

CEO HUBRIS AND FIRM RISK TAKING IN CHINA: THE MODERATING ROLE OF MANAGERIAL DISCRETION

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This study linked CEO hubris to firm risk taking and examined the moderating role of managerial discretion in this relationship. Drawing on upper echelons theory and behavioral decision theory, we developed and tested hypotheses using original survey data from 2,790 CEOs of diverse manufacturing firms in China. The positive relationship between CEO hubris and firm risk taking was found to be stronger when CEO managerial discretion was stronger: when a firm faced munificent but complex markets; had less inertia and more intangible resources; had a CEO who also chaired its board; and had a CEO who was not politically appointed.

CEO hubris is generally defined as a CEO's exaggerated self-confidence or pride (Hayward & Hambrick, 1997; Hiller & Hambrick, 2005; Kahneman & Tversky, 1995). Prior research has studied the impacts of CEO hubris or overconfidence on firm decisions and outcomes including acquisition premiums (Hayward & Hambrick, 1997), investment distortion (Malmendier & Tate, 2005), and venture failure (Hayward, Shepherd, & Griffin, 2006). The findings generally suggest that firms with overconfident CEOs pay higher premiums (Hayward & Hambrick, 1997), rely on internal rather than external financing (Malmendier & Tate, 2005), miss their own forecasts of earnings (Hribar & Yang, 2006), and undertake more value-destroying mergers (Malmendier & Tate, 2006).

However, except for very few efforts (e.g., Simon & Houghton, 2003), previous research has not paid adequate attention to the relationship between CEO hubris and firm risk taking. Risk taking is fundamental to decision making and has important implications for firm performance and survival (Bromiley, 1991; Sanders & Hambrick, 2007; Shapira, 1995). Firm risk taking has previously been examined in terms of performance feedback (Greve, 1998, 2003), slack (Bromiley, 1991; Singh, 1986),

top management incentive systems (Hoskisson, Hitt, & Hill, 1993; Rajgopal & Shevlin, 2002; Sanders, 2001; Wright, Kroll, Krug, & Pettus, 2007), and environmental factors (Palmer & Wiseman, 1999). Unfortunately, prior research has largely neglected how top managers' psychological characteristics affect risk taking by a firm (Hiller & Hambrick, 2005), and the boundary conditions of any such relationship have not yet been investigated. In addition, the effects of managers' psychological biases have not been examined in non-Western contexts, notably in a collectivist context such as that in China.

This study is designed to fill these gaps by contributing to the literature in three areas: first, we elucidate the effect of CEO hubris on firm risk taking; second, we identify the moderating role of managerial discretion in this relationship; and third, we examine the psychological biases of managers in China, a collectivist society different from the more individualist Western contexts of prior studies.

First, the study focused on the theoretical mechanisms linking CEO hubris to firm risk taking, building on the predictions of upper echelons theory (Hambrick & Mason, 1984) and behavioral decision theory (Kahneman & Lovallo, 1993; March & Shapira, 1987; Sitkin & Pablo, 1992). The upper echelons perspective suggests that the psychological and demographic characteristics of firms' top executives can largely predict decisions and their outcomes (Hambrick, 2007; Hambrick & Mason, 1984). Further, behavioral decision theory suggests that hubris or overconfidence, as one type of cognitive bias, encourages decision makers to overestimate their own problem-solving capabilities

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(Camerer & Lovo, 1999), underestimate the resource requirements of risky initiatives (Shane & Stuart, 2002), and underestimate the uncertainties facing their firms (Kahneman & Lovo, 1993; March & Shapira, 1987; Sitkin & Pablo, 1992). This study set out to integrate these perspectives in elucidating the relationship between CEOs' hubris and risk taking by their firms.

Second, previous research has not clearly identified what factors might moderate any relationship between CEO hubris and firm risk taking, nor have previous studies sufficiently defined the boundary conditions of any such relationship. When driven by inflated egos, CEOs may lead their firms to take risks not in the best interests of the shareholders, resulting in poor performance (Charan, Useem, & Harrington, 2002; Sanders & Hambrick, 2007). Apart from damaging a firm's fundamental interests, such hubristic behavior may eventually ruin a CEO's career (Hayward, 2007). Thus, it is important to discover any factors that either strengthen or weaken the impact of CEO hubris on firm risk taking.

Top executives are normally assumed to greatly affect what takes place in their firms (Hambrick & Mason, 1984), but scholars taking a population ecology or neoinstitutional theory perspective have argued that top executives have little impact because firms are largely constrained by external forces (DiMaggio & Powell, 1983; Hannan & Freeman, 1977). To reconcile these conflicting perspectives, upper echelons theory has identified an important moderator, managerial discretion, defined as a manager's latitude of action, which may account for why top executives matter more in some situations than in others (Hambrick, 2007; Hambrick & Finkelstein, 1987). When top executives have greater discretion, their impacts on firm decisions and outcomes are stronger (Finkelstein & Boyd, 1998; Finkelstein & Hambrick, 1990). Managerial discretion might then be an important moderator of any relationship between CEO hubris and firm risk taking.

Discretion exists when there is less constraint and more means-ends ambiguity (Hambrick, 2007). Hambrick and Finkelstein (1987) suggested that discretion emanates from environmental conditions, from organizational factors, and from a top executive's own attributes. Prior research has primarily focused on the first two sets of factors (Finkelstein & Hambrick, 1990; Halebian & Finkelstein, 1993; Hambrick, Geletkanycz, & Fredrickson, 1993), and these are also considered in the current study. We followed Dess and Beard's (1984) formulation and examined three environmental factors influencing discretion: market munificence, com-

plexity, and uncertainty. The organizational factors considered were a firm's inertia (for which its age and size served as proxies), resource availability (firm intangible resources), and its CEO's influence on its board of directors (for which chair-CEO "duality," defined below, was the proxy) (Crossland & Hambrick, 2007; Finkelstein & Hambrick, 1990).

A third contribution is our studying managerial biases and discretion in the Chinese context, an approach unique among hubris and managerial discretion research studies, which have been based primarily in Western contexts (Hambrick & Finkelstein, 1987; Hayward & Hambrick, 1997). We set out to examine the influence on managerial discretion of several additional factors found in China, particularly whether or not a firm was state-owned (Clarke, 2003; Lioukas, Bourantas, & Papadakis, 1993) and whether or not its CEO was politically appointed (Fan, Wong, & Zhang, 2007; Liu, 2006). Both of these factors might limit a CEO's discretion in the Chinese context. By doing so, we attempt to extend the research on CEO hubris and managerial discretion to a novel context through deep contextualization (Tsui, 2007).

In summary, this study examines the impact of CEO hubris on firm risk taking and the moderating effect of managerial discretion on this relationship in the Chinese context. This research contributes to upper echelons theory by examining an important yet underinvestigated prediction that managerial discretion can help to define boundary conditions of the effects of CEOs' psychological traits and characteristics on firm decisions and outcomes and how such relationships can be generalized to a non-Western context.

THEORY AND HYPOTHESES

CEO Hubris

Hubris is one type of cognitive bias that can influence decisions (Kahneman, Slovic, & Tversky, 1982). Hubris refers to an exaggerated belief about one's own judgment that may deviate from objective standards (Hayward & Hambrick, 1997; Hayward et al., 2006; Hiller & Hambrick, 2005). Overconfidence occurs when, for example, an individual's certainty about his or her own predictions exceeds the accuracy of those predictions (Hilary & Menzly, 2006; Klayman, Soll, Gonzales-Vallerjo, & Barlas, 1999; Simon & Houghton, 2003). Researchers have examined the phenomenon using both "overconfidence" (Malmendier & Tate, 2005; Simon & Houghton, 2003) and "hubris" (Hayward & Hambrick, 1997). Drawing on the work of Judge and his colleagues (Judge, Erez, Bono, & Thoresen,

2002; Judge, Lock, & Durham, 1997), Hiller and Hambrick (2005) proposed that both overconfidence and hubris belong under the same overarching construct of “hyper core self-evaluation.” In this discussion, we focus on “optimistic overconfidence” (Kahneman & Tversky, 1995) and describe it as “hubris” (Hayward et al., 2006).

Researchers have long observed the sources and consequences of executive overconfidence, both conceptually and empirically. The conceptual efforts go back to Roll (1986), who hypothesized that corporate takeovers could be explained by CEO hubris. More recently, Hiller and Hambrick (2005), in a conceptual review, suggested that CEO hyper core self-evaluation, their overarching construct, leads to faster, less comprehensive, and more centralized decisions and higher-stake strategic actions. Similarly, Hayward et al. (2006) proposed that overconfident entrepreneurs are more likely to lead their ventures to failure.

In empirical endeavors, Hayward and Hambrick (1997) showed that hubris drove CEOs to pay higher premiums during acquisitions. Seth, Song, and Pettit (2000) tested the idea that cross-border takeovers were driven by top executives’ hubris, although they did not measure CEO hubris directly. Lowe and Ziedonis (2006) showed that overoptimistic entrepreneurs were more likely to cause poor firm performance. In one of the few studies explicitly examining the relationship between CEO hubris and firm risk taking, Simon and Houghton (2003) found that top managers’ overconfidence was positively associated with pioneering (risky) rather than incremental (less risky) decisions. However, their study did not examine any contingent factors defining the boundary conditions of this relationship, and its sample of small firms in a single industry limited the generalizability of the results.

In view of the findings in management research, behavioral finance researchers have also recently begun to examine the sources of executive overconfidence and its consequences for a firm’s investment decisions and financial performance. Stotz and von Nitzsch (2005) showed that financial analysts’ overconfidence intensified with increasing perceptions of control. Malmendier and Tate (2005) found that overconfident executives tended to distort their investment decisions to rely more on internal rather than external financing. Hilary and Menzly (2006) discovered that prior successful predictions led to analyst overconfidence and that overconfident analysts were less accurate in their subsequent forecasts. Hriber and Yang (2006) found that overconfident CEOs were more likely to issue overly optimistic management earnings forecasts.

