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## THE ACCENTUATED CEO CAREER HORIZON PROBLEM: EVIDENCE FROM INTERNATIONAL ACQUISITIONS

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*We develop a conceptual model of the career horizon problem of CEOs approaching retirement and discuss its implications on firm risk taking, specifically in engagement in international acquisitions. Based on prospect theory and agency theory, we emphasize the legacy conservation and wealth preservation concerns of CEOs and investigate how their holdings of in-the-money unexercised options and firm equity accentuate or mitigate the career horizon problem. The model is tested in the context of international acquisitions with a sample of 293 U.S. firms over a five-year period (1995–1999). We find that a longer CEO career horizon is associated with a higher likelihood of international acquisitions. We also find that CEOs nearing retirement with high levels of in-the-money unexercised options and equity holdings are less likely to engage in international acquisitions than CEOs with low levels of in-the-money options and equity holdings. The study raises important considerations about the implications of CEOs' equity and in-the-money option holdings on firm risk taking at various stages of their career horizon. Copyright © 2008 John Wiley & Sons, Ltd.*

### INTRODUCTION

Agency theory suggests that the longer the duration of a relationship between an agent and a principal, the more efficient it is (Eisenhardt, 1989). In fact, a long-term relationship reduces the risks on agents from fluctuations in the performance of the firm due to factors outside their control. Similarly, it allows the principal to accurately detect moral hazard (Holmstrom, 1979). Long-term relationships also eliminate the propensity of agents to shirk as short-term oriented actions are balanced by long-term accountability (Fama, 1980; Jensen and Meckling, 1976; Williamson, 1991). A specific consideration of the duration of a relationship

between agents and principals is the case of the career horizon of a chief executive officer (CEO), as the benefits of long-term relationships can be compromised when a CEO approaches retirement.

Retirement is an instance of career assessment for CEOs. Relying on myopic loss aversion (Bernartzi and Thaler, 1999), we propose that CEOs nearing retirement exhibit growing aversion to risk. Concerns for conserving a legacy of success induce avoidance of risky strategic choices that can dampen down firm performance in the short run, and hence taint the CEOs' reputations in their last years of employment. In a sense, myopic considerations near retirement will focus CEOs on the short-term implications of their strategic investments rather than long-term considerations of firm growth (Gibbons and Murphy, 1992). Further, although stock options and equity are often presented as a remedy to the short-term orientation of agents (Dechow and Sloan, 1991),

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such alignment can prove less than straightforward near retirement. Long-term payoffs from options and equity are less applicable to CEOs soon to depart their firms. Moreover, extensive substitution of contingent pay for cash compensation (Murphy, 1999; Guay, 1999) leaves CEOs approaching retirement with significant firm-specific wealth in accumulated equity and unexercised option holdings whose value and realized gains are important components in CEOs' postretirement wealth. As the value of equity holdings and the realized gains on unexercised options are directly exposed to firm stock price and its fluctuations around retirement, CEOs aiming to preserve these holdings will further avoid strategic risky investments that can increase variation in their value. Hence, accumulated firm-specific wealth in options and equity will accentuate risk aversion from legacy conservation concerns.

Thus, we develop an 'accentuated career horizon problem' for CEOs approaching retirement, and we test it in the context of international acquisitions. Acquisitions are considered a form of risk taking (Kahneman and Lovallo, 1993). They present high possibilities of loss and heighten uncertainty about a firm's future income stream. They involve significant up-front costs that require digestion time (Lee and Caves, 1998) for value creation to materialize, as the firm needs to integrate the acquired target and eliminate redundancies (Woodcock, Beamish, and Makino, 1994). Moreover, their international context places significant strain on executives, as it requires a sufficient understanding of the global environment (Hoffman and Gopinath, 1994), specific managerial and leadership skills (Morrison, 2000), and a substantial level of cognitive complexity and strategic dexterity (Carpenter, Sanders, and Gregersen, 2001; Sanders and Carpenter, 1998). Finally, international acquisitions have been associated with the personal motives of CEOs of the acquiring firms, with failure of acquisitions sometimes attributed to their opportunism (Berkovitch and Narayanan, 1993; Seth, Song, and Pettit, 2000, 2002; Grinstein and Hribar, 2004).

Hence, in the context of international acquisitions, we raise the following questions: How does the career horizon of a CEO affect a firm's engagement in international acquisitions? Is the career horizon effect on engagement in international acquisitions accentuated or mitigated by the CEO's holdings of stock options and equity? Using

a longitudinal sample from 1995–1999 for 293 U.S.-incorporated firms, we find that a longer CEO career horizon is associated with a higher likelihood of international acquisitions. We also find that equity and in-the-money option holdings accentuate the career horizon problem, with high values of in-the-money options and equity holdings further reducing the likelihood of international acquisitions for CEOs near retirement.

### The empirical context: international acquisitions

The study of acquisitions as a context for risk taking and executive compensation is not unprecedented (May, 1995; Bliss and Rosen, 2001; Sanders, 2001; Eisenmann, 2002; Grinstein and Hribar, 2004). Specifically, international acquisitions, a widespread mode of firm internationalization (Reuer, Shenkar, and Ragozzino, 2004; UNCTAD, 2000; Newbury and Zeira, 1997), provide an interesting context of study given their augmented risk associated with internationalization. In fact, international acquisitions heighten the uncertainty about a firm's future income stream as returns from internationalization often cannot be predicted *ex ante* and possibilities of failure or loss are high (Lu and Beamish, 2004; Shrader, Oviatt, and McDougall, 2000; Mitchell, Shaver, and Yeung, 1994; Roth, 1992). For example, Denis, Denis, and Yost (2002) find that internationalization destroys firm value because of suboptimal investments and high costs of coordination and monitoring. Shrader *et al.* (2000) explicitly propose that 'internationalization is considered inherently risky because it may involve loss of profits and/or assets. . . ' (Shrader *et al.*, 2000: 1227). Carpenter, Pollock, and Leary (2003) stress that managers perceive internationalization as risky because of uncertain future returns and occurrences of failure. As Lee and Caves (1998) succinctly note: 'That FDI is a risky business is a commonplace observation' (Lee and Caves, 1998: 576). This is particularly true given the high digestion and transaction costs involved in establishing a presence in foreign cultural and institutional contexts (Lu and Beamish, 2004).

