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BEHAVIORAL AGENCY AND THE IMPACT OF AFFECT UPON CEO RISK TAKING

ABSTRACT

We advance behavioral agency theory by exploring the influence of mood or “affect” on the behavioral consequences of equity incentives. Drawing on insights from psychology and behavioral decision theory, we describe how affect influences agent risk behavior. We argue that positive affect amplifies both the extent to which executives reduce strategic risk taking in response to risk bearing and engage in strategic risk taking in response to incentives for further enrichment. Building again on the psychology literature, we describe how CEO accountability attenuates the influence of affect on CEO risk behavior in response to equity incentives. We test our expectations in a longitudinal dataset of CEO equity incentives and strategic risk taking by U.S. firms for the period 1994—2013.
“Consideration of the role of an affect heuristic in decision making is probably the most important development in the study of judgment heuristics in the last decades”
Kahneman, Nobel Acceptance Speech (2002: 470)

Agency theorists have explored the role of equity-based pay in shaping the risk preferences of executives (e.g., Fama, 1980; Hölmstrom, 1979). Drawing on insights from prospect theory (e.g., Kahneman & Tversky, 1979), management scholars have extended classical agency theory’s predictions on the behavioral consequences of equity incentives by examining the role of decision framing (e.g., Beatty and Zajac, 1994; Wiseman and Gómez-Mejía, 1998) and risk perception (Sitkin and Pablo, 1992). The Behavioral Agency Model (BAM) suggests that executives subjectively endow (include in estimations of personal wealth) compensation considered assured, such as the value of options previously granted. Endowed equity wealth is included in executives’ assessment of wealth-at-risk of loss (risk bearing) in the event of failure from risk taking, leading to executives becoming more risk averse (Devers, McNamara, Wiseman and Arrfelt, 2008; Larraza-Kintana, Wiseman, Gómez-Mejía, and Welbourne, 2007).

We offer a refinement to BAM’s formulation by describing how CEO mood or “affect” influences the relationship between equity incentives and risk taking. The influence of an individual’s affective state is typically assumed away in both classical agency theory (Jensen and Meckling, 1976) and prospect theory—at least as the latter was originally formulated—(Kahneman and Tversky, 1979). Therefore, it is perhaps unsurprising that the influence of affect on the behavioral consequences of incentives is largely unexplored in the behavioral agency literature. Yet, extensive research in psychology and behavioral decision theory suggests that affect is an important factor in decision making (Johnson and Tversky, 1983; Slovic, Finucane, Peters, and MacGregor, 2002; Raghunathan and Pham, 1999) and in shaping individual risk
preferences (Arkes, Herren, and Isen, 1988; Nygren, Isen, Taylor, and Dulin, 1996). The influence of affect on decision making has been observed in a wide range of business settings (George and Brief, 1996; Staw, Sutton, and Pelled, 1994; Seo, Goldfarb, and Barrett, 2010). Moreover, affect is thought to have greatest influence on decision making in contexts of uncertainty—contexts common in executive decision making. In such settings, affect is more likely to tip the balance towards specific decisions than when outcomes are more predictable (Baron, 2008; Forgas, 1995, 2000).

Decision theorists argue that affect influences decision making through two mechanisms: affect maintenance and affect congruence (Isen, 2008; Johnson and Tversky, 1983). Affect maintenance refers to the tendency of individuals in a positive affective state to demonstrate a higher negative utility on losses (Isen, 2008). Behavioral decision theorists attribute this tendency to an individual’s efforts to avoid decisions that threaten a positive mood (Arkes et al., 1988; Epstein, 1994). Affect congruence refers to the tendency of individuals in a positive affective state to make more optimistic assessments of the probability of success from risk taking. This tendency is attributed to individuals taking affect as a heuristic—mental shortcut—in the decision making process (Johnson and Tversky, 1983). In sum, affect impacts on the individual’s estimate of two core components of decision making under risk—utility and probability—albeit in functionally opposite ways: when considering possible losses, affect maintenance increases an individual’s estimate of the negative utility of losses and when considering possible gains, affect congruence increases subjective assessments of the probability

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1 We use the term “affect” to refer to a mild affective state or a mood induced by either the environment or specific events (Jones and George, 1998).