Malmendier and Tate (2006) observed that overconfident CEOs making acquisitions overpaid for target companies and were more at risk of undertaking value-destroying mergers and acquisitions (M&A). Doukas and Petmezas (2007) showed that managerial overconfidence could lead to lower announcement returns and poor long-term performance in M&A situations. Nevertheless, these studies, focusing only on main effects, have not identified the potential boundary conditions of CEO hubris.

CEO Hubris and Firm Risk Taking

Risk taking is to some extent fundamental to the survival and development of a firm (Shapira, 1995). Scholars have examined the factors influencing risk taking from theoretical perspectives including behavioral decision theory (Bromiley, 1991; Greve, 1998, 2003; Shapira, 1995; Singh, 1986; Sitkin & Pablo, 1992), agency theory (Hoskisson et al., 1993; Rajgopal & Shevlin, 2002; Sanders, 2001; Wright, Ferris, Sarin, & Awasthi, 1996; Wright, Kroll, Lado, & Van Ness, 2002; Wright et al., 2007), and others (e.g., Larraza-Kintana, Wiseman, Gomez-Mejia, & Welbourne, 2007). Some researchers have also used upper echelons theory to investigate firm risk taking. For instance, Palmer and Wiseman (1999) showed that the composition of its top management team influenced a firm’s propensity to take risks.

Research on individual decision making has linked the construct of hubris to risk taking (Busenitz & Barney, 1997; Camerer & Lovallo, 1999), but very little empirical evidence has been collected to link them in the executive setting (Simon & Houghton, 2003). Hubris affects how CEOs interpret situational stimuli (Hambrick & Mason, 1984; Hayward & Hambrick, 1997) and thus it should influence CEOs’ strategic choices for their firms, including risky decisions.

Building on behavioral research on managerial decision biases, scholars have proposed three main operative mechanisms that link CEO hubris to firm risk taking: first, overestimation of a CEO’s own problem-solving capabilities (Camerer & Lovallo, 1999); second, underestimation of the resources required and/or overestimation of a firm’s resource endowments (Shane & Stuart, 2002); and third, underestimation of the uncertainties the firm is facing (Kahneman & Lovallo, 1993; March & Shapira, 1987). All three mechanisms tend to allow an overconfident CEO to interpret decision situations as less risky than they actually are, and thus to take more risk (Chatterjee & Hambrick, 2007; Sitkin & Pablo, 1992). Although these mechanisms were not assessed directly in this study, they help to de-

scribe the ways in which hubris can play a role in a CEO's strategic choices (Chatterjee & Hambrick, 2007).

First, an overconfident CEO tends to overestimate his/her personal problem solving capabilities (Hayward et al., 2006). Such misperception may lead the CEO to exaggerate the potential benefits of a strategic decision, as reflected in, for example, paying higher premiums for acquisitions (Hayward & Hambrick, 1997), and to overestimate the possibility of implementing an action successfully—as reflected in, for instance, undertaking value-destroying mergers (Malmendier & Tate, 2006). Camerer and Lovo (1999), for instance, found in a laboratory study that decision makers' overconfidence led to market entry even though the target market had already become overcrowded, because they believed that their own capabilities would allow them to prevail despite the base rates of failure characteristic of entering the new market.

Second, an overconfident CEO also tends to underestimate resource requirements for undertaking strategic initiatives (Shane & Stuart, 2002) and overestimate the resource endowments of her/his firm. For instance, Malmendier and Tate (2005) found that overconfident CEOs tended to finance internally rather than externally because they believed the financial resources in hand were enough to support their strategic actions. This misperception of resource endowments will inflate estimates of payoffs (March & Shapira, 1992), driving CEOs to assign subjective probabilities to the preferred outcomes of their strategic initiatives (Sanders, 2001; Shapira, 1995). Chatterjee and Hambrick (2007), for instance, argued that such a subjective assignment of probability leads to strategic dynamism. As a result, CEO hubris promotes optimism about the success of risky strategic actions (Chatterjee & Hambrick, 2007; March & Shapira, 1992).

Third, hubris may also lead CEOs to underestimate uncertainties in their operating environment. Overconfident CEOs believe that they hold more information than they actually have. They may also consider their own information to be more valuable than external information (Bernardo & Welch, 2001). Such a misperception of the amount and value of one's own information has been associated with high ratings for internal "locus of control" (Hiller & Hambrick, 2005; March & Shapira, 1987), which imply that overconfident CEOs believe that their actions and outcomes are less determined by factors outside their control than by factors under their control. The higher the perception of control, the higher

the likelihood of underestimating uncertainties and risks (Durand, 2003; Schwenk, 1986). Such a misperception of high control normally results in poor outcomes (Durand, 2003).

These three mechanisms all suggest that hubris leads a CEO to overestimate the likelihood of the success of a strategic initiative, even though it is associated with great risk. Such overestimation of the probability of success tends to elevate the CEO's "aspiration level," a metric decision makers use to evaluate organizational performance, according to the behavioral theory of the firm. When aspiration level is elevated, performance relative to it can worsen, and decision makers will initiate "problemistic search" and become more risk seeking (Cyert & March, 1963: 127). In a study of the Japanese shipbuilding industry, Greve (2003) found evidence supportive of this pattern. Thus, an overconfident CEO tends to be risk seeking. As the most powerful member of his/her firm's top management team, a CEO may distort strategic choices by influencing other top managers' decisions (Finkelstein, 1992), and thus the firm's decisions largely reflect the CEO's personal will. Therefore,

Hypothesis 1. CEO hubris is positively related to firm risk taking.

The Moderating Role of Managerial Discretion

If CEO hubris leads to more risk taking, then what factors can mitigate its impact? Previous research has not explored this question, and the pertinent literature offers little theoretical guidance or empirical evidence. Most research on hubris has focused on the main effect (e.g., Simon & Houghton, 2003). Therefore, it is important to establish the boundary conditions of the theory. Building on upper echelons theory, we explored the idea that managerial discretion can be an important moderator of the relationship between CEO hubris and firm risk taking. Prior theory suggests that managerial discretion influences the extent to which CEOs matter to firm decisions and outcomes (Hambrick, 2007; Hambrick & Finkelstein, 1987), and empirical evidence has confirmed that when top executives have more discretion, their impacts on their firms are stronger (Crossland & Hambrick, 2007; Finkelstein & Boyd, 1988; Finkelstein & Hambrick, 1990). Drawing on these insights, we examined specific environmental and organizational factors that might determine the scope of managerial discretion (Finkelstein & Hambrick, 1990; Halebian & Finkelstein, 1993; Hambrick, 2007).

Environmental Factors

Market munificence. Market munificence describes an environment's ability to support sustained growth (Dess & Beard, 1984; Keats & Hitt, 1988). A munificent market provides more opportunities and resources to firms, which in turn provide more "strategic degrees of freedom" to their CEOs (Hambrick & Finkelstein, 1987). At the same time, a munificent market also attracts more competitors (Palmer & Wiseman, 1999; Wiseman & Bromiley, 1996) and is thus characterized by unprogrammed decision making, competitive variation, and poorly understood means-ends linkages (Hambrick & Abrahamson, 1995). For these reasons, a CEO's discretion is enhanced when a market is munificent. Enhanced discretion may then strengthen the impact of CEO hubris on firm risk taking. Therefore,

Hypothesis 2a. Market munificence strengthens the positive relationship between CEO hubris and firm risk taking.

Market complexity. Market complexity defines the extent to which a firm's operating environment is competitive and heterogeneous (Aldrich, 1979; Dess & Beard, 1984), and Hambrick and Finkelstein (1987) argued that an industry's structural characteristics may affect managerial discretion. Market complexity is likely to increase as industry concentration decreases (Keats & Hitt, 1988) and competitors increase (Palmer & Wiseman, 1999). The number of strategic groups in the industry and the intricacy of their interrelations also increase with the number of competitors (DeSarbo & Grewal, 2008), and the potential interconnectedness of competitors may increase as well (Chen, 1996; Grimm, Lee, & Smith, 2006). Markets with fewer competitors tend to be simpler and to have highly developed rules, or norms, of interaction (Hambrick & Finkelstein, 1987), which may limit a CEO's competitive discretion. At the same time, the scope for maneuvering without detection is enhanced when competitors are numerous (Zajac & Bazerman, 1991). Thus, firms operating in more complex markets normally face fewer restrictions, and their CEOs tend to have more discretion (Hambrick & Finkelstein, 1987). Therefore,

Hypothesis 2b. Market complexity strengthens the positive relationship between CEO hubris and firm risk taking.

Market uncertainty. Market uncertainty defines the extent to which a CEO faces an unpredictable and unstable environment (Finkelstein & Boyd, 1998; Hambrick & Abrahamson, 1995). Such uncer-

tainty may include the extent to which a market is competitively unstable (Grimm et al., 2006) or competitors' actions are unpredictable (Ferrier, 2001). Hambrick (2007) pointed out that managerial discretion is enhanced when means-ends ambiguity is high. Market uncertainty creates such ambiguity. When market information is stable and reliable, the range of options CEOs face is significantly constrained (Hambrick & Finkelstein, 1987). However, when a market does not provide such reliable information, managerial discretion is enhanced. The enhanced discretion allows CEOs to more strongly influence firm decisions and outcomes. Therefore,

Hypothesis 2c. Market uncertainty strengthens the positive relationship between CEO hubris and firm risk taking.