Besides soaking up the uncertainties of internationalization, international acquisitions are equity-based modes of foreign market entry. Compared to non-equity modes (exporting and contractual

agreements), they entail more resource commitment, financial disbursement, structural adjustments, and control (Gaba, Pan, and Ungson, 2002; Pan and Tse, 2000; Agarwal and Ramaswami, 1992). For instance, Woodcock *et al.* (1994) highlight the costs of searching for an appropriate international target, the problematic process of valuating targets given uncertainty in international contexts, and information asymmetry between the acquiring firm and the foreign target. Newbury and Zeira (1997) emphasize that equity acquisitions, often completed within significant time constraints, lead to substantial financial risk and uncertain large disbursements. Moreover, capturing value in an international acquisition in a short amount of time is doubtful (Reuer *et al.*, 2004). Due to information asymmetry, bottlenecks in post-acquisition management and control could limit synergy and create redundancies; for that, Woodcock *et al.* (1994) deem international acquisition as the least efficient mode of foreign market entry. Moreover, acquisitions seem to lead to more loss than greenfield foreign entries; Lee and Caves (1998) state that, 'Foreign subsidiaries started by acquisition of a business unit seem more likely to be divested or liquidated subsequently than one started anew ("greenfield")' (Lee and Caves, 1998: 568).

In addition to jeopardizing short-run income stream, announcements of international acquisitions do not generally generate positive market reactions. Markides and Ittner (1994) argue that international acquisitions on average create no value for acquiring firms, and their results show that value when created is very short lived as they note that 'for the ten days following the announcement day, the abnormal returns appear random and cancel each other out, so that no real value change occurs during this period' (Markides and Ittner, 1994: 354). Eun, Kolodny, and Scheraga (1996), in an analysis of market reactions to international acquisitions, find that cumulative abnormal returns were negative for the acquirer, and that shareholders of the acquiring firms experienced wealth reductions in 50 cases out of 103, with a negative overall change in acquirers' shareholder wealth.

All these elements emphasize that international acquisitions are costly, heighten uncertainty about the firm's short-run income stream, and can jeopardize immediate market returns. Studies in managerial risk emphasize that managers are particularly concerned with uncertainty about the future

income stream of their firms (Libby and Fishburn, 1977; Fiegenbaum and Thomas, 1988; Miller and Reuer, 1996). Uncertainty in income stream leads to market discounts of future cash flows and increases stock price fluctuation or deterioration, given decline in earnings. For CEOs, international acquisitions would then represent risky strategic investments as their effects impinge on the assessment of CEOs' performance; shareholder wealth destruction, especially in international acquisitions, is often ascribed to opportunistic motives of managers in acquiring firms (Berkovitch and Narayanan, 1993; Seth *et al.*, 2000, 2002; Grinstein and Hribar, 2004). Moreover, CEOs hold significant firm-specific wealth in unexercised options and equity that is directly jeopardized by stock price fluctuations or deteriorations. This is particularly important for CEOs approaching retirement, as legacy conservation and wealth preservation are central to the accentuated career horizon problem we next develop.

### The CEO career horizon problem

Career horizon concerns relate mainly to the stage of the career of a CEO. The nearer a CEO is to retirement, the shorter is the career horizon. The implications of a shorter career horizon on risk taking are important. Strategic investments have considerable bearing on CEOs' reputations and wealth and also on a firm's strategy. In fact, Gray and Cannella (1997) note that an executive's age could influence the time horizon considerations in the decision-making process. Vroom and Pahl (1971) argue that older executives are risk averse and overemphasize career stability and security (Hitt and Tyler, 1991; Wiersema and Bantel, 1992). We propose that an implication of a short career horizon of CEOs is a growing aversion to risk aimed at preserving success. Informed by prospect theory (Kahneman and Tversky, 1979), we distinguish a basic motive in the career horizon problem for CEOs: legacy conservation.

Retirement is an instance of assessment and evaluation of a CEO's career. Prospect theory indicates that decision makers avoid risk the closer they are to the evaluation of their choices. For instance, Kahneman and Lovallo (1993) show that deferral of outcomes and particularly 'blame' increases the ability of a decision maker to consider the various facets of a decision and take more risks. However, under imminent assessment

of the outcome of a choice, decision makers act in a short-term manner. In corroboration, studies on regret indicate that decision makers anticipate their ability to undo the effects of a regretted choice after a decision is made (Gilovich and Medvec, 1995); inability to undo the effect of a regretted choice leads to higher aversion to risk (Josephs *et al.*, 1992).

The willingness of CEOs to maintain a legacy of success implies an increasing risk aversion near retirement, given limited ability and time to reverse any performance downfall. Risky choices could well endanger the performance of the firm and taint the legacies of CEOs with the bad performance of their last years of employment. In fact, perceptions of CEOs' skills and reputations are often based on the success of their firms, and there is a close association between CEOs' perceived human capital and their success in their present employment position (Smith and Watts, 1992; Harris and Helfat, 1997; Hayward, Rindova, and Pollock, 2004). CEOs whose companies underperform or go bankrupt, face the attributions of incompetence and mismanagement. For instance, Eckbo and Thornburn (2003) find that trustees involved in the liquidation of bankrupt firms attribute 32 percent of bankruptcy cases to CEO incompetence. Also, CEOs sometimes extend their careers beyond retirement through directorship positions in other firms. Brickley, Linck, and Coles (1999) find that eight percent of the CEOs continue to hold director positions with their own firm or other firms for two or three years after retirement. Deterioration in firm performance presents considerable threat to the reputation of the CEO and limits possibilities of holding consulting positions and board appointments postretirement.

Consequently, we propose that CEOs facing a short career horizon would minimize the risk to their legacies and become more inclined to forego risky long-term investments (Bryan, Hwang, and Lilien, 2000). Although such risky strategic choices could provide rewards to shareholders and the CEO's successor, they might jeopardize current returns and adversely affect the present CEO's reputation and wealth (Murphy and Zimmerman, 1993; Berger, Ofek, and Yermack, 1997). In the context of international acquisitions, studies have not supported immediate gains to the firm (Markides and Itner, 1994), but rather indicated significant digestion costs and complexities in the short term. Moreover,

given ascription of managerialism in negatively performing international acquisitions (Berkovitch and Narayanan, 1993; Seth *et al.*, 2000; Grinstein and Hribar, 2004), international acquisitions represent serious risks to the reputation and legacy of the CEO. Hence, we propose that CEOs with a long career horizon (not near retirement) are more likely to engage in international acquisitions than CEOs with a short career horizon (near retirement).

*Hypothesis 1: There is a positive relationship between a CEO's career horizon and the likelihood of firm engagement in international acquisitions.*

### **Toward an accentuated CEO career horizon problem**

CEOs accumulate a large amount of firm-specific wealth through ownership of firm equity and repeated grants of stock options. In the United States, equity-based incentives represent a substantial portion of CEO pay. Murphy (1999) shows that in 1996, 76 percent of the median income of a U.S. CEO in the Standard & Poor's (S&P) 500 Industrials was contingent on firm performance in bonus, stock options, or equity awards. Payoffs from equity-based incentives are deferred; for instance, most grants of options have a maturity of five or 10 years (Hall, 2000) and equity holdings are often subject to target ownership levels for CEOs to maintain during employment (Core and Larcker, 2002). The deferral of payoffs from equity-based incentives is proposed to align CEOs' income with the long-term performance and growth of the firm. Yet, the retirement context raises particular considerations for the accumulated holdings in options and equity.