2 Knight (1921) defined risk as relating to known probabilities and uncertainty as relating to unknown probabilities. However, uncertainty and risk are often used interchangeably by scholars and practitioners, given known payoffs are rare in business decision making (Bromiley, Miller and Rau, 2001).
of gains. The impact of affect on decision making is frame dependent (Isen and Geva, 1987; Nygren et al., 1996). When potential losses are significant, affect maintenance dominates and individuals in a positive affective state bet less than people in a neutral affective state. However, when there is little to lose, affect congruence dominates leading people in a positive affective state to bet more.

We reason that affect maintenance and affect congruence are each likely to influence the relationship between CEO equity incentives and strategic risk taking: affect maintenance by increasing risk aversion and affect congruence by increasing risk seeking behavior. To develop our arguments, we integrate insights from psychology on the role of affect in decision making with arguments from BAM on decision framing and the behavioral consequences of equity incentives. In particular, we draw on the insights that, previously awarded stock options increase CEO risk bearing, as they are endowed in estimates of personal wealth (Wiseman and Gómez-Mejía, 1998), whereas prospective equity wealth (potential wealth gains if risk taking is successful) increases CEO willingness to take risk (Martin, Wiseman, and Gómez-Mejía, 2013). Building on these insights, we describe how affect influences both risk aversion in response to endowed equity wealth and risk seeking in response to prospective equity wealth. To add further texture to our study, we also consider how CEO accountability shapes the impact of affect. The psychology literature suggests that the impact of affect on decision making varies with the extent to which an agent has to account for their actions (Bodenhausen, Kramer, and Suesser, 1994; Lerner, Goldberg, and Tetlock, 1998). Therefore, we examine how CEO accountability influences the interplay between CEO affect, equity incentives, and strategic risk taking.

As affect is not directly observable, the psychology and decision theory literatures on the role of affect is largely built on analysis of the relationship between observable stimuli that are
thought to prime effect—such as music or light—and an individual’s subsequent behavior (e.g., Isen and Patrick 1983; Johnson and Tversky, 1983). Within these literatures, scholars make extensive use of laboratory experiments. However, as with upper echelons literature on the relationship between executive cognition and firm outcomes, we are challenged by the practicalities of getting senior executives to participate in laboratory-style tests (Cycyota and Harrison, 2006; Hambrick and Mason 1984). In light of this challenge, management scholars rely on proxies for the CEOs’ psychological state—such as demographic data (e.g., Chatterjee and Hambrick, 2011), media praise, and recent firm performance (Hayward and Hambrick, 1997). A related approach adopted in recent studies is to use real life natural experiments in the form of shocks to executive cognition (e.g., Dahl et al., 2012; Shi, Hoskisson, and Zhang, 2016). Shi for example take the death of an independent director as a primer of CEO reflection and reevaluation of life goals, ultimately impacting on acquisition decisions.

Adopting a natural experiment approach, we take weather conditions in the area surrounding firms’ headquarters as an observable, exogenous source of variation in CEO affect. There are several reasons why weather conditions provide an attractive context for exploring the impact of CEO affect on decision making. First, research on the impact of affect on decision making is built primarily on studies of mild incidental affect (e.g., Johnson and Tversky, 1983; Keller, Lipkus, and Rimer, 2002; Townsend and Campbell, 2004)—the kind of affect induced by ambient weather conditions (Leppämäki, Partonen, and Lonnquist, 2002; Schwarz and Clore, 1983)\(^3\). As individuals tend not to attend consciously to background conditions that give rise to mild changes in incidental affect, such stimuli are thought to have a pronounced impact on

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\(^3\) Scholars commonly distinguish between two forms of affect: integral and incidental. Integral affect arises from the task at hand—for example, job anxiety, and incidental affect arises from factors unrelated to the task at hand—for example, the weather (Altman and Rogoff, 1987) or the performance of sports teams (Arkes et al., 1988).
decision making (Isen, 2008). In contrast, when a person attends to the origin of their affective state, the influence of affect on decision making can become muted (Schwartz and Clore, 1983).

Second, there is abundant evidence that the affect induced by ambient weather influences decision making (Cunningham, 1979; Howarth, and Hoffman, 1984; Larrick, Timmerman, Carrton, and Abrevaya, 2011). Of particular relevance in our setting, prior research points to the influence of weather on decision making under risk. People make more optimistic assessments of the probabilities associated with risky future events—and thus exhibit a greater willingness to take risks—in brighter weather (Bassi, Colacito, and Fulghieri, 2013) Also, investors take more optimistic positions on firms in brighter weather than in cloudier weather (Hirshleifer and Shumway, 2003; Saunders, 1993). Third, we are interested in capturing effect over a sustained period of time—to keep with the tradition in research on CEO risk taking of looking at incentives, risk taking and contingencies on an annualized basis. Annualized data is available on prevailing weather conditions in areas around firms’ headquarters for a large range of firms over multiple years. Fourth, the availability of large-scale longitudinal data allows us to exploit the advantages of rigorous econometric testing.

