.07	.19	-.02	.23	-.15	

Correlations greater than .05 or less than -.05 are significant at  $p < .05$ .

**TABLE 2**

**Results of Generalized Least Squares Regression Models for Strategic Risk Taking**

Variables	Model 1: Controls		Model 2: Main Effects		Model 3: Power x Exercisable Stock Options		Model 4: Power x Unexercisable Stock Options		Model 5: Complete Model	
CEO ownership	0.09***	(0.02)	0.07***	(0.02)	0.08***	(0.02)	0.08***	(0.02)	0.08***	(0.02)
CEO cash compensation	0.02	(0.03)	0.01	(0.03)	0.00	(0.03)	0.01	(0.03)	0.00	(0.03)
CEO gender	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)
CEO age	-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.03)
New CEO	-0.01	(0.02)	0.00	(0.02)	0.00	(0.02)	0.00	(0.02)	-0.01	(0.02)
CEO tenure	-0.03	(0.03)	-0.07*	(0.04)	-0.06	(0.04)	-0.07*	(0.04)	-0.05	(0.04)
Board size	0.11***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.11***	(0.03)
Proportion of outside directors	0.01	(0.03)	0.00	(0.03)	0.00	(0.03)	0.00	(0.03)	0.00	(0.03)
Outside director' average board tenure	0.02	(0.03)	0.04	(0.03)	0.04	(0.03)	0.04	(0.03)	0.03	(0.03)
Prior firm performance	0.02	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)
Unabsorbed slack	0.04	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)
Potential slack	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Firm size	0.28***	(0.03)	0.27***	(0.03)	0.27***	(0.03)	0.27***	(0.03)	0.27***	(0.03)
Firm age	-0.01	(0.04)	0.00	(0.04)	0.00	(0.04)	0.00	(0.04)	0.00	(0.03)
Industry discretion	-0.02	(0.03)	-0.03	(0.03)	-0.03	(0.03)	-0.03	(0.03)	-0.03	(0.03)
Year 1	-0.02	(0.03)	-0.02	(0.03)	-0.02	(0.03)	-0.02	(0.03)	-0.02	(0.03)
Year 2	0.01	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)
Year 3	0.05	(0.03)	0.05	(0.03)	0.05*	(0.03)	0.05*	(0.03)	0.05*	(0.03)

CEO power		0.08 <sup>***</sup>	(0.03)	0.06 <sup>*</sup>	(0.03)	0.06 <sup>*</sup>	(0.03)	0.04	(0.03)
CEO exercisable stock options		0.04 <sup>*</sup>	(0.03)	0.04 <sup>*</sup>	(0.03)	0.04 <sup>*</sup>	(0.03)	0.04 <sup>*</sup>	(0.03)
CEO unexercisable stock options		0.05 <sup>*</sup>	(0.02)	0.05 <sup>*</sup>	(0.02)	0.05 <sup>*</sup>	(0.02)	0.05 <sup>**</sup>	(0.02)
CEO power x CEO exercisable stock options				0.05 <sup>**</sup>	(0.02)			0.05 <sup>**</sup>	(0.02)
CEO power x CEO unexercisable stock options						-0.04 <sup>*</sup>	(0.02)	-0.04 <sup>*</sup>	(0.02)
Wald $\chi^2$	220.68	241.10 <sup>***</sup>		246.68 <sup>***</sup>		244.92 <sup>***</sup>		252.31 <sup>***</sup>	
Change in Wald $\chi^2$		20.42 <sup>***</sup>		5.58 <sup>*</sup>		3.82		11.21 <sup>**</sup>	

\* p < .05, \*\* p < .01, \*\*\* p < .001

*N* = 1574 standardized regression coefficients are reported. Standard errors are in parentheses.