Organization-Level Factors

Firm age. Organizational inertia precludes a CEO's discretionary choices, since internal inertial forces largely drive the direction and fate of the CEO's firm (Tushman & Romanelli, 1985). A firm's age has been suggested as an important indicator of organizational inertia (Hambrick & Finkelstein, 1990). As firms age, CEOs feel more comfortable about following established routines (Hannan & Freeman, 1984; Nelson & Winter, 1982) and limit exploratory search behavior (Lavie & Rosenkopf, 2006). Also, as a firm ages it may develop more impediments to effective action, embody more taken-for-granted understandings, and have more ossified communication patterns (Barron, West, & Hannan, 1994; Guillén, 2002). Therefore, the older the firm, the greater its inertia. Increasing inertia should constrain a CEO's discretion. Therefore,

Hypothesis 3a. Firm age weakens the positive relationship between CEO hubris and firm risk taking.

Firm size. Firm size is another determinant of organizational inertia (Hambrick & Finkelstein, 1987). Large organizations normally have difficulty undertaking dramatic change (Aldrich, 1979), as they are more likely to have established routines and hierarchical structures (Nelson & Winter, 1982). In a study of the Japanese shipbuilding industry, Audia and Greve (2006) demonstrated that large firms were more inert than small firms, as the former took less initiative to expand their businesses. The larger the firm, the greater its inertia, and the less the scope for managerial discretion. For example, Finkelstein and Hambrick (1990) demonstrated that top management team tenure has a stronger impact on firm strategy and perfor-

mance when a firm is smaller rather than larger. Therefore,

Hypothesis 3b. Firm size weakens the positive relationship between CEO hubris and firm risk taking.

Firm intangible resources. Firms with more resources tend to have more leeway to indulge in exploratory activities (Cyert & March, 1963), allowing their CEOs more discretion (Hambrick & Finkelstein, 1987). Among the different types of resources a firm has, intangible resources are very important for attaining sustainable competitive advantage (Hall, 1992). A firm's R&D intensity has been suggested as one indicator of its intangible resources (Iyer & Miller, 2008). R&D intensity is also prominently influenced by CEOs' strategic maneuvers conducted through resource allocation and shaping of the structural contexts of their firms, especially in research-intensive firms (Burgelman, 1983, 2002; Burgelman & Grove, 2007). Additionally, greater R&D expenditure may increase the "information asymmetry" between insiders and outsiders, increasing the CEOs' power and discretion (Heeley, Matusik, & Jain, 2007). Therefore,

Hypothesis 3c. Firm R&D intensity strengthens the positive relationship between CEO hubris and firm risk taking.

Chair-CEO duality. Monitoring by the board of directors of a firm clearly may influence the impact of its CEO's hubris on firm risk taking (Crossland & Hambrick, 2007; Hambrick & Finkelstein, 1987). When board vigilance is weak, the monitoring is also weak. Prior research has confirmed that a board's vigilance is weaker when duality is present: that is, when a firm's CEO also chairs its board (Hayward & Hambrick, 1997; Mizruchi, 1983). Duality is more likely to allow a chair-CEO to advance his or her personal preferences in a relatively unchecked manner (Finkelstein & D'Aveni, 1994; Kesner, Victor, & Lamont, 1986). Therefore, when the board chair and CEO positions are consolidated, a CEO may have more discretion to allow hubris to drive the firm in risky directions.

Hypothesis 3d. Chair-CEO duality strengthens the positive relationship between CEO hubris and firm risk taking.

Additional Factors in the Chinese Context

State ownership. The Chinese economy is still characterized by a significant portion of state-owned enterprises (SOEs). Although market re-

forms have led to partial privatization of many SOEs (Sun & Tong, 2003), for instance through public listing on a stock exchange, the state still remains as a majority or controlling shareholder in many of these firms (Liu, 2006). The nature of state ownership may have implications for how much discretion a CEO has. A SOE's business operations are normally constrained by governmental political and social objectives, which may include maintaining employment, keeping certain strategic industries under close control, or even politically motivated appointment of key managers (Clarke, 2003). In addition, SOEs normally depend on the state for certain essential resources such as financial capital, key supplies, product distribution, and personnel (Aharoni, 1986), and such dependence enables governments to exercise extensive formal as well as informal controls and intervention (Lioukas et al., 1993). The CEOs of SOEs may thus face more constraints in their decision making and enjoy less discretion. Therefore,

Hypothesis 4a. State ownership weakens the positive relationship between CEO hubris and firm risk taking.

Political appointment of CEO. The government frequently appoints the CEOs of Chinese firms (Fan et al., 2007). This happens not only in state-owned firms (Liu, 2006; Luo, Shenkar, & Nyaw, 2001), but also in firms with other types of ownership. Political appointments are specially designed to ensure state control and compliance with government policies (Faccio, 2006; Fan et al., 2007; Walder, 1995). The goals pursued by these firms may diverge toward other social objectives or even government officials' private gain at the firms' expense (Bertrand, Kramarz, Schoar, & Thesmar, 2004; Faccio, 2006; Fan et al., 2007). Fan and colleagues found that because of government intervention, Chinese listed firms with politically connected CEOs normally underperformed compared with firms without political connections (Fan et al., 2007). In a study of French listed firms, Bertrand et al. (2004) found that the close connections between the CEOs and politicians factored into corporate decisions relating to job creation not in the best interests of the firms. The political appointment of a CEO thus constrains managerial discretion. Therefore,

Hypothesis 4b. Political appointment of a CEO weakens the positive relationship between CEO hubris and firm risk taking.

METHODS

Data

China's government-funded Entrepreneurs Survey System carries out regular surveys of Chinese CEOs. Their purpose is to gather insights into the problems firms have as they learn to face market competition and technological innovation during China's market transition. The firms surveyed constitute a proportional sample based on industry, location, ownership, and size.

From August to October 2000 the Entrepreneurs Survey System mailed questionnaires to 15,000 firms, and 5,075 usable responses were returned (out of 5,126 responses). The effective response rate was 33.8 percent. Cross-tabulation analysis (Steensma & Corley, 2001) revealed no significant industry, location, ownership, or size differences between the respondents and nonrespondents. The data used in this study were part of the information collected in the survey. The present study focused on firms in manufacturing industries, which were a majority of the surveyed firms (62.3%). After excluding those with missing values, the final sample comprised 2,790 firms.¹

Measures

CEO hubris. The key independent variable was CEO hubris. Research in social psychology has suggested that, as a human cognitive bias, hubris or overconfidence has a meaning and prominence in the Chinese context that are similar to its meaning and prominence in the West (e.g., Yates, Lee, Shinotsuka, Patalano, & Sieck, 1998). The Chinese business media has often reported CEO hubris, suggesting that it is prevalent among Chinese firms (see, for example, the *Economist*, 2005).

We based our measure on the idea that the essence of hubris is to overestimate the correctness of one's own judgments (Hayward & Hambrick, 1997; Kahneman & Tversky, 1995). So the positive deviation of a CEO's subjectively anchored evaluation of his or her firm's performance from a more concrete measure of performance was used to measure

CEO hubris.² CEOs were invited to evaluate their firm's financial performance in the prior half year using a five-point scale (1, "a large loss"; 3, "breaking even"; 5, "a large profit"). Objective performance was measured as ROS during the same period, as reported in the survey. Since both subjective evaluation and objective performance depended strongly on industry, we adjusted both values by subtracting the respective mean values of all sampled firms in the same industry. To make the two measures comparable, we converted both industry-adjusted values to z-scores by normalizing them to a mean of 0 and a standard deviation of 1 (Bloom & Van Reenen, 2007). Thus, CEO hubris was measured by the z for a subjective evaluation minus the z for ROS. The greater the difference, the greater a CEO's hubris. Among all the respondents, 58 percent had deviations greater than 0, and 42 percent had deviations below 0. A subjective evaluation lower than actual performance may have indicated a lack of confidence rather than overconfidence. Therefore, a score of less than zero was recorded as zero.

Firm risk taking. A firm's decision to invest in a new, high-technology project was taken as a proxy for firm risk taking. In prior studies, researchers have adopted a wide array of proxies to measure firm risk taking, including R&D expenditure (Hoskisson et al., 1993), acquisitions and divestitures (Sanders, 2001), and launching innovative products (Greve, 2003). The common theme of those measures is that the outcome of the strategic decisions they refer to is associated with high uncertainty. New high-tech initiatives generally involve uncertainties and unusual risks (Anderson & Tushman, 1990). Making such investments in China was particularly risky, as China's transition economy had a poorly developed technological and institutional environment during the study period (Maskus, 2000). For example, weak intellectual property rights protection exposed firms investing in new technologies to risks of appropriation (Zhao, 2006). In the survey, the CEOs were asked whether their firms had "invested in projects involving 'high and new' technologies."³ The re-

¹ Manufacturing industries have been classified into 30 categories in China (National Bureau of Statistics of China, 2001). The number of firms in each industry ranged from 13 to 274, with an average of 91 firms. The sampled firms had an average return on sales (ROS) of 7.18 percent, assets of US\$65 million, and 1,818 employees. Detailed descriptive statistics are available from the authors.

² We thank an anonymous reviewer for pointing out that a more concretely anchored response leaves less room for inflated misinterpretation by a hubristic respondent.

³ Nine categories of "high and new" technology were suggested, including aeronautics and astronautics technology, biotechnology and new medicines, computer hardware and software, digital electronics, networks and communications, new energy, new environmental pro-

sponses were coded 1 for “have invested” in new technologies (18.5 percent of the sampled firms) and as 0 otherwise.

Of course, firm risk taking is likely to vary by industry. As we discuss below, we used four variables to control for industry causes of firm risk taking, including three industry environmental variables (munificence, complexity, and variability) and a measure of industry risk taking (the number of peers investing). In an alternative analysis, we also confirmed the main effects with models including industry dummy variables (but necessarily excluding industry environmental variables). In addition, we conducted a supplementary analysis in which we adjusted the dependent variable so that entry was temporally categorized. By examining a firm’s market entry relative to industry peers, this study could differentiate early entrants (“pioneers”) from others taking a more defensive or “follower” position within an industry.