In fact, CEOs reduce their financial ties with the firm near departure (Carpenter, 2000), and unexercised options are forfeited upon departure from office if they are not vested or not in-the-money (Hall and Murphy, 2003). Consequently, retirement represents a moment of cash out, where gains from cumulated unexercised options and equity holdings are materialized. This is particularly important as CEOs are less diversified than shareholders (Bryan *et al.*, 2000) and equity incentives have often substituted for cash compensation in the composition of their pay (Beatty and Zajac, 1994; Murphy, 1999). Consequently, their personal wealth in unexercised options and equity holdings

represents a significant component in their postretirement wealth that can allow them to maintain the standard of living of their present employment.

The inclination to maintain levels of wealth is driven by considerations of 'adaptation' and 'habituation,' as individuals update their expectations of wealth following their most recent levels of wealth and income (Kahneman and Thaler, 1991). However, with respect to CEOs' firm-specific wealth, its value is closely tied to the level and fluctuation in the firm's stock price around retirement. Rather than being a sure gain, equity and unexercised options remain wealth at risk, and their value needs to be preserved. Prospect theory indicates that wealth preservation leads to increasing risk aversion and avoidance of choices that cause variations to the value of wealth. As decision makers are loss averse, they are variance avoidant in the context of gain (Kahneman and Tversky, 1979). This is further compounded under myopic considerations of retirement. For instance, Thaler *et al.* (1997) argue that the attractiveness of a risky asset, such as stock options or firm equity in the context of CEOs, is dependent on the time horizon of the holder. When faced with a short-term horizon, preference is for preserving realized gains (Tversky, Slovic, and Kahneman, 1990). Similarly, Benartzi and Thaler (1999) show that decision makers take more risks in repeated gambles the more time they have to cash out. Further, Kahneman and Lovallo (1993) indicate that myopic loss aversion in a situation of gain (accumulated wealth) leads to risk avoidance, and avoidance of choices (like capital investments, new product development, or acquisitions) that increase variation in the amount of these gains. Consequently, for CEOs with short career horizons, preservation of value of equity holdings and gains from options holdings would augment risk aversion from legacy conservation concerns and further reduce the likelihood of engagement in strategic investments that could increase uncertainty or fluctuations in the value of these gains.

However, preservation would be more potent for wealth that is endowed by CEOs and that they incorporate into their assessment of personal wealth. The concept of endowment (Thaler, 1980; Wiseman and Gomez-Mejia, 1998; Miller and Shapira, 2004) indicates that people value more what they own than what they could own, and they require much more to give it up than they would be willing to pay to acquire it, hence an ensuing risk

aversion with respect to the value of the endowed wealth. The endowment effect is more pronounced for wealth that can be immediately used for consumption than wealth that is received for *resale* (Kahneman, Knetsch, and Thaler, 1991). Given that equity and option holdings differ in availability for immediate consumption along the career horizon of the CEO, it remains important to distinguish what is endowed for CEOs from their equity and option holdings.

CEOs' equity holdings represent a significant amount of personal wealth. Specifically, they represent an endowed wealth, given equity is immediately available to possibly sell and use proceeds for consumption. However, given target ownership levels on CEOs in their firms, this endowment is particularly pronounced when CEOs are nearing cash out. Like any risky prospect, the value of equity holdings is sensitive to the time left to hold them. Equity investors are more risk averse if they have a short investment horizon rather than a long one, given investors' assumption that risk is smoothed out over the life of an investment (Anderson and Settle, 1996; Clotfelter and Cook, 1993). When faced with a short investment horizon, investors aim at locking in gains (Shfrin and Statman, 1985). Moreover, equity holdings are surer gains than unexercised options (Hall, 2000) and they represent large amounts of wealth. Prospect theory indicates that an individual's loss aversion is commensurate with the possible loss in comparison to his or her present state (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981). Hence, the preservation of the value of CEOs' equity holdings will be central near retirement. Given that international acquisitions increase uncertainty about future income stream and could increase fluctuations in stock price, the value of a CEO's holdings in firm equity can be jeopardized by engagement in international acquisitions. It follows that acting in wealth preservation, CEOs near retirement and holding large values of firm equity will be less willing to engage in international acquisitions than CEOs near retirement who are holding lower values of firm equity.

*Hypothesis 2: CEO equity holdings moderate the relationship between CEO career horizon and the likelihood of engagement in international acquisitions, with higher value of equity holdings making this relationship more positive.*

CEOs throughout their tenure are also granted many options by their compensation committees; these grants cumulate to form significantly valuable firm-specific wealth. Though less straightforward than equity holdings, whether option holdings are considered as endowed wealth to be preserved requires particular consideration. For example, Sanders (2001), among many scholars, argues that deterioration in the value of stock options in cases of depreciation of the firm's stock price is not framed as an actual loss for CEOs. In other words, being an entitlement to future windfalls that might not materialize, options might not represent a form of wealth that is endowed and to be preserved. These arguments particularly hold when considering options at time of grant, that is, before they vest and go deep in-the-money.

The risk taking implications of option holdings substantially differ between their time of grant (with uncertainty about potential gains) and when they are in-the-money (Wiseman and Gomez-Mejia, 1998). In fact, as options become in-the-money (stock price exceeds grant price), a CEO's potential gain from option holdings becomes attainable rather than potential, and unexercised in-the-money options would then represent wealth that is available for consumption upon exercise (through income from their spread at exercise). In that sense, Wiseman and Gomez-Mejia (1998) emphasize that options that are in-the-money could be considered as endowed wealth, at least partially. An equally important factor is that options are partly offered in lieu of other forms of pay (Beatty and Zajac, 1994). The substitution effect between cash compensation and stock options favors their endowment as they are cumulated by CEOs as part of income earmarked for consumption. Consequently, CEOs would incorporate the value of their holdings of unexercised in-the-money options (at least partially) into their personal wealth assessments.

When a CEO leaves office, unvested and out-of-the-money options are forfeited (Hall and Murphy, 2003). Hence, realized gains on in-the-money unexercised option holdings represent a significant component in post-retirement wealth, which will exacerbate their importance in a CEO's personal wealth considerations near retirement. Wealth preservation near retirement would imply that the CEO will avoid risky choices that could jeopardize realized gains from these option holdings: increases in instability in stock price can reduce

realized gains or drive options out-of-the-money. The higher the value of in-the-money options, the larger is the endowed wealth for CEOs to preserve, and the more aggravated their risk aversion near retirement. In the context of international acquisitions, the uncertainty about future income streams and possible market discounts of firm returns imply that CEOs near retirement who are holding large values of in-the-money unexercised options will be less willing to engage in international acquisitions than CEOs near retirement who are holding lower values of in-the-money unexercised options.