**TABLE 3****Mean Values of Variables by Industry**

<b>Variable</b>	<b>All industries</b>	<b>Communications</b>	<b>Defense</b>	<b>Paper &amp; Packaging</b>	<b>Oil &amp; Gas</b>
Number of observations	543	175	156	102	110
Number of Firms	124	37	35	24	28
Cross-border acquisition activity	0.47	0.46	0.59	0.45	0.35
CEO retirement pay	7.06	5.88	7.25	7.91	7.88
CEO in-the-money stock options	6.65	6.09	7.32	5.08	8.04
Industry discretion	4.36	5.28	4.90	3.74	2.71
CEO duality	0.68	0.59	0.78	0.69	0.69
CEO equity ownership	8.88	8.38	8.82	8.55	10.08
CEO cash compensation	6.88	6.80	6.89	6.85	7.03
CEO age	57.15	56.1	58.2	56.7	57.7
Firm age	69.18	71.5	69.5	84.9	50.4
Firm size	8.15	9.57	9.43	8.79	10.64
Prior firm performance	17.05	12.9	14.8	22.3	10.0
Foreign sales	42.45	46.2	41.3	35.4	44.6
Domestic acquisitions	0.81	0.88	1.03	0.49	0.71

**TABLE 4**

**Correlations and Descriptive Statistics – Essay 2**

Variables	Mean	Std. Dev.	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1 Cross-border acquisition activity	0.47	0.97													
2 CEO retirement pay	7.06	3.36	1.35	.18											
3 CEO in-the-money stock options	6.65	3.89	1.38	.16	.25										
4 Industry discretion	4.36	0.81	1.17	.07	-.18	-.08									
5 CEO duality	0.68	0.46	1.30	.17	.31	.22	-.01								
6 CEO equity ownership	8.88	2.17	1.46	.12	.27	.33	-.24	.28							
7 CEO cash compensation	6.88	1.08	1.32	.12	.30	.28	-.06	.17	.12						
8 CEO age	7.32	3.29	1.11	-.02	.09	-.00	-.03	.10	.20	.10					
9 Firm age	5.63	3.39	1.09	.12	.06	.08	.11	.13	.06	.06	-.10				
10 Firm size	8.79	2.80	1.29	.12	.28	.18	-.20	.19	.23	.30	-.01	-.08			
11 Prior firm performance	17.05	8.88	1.08	-.01	-.03	-.08	-.05	-.04	-.12	-.20	.00	.00	-.02		
12 Foreign sales	0.02	0.14	1.07	.11	.02	.02	.02	-.11	-.14	.05	-.01	.04	.09	-.03	
13 Domestic acquisitions	56.1	7.53	1.13	.35	.13	.17	.08	.14	.18	.18	-.01	.11	.16	-.02	-.00

Correlations greater than .05 or less than -.05 are significant at  $p < .05$ .

**TABLE 5**

**Results of Negative Binomial Regression for Cross-border Acquisition Activity**

Variables	Model 1: Controls		Model 2: Main Effects		Model 3: Industry Discretion Interactions		Model 4: CEO Duality Interactions		Model 5: Complete Model	
CEO equity ownership	0.13	(0.11)	0.07	(0.12)	0.06	(0.12)	0.06	(0.12)	0.04	(0.13)
CEO cash compensation	-0.02	(0.09)	-0.10	(0.10)	-0.13	(0.11)	-0.13	(0.10)	-0.16	(0.11)
CEO age	0.00	(0.12)	-0.04	(0.12)	-0.05	(0.12)	-0.08	(0.12)	-0.08	(0.12)
Firm age	0.09	(0.09)	0.07	(0.09)	0.06	(0.09)	0.07	(0.09)	0.05	(0.11)
Firm size	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.01)
Prior firm performance	0.06	(0.10)	0.06	(0.10)	0.04	(0.10)	0.04	(0.10)	0.02	(0.11)
Foreign sales	0.30**	(0.13)	0.27**	(0.12)	0.24*	(0.12)	0.26*	(0.12)	0.23*	(0.13)
Domestic acquisitions	0.19**	(0.07)	0.20**	(0.07)	0.17**	(0.07)	0.17**	(0.07)	0.14*	(0.06)
Year 1	0.12	(0.11)	0.14	(0.11)	0.12	(0.11)	0.13	(0.11)	0.10	(0.11)
Year 2	0.24**	(0.10)	0.22*	(0.10)	0.21*	(0.10)	0.21*	(0.10)	0.20*	(0.10)
Year 3	0.13	(0.10)	0.17	(0.11)	0.16	(0.11)	0.18*	(0.11)	0.18*	(0.11)
Year 4	0.12	(0.10)	0.14	(0.10)	0.14	(0.10)	0.15	(0.10)	0.16	(0.10)
Industry discretion	0.21*	(0.12)	0.24*	(0.12)	0.23	(0.15)	0.22*	(0.13)	0.22	(0.16)
CEO duality	0.37**	(0.12)	0.30**	(0.12)	0.26*	(0.12)	0.33**	(0.13)	0.31**	(0.13)
CEO retirement pay			0.22*	(0.13)	0.38*	(0.17)	0.20	(0.13)	0.35*	(0.18)
CEO in-the-money stock options			0.21*	(0.12)	0.18	(0.12)	0.19	(0.13)	0.16	(0.13)
CEO retirement pay X Industry discretion					-0.25	(0.19)			-0.27	(0.20)
CEO in-the-money stock options X					0.42***	(0.13)			0.45***	(0.13)