Managerial discretion. Information was analyzed on nine potential indicators of managerial discretion: market munificence, complexity, uncertainty, firm age and size, R&D intensity, board chair–CEO duality, state ownership, and political appointment of CEO. To avoid common method bias (Doty & Glick, 1998), we drew the data measuring market munificence, complexity, and uncertainty from the editions of the *Chinese Statistics Yearbook* for 1996–2000. These environmental variables were measured on the basis of a firm’s primary industry.

Market munificence was measured as the average growth in industry sales over the prior five years (Keats & Hitt, 1988).⁴ *Market complexity* was the number of competitors (measured in thousands) in an industry (Palmer & Wiseman, 1999). We counted the number of rivals identified for each year from the *Chinese Statistics Yearbook* and averaged these over the five years prior to the survey date. Past research has used either industry concentration or the number of competitors to measure market complexity (Aldrich, 1979; Keats & Hitt, 1988; Palmer & Wiseman, 1999). Unfortunately, data availability did not allow the use of an industry concentration measure for this study. *Market uncertainty* was measured as the instability of industry sales over

the prior five years (Bergh & Lawless, 1998; Keats & Hitt, 1988). Industry sales were regressed against time, and the standard errors of the regression slope coefficients were divided by the mean sales (Dess & Beard, 1984; Krishnan, Martin, & Noorderhaven, 2006). Larger values indicated greater environmental uncertainty (Keats & Hitt, 1988; Palmer & Wiseman, 1999).

The data on the firm-level variables were obtained from the CEO survey. *Firm age* was coded as the number of years from the founding of a firm to 2000. *Firm size* was the logarithm of the firm’s total assets. (The logarithm of total employment was also tested, and the results were consistent with the results reported here.) *R&D intensity* was measured as the ratio of R&D expenditure to sales. *Board chair–CEO duality* was a dummy variable coded yes when duality was present.

A dummy variable for *state ownership* was included; about 46 percent of the sampled firms were wholly state-owned or state-controlled. *Political appointment of the CEO* was also flagged with a dummy variable; about 48 percent of the CEOs in the sample had been politically appointed. A further investigation revealed that among the SOEs in the sample, 74 percent of the CEOs had been so appointed, and among the non-SOEs, 25 percent.⁵

Control variables. To rule out alternative explanations, we included control variables on four levels: individual CEO, firm, industry, and geographic location. CEO age and education were included because research has shown that managers’ personal demographic characteristics influence their risk-taking behavior (MacCrimmon & Wehrung, 1990). Education was measured by a categorical variable ranging from 1 to 6, each number indicating an ascending level of formal education.⁶ The gender of the CEO was not included because only 2.5 percent were female. It is important to note that the characteristics of other top management team members may also affect a firm’s risk taking (Hambrick & Mason, 1984; Milliken & Lant, 1991; Palmer & Wiseman, 1999). Unfortunately, no such data were available for the present study. We also created a dummy variable indicating whether the CEO was the founder of a firm, because Forbes (2005) found that founder-managers think more like entre-

tection technology, new materials, and ocean engineering. These categories were officially designated as high and new technologies during the study period by the Chinese Academy of Sciences (2002).

⁴ The average growth in industry employment over the prior five years was also tested as a measure of market munificence, and the results were consistent with the results reported here.

⁵ A typical example of a politically appointed CEO in a non-SOE would be the CEO of a township and village enterprise appointed by the local branch of the Communist Party to represent the local government.

⁶ The six categories of CEO education were “below high school,” “high school,” “college diploma,” “university,” “master degree,” and “doctorate.”

preneurs in risk taking. In the sample, 18.9 percent of the CEOs had founded their firms.

Firm-level factors that might influence risk taking included as controls were as follows: Firm leverage was measured as the ratio of debt to equity (reverse-coded), since a higher level of debt lowers a firm's borrowing capacity (Bourgeois, 1981; Singh, 1986). Firm performance was measured as ROS over the most recent half year, because prior performance may influence a CEO's perception of the gain/loss situation, which may influence firm risk taking (Kahneman & Tversky, 1979; Wiseman & Gomez-Mejia, 1998).⁷ In addition, it is possible that the presence of contingency-based incentives, such as stock options, might increase CEOs' willingness to take risks (Sanders, 2001; Sanders & Hambrick, 2007; Wright et al., 2002, 2007). However, only 1.13 percent of the firms sampled provided stock options to their top managers, indicating that such incentives were not widely used in China during the study period. Thus, this variable was dropped from the final models.

A firm's ability to invest in high or new technologies also depends substantially on its industry (Dushnitsky & Lenox, 2005). Firms tend to mimic others' behaviors and actions to manage uncertainty (DiMaggio & Powell, 1983). To account for this possibility, the total number of firms in each industry that had invested in high-technology and new technology projects was also used as a control variable. Because many of the environmental variables, such as market munificence, complexity, and uncertainty, would capture industry effects, we dropped the industry dummies from the final models.⁸ Finally, we included dummy variables representing the 31 provinces in China.

Models

The dependent variable had a binary outcome of 1 or 0. A logit model was therefore utilized (Long, 1997):

$$\Pr(y = 1|x) = \frac{\exp(\alpha + \beta x)}{1 + \exp(\alpha + \beta x)},$$

in which y is the binary dependent variable and x indicates the explanatory variables. Likelihood-ratio chi-squares are reported with the results of the

logit models, which tested the null hypothesis that no regression coefficients was significantly different from zero. A likelihood-ratio test was conducted in comparing alternative models with the baseline model. The models were estimated with the STATA statistical package.

It was necessary to check for possible endogenous relationships between CEO hubris and firm risk taking. The observable relationships may, after all, have been due to unobservable factors. For example, good prior firm performance may simultaneously predict CEO hubris and firm risk taking (Hayward & Hambrick, 1997). We addressed this issue by including prior firm performance in all models and conducting a Hausman test using a firm's human resource training expenditure as the instrument variable.⁹ The Hausman test failed to refute the null hypothesis, indicating that endogeneity should not be a concern in this study (Hausman, 1978).

RESULTS

Table 1 presents descriptive statistics and correlations for the study variables. The latter are not particularly high. A further inspection of the correlations does not reveal any serious multicollinearity, showing a mean variance inflation factor (VIF) of 1.32 and a maximum VIF of 2.18. To avoid possible collinearity among the interaction terms, we mean-centered the variables involved in the interaction terms by subtracting the mean from each value (Aiken & West, 1991).

Table 2 presents the logistic regression estimates of the impact of CEO hubris on firm risk taking. The coefficients represent the logarithmic odds ratios of greater versus lower risk taking. Model 1 includes all the control and moderating variables. Model 2 tested the main effect of the key independent variable, CEO hubris. The coefficient was positive and significant ($p < .001$). This finding supports Hypothesis 1, which states that CEO hubris predicts firm risk taking. This relationship was consistent in all of the models. Hoetker (2007) suggested that the coefficients of logged odds ratios provided by logit models are less intuitive to interpret than are linear model estimates. Thus, it was necessary to transform the logged odds ratios into their impacts on probabilities. To interpret the result, we calculated the marginal effect of CEO hubris on firm risk tak-

⁷ We thank the associate editor and an anonymous reviewer for raising this important issue.

⁸ Alternatively, we included 30 industry dummies in the models while dropping the three market variables, and the results were consistent with the results reported here. The results are available from the authors.

⁹ Training expenditure was selected on the basis of the argument that investment in dynamic resources will reinforce a CEO's illusion of control, which should be related to CEO hubris (Durand, 2003).

TABLE 1
Descriptive Statistics and Correlations of Study Variables^a

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1. Firm risk taking	0.18	0.39																	
2. CEO age	47.07	9.01	.06																
3. CEO education	3.28	0.93	.15	-.13															
4. CEO founder	0.19	0.39	.10	-.07	-.25														
5. Firm performance	7.18	24.25	.06	-.00	-.01	.10													
6. Firm leverage	0.47	0.43	.11	.01	-.04	.17	.07												
7. Peers investing in new technology	25.70	20.39	.28	.03	.12	.01	.05	.03											
8. Market munificence	0.07	0.05	.26	.02	.08	.06	.06	.06	.56										
9. Market complexity	15.05	8.91	-.11	-.02	-.07	-.03	-.06	-.02	-.06	-.48									
10. Market uncertainty	1.16	0.59	.02	-.02	-.02	-.03	.01	-.01	-.03	.05	.07								
11. Firm age	25.59	17.54	-.10	.07	.11	-.34	-.09	-.17	-.02	-.13	.05	-.03							
12. Firm size	8.12	3.05	.08	.07	.21	-.11	.02	-.25	.02	-.05	-.01	.03	.11						
13. Firm R&D intensity	3.42	7.09	.10	.02	-.02	.11	.08	.06	.07	.07	-.03	-.02	-.03	-.03					
14. Chair-CEO duality	0.37	0.48	.04	.01	-.06	.10	.03	.01	-.02	-.03	.03	-.01	-.03	.01	.01				
15. State-owned firm	0.46	0.50	-.09	.04	.24	-.41	-.11	-.17	-.01	-.09	.02	.06	.41	.16	-.07	-.18			
16. Politically appointed CEO	0.48	0.50	-.05	.08	.20	-.46	-.10	-.13	.00	-.04	-.01	.02	.29	.15	-.11	-.24	.46		
17. CEO hubris	0.42	0.54	.08	.05	.04	-.01	-.29	.11	.00	.01	-.01	.02	-.06	.07	-.05	.03	-.07	-.01	

^a *n* = 2,790. Correlation coefficients with a magnitude greater than .04 are significant at *p* < .05.

ing. Since the relationship between the probability of risk taking and CEO hubris is nonlinear, the marginal change is shown by the tangent to the probability curve:

$$\frac{\sigma \Pr(y = 1/x)}{\sigma x}$$

The “prchange” program in STATA indicated that the marginal effect of CEO hubris on the probability of firm risk taking was 0.04. So a one-unit change in the CEO hubris rating increased the probability of firm risk taking by approximately 0.04 in absolute terms, and a one standard deviation change from the mean increased the probability by approximately 0.02 in absolute terms, with other variables held at their means (Long & Freese, 2006). (A further investigation revealed an essentially linear relationship between CEO hubris and firm risk taking for these data.)