*Hypothesis 3: In-the-money CEO option holdings moderate the relationship between CEO career horizon and the likelihood of engagement in international acquisitions, with higher value of in-the-money option holdings making this relationship more positive.*

## METHODS

Hypotheses are tested using a longitudinal sample from 1995–1999 for 293 public U.S.-incorporated firms. The choice of the firms was dictated by (1) the availability of internationalization data, (2) the availability of compensation data on its CEO, (3) availability of its financial data, and (4) having the same CEO for the whole period of the study. The sample includes firms from various industries. An extensive reliance on several sources of data was necessary for the study. Data sources included S&P's COMPUSTAT industry surveys between 1995 and 1999; U.S. Securities and Exchange Commission's (SEC) EDGAR database for company filings ([www.sec.gov/edgar.shtml](http://www.sec.gov/edgar.shtml)); Thomson Financial's SDC Platinum Mergers and Acquisitions database (1995–1999); Dun & Bradstreet's *Reference Book of Corporate Management*, (1996–2000); Marquis *Who's Who in Finance and Industry*, 1994–1995 (1997); Mergent Online for the period 1995–1999 (<http://www.mergentonline.com>); and S&P's NetAdvantage for ([www.netadvantage.standardandpoor.com](http://www.netadvantage.standardandpoor.com)) for the same period.

### Dependent variable

#### *Engagement in International Acquisitions*

A binary dependent variable was coded at 1 when an international acquisition took place during the

year, 0 if otherwise. Data on international acquisitions were collected from SDC Platinum.

### Independent variables

#### *CEO career horizon*

The variable was measured as the *Time to retirement* for a CEO as it captures the remaining career horizon of a CEO. It was calculated as 70 (retirement age and a few years of service on boards) minus the age of the CEO; the younger the CEO, the longer his or her career horizon.<sup>1</sup>

#### *CEO in-the-money options holdings*

To emphasize the 'value at loss,' we measure value of stock options holdings as the natural logarithm of the Black-Scholes value of *vested and unvested in-the-money options* held by the CEO. Data were collected from the SEC filings.

#### *CEO equity holdings*

To emphasize the 'value at loss,' we measure the value equity holdings as the natural logarithm of the market value of shares owned by the CEO at year end, in line with Sanders (2001). Equity data were collected from the SEC filings and stock prices were collected from S&P's COMPUSTAT.

### Controls

We control for various factors that affect risk taking, including individual characteristics of CEOs, their cash compensation, the firm's characteristics, and industry classification.

#### *CEO educational level*

Prospect theory indicates that competence affects individual choices under risk (Tversky and Koehler, 1994). For instance, Wiersema and Bantel (1992) found executives with higher levels of education more open to innovation and risky investments. We hence control for the educational level by an ordinal measure equal to 1 if the CEO has an undergraduate degree, 2 for a Master's degree, 3 for a Ph.D., and zero otherwise. Data

were collected from Dun & Bradstreet's *Reference Book of Corporate Management*, (1996–2000).

#### *CEO functional background*

Risky choices are affected by the competence of the decision maker (Heath and Tversky, 1991), hence we control for the functional background of the CEO along the lines of Finkelstein and Hambrick (1996), who argue that executives with backgrounds in output functions (R&D, engineering, marketing, and sales) take more risks than executives in input functions (accounting, finance, production, and administration). It is measured by a dummy variable equal to 1 if the CEO has a career background in output functions, 0 otherwise. Data were collected from Dun and Bradstreet's *Reference Book of Corporate Management*, (1996–2000).

#### *CEO international experience*

We control for the international experience of the CEO, given the role of individual competence in risk perceptions (Tversky and Koehler, 1994). We include a dummy variable that is equal to 1 if (1) the CEO was born outside the United States, or (2) the CEO's biography indicates work assignment outside the United States or having served as an expatriate, or (3) the CEO had previously headed the international sales or another international division of a firm. Data were collected from Dun & Bradstreet's *Reference Book of Corporate Management*, (1996–2000).

#### *CEO tenure*

We control for tenure to capture employment concerns related to present position (Miller, 1991) and to distinguish between tenure and career horizon effects. It is measured as the number of years the executive has been serving as CEO. Data were collected from SEC filings.

#### *CEO salary and bonus*

Risky choices are altered by the level of wealth of the decision maker (Benartzi and Thaler, 1999). We control for the cash compensation of the CEO as the natural log of the salary and the natural log of bonus. Data were collected from the SEC filings.

<sup>1</sup> Analyses with retirement age of 65 were consistent with the results for the retirement age of 70.



*Prior firm performance*

Prior performance is a referent for decision makers' assessment of risky choices (Benartzi and Thaler, 1999). Prior firm performance was measured as the return on assets (ROA) for the previous year. Data were collected from S&P's COMPUSTAT.

*Firm age*

It is calculated in years. The older the firm, the higher is its possible international expansion. Data were collected from S&P's Net Advantage and Mergent's *Handbook of Common Stocks*, (1995–1999).

*Firm size*

We control for the size of the firm through the natural logarithm of the number of employees, as it can be argued that the importance of foreign investment for a firm and the involvement of a firm's CEO in the acquisition choice is reduced with firm size. Data were collected from S&P's COMPUSTAT.

*Firm level of internationalization*

We control for the international experience of the firm by its degree of internationalization, as measured by its foreign sales ratio. Data were collected from S&P's COMPUSTAT.

*Variance of historical returns*

To capture the total risk of the firm as it affects the relative riskiness of an international acquisition, we measure the total variance of monthly market returns for the firm for the previous 60 months. Data were collected from S&P's COMPUSTAT.

*Institutional ownership*

Large institutional investors may influence a CEO's risk taking through activism, and social and political ties (Useem, 1996). Institutional ownership is measured by the sum of the percentages of ownership held by institutional investors. Data were collected from Mergent Online.

*Industry classification*

Some industries witness wider geographic expansion than others (Markides and Ittner, 1994). We control for industry effects by including industry dummy variables following the classification suggested by Amburgey and Miner (1992).