Industry discretion					
CEO retirement pay				0.04	(0.13)
X CEO duality					
CEO in-the-money				0.26*	(0.12)
stock options					
X CEO duality					
Wald $\chi^2$	39.91***	48.76***	58.46***	51.40***	61.17***
Change in Wald $\chi^2$		8.85*	9.70**	2.64	12.41*

\* p < .05; \*\* p < .01; \*\*\* p < .001      N = 543

Standardized regression coefficients are reported. Standard errors are in parentheses.

**TABLE 6**

**Correlations and Descriptive Statistics with GLOBE Measures – Essay 3**

	Mean	Std. Dev.	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1 R&D Investment	3.38	1.33													
2 Attainment discrepancy	-0.07	0.33	1.28	0.26*											
3 Future orientation	4.16	0.15	1.76	0.36*	0.05										
4 Institutional collectivism	4.74	0.43	2.24	0.11*	-0.22*	-0.02									
5 Power distance	5.18	0.28	5.63	-0.45*	-0.28*	-0.49*	0.34*								
6 Uncertainty avoidance	4.18	0.45	3.32	0.16*	0.03	0.43*	-0.25*	-0.64*							
7 Potential slack	0.35	0.14	1.44	-0.23*	0.16*	0.00	0.07	0.20*	-0.15*						
8 Unabsorbed slack	-0.01	0.08	1.22	0.22*	0.13*	0.06	0.00	-0.23*	0.01	-0.22*					
9 Firm size	6.60	1.97	2.44	0.26*	0.28*	0.27*	-0.07	-0.65*	0.39*	0.07	0.26*				
10 Firm age	58.2	39.8	1.30	0.26*	0.09*	0.39*	-0.08*	-0.31*	0.28*	-0.19*	0.12*	0.15*			
11 Shareholder protection	6.21	1.26	5.66	0.11	0.21*	0.34*	-0.62*	-0.55*	0.60*	-0.14*	0.03	0.34*	0.23*		
12 Financial system support	6.59	1.42	4.32	0.10	0.25*	0.26*	-0.64*	-0.51*	0.45*	-0.11*	0.01	0.25*	0.19*	0.65*	
13 GDP per capita	26.36	13.3	2.82	0.42*	0.20*	0.16*	-0.03	-0.59*	0.08*	-0.25*	0.31*	0.57*	0.23*	0.21*	0.16*