Models 3, 4, and 5 show results of our tests of Hypotheses 2, 3, and 4, respectively. The predicted effects were tested in the order of the hypotheses. Model 3 tested the interaction between CEO hubris and the three market factors. The result supported Hypotheses 2a and 2b, stating that both market munificence and complexity strengthen the relationship between CEO hubris and firm risk taking: the coefficients of the two interaction terms were positive and significant (*p* < .01). However, Hypothesis 2c, on market uncertainty, was not supported. Model 4 tested the interactions of CEO

hubris with firm age, size, R&D intensity, and chair-CEO duality. The interaction coefficient of firm age with CEO hubris was negative and significant (*p* < .05). Hypothesis 3a was thus supported: Firm age weakens the relationship between CEO hubris and firm risk taking. The interaction of CEO hubris with firm size was significantly positive (*p* < .05), supporting Hypothesis 3b. The interaction coefficient of firm R&D intensity with CEO hubris was also positive and significant (*p* < .05), indicating that firm R&D intensity strengthens the relationship between CEO hubris and firm risk taking. Thus, Hypothesis 3c was supported. As predicted by Hypothesis 3d, the interaction of CEO hubris with chair-CEO duality was positive and significant (*p* < .05), indicating that such duality strengthens the positive relationship between CEO hubris and firm risk taking. Therefore, Hypothesis 3d was supported.

Model 5 tested the interaction of CEO hubris with two variables specific to the Chinese context. The interaction coefficient of state ownership with CEO hubris was not significant. To further explore this result, we conducted a split sample analysis separating the SOEs from the non-SOEs (Xiao & Tsui, 2007). The results showed that CEO hubris was positively and significantly (*p* < .01) related to firm risk taking in the non-SOE subsample, but it was not significant in the SOE sample. This result provided some support for Hypothesis 4a, suggesting that state ownership weakens the effect of CEO

TABLE 2
Logit Estimates of Firm Risk Taking^a

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CEO age	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)
CEO education	0.52*** (0.07)	0.51*** (0.07)	0.51*** (0.07)	0.51*** (0.07)	0.52*** (0.07)	0.51*** (0.07)
CEO founder	0.53** (0.16)	0.55** (0.16)	0.56** (0.16)	0.56** (0.16)	0.56** (0.16)	0.57** (0.16)
Firm performance	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Firm leverage	1.06*** (0.19)	0.99*** (0.19)	0.98*** (0.19)	0.98*** (0.19)	1.00*** (0.19)	0.97*** (0.19)
Peers investing in new technology	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Market munificence	2.38 (1.61)	2.45 (1.62)	2.25 (1.63)	2.46 (1.63)	2.57 (1.62)	2.40 (1.63)
Market complexity	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.02 (0.01)
Market uncertainty	0.03 (0.10)	0.02 (0.10)	0.03 (0.10)	0.00 (0.10)	0.02 (0.10)	0.01 (0.10)
Firm age	-0.01* (0.00)	-0.01 (0.00)	-0.01 (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)
Firm size	0.15*** (0.03)	0.14*** (0.03)	0.15*** (0.03)	0.16*** (0.03)	0.14*** (0.03)	0.16*** (0.03)
Firm R&D intensity	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Chair-CEO duality	0.19 (0.12)	0.18 (0.12)	0.18 (0.12)	0.14 (0.12)	0.19 (0.12)	0.15 (0.12)
State-owned firm	-0.46** (0.15)	-0.45** (0.15)	-0.44** (0.15)	-0.45** (0.15)	-0.46** (0.15)	-0.48** (0.15)
Political appointed CEO	-0.01 (0.14)	0.00 (0.14)	-0.01 (0.14)	-0.02 (0.14)	0.06 (0.15)	0.01 (0.15)
CEO hubris		0.34*** (0.11)	0.29** (0.11)	0.41*** (0.12)	0.33*** (0.11)	0.34** (0.12)
CEO hubris × market munificence			5.71** (2.32)			5.31* (2.37)
CEO hubris × market complexity			0.04** (0.01)			0.04** (0.01)
CEO hubris × market uncertainty			-0.04 (0.17)			-0.06 (0.18)
CEO hubris × firm age				-0.01* (0.01)		-0.01* (0.01)
CEO hubris × firm size				-0.08* (0.04)		-0.06 (0.04)
CEO hubris × firm R&D intensity				0.03* (0.02)		0.03* (0.02)
CEO hubris × chair-CEO duality				0.44* (0.23)		0.47* (0.24)
CEO hubris × state-owned firm					0.09 (0.21)	0.21 (0.24)
CEO hubris × politically appointed CEO					-0.55** (0.21)	-0.42* (0.22)
Constant	-6.65*** (0.61)	-6.65*** (0.61)	-6.64*** (0.62)	-6.79*** (0.62)	-6.71*** (0.62)	-6.78*** (0.63)
Likelihood-ratio χ^2	478.16***	487.80***	498.06***	506.87***	496.29***	519.93***
Log-likelihood	1,077.32	-1,072.50	-1,067.37	-1,062.96	-1,068.26	-1,056.43
Likelihood-ratio test		9.64**	19.90***	28.71***	18.13***	41.77***

^a $n = 2,790$; location dummies were included in all models. Standard errors are in parentheses.

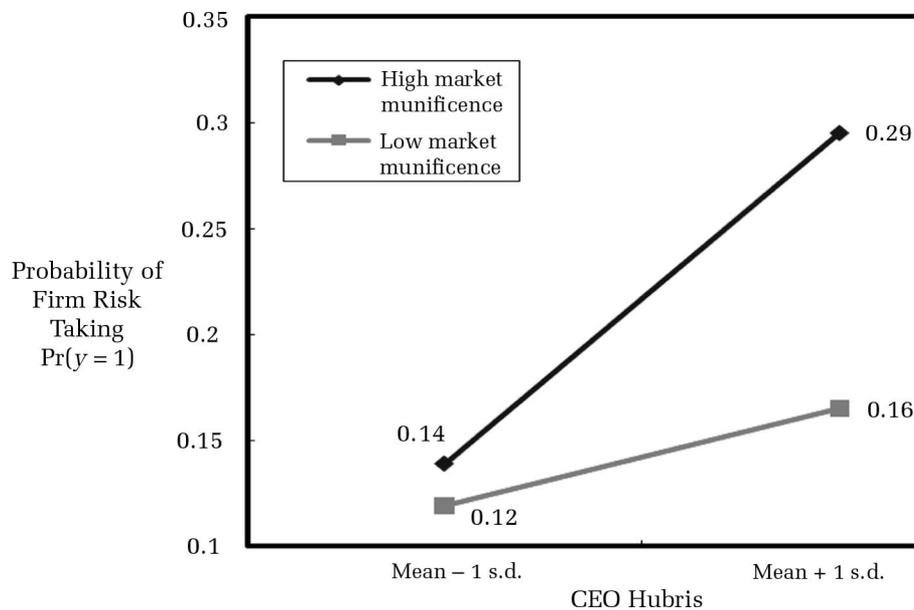
* $p < .05$

** $p < .01$

*** $p < .001$

One-tailed tests for hypotheses, two-tailed tests for others.

FIGURE 1
Moderating Effect of Market Munificence



hubris. The interaction between CEO hubris and political appointment was negative and significant ($p < .01$), supporting Hypothesis 4b, which predicts that CEO political appointment is reflected in a lower level of managerial discretion.

Model 6 was the full model, including all the interaction terms. CEO hubris was still found to be significantly ($p < .01$) and positively related to firm risk taking. The interaction effects of CEO hubris with market munificence, market complexity, firm age, firm R&D intensity, chair-CEO duality, and political appointment remained significant. The interaction of CEO hubris with firm size became nonsignificant. This may have been observed because the formulation included too many interactions associated with the same variable and so may have yielded high correlations among the covariates. Likelihood-ratio tests suggested that models 2–6 significantly improved upon the baseline model 1.

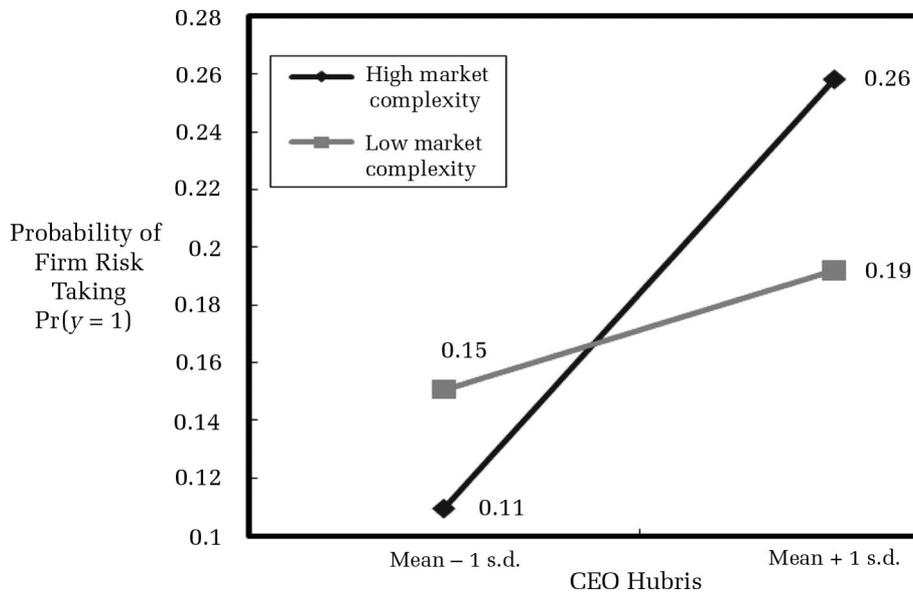
To illustrate the patterns of the significant interaction effects that supported the hypotheses, we plotted the significant (at $p < .05$ or greater) interaction effects using one standard deviation above and below the mean to represent high and low levels of the moderating variables (Aiken & West, 1991),¹⁰ using the coefficients in model 6

(Hoetker, 2007). Figures 1–6 present these plots. Figures 1 and 2 show that the slopes are much steeper when market munificence and complexity are high. In other words, as CEO hubris increases from one standard deviation below the mean to one standard deviation above, the probability of firm risk taking increases significantly faster when a market is munificent (from 0.14 to 0.29) or complex (from 0.11 to 0.26). Figure 3 shows the moderating effect of firm age: when firm age is high, the probability of firm risk taking increases from 0.14 to 0.29; when firm age is low, the probability increases only from 0.12 to 0.17. Figure 4 displays a steeper slope when a firm's R&D intensity is high: the probability of risk taking increases from 0.15 to 0.31. When R&D intensity is low, the probability increases only from 0.11 to 0.15. Figure 5 also shows a steeper slope when the CEO of a firm chairs its board: when CEO hubris increases from one standard deviation below the mean to one standard deviation above, the probability of firm risk taking increases from 0.14 to 0.30 when the CEO also chairs the board, but only from 0.12 to 0.19 when he or she does not. Figure 6 shows that when a CEO was politically appointed, the probability of firm risk taking increases from 0.13 to 0.19, but the probability increases from 0.12 to 0.26 when the CEO was not politically appointed.