It is important to note that our focus here is not in establishing that weather induces affect or that weather induced affect influences decision making. Each of these phenomena have been established in extensive prior work. Instead, we take research on the impact of weather on affect and weather induced affect on decision making as our departure point in examining how CEO affect influences the behavioral consequences of equity incentives. While we build on the expectation that CEO affect is, at least in part, induced by weather, a host of other factors such as personal life, health and peer relationships are also likely to impact on CEO affect—many in a more pronounced way than weather. However, we reason that in a sufficiently large-scale study,
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weather provides a useful proxy for CEO affect. That is, with a large sample (8,432 firm years) over a long period (20 years) we mitigate the impact of idiosyncratic aspects of a CEO’s mood, giving us an opportunity to empirically test of the impact of systematic variations in affect on decision making. Here our work fits with the tradition adopted in upper echelons research of utilizing unobtrusive proxies for an executive’s psychological state that allow researchers to exploit the benefits of larger sample sizes.4

Our work makes several contributions. First, we refine BAM’s formulation (Wiseman and Gómez-Mejía, 1998) by introducing affect as a contingency in the relationship between CEO equity incentives and strategic risk taking. As suggested by the excerpt from Kahneman’s Nobel Prize acceptance speech (2002, in the epigraph to this paper), in recent decades the influence of affect has proven to be one of the most fruitful avenues for scholars seeking to advance behavioral decision research. Yet, behavioral agency research has not delved into the implications of affect for the foundational predictions of BAM. While BAM has gained acceptance among management and behavioral scholars, it has been applied in a narrow range of contexts and empirical results have been mixed (Devers et al., 2008). In addition it remains open to the criticism that a limited range of boundary conditions have been offered (cf. Martin et al., 2013). By describing affect-related boundary conditions, we enhance the predictive validity of behavioral agency theory.

Second, in exploring the interplay between affect and incentive responsiveness, our work provides further insight on the influence of CEOs’ psychological state on firm behaviors. To

4 A large sample mitigates the impact of idiosyncratic factors (such as personal disposition, travel, office layout or work practices etc.) that could influence reaction to weather conditions. In this context, we note that we have a significantly larger sample size than other studies that look at the impact of factors that prime CEO affect (for e.g., Chatterjee et al., 2007 study 11 CEOs; Chatterjee et al., 2011 study 152 CEOs—totalling 554 firm-years). Also, as Hambrick and Mayson (1984) note, as we rely on a proxy, any significant finding will be conservative, given the underlying effect is attenuated by noise.
date, the management literature on the relationship between CEOs’ psychological states and firm behaviors has focused primarily on personality traits—such as hubris or core self-evaluation, narcissism, humility, and the Big Five personality traits (Chatterjee and Hambrick, 2007; 2011; Hayward and Hambrick, 1997; Nadkarni and Herrmann, 2010; Ou et al., 2014; Patel and Cooper, 2014; Simsek, Heavey, and Veiga, 2010). We advance this research by adopting a primer of affect (weather) to refine BAM’s predictions of agent risk taking. While there are strong reasons to believe that personality traits shape CEO responsiveness to incentives, CEOs may shape compensation plans to fit their personality traits or join firms with plans that fit their personality related preferences (Gerhart and Rynes, 2003; Wowak and Hambrick, 2010). In contrast to a personality trait—a stable tendency in an individual’s reactions to stimuli (Baron, 2008)—environmentally induced affect is less prone to such concerns.5

Third, our work extends scholarship on environmental influences on CEO decision making and, in particular, decision making under risk. The organizational literature has emphasized the priming influence of social and professional environments (Chatterjee and Hambrick, 2011; Graffin et al., 2013; Park, Westphal and Stern, 2011; Shi et al., 2016). We highlight the role of the physical environment as an affect primer that shapes responsiveness to CEO equity risk bearing. In doing so, our work also extends research on the embedded nature of principal-agent relationships beyond issues of social embeddedness (e.g., Crossland and Hambrick, 2011; Gómez-Mejía, Nunez-Nickel, and Gutierrez, 2001; Westphal and Zajac, 2013; Wiseman et al., 2012).