\*p < .05

**TABLE 7**

**Correlations and Descriptive Statistics with Hofstede Measures – Essay 3**

	Mean	Std. Dev.	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1 R&D Investment	3.38	1.33													
2 Attainment discrepancy	-0.07	0.33	1.27	0.26*											
3 Long term	59.14	14.75	9.82	0.13*	-0.24*										
4 Individualism	52.47	26.78	6.12	0.27*	0.30*	-0.88*									
5 Power distance	53.36	14.75	11.41	-0.43*	-0.18*	0.69*	-0.66*								
6 Uncertainty avoidance	62.67	22.85	5.07	0.18*	-0.16*	0.68*	-0.60*	0.12*							
7 Potential slack	0.35	0.14	1.45	-0.24*	0.16*	0.21*	-0.19*	0.29*	0.11*						
8 Unabsorbed slack	-0.01	0.08	1.23	0.22*	0.13*	-0.17*	0.19*	-0.32*	0.06	-0.22*					
9 Firm size	6.60	1.97	2.41	0.25*	0.28*	-0.35*	0.42*	-0.65*	-0.04	0.06	0.26*				
10 Firm age	58.2	39.8	1.19	0.25*	0.09*	-0.29*	0.33*	-0.33*	-0.15*	-0.19*	0.12*	0.15*			
11 Shareholder protection	6.21	1.26	7.00	0.10*	0.21*	-0.79*	0.69*	-0.52*	-0.71*	-0.15*	0.02	0.33*	0.23*		
12 Financial system support	6.59	1.42	4.18	0.10*	0.24*	-0.68*	0.65*	-0.40*	-0.63*	-0.11*	0.01	0.25*	0.19*	0.86*	
13 GDP per capita	26.36	13.3	7.58	0.44*	0.21*	-0.47*	0.53*	-0.87*	0.13*	-0.25*	0.32*	0.61*	0.25*	0.24*	0.18*

\*p < .05

**TABLE 8**

**Results of Hierarchical Linear Modeling for R&D Investment**

	Model 1		Model 2		Model 3		Model 4	
	Controls Only		Attainment Discrepancy		Full Model with GLOBE National Culture		Full Model with Hofstede National Culture	
	b	S.E.	b	S.E.	b	S.E.	b	S.E.
<b>Firm Level</b>								
Potential slack	0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Unabsorbed slack	0.44	0.35	0.37	0.35	0.39	0.35	0.32	0.37
Firm size	0.02	0.07	0.02	0.07	-0.01	0.07	-0.03	0.08
Firm Age	0.01†	0.00	0.01†	0.00	0.01†	0.00	0.01†	0.00
Attainment discrepancy			0.32**	0.12	0.31**	0.12	0.31**	0.12
<b>Country Level</b>								
Shareholder protection	0.06	0.05	0.04	0.05	0.04	0.05	0.05	0.05
Financial system support	-0.02	0.05	-0.02	0.04	-0.02	0.04	-0.03	0.04
GDP per capita	-0.01†	0.01	-0.01	0.01	-0.01	0.01	-0.02	0.01*
GLOBE Future Orientation					0.74	1.08		
GLOBE Institutional Collectivism					0.88**	0.36		
GLOBE Power Distance					-2.88***	0.85		
GLOBE Uncertainty Avoidance					-0.90*	0.44		
HOFSTEDE Long Term Orientation							0.02†	0.01
HOFSTEDE Individualism							0.03*	0.01
HOFSTEDE Power Distance							-0.04*	0.02
HOFSTEDE Uncertainty Avoidance							0.02	0.01

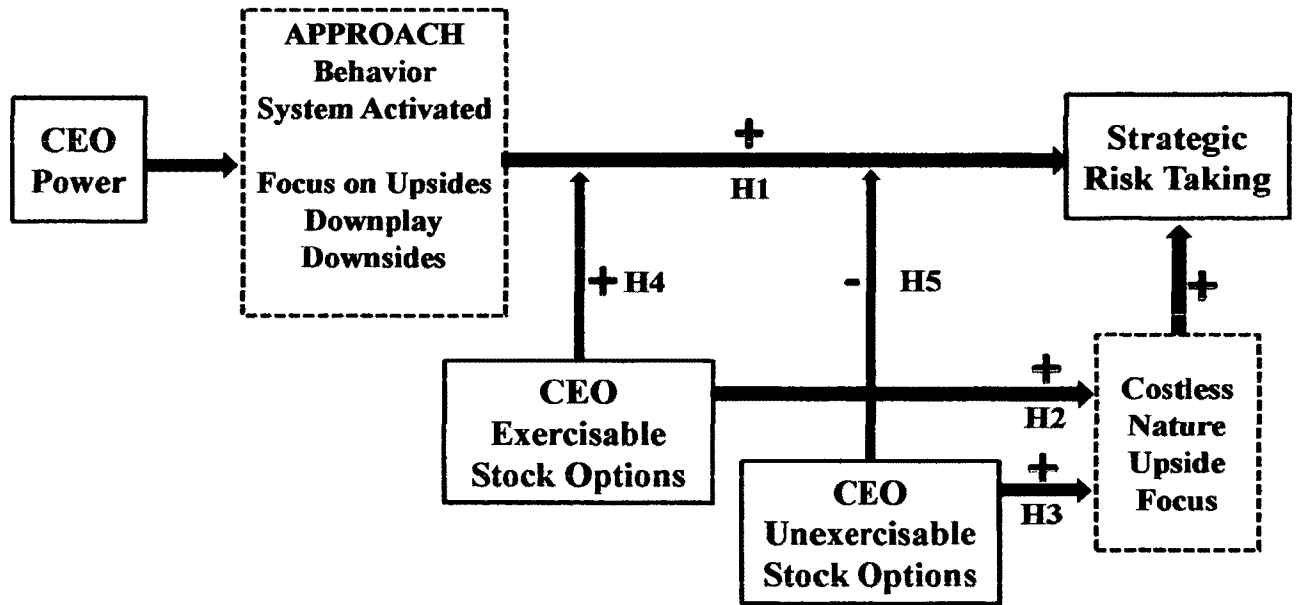
Wald $\chi^2$	8.70	15.8*	38.7***	41.7***
Change in Wald $\chi^2$		7.1**	30.0***	33.0***