**ANALYSIS AND RESULTS**

The relation between CEO career horizon and firm engagement in international acquisitions was estimated using logistic regression analysis. Given our focus on the likelihood of international acquisitions, this regression analysis is appropriate for binary dependent variables. Logistic regression is based on the assumption that the categorical dependent reflects an underlying qualitative variable and uses the binomial distribution. Given that our dependent is whether the CEO engaged in an international acquisition or not, logistic regression is an appropriate analysis technique. Parameters (or the logits) estimated are the natural log of the odds ratio and can be interpreted as follows: a positive logit means that the odds that the dependent variable equals 1 increase (decrease) when the independent variable increases (decreases); hence, a positive coefficient indicates a positive association. In order to avoid multicollinearity, we standardized all continuous variables<sup>2</sup>. The sample included those firms that were involved in international acquisitions between 1995 and 1999 (sometimes repeatedly) and those firms that were not. After eliminating observations with missing data, the sample size was 1,449. Table 1 presents the descriptive statistics and correlations.

Model A (Table 2) is the base model and is significant ( $p < 0.000$ ). This significance is in comparison to the null model that assumes all parameters in Model A are equal to 0. Model B is also significant ( $p < 0.05$ ) in comparison to Model A, indicating that the main effects included significantly improve the analysis of the dependent variable. Model C is also significant ( $p < 0.000$ ) indicating a significant improvement over the main effects in Model B by including the interaction effects of CEO career horizon and equity and options holdings. The Cox & Snell R-square is

<sup>2</sup> Analysis with mean-centered variables led to the same results reported in this manuscript.

Table 1. Descriptive statistics and correlation matrix

	Mean	Std. deviation	1	2	3	4	5	6	7	8	9	10	11	12	13
1 International acquisition (Binary)	0.43	0.50	1												
2 1995	0.19	0.39	-0.037	1											
3 1996	0.20	0.40	0.004	-0.242**	1										
4 1997	0.21	0.41	0.057*	-0.250**	-0.258**	1									
5 1998	0.20	0.40	0.005	-0.245**	-0.253**	-0.262**	1								
6 1999	0.20	0.40	-0.031	-0.238**	-0.246**	-0.255**	-0.250**	1							
7 Extractive	0.05	0.22	-0.033	-0.008	0.021	-0.020	-0.005	0.012	1						
8 Processing	0.33	0.47	0.065**	-0.049*	0.019	0.065**	-0.013	-0.025	-0.162**	1					
9 Equipment	0.19	0.39	0.119**	0.035	-0.001	-0.024	-0.042	0.034	-0.112**	-0.343**	1				
10 Electrical	0.05	0.22	-0.047*	0.091**	-0.028	-0.040	-0.013	-0.008	-0.053*	-0.163**	-0.113**	1			
11 Textile apparels	0.02	0.14	-0.088**	0.006	0.002	0.007	-0.009	-0.006	-0.033	-0.101**	-0.070**	-0.033	1		
12 Consumables	0.03	0.17	-0.034	-0.017	0.017	0.011	0.001	-0.012	-0.041	-0.125**	-0.086**	-0.041	-0.025	1	
13 Other manufacturing	0.01	0.10	-0.048*	0.003	0.001	-0.003	-0.001	0.001	-0.023	-0.072**	-0.050*	-0.024	-0.015	-0.018	1
14 Trade	0.31	0.46	-0.080**	-0.016	-0.022	-0.023	0.060**	0.001	-0.156**	-0.477**	-0.330**	-0.157**	-0.097**	-0.120**	-0.069**
15 Firm age	62.51	40.56	0.244**	-0.030	-0.018	0.024	0.026	-0.003	-0.058*	0.186**	0.013	-0.042	0.027	-0.044	-0.020
16 Firm size	53.13	103.16	0.372**	-0.016	-0.057*	0.010	0.032	0.031	-0.091**	-0.110**	0.205**	-0.012	-0.058*	-0.018	-0.039
17 Previous firm performance	4.67	10.60	0.082**	0.019	0.019	0.036	-0.039	-0.003	-0.111**	-0.039	0.117**	-0.040	0.010	0.104**	0.008
18 Institutional ownership	54.89	23.28	0.034	-0.115**	0.060*	0.033	0.021	-0.002	0.055*	-0.060*	0.112**	0.032	-0.005	-0.014	0.008
19 Firm internationalization	22.25	20.97	0.360**	-0.059**	-0.021	0.010	0.040	0.029	0.096**	0.052*	0.167**	0.009	-0.070**	-0.080**	0.002
20 Historical variance	0.09	0.04	-0.062**	-0.020	-0.017	-0.021	-0.009	0.067**	-0.002	-0.041	-0.007	0.020	-0.001	-0.021	-0.007
21 CEO tenure	9.11	6.78	0.077**	-0.107**	-0.015	0.022	0.066**	0.032	0.053*	-0.171**	-0.058*	-0.035	-0.017	0.155**	0.022
22 CEO level of education	1.77	0.73	0.147**	-0.020	-0.008	0.011	0.045	-0.028	0.017	0.121**	-0.024	-0.009	-0.068**	-0.147**	-0.031
23 CEO international experience	0.22	0.41	0.151**	-0.016	-0.020	-0.003	-0.003	0.043	-0.012	0.115**	0.168**	-0.055*	-0.031	-0.052*	-0.056*
24 CEO functional background	0.68	0.47	0.253**	-0.022	-0.008	0.030	0.050*	-0.050*	-0.083**	0.093**	0.091**	0.025	0.100**	-0.039	0.050*
25 CEO salary	838.57	558.46	0.429**	-0.094**	-0.075**	0.022	0.091**	0.054*	-0.063**	0.037	0.041	-0.032	-0.059**	-0.014	-0.035
26 CEO bonus	1197.50	1821.70	0.354**	-0.103**	-0.086**	0.016	0.071**	0.100**	-0.083**	-0.133**	0.040	-0.027	-0.065**	-0.001	-0.034
27 CEO equity holdings	67428.42	443895.55	0.043	-0.049*	-0.043	-0.017	0.043	0.067**	-0.032	-0.068**	0.025	-0.015	-0.019	-0.002	-0.014
28 CEO in-the-money option holdings	29998.54	84304.27	0.187**	-0.118**	-0.093**	-0.007	0.080**	0.137**	-0.058*	-0.079**	0.033	-0.038	-0.049*	-0.046*	-0.035
29 CEO career horizon	11.68	7.16	0.013	0.096**	0.019	0.006	-0.084**	-0.035	-0.054*	0.004	-0.060**	0.109**	0.021	-0.102**	-0.063**

\*\* Correlation is significant at the 0.01 level two-tailed.  
 \* Correlation is significant at the 0.05 level two-tailed.