¹⁰ For plotting the moderating effect of chair-CEO duality, we plotted the slopes on the basis of two situations, either duality = 1 or duality = 0; for plotting the moderating effect of political appointment, we based the plots

on either political appointment = 1 or political appointment = 0.

FIGURE 2
Moderating Effect of Market Complexity



Since the effects of the control and moderating variables were generally consistent across the different models, we based their interpretation on the full model (model 6). At the individual level, we observed that the coefficient of CEO age was positive and significant ($p < .01$), indicating that firms with experienced CEOs were more likely to take risks. CEO education showed a positive re-

lationship ($p < .001$), indicating that firms with better-educated CEOs tended to be more risk seeking. Firms with their founders as CEOs were also more likely to take risks ($p < .01$). Turning to the firm-level variables, we saw that, in keeping with the behavioral theory of the firm (Cyert & March, 1963; Greve, 2003), firm leverage showed a positive effect on risk taking ($p < .001$). At the

FIGURE 3
Moderating Effect of Firm Age

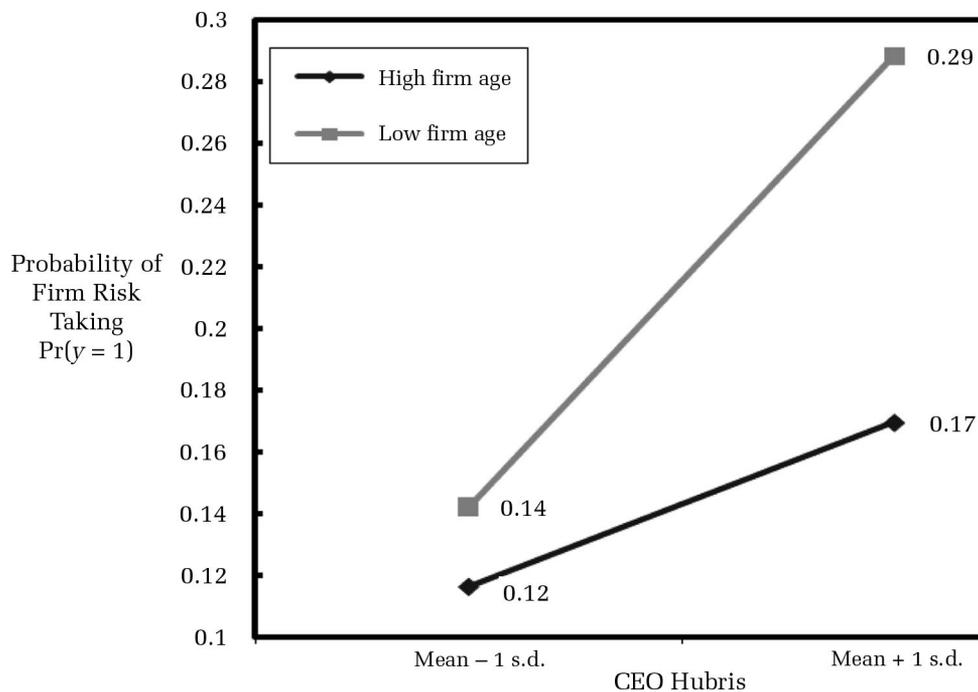
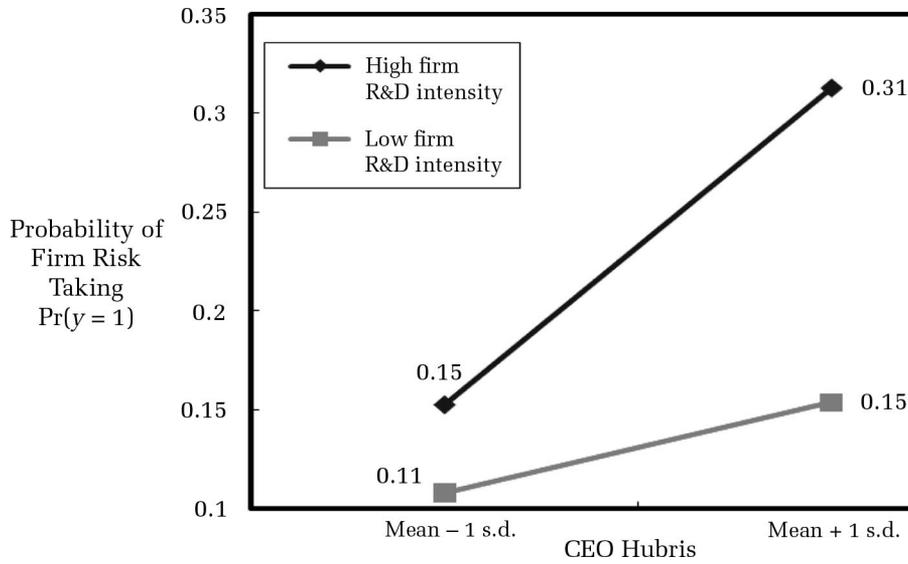


FIGURE 4
Moderating Effect of Firm R&D Intensity



industry level, the number of peer firms investing in high and new technologies had strong predictive power in regard to risk taking ($p < .001$). Among the moderators, firm age had a negative effect on risk taking ($p < .01$), suggesting that older firms are more resistant to the temptation of risky change (Aldrich & Auster, 1986; Hannan & Freeman, 1984); firm size had a positive effect on risk taking ($p < .001$), suggesting that firms with more resources are more likely to take risks (Audia & Greve, 2006); and firms doing more R&D were more inclined to take the risk of attempting to invest in high and new technologies

($p < .001$), suggesting that firms with technological capabilities are more likely to take such strategic initiatives. Finally, firms owned or controlled by the state were less likely to take risks ($p < .01$).

Supplementary Analysis: CEO Hubris and Relative Risk Taking

If hubris leads a CEO to perceive less risk and thus to take more actual risks, a subsequent question would be whether such risk taking is actually greater relative to that of his/her firm's industry

FIGURE 5
Moderating Effect of Chair-CEO Duality

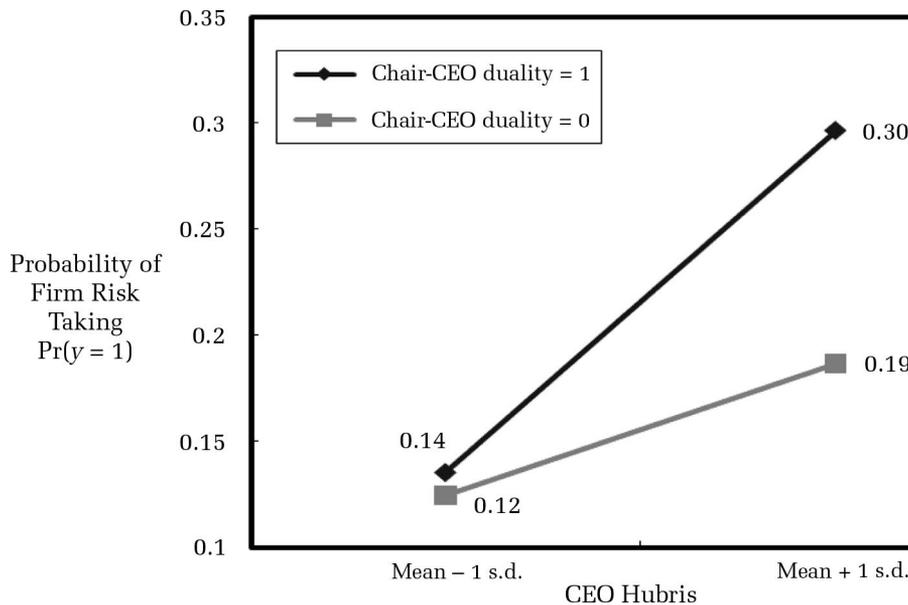
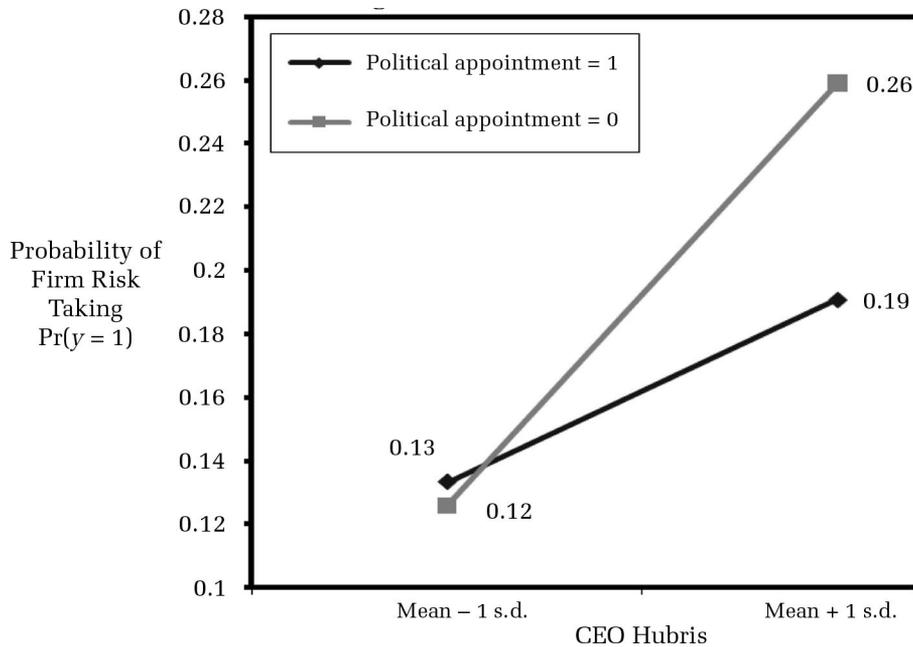