† p < .10; \* p < .05; \*\* p < .01; \*\*\*p < .001

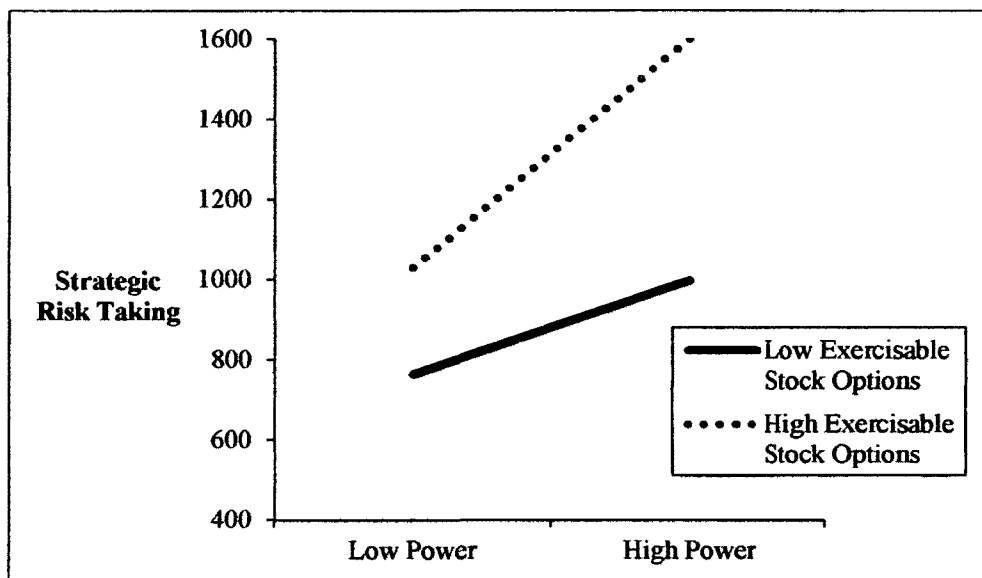


FIGURE 1

**Model for Direct and Interactive Effects of CEO Power and the Accumulated Value of Exercisable and Unexercisable Stock Options**