Table 1. (Continued)

	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
15 Firm age	-0.139**	1													
16 Firm size	0.018	0.315**	1												
17 Previous firm performance	-0.027	0.049*	-0.009	1											
18 Institutional ownership	-0.016	0.037	-0.092**	0.168**	1										
19 Firm internationalization	-0.194**	0.265**	0.174**	0.060**	-0.013	1									
20 Historical variance	0.050*	-0.051*	-0.047*	-0.062**	-0.043	-0.037	1								
21 CEO tenure	0.157**	-0.059**	0.083**	0.013	-0.050*	0.039	-0.007	1							
22 CEO level of education	-0.022	0.113**	0.223**	-0.054*	-0.031	0.091**	-0.076**	0.063**	1						
23 CEO international experience	-0.190**	0.049*	0.173**	0.049*	0.014	0.245**	-0.014	-0.242**	0.004	1					
24 CEO functional background	-0.173**	0.079**	0.143**	0.051*	0.061*	0.132**	0.007	-0.041	0.128**	0.156**	1				
25 CEO salary	0.078**	0.392**	0.630**	0.024	-0.131**	0.242**	-0.076**	0.218**	0.367**	0.033	0.171**	1			
26 CEO bonus	0.180**	0.305**	0.627**	0.007	-0.169**	0.180**	-0.043	0.230**	0.218**	-0.007	0.121**	0.769**	1		
27 CEO equity holdings	0.078**	-0.076**	0.024	0.050*	-0.036	0.084**	-0.010	0.211**	-0.030	-0.034	0.050*	0.069**	0.113**	1	
28 CEO in-the-money option holdings	0.137**	0.123**	0.352**	0.089**	-0.138**	0.140**	-0.010	0.178**	0.189**	-0.040	0.122**	0.527**	0.584**	0.461**	1
29 CEO career horizon	0.067**	-0.002	0.170**	-0.025	-0.155**	-0.024	0.081**	-0.146**	0.158**	-0.067**	0.026	0.191**	0.187**	0.024	0.265**

\*\* Correlation is significant at the 0.01 level two-tailed.  
 \* Correlation is significant at the 0.05 level two-tailed.

Table 2. Logistic regression analysis: international acquisitions

	Model A			Model B			Model C		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
Constant	-22.312	2901.025	0.994	-22.347	2894.999	0.994	-22.395	2890.512	0.994
1995	21.264	2901.025	0.994	21.227	2894.999	0.994	21.256	2890.512	0.994
1996	21.230	2901.025	0.994	21.173	2894.999	0.994	21.178	2890.512	0.994
1997	21.334	2901.025	0.994	21.263	2894.999	0.994	21.255	2890.512	0.994
1998	20.919	2901.025	0.994	20.939	2894.999	0.994	20.894	2890.512	0.994
1999 (base year)	.	.	.	.	.	.	.	.	.
Extractive	0.584	0.374	0.119	0.774	0.383	0.043	0.781	0.391	0.046
Processing	0.364	0.199	0.068	0.416	0.202	0.040	0.483	0.204	0.018
Equipment	-0.035	0.214	0.868	0.036	0.216	0.867	0.092	0.218	0.674
Electrical	-0.576	0.378	0.128	-0.607	0.399	0.128	-0.629	0.417	0.131
Textile apparels	-1.419	0.598	0.018	-1.369	0.596	0.022	-1.230	0.601	0.041
Consumables	-0.243	0.427	0.570	-0.053	0.426	0.900	-0.187	0.431	0.664
Other manufacturing	-0.812	0.667	0.223	-0.638	0.671	0.342	-0.435	0.680	0.523
Trade (base industry)	.	.	.	.	.	.	.	.	.
Firm age	0.067	0.084	0.420	0.111	0.086	0.196	0.114	0.087	0.191
Firm size	0.865	0.147	0.000	0.810	0.147	0.000	0.799	0.148	0.000
Previous firm performance	0.020	0.119	0.869	-0.018	0.122	0.881	-0.090	0.129	0.484
Institutional ownership	0.120	0.077	0.120	0.145	0.078	0.064	0.166	0.079	0.036
Firm's degree of internationalization	0.553	0.080	0.000	0.543	0.080	0.000	0.547	0.081	0.000
Variance of historical returns (60 months)	-0.235	0.517	0.650	-0.667	0.554	0.229	-0.940	0.563	0.095
CEO tenure	0.045	0.082	0.586	0.071	0.087	0.411	0.008	0.089	0.927
CEO level of education	-0.092	0.078	0.238	-0.127	0.080	0.113	-0.132	0.081	0.104
CEO international experience	-0.144	0.182	0.429	-0.113	0.183	0.538	-0.054	0.184	0.768
CEO functional background	1.169	0.163	0.000	1.186	0.168	0.000	1.137	0.170	0.000
CEO salary (logged)	0.509	0.152	0.001	0.486	0.153	0.001	0.456	0.156	0.003
CEO bonus (logged)	0.134	0.081	0.098	0.086	0.085	0.308	0.074	0.087	0.393
CEO equity holdings (logged)				0.011	0.089	0.900	0.120	0.100	0.229
CEO in-the-money option holdings (logged)				0.210	0.098	0.032	0.289	0.111	0.009
CEO career horizon				0.203	0.092	0.027	0.241	0.102	0.019
CEO career horizon × equity holdings							0.228	0.097	0.019
CEO career horizon × in-the-money options							0.388	0.109	0.000

	Overall (score)				Change from previous model			
	Chi-square	df	Sig.	-2 Log likelihood	Cox & Snell r square	Chi-square	df	Sig.
<b>Model A</b>	727.138	23	0.000	1255.3	0.394			
<b>Model B</b>	737.291	26	0.000	1245.1	0.398	10.152	3	0.017
<b>Model C</b>	757.279	28	0.000	1225.1	0.407	19.988	2	0.000

0.407 and the Nagelkerke R Square is 0.546 for the full moderated model.

Model A includes the basic controls and year and industry effects. Firm size is significant ( $p < 0.000$ ) indicating that for a one unit increase in firm size (i.e., one standard deviation), the odds of international acquisitions increase by a

factor of 2.3. The firm's foreign sales ratio is also significant ( $p < 0.000$ ) and positively associated with foreign acquisitions. From the CEO's characteristics, the functional background is significant ( $p < 0.000$ ) indicating that the odds of international acquisitions increase by a factor of 3.2 if the CEO comes from an output function. The

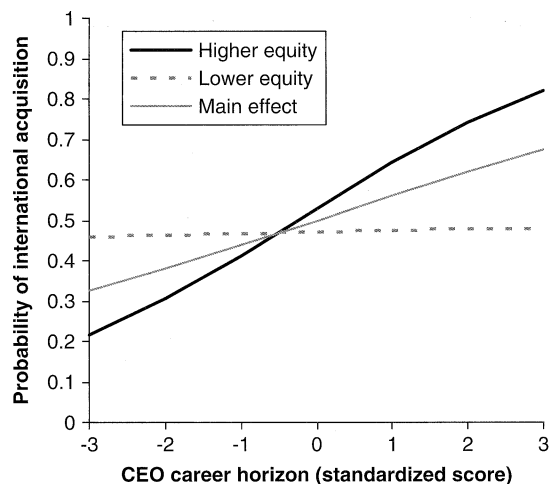


Figure 1. Moderation effect of equity holdings on CEO career horizon

CEO's salary ( $p < 0.05$ ) and bonus ( $p < 0.10$ ) are both significant and positively associated with the likelihood of international acquisitions. That salary and bonus are positively associated with engagement in international acquisitions can be evidence of a substitution between cash compensation and equity-based incentives (Beatty and Zajac, 1994); being not at risk like equity-based pay (Murphy, 1999), salary and bonus can represent guaranteed wealth that is argued to increase risk taking (Benartzi and Thaler, 1999).