FIGURE 6
Moderating Effect of CEO Political Appointment



peers. For instance, some firms might have taken a risk when the majority of peer firms did not do so. In this case, these firms could be called early investors, or pioneers (Sanders & Tuschke, 2007). In another scenario, a firm might have not taken a particular risk when the majority of its peers had already done so, and in this case the firm could be called a lagger. Early entry is a form of risk taking (Schoenecker & Cooper, 1998) and is expected to be associated with CEO hubris. Therefore, we conducted a supplementary analysis with a multinomial model to examine the effect of CEO hubris on a categorical measure of firm risk taking relative to industry peers.

Relative risk taking was the difference between a firm’s risk-taking level and the average risk-taking level of peer firms. A peer was defined as a firm in the same industry as a focal firm, and relative risk-taking was calculated as:

$$R_i - \frac{\sum_{j=1}^n R_j}{n - 1}, i \neq j,$$

where R_i denotes the risk-taking score of firm i , R_j is the risk-taking score of a peer firm, j , and n is the total number of firms in the same industry. The relative risk-taking level, measured as deviation from the peer average level of risk taking, could range between -1 and 1 . Expressed in terms of market entry decisions, the closer the value was to

1 , the earlier the focal firm entered relative to its peers; the closer to -1 , the more it lagged behind. Thus, a firm with a relative risk-taking score below -0.5 was a lagger, since it did not take risky action even when more than half of its peers had already done so; a firm with a relative risk-taking score above 0.5 was a pioneer, since it had already taken risky action when more than half of its peers had not yet done so. Any firm with a relative risk-taking score between -0.5 and 0.5 was a follower, since it just followed the majority in terms of risk taking. The sample was recoded into these three categories on the basis of relative risk-taking scores.

A multinomial logit regression model was used to estimate the likelihoods of the three categories (Powers & Xie, 2000). Multinomial logit models simultaneously estimate coefficients for each parameter for each category relative to other categories. Typically, one of the categories is chosen as a referent, and the cases are modeled on the basis of their probability of being classified into the other categories rather than the referent category. For the present study, “follower” was the referent category.¹¹

¹¹ The distribution of the three categories was as follows: pioneers (15.29%), followers (82.72%), and lagers (2%). The low proportions may not generate problems in model estimation, since a multinomial model can be thought of as simultaneously estimating binary logits for all comparisons among the alternatives, and the distribu-

TABLE 3
Multinomial Logit Estimates of Relative Risk Taking^{a, b}

Variables	Model 1		Model 2	
	Pioneers vs. Followers	Laggers vs. Followers	Pioneers vs. Followers	Laggers vs. Followers
CEO age	0.03*** (0.01)	0.01 (0.02)	0.03*** (0.01)	0.01 (0.02)
CEO education	0.54*** (0.07)	0.20 (0.15)	0.54*** (0.07)	0.20 (0.15)
CEO founders	0.55*** (0.16)	0.18 (0.40)	0.57*** (0.16)	0.18 (0.40)
Firm performance	0.00 (0.00)	0.01 (0.00)	0.00 (0.00)	0.01 (0.00)
Firm leverage	1.03*** (0.18)	-0.25 (0.22)	0.97*** (0.19)	-0.25 (0.22)
Firm age	-0.01* (0.00)	-0.01 (0.01)	-0.01 (0.00)	-0.01 (0.01)
Firm size	0.12*** (0.02)	-0.10* (0.04)	0.11*** (0.02)	-0.10* (0.04)
Firm R&D intensity	0.02*** (0.01)	0.02 (0.02)	0.03*** (0.01)	0.02 (0.02)
Chair-CEO duality	0.27* (0.11)	0.22 (0.29)	0.27* (0.11)	0.22 (0.29)
State-owned firm	-0.29* (0.14)	0.11 (0.36)	-0.27* (0.14)	0.11 (0.36)
Politically appointed CEO	0.01 (0.14)	0.30 (0.35)	0.02 (0.14)	0.30 (0.35)
CEO hubris			0.34*** (0.10)	-0.01 (0.30)
Constant	-6.17*** (0.55)	-3.59** (1.24)	-6.17*** (0.55)	-3.59** (1.24)
Likelihood-ratio χ^2		330.96***		341.25***

^a Definition of categories: pioneers: relative risk taking > 0.50; followers: $-0.50 \leq$ relative risk taking \leq 0.50; laggards: relative risk taking < -0.50.

^b Location dummies were included in all models. Standard errors are in parentheses.

* $p < .05$

** $p < .01$

*** $p < .001$

Table 3 reports the multinomial logit estimates of the impact of CEO hubris on the three levels of relative risk taking. Since this was a within-industry analysis, we omitted the industry-level moderators and controls. The results suggested that CEO hubris is positively ($p < .001$) related to becoming a pioneer, but it cannot account for the difference between being a lagger and a follower. Therefore, using relative risk taking as the dependent variable reconfirmed the effect of CEO hubris on firm risk taking. A hubristic CEO will take more risk than the CEOs of peer firms. CEO hubris encourages firm risk taking, and to some extent, such risk taking is also above the norm.

DISCUSSION

Anchored in the upper echelons theory and managerial discretion research (Hambrick & Finkelstein, 1987; Hambrick & Mason, 1984), the present research provides empirical evidence that CEO hubris spurs firms to make more risky decisions and that such a relationship is contingent on managerial discretion.

This is one of the first empirical studies to explicitly test the relationship between CEO hubris

and firm risk taking as well as its boundary conditions in a non-Western context. Prior research has shown that CEO hubris influences firm decision processes and outcomes (Hayward & Hambrick, 1997; Hiller & Hambrick, 2005; Malmendier & Tate, 2005, 2006), but very few studies have examined the relationship between CEO hubris and firm risk taking (Simon & Houghton, 2003). All those efforts have been conducted in the Western context, and they have not focused on the potential boundary conditions of the impact of CEO hubris on firm risk taking. By filling these gaps, this study extends understanding of the impact of CEO hubris on firm behavior.

The results highlight the moderating effects of managerial discretion, emanating from factors in a firm's environment, organization, internal corporate governance, and the specific sociopolitical context, either strengthening or weakening the relationship between CEO hubris and firm risk taking. The results demonstrate that market munificence and complexity provide CEOs with more discretion, thus strengthening the positive relationship between CEO hubris and firm risk taking. When firms have more inertia, as in the case of older firms, managerial discretion is weakened, as is the relationship between CEO hubris and firm risk taking. When firms have more intangible resources, enhanced managerial discretion strength-

tion of the three categories is fit for estimating a binary model (Agresti, 2002; Long, 1997).

ens the relationship between CEO hubris and firm risk taking. Internal corporate governance also matters. When a CEO also chairs his/her firm's board, the relationship between CEO hubris and firm risk taking becomes stronger, presumably because board monitoring is weaker and the CEO has more discretion. Finally, when the CEO is politically appointed, he or she will have more constraints and less discretion, thus weakening the effect of CEO hubris on firm risk taking. These results, examining the moderating effect of managerial discretion, contribute to the emerging literature on CEO hubris, as well as to research on managerial discretion and firm risk taking.

This study employed a large, multi-industry data set in an important emerging economy, China. In prior studies of CEO hubris and managerial discretion, researchers have normally used Western samples (e.g., Finkelstein & Hambrick, 1990; Halebian & Finkelstein, 1993; Hayward & Hambrick, 1997; Malmendier & Tate, 2005). Crossland and Hambrick (2007) suggested that the effect of managerial discretion will be weaker in a collective context than in an individualistic context. Therefore, China's collectivist heritage may make it a particularly difficult setting in which to find support for the propositions tested here. Nevertheless, this study still revealed significant moderation by managerial discretion of the relationship between CEO hubris and firm risk taking. This study thus contributes to the literature by generalizing and deepening understanding of CEO hubris and managerial discretion in a context different from the traditional Western one of prior studies.

Implications for Research

This study has several implications for management research. First, as have several other recent studies (e.g., Chatterjee & Hambrick, 2007; Hiller & Hambrick, 2005), this study has emphasized the importance of top executives' psychological characteristics and their effects on firm-level decisions and outcomes, a key prediction of upper echelons theory (Hambrick & Mason, 1984). Prior research has focused primarily on top executives' demographic rather than their psychological characteristics, in part because of the difficulty of collecting such data from top executives in field studies (Chatterjee & Hambrick, 2007). As a response to calls to integrate macro and micro management research (House, Rousseau, & Thomas-Hunt, 1995; Porter, 1996), this study may help advance research on the role of top executives' psychological characteristics in determining firm behavior.