**FIGURE 2**  
**Interaction between CEO Power and the Accumulated Value of**  
**Exercisable Stock Options**



**FIGURE 3**  
**Interaction between CEO Power and the Accumulated Value of**  
**Unexercisable Stock Options**

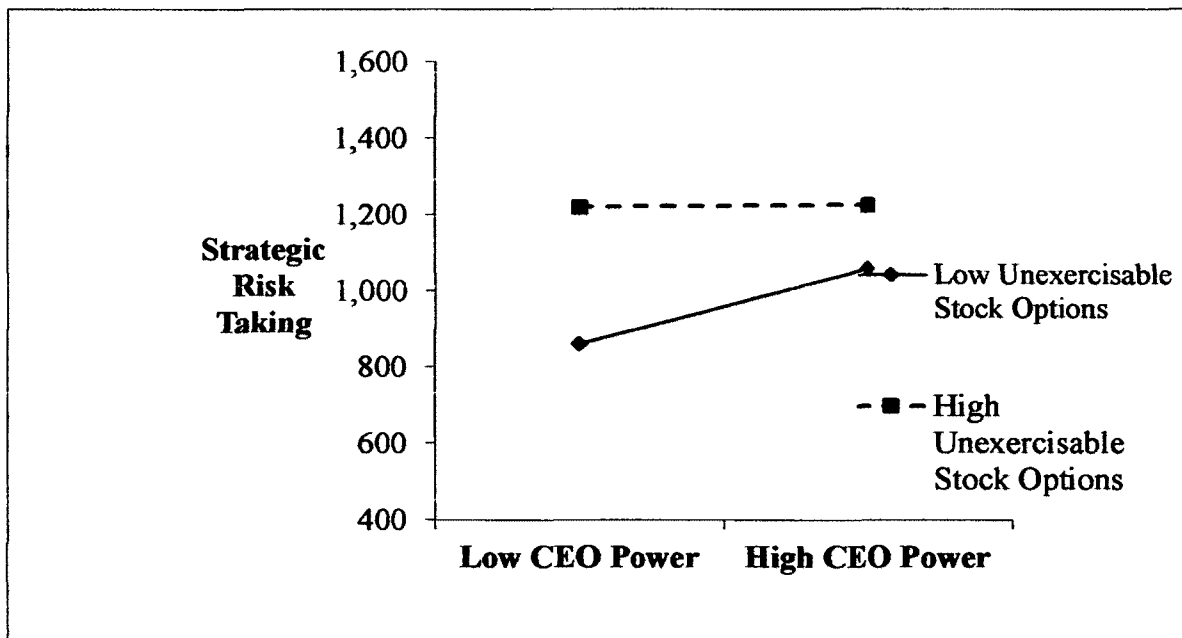
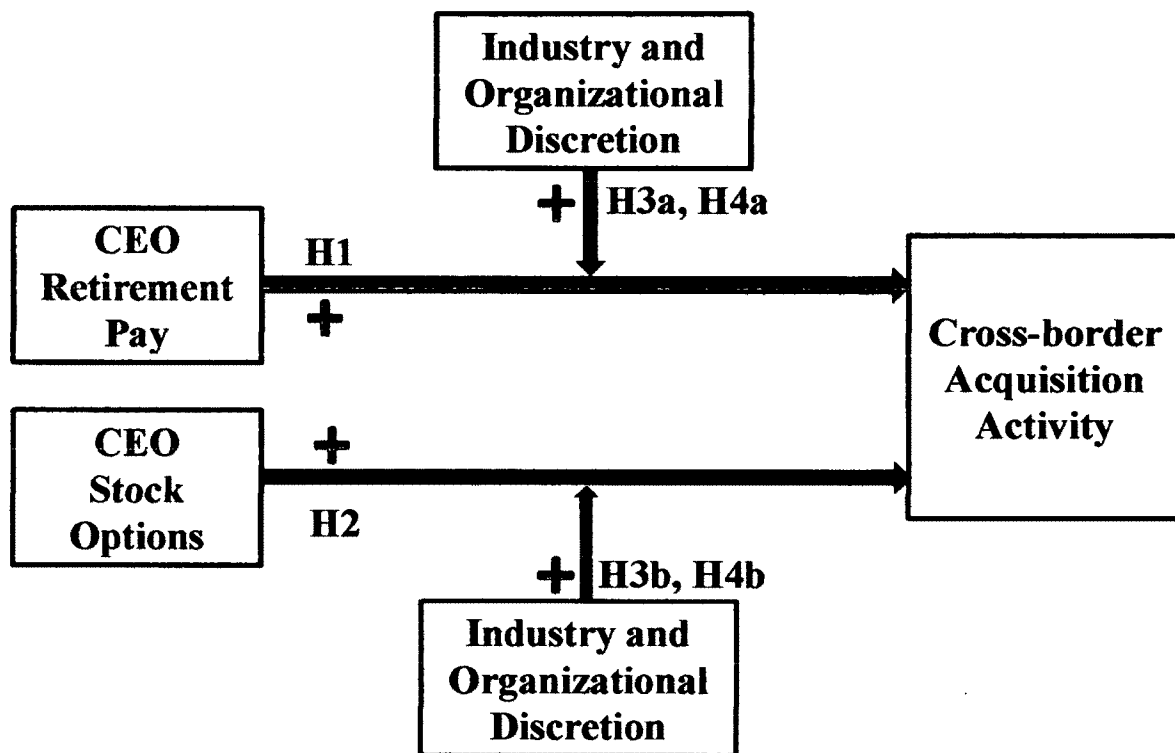
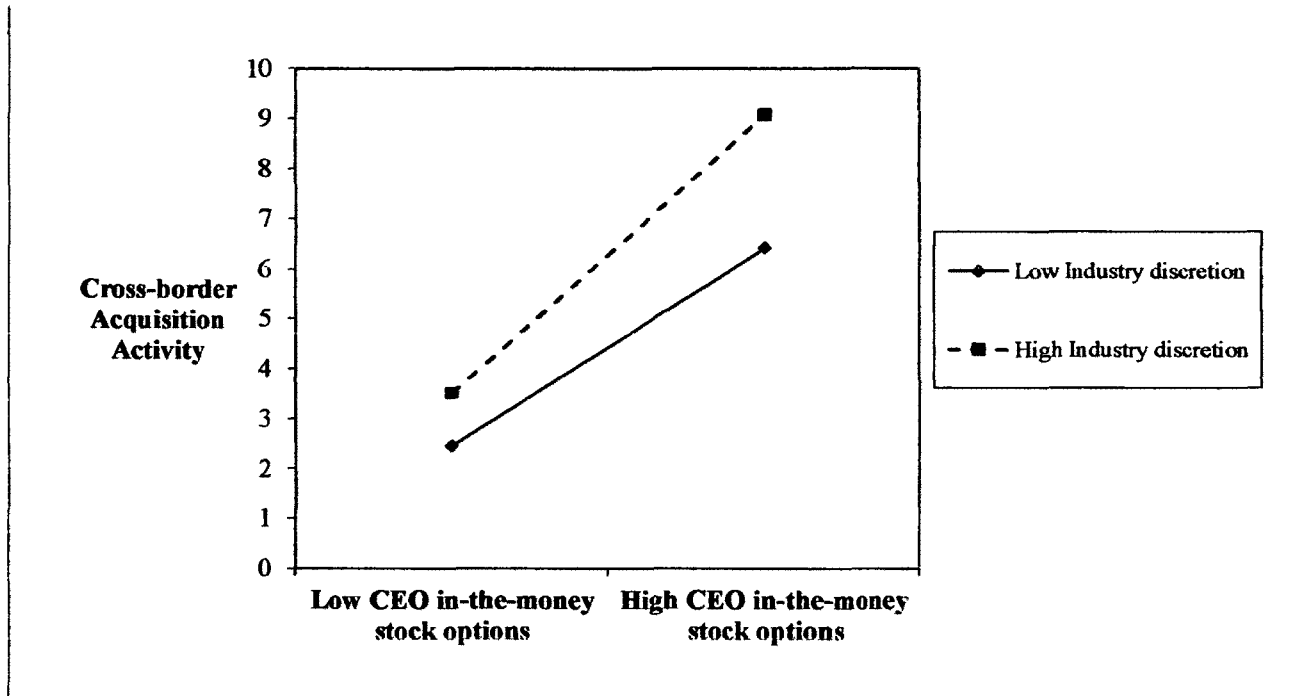


FIGURE 4

**Model of the Relationships between CEO Retirement Pay and in-the-money Stock Options with Cross-border Acquisitions**



**FIGURE 5****Moderating Influence of Industry Discretion on the Relationship between CEO in-the-money Stock Options and Cross-border Acquisitions**

**FIGURE 6**  
**Moderating Influence of CEO Duality on the Relationship between CEO in-the-money Stock Options and Cross-border Acquisitions**