Hypothesis 1 stipulates a positive relationship between a CEO's career horizon and the probability of international acquisitions. In Model B, the career horizon effect is significant and positive ( $p < 0.05$ ) providing support to Hypothesis 1. The effect of career horizon indicates that one standard deviation increase in a CEO's career horizon increases the odds of international acquisitions by a factor of 1.2. Model C provides the results of the interaction effects. Interaction terms between CEO career horizon and value of option and equity holdings are included as the cross-product of the standardized terms (Aiken and West, 1991). The interaction effects between career horizon and the value of equity holdings is significant ( $p < 0.05$ ) and between in-the-money option holdings and career horizon is significant ( $p < 0.000$ ). In Figure 1, we plot the estimated moderation effect of the value of equity holdings on the relationship between career horizon (Z scores between  $-3$  and  $+3$ ) and probability of international acquisition, with high value of equity holdings at a Z score value of  $+1$  and low

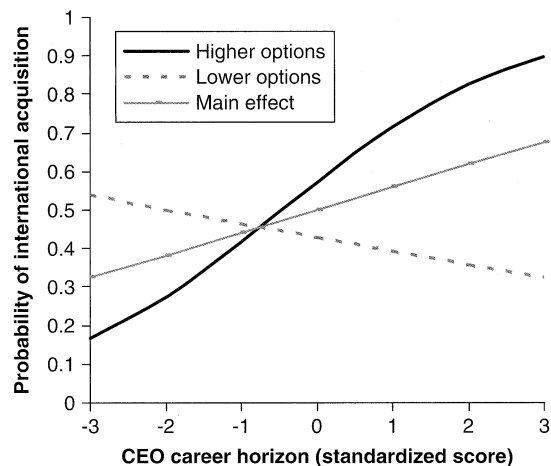


Figure 2. Moderation effect of in-the-money option holdings on CEO career horizon

value of equity holdings at a Z score value of  $-1$ . The plot shows that a higher value of equity holdings alters the career horizon effect and accentuates it near retirement, providing support to Hypothesis 2. In Hypothesis 3, we propose that higher in-the-money option holdings will make the relationship between CEO career horizon and entry through international acquisitions more positive. In Figure 2, we plot the moderation effect along the standardized values of CEO career horizon on the probability of international acquisition. High value of option holdings is measured at a Z score value of  $+1$  and low value at a Z score value of  $-1$ . The figure confirms that higher values of in-the-money option holdings accentuate career horizon concerns of CEOs near retirement. Hence, Hypothesis 3 is supported.

## DISCUSSION

Our findings present numerous insights into the CEO career horizon problem. Using international acquisitions as a context for risk taking, we find that a longer career horizon is positively associated with the likelihood of international acquisitions, in support of the increasing risk aversion of CEOs as they approach retirement. In our conceptual model, we emphasized that retirement is a moment of assessment of a CEO's career. CEOs operating in the public eye and under significant media attention (Hayward *et al.*, 2004) strive to conserve a legacy of success. We proposed that

as retirement draws near, the legacy conservation motive has important myopic influences on the strategic decisions of CEOs, through avoidance of risky investments that could jeopardize short-run profitability or could taint perceptions of their competence in the last years of their careers.

Myopic risk aversion is further aggravated by CEOs' firm-specific endowed wealth in options and equity. The widespread use of equity-based incentives presents an interesting paradox between the long-term orientation of equity incentives and short-termism around retirement. If retirement is a moment of assessment of success in a career, it is also a valuation of CEOs' accumulated wealth from this career. Firm-specific wealth in equity holdings and unexercised options represents a significant level of CEOs' personal wealth, yet remains at risk from fluctuations in the stock price of the firm.

We found that when the CEO approaches retirement, the career horizon problem and ensuing risk avoidance are accentuated by the CEO's equity holdings in the firm. Equity ownership is proposed to align agents and principals and increase risk taking (Jensen and Murphy, 1990). Figure 1 shows that this alignment holds when the CEO's career horizon is long, as high levels of equity holdings encourage risk taking more than lower levels of equity holdings. Yet, risk taking is reduced near retirement. This finding highlights the paradoxical nature of long-term incentives for CEOs with short-term employment. Although equity holdings do lead to risk taking, the myopic wealth preservation near retirement and attachment to the value of equity holdings (i.e., endowment) reduces their risk taking effect. The importance of alignment of incentives with the duration of employment is a typical multi-period contracting agency problem, manifested in this study by the time to retirement of CEOs. The result also underscores the possible overexposure to firm-specific risk through widespread and potentially excessive use of equity incentives, rendering firm-specific wealth a significant portion of the personal wealth of CEOs at retirement and reinforcing their endowment.

Given the emphasis on CEO firm-specific wealth, we also considered the value of in-the-money unexercised option holdings. The implications of stock options on risk taking remain a source of debate. Stock options are often associated with increased risk taking, when considered

at time of award<sup>3</sup>, as their potential is not yet realized. For instance, Sanders (2001) found that new option grants continue to increase risk taking in the latter years of a CEO's tenure (though nowhere near as much as in the early years of tenure). Our model considers CEOs' portfolios of in-the-money unexercised options. Emphasizing the logic of partial endowment of in-the-money options (Wiseman and Gomez-Mejia, 1998), we found that high values of in-the-money options holdings (i.e., deep in-the-money) encourage CEOs with long career horizons to engage in international acquisitions; yet, similarly to equity holdings, they accentuate risk aversion near retirement (Figure 2). The differing implications of in-the-money options along the career horizon of a CEO confirm the influence of wealth preservation near retirement. In fact, the value attached to the realized gains on option holdings near retirement is more important than at the beginning of a CEO's career, as these gains will not be supplemented by future option gains and hence represent a significant element in postretirement wealth. In other words, wealth preservation near retirement would exacerbate attachment to realized gains from in-the-money unexercised options and deepen their endowment. In turn, these option holdings would accentuate risk aversion in a CEO's late career.