The relationship this study has demonstrated be-

tween CEO hubris and firm risk taking has important implications for behavioral decision theory. Kahneman and Tversky (1979) suggested that when decision makers are confronted with gains, they become risk averse to protect those gains. This reasoning would predict that successful CEOs, even though they may easily become infected with hubris (Hayward & Hambrick, 1997), should be risk averse, since they are enjoying the gains associated with past success (Wiseman & Gomez-Mejia, 1998). But this reasoning may not contradict what was found in this study. Sitkin and Pablo (1992) suggested that both problem framing (contexts of gains/losses) and decision makers' individual characteristics explain risk-taking behavior. Here, we emphasized hubris as a key psychological attribute and controlled for the gain/loss context using prior firm performance. Researchers taking a behavioral decision theory perspective may wish to further explore whether the interplay between decision makers' psychological attributes and problem framing can generate additional insights, especially for top executives (Chatterjee & Hambrick, 2007), for whom the distribution of psychological characteristics can be very different from that of the general population (Hiller & Hambrick, 2005).

Previous research on managerial discretion has examined its moderating effect on the relationship between surface-level or demographic attributes of top executives—such as top management team tenure (Finkelstein & Hambrick, 1990), top management team size, CEO dominance (Halebian & Finkelstein, 1993), and CEO tenure (Crossland & Hambrick, 2007)—and firm decisions and their outcomes. This prior work has not emphasized the moderating effect of managerial discretion on deep-level or psychological factors characterizing top executives. The findings of this research have suggested that managerial discretion can have important implications for helping define the limits on the effects of CEOs' psychological traits and characteristics on firm decisions and outcomes, an important yet underinvestigated prediction of the upper echelons theory.

These findings on the moderating effects of managerial discretion in the Chinese context may have wider applicability. Previous research on managerial discretion has usually been set in a Western context, often the United States (Finkelstein & Boyd, 1998; Finkelstein & Hambrick, 1990; Halebian & Finkelstein, 1993; Hambrick et al., 1993). Crossland and Hambrick (2007) recently conducted a cross-country analysis and found that in countries emphasizing collective values, top executives tend to have less managerial discretion. China has long been considered as valuing collectivism rather

than individualism (Bond & Hwang, 1986; Redding, 1993). The Chinese context offered an opportunity to discover additional discretion-limiting factors highly embedded in that particular environment: state ownership and CEO political appointment. Therefore, the findings not only support the generalizability of research findings on managerial discretion, but also suggest insights into the role of managerial discretion in other emerging economies.

Finally, the results of this study also have implications for corporate governance research. Prior research on corporate governance and firm risk taking has normally taken the view (a key theme in agency theory) that principals and agents have different risk preferences: principals are risk-neutral, while agents are risk-averse (Eisenhardt, 1989). Firms use certain incentive and monitoring systems to align the risk preferences of agents with those of principals, and the predictions include that an outcome-based incentive contract, such as stock options, will increase firm risk taking (Rajgopal & Shevlin, 2002; Sanders 2001; Wright et al., 2002, 2007). A less vigilant board, such as one chaired by a firm's CEO, will allow firm decisions to largely reflect agents' desires (Finkelstein & D'Aveni, 1994). Although this study did not find a significant direct influence of chair-CEO duality, the significant interaction effect of this governance variable with CEO hubris suggests that governance can influence firm risk taking through its role in affecting managerial discretion. Different types of corporate governance may have distinct impacts on the extent to which a CEO can exercise discretion in decision making. Future research on corporate governance might fruitfully examine how other corporate governance variables, in addition to the chair-CEO duality examined in this study, influence firm risk taking and other decisions through their interplay with managerial discretion.

Implications for Practice

The results of this study also have several practical implications for managers. Confidence is necessary for CEOs. Moderate confidence can help spur executives to achieve more than they otherwise might have done (Hiller & Hambrick, 2005). As an integral part of the discovery process, moderate confidence is instrumental in innovation (Kanter, 2006). Confidence can also represent a CEO's vision of his/her firm. For instance, when Thomas J. Watson Sr. changed the name of his small workshop to International Business Machines Corporation, the change conveyed his confidence in his vision of the firm rather than arro-

gance (Collins & Porras, 1994). However, when executives overreach and their egos inflate, the resulting hubris can have serious consequences. For instance, CEO hubris is often detectable in business failures (Hayward et al., 2006). The effective CEO must tread a fine line between confidence and the bravado of hubris. Executives should check their decisions and actions to determine whether they reflect authentic confidence based on real data or hubris stemming from an inflated ego and stubborn pride (Hayward, 2007).

When a firm allows too much discretion to a CEO driven by an inflated ego, hubris can have strong impacts on firm decisions and outcomes. Specifically, it can lead to undue risk taking, and such risk taking may significantly influence the firm's performance. In such situations, firms may need to arrange governance structures especially to monitor the overconfident behavior of their CEOs and to protect the firms from ego-based decisions. Firms may need to pay attention to the amount of managerial discretion made available to top executives with, for instance, vigilant boards of directors and separation of the board chair and CEO positions.

Limitations and Future Research

Certain aspects of the results presented here should be interpreted in light of their limitations. First, the data were cross-sectional. It is possible that entering a high-tech industry may lead CEOs to become overconfident, rather than that the decision to enter the high tech industry resulted from pre-existing hubris. The arguments tested were based on theoretical logic and findings reported in the literature, but it is difficult to rule out such reverse causality. Research using longitudinal data or experimental methods is needed to confirm the direction of causality assumed in this research, as well as the dispositional and situational determinants of CEO hubris.

Another concern is the potential for single-source bias. However, there are several reasons to believe that any such bias would not have been serious. First, except for the question soliciting CEO evaluation of firm performance, our questions solicited mostly factual information about the firms. For example, the dependent variable, firm risk taking, was coded on the basis of whether or not a firm had invested in one of the nine categories of high and new technologies identified. Such information tends to be concrete and specific, so the decreased complexity of the judgments called for made the data less susceptible to common method bias (Doty & Glick, 1998). Second, measurement of the key independent variable, CEO hubris, was

based not only on subjective evaluation, but also on more objective information about return on sales. Although CEOs did report ROS in the survey, we compared their responses with data from an objective source, the *China Statistics Yearbook*. The average ROS for the sample firms in each industry was correlated with the industry data reported in the 2000 *Yearbook*, and the significant correlation ($\gamma = 0.41, p < .05$) demonstrated to some extent that the information on ROS was reasonably reliable and objective.¹² Third, the data measuring the three environmental moderators (market munificence, complexity, and uncertainty) were also drawn from the *Chinese Statistics Yearbook* (1996 to 2000), and the firm-level moderators were based on factual information such as firm age, firm size, R&D intensity, and internal corporate governance. Finally, for the firm-level moderators, the significance of such interactions was unlikely to be an artifact of the single-informant method, as the respondents were unlikely to have consciously fabricated the moderated relationships when responding to the survey (Brockner, Siegel, Daly, Tyler, & Martin, 1997; Doty & Glick, 1998).

In addition to the environmental and organizational determinants of managerial discretion, Hambrick and Finkelstein (1987) identified another set of individual determinants, including personal commitment, cognitive complexity, and tolerance of ambiguity. Data appropriate to measurement of these constructs were not available, so this study did not test them as possible determinants. Future research might profitably examine how CEOs' personal characteristics affect their managerial discretion, and the relationship between CEO hubris and firm risk taking and other firm decisions and their outcomes.

The fact that Chinese executives were surveyed and that the research was conducted in a single country may to some extent limit the applicability of the results to other contexts. China is a transition economy, so it is of course different from developed markets in certain respects. China's unique culture would also be expected to influence the behavior of Chinese CEOs. Nevertheless, we believe that China is an appropriate experimental setting for testing the generalizability of theoretical constructs and propositions largely developed in a Western context, particularly the concept of CEO hubris and the theory of managerial discretion.

¹² Because many of the surveyed firms were not publicly listed and the survey conditions did not allow revealing the firms' identities, it was not feasible to use archival performance data at the firm level.

Still, the idiosyncratic impacts of the Chinese context and their theoretical implications should be further explored in future research (Tsui, 2007; Xiao & Tsui, 2007).

On balance, this study has tested managerial discretion theory in a collectivist national context and provided evidence that managerial discretion is more generally influential than has previously been suggested. The conventional corporate governance variable, chair-CEO duality, showed no strong direct relationship with firm risk taking in these Chinese data. Future research in different contexts based on deep contextualization (Tsui, 2007) and in cross-cultural studies is clearly needed to clarify these issues.

Of course, in view of the limited data availability here, our operationalization of CEO hubris needs to be strengthened by future exploration of more direct measures of hubris, by such means as surveying CEOs directly on their (hyper) core self-evaluation (Hiller & Hambrick, 2005; Judge et al., 2002). Also, the measure of firm risk taking should be strengthened by considering the fact that different CEOs may have different interpretations of risk-taking behavior (Chattopadhyay, Glick, & Huber, 2001). Thus, future research should include attempts to develop direct measures of CEOs' subjective perceptions of firm risky decisions.

Finally, it is likely that other potential moderators were neglected. As one example, we note Hambrick, Finkelstein and Mooney's (2005) suggestion that executive job demands is another important moderator of the basic predictive strength of upper echelons theory. Their general proposition is that the greater an executive's job demands, the stronger the relationship between executive characteristics and strategic choices (Hambrick, 2007: 336). This suggests a logical extension of these findings: the greater an executive's job demands, the stronger the relationship between CEO hubris and firm risk taking. Future research might be directed at empirically testing this proposition.

Conclusions

This study has provided empirical evidence of a positive relationship between CEO hubris and risk taking in Chinese firms. The relationship appears to be stronger when a firm faces a munificent but complex market, when it has low inertia, when it has many intangible resources, when its CEO also chairs its board, and when the CEO is not politically appointed. If it is assumed that many CEOs are driven by inflated egos, the consequences of CEO hubris for firm behavior and outcomes would clearly be important and deserving of further study.

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