## CONCLUSION

The theoretical development of the career horizon problem was rooted in myopic risk aversion (Kahneman and Lovallo, 1993) and work in agency theory on the duration of the relationship between the agent and the principal (Eisenhardt, 1989; Williamson, 1991). The context of international acquisitions in its substantial complexity and risk provided an adequate test of the misalignment of the career horizon of CEOs with the strategy horizon of their firms. Fama (1980) suggests that a long-time horizon for the agent induces an alignment effect with the shareholders, as the external labor market would ensure a long-term accountability of the agent's actions. The context of a short career horizon raises the question of short-termism of CEOs near retirement and provides a depiction of the firm as a nexus of misaligned horizons.

<sup>3</sup> We thank an anonymous reviewer for underlining this point.

From an agency perspective, a short career horizon does not allow for executives to claim much of the residuals from future firm profitability, thereby compelling them to operate with a short-run perspective. Hence, CEOs with short career horizons might not engage in the actions that best guarantee this future performance, given they will not be able to benefit from future returns (Gibbons and Murphy, 1992). Similarly, prospect theory presents that loss aversion coupled with myopia (Benartzi and Thaler, 1999) leads to an avoidance of risky investments. Consequently, as a general problem of short-term orientation and contracting, we argue and find that CEOs approaching retirement exhibit risk aversion.

The study of career horizon concerns highlights the importance of incentives provided to CEOs along their career. As a remedy to short-term orientation, long-term incentives through stock options and equity ownership should extend the decision horizon of the agent (Dechow and Sloan, 1991; Dikolli, 2001). We found that endowed wealth in equity and in-the-money options would exacerbate rather than mitigate career horizon concerns. This suggests that the risk taking implications of options and equity ought to be considered in the context of their award and in careful consideration of the CEO's already accumulated equity incentives. CEOs feel overexposed to firm risk given the overweighing of long-term incentives in their compensation design (Hall and Murphy, 2003). Meulbroek (2000) describes CEOs' preferences to sell their equity holdings at a discount to reduce their ownership. Bettis, Bizjak, and Lemmon (2001) discuss executives' tendencies to hedge their equity holdings in their firms through market derivatives. The context of retirement underlines this overexposure given possible transience from the CEO and increased attachment to wealth in hand rather than the upside potential of equity incentives that would not materialize under their term of employment.

In fact, the executive compensation literature has addressed the risk implications of option and equity holdings with limited consideration of executives' characteristics. Our findings suggest that compensation committee members should not only consider the professional status of CEOs and the comparable pay in the industry, but also their career horizon and their accumulated holdings in equity and options. It would seem natural that compensation committee members be aware of the career stage of a CEO. Nevertheless, data from

the sample show that CEOs within five years of retirement still maintain on average 17 million dollars in above-water options and 62 million dollars in firm equity. In that sense, a weighing up of the various horizons within a governance design should be made by a precise scheduling of maturity and expiration of options granted. In practice, this translates into a very complex task for members of the compensation committees, especially since they are most commonly appointed by the CEOs themselves (Daily *et al.*, 1998) and could be interlocked with them (Core, Holthausen, and Larcker, 1999; Hallock, 1997).

Finally, the study of the career horizon emphasizes managerial risk in firm internationalization, which has been called for by Brouthers (2002). There are numerous studies on executive characteristics and firm internationalization with various theoretical standpoints: learning and networks (Barkema and Chvyrkov, 2002); managerial discretion (Wally and Becerra, 2001); human capital (Daily, Certo, and Dalton, 2000); CEO succession and selection (Herrmann and Datta, 2002); entrepreneurship (Reuber and Fischer, 1997); and strategy process (Sambharya, 1996). Few studies consider the risk for executives engaged in internationalization (e.g., Seth *et al.*, 2000, and Carpenter *et al.*, 2001), although studies on the behavioral foundations in internationalization are much needed. Emphasis on managerial risk in firm internationalization would connect managerial and organizational risk taking, and identify the linkages that equity-based incentives can create between the two.

## LIMITATIONS AND IMPLICATIONS

There are several methodological and theoretical limitations to this study. First, the sample consists of large American firms that have met our criteria on data reporting and non-CEO turnover, which limits the generalizability of the findings. Career horizon effects and equity-based incentives could also have different results in European or Asian firms, given differences in cultural perceptions of careers, success, and financial stability (Gedajlovic and Shapiro, 1998; Aguilera and Jackson, 2003). Second, emphasis on the CEO rather than the top management team was dictated by data consistency as the SEC requires disclosure of the compensation for the five highest paid executives. Yet,

aside from the CEO, there is little uniformity in the positions on which compensation is reported. To ignore differences in positions creates significant bias. In addition, option and equity holdings could be less important among non-CEOs as equity ownership decreases significantly (Core and Larcker, 2002). Thus, the accentuated career horizon problem developed might apply less to lower-level executives than to CEOs. It is also possible that our findings (based on an objective valuation of in-the-money unexercised option holdings with Black-Scholes) reflect a conservative test of the endowment effect of in-the-money options. Tversky, Slovic, and Kahneman (1990) indicate that investors often overprice riskier and higher payoff prospects. Payoffs from options are exponentially related to relative changes in firm stock price (Hall, 2000) but if the firm's performance deteriorates below the exercise price, options end up underwater and become worthless. Moreover, Devers, Wiseman, and Holmes (2007) find that options are subjectively overvalued by their holders (in comparison to their Black-Scholes value), given their partial endowment. Reliance on the Black-Scholes valuation was mandated given the practically impossible task of collecting individual subjective valuation from CEOs of their in-the-money unexercised option holdings. It also allows comparison with previous studies on executive compensation that mostly rely on the Black-Scholes valuation technique (O'Connor *et al.*, 2006).

Further work on the risk taking implications of equity and option holdings along the career horizon of a CEO could investigate other aspects of internationalization like sequential expansion and scope or speed of foreign market entries. It could also be developed in other contexts, such as R&D, capital investment projects, and new product developments. Similarly, it can extend beyond the demographic approach to executive characteristics. Although we emphasize career horizon and include tenure, functional background, educational level, and international experience in the study, other CEO characteristics such as attitudes toward risk, need for achievement (Papadakis, Lioukas, and Chambers, 1998), propensity to act, impatience, and decisiveness (Wally and Baum, 1994) can provide additional insights about the risk taking implications of equity and option holdings following personality characteristics of their holders. Finally, the accentuated career horizon problem was derived through an application of prospect

theory mechanisms to an agency problem (Wiseman and Gomez-Mejia, 1998). It is apparent that a holistic reconciliation of agents' risk preferences and risk mechanisms in both theories is needed. In fact, aspects of personal wealth, subjective valuation of loss, and mental accounting along the length of the agency relationship would provide further insights on the effectiveness of equity-based incentives.

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