BACKGROUND AND HYPOTHESES

5 To ensure that our findings are not subject to the kinds of concerns raised by Gerhart and Rynes (2003) and Wowack and Hambrick (2010), in our empirical analysis we control for the potential impact of enduring weather conditions.
Behavioral agency theory, equity incentives, and risk taking

Our core argument is that affect influences the relationship between the incentives created by CEO equity-based pay and strategic risk taking. In developing our argument we build on the BAM literature on the relationship between CEO equity incentives and strategic risk taking (e.g., Wiseman and Gómez-Mejía, 1998). Therefore, we first review the BAM literature on the behavioral consequences of incentives.

Financial economists had assumed that managerial agents are risk averse due to the agents’ concentration of financial and human capital wealth in their firms (Fama, 1980; Hölmstrom, 1979). This assumption was instrumental in subsequent modeling of optimal principal–agent contracting, intended to incentivize risk taking while compensating the executive for bearing firm performance risk (e.g., Core and Guay, 1999; Gao, 2010). However, the assumption that risk preference is fixed regardless of context is inconsistent with a substantial body of behavioral decision research suggesting that individuals are loss averse. Loss aversion suggests that individuals prefer to preserve existing wealth rather than place that wealth at-risk through the pursuit of uncertain additional wealth gains (Kahneman and Tversky, 1979). Said differently, prospective losses are weighed more heavily than prospective gains when choosing among alternatives with uncertain outcomes.

Integrating the concept of loss aversion, BAM sought to enhance agency theory’s predictive validity when modeling agent risk taking using compensation related variables (Wiseman and Gómez-Mejía, 1998). BAM describes wealth as endowed if it is included in an agent’s estimate of accumulated wealth, which may be extended to future compensation that is considered assured (Martin et al., 2013). Drawing on Sitkin and Pablo’s (1992) model of risk taking within firms, BAM suggests that endowed wealth—wealth-at-risk of loss if risk taking
fails—is negatively related to risk taking. That is, the greater their equity wealth, the greater the agent’s risk aversion when making decisions under risk on behalf of the firm.

Extending BAM, Martin and colleagues (2013) distinguish between the negative influence of endowed (“current”) equity wealth on risk taking and the positive impact of uncertain future (“prospective”) equity wealth on risk taking. According to the definition of endowed wealth (cf. Wiseman and Gómez-Mejía, 1998), the uncertain qualities of prospective wealth mean that it is not endowed by the CEO. Said differently, as equity incentives consist of assured (current) wealth that is endowed and uncertain prospective wealth that may materialize if risk taking is successful, they present CEOs with a mixed gamble—one with potential gains and losses (as opposed to pure gambles, representing a choice between losses or gains with different probabilities). The aversion to loss of current wealth in equity incentives is tempered by assessments of the opportunity for potential future gains from increases in share price should risk taking be successful. Behavioral agency research suggests that current equity wealth leads to CEOs reducing risk to limit the potential for loss, and thus negatively impacts risk taking (Wiseman and Gómez-Mejía, 1998). Conversely, assessments of prospective equity wealth lead to CEOs focusing on wealth gains and thus positively impact risk taking (Martin et al., 2013, 2015). In sum, equity wealth: (1) creates risk bearing when wealth is endowed, leading to CEO risk aversion; and (2) offers the potential for additional wealth gains, leading to risk seeking by the CEO. Next, we explore how these incentives are likely to be moderated by CEO affect.

**Affect, equity incentives, and risk taking**

There is compelling evidence in the psychology literature that positive affect can amplify both loss aversion and risk taking, depending on how a decision is framed (e.g., Isen, 2008; Isen and
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Patrick, 1983; Nygren et al., 1996). We build on this literature, to describe the impact of affect upon the consequences of CEO equity wealth for loss aversion and risk taking.

Turning first to loss aversion: the concept of affect maintenance has been advanced in the psychology literature to explain the phenomenon whereby individuals in whom a positive affect has been induced are more likely to avoid meaningful risks relative to those in control groups (e.g., Arkes et al., 1988; Isen and Patrick, 1983). People in whom a positive affect has been induced tend to have more thoughts about potential losses, and to behave more conservatively—protectorg themselves from losses—even though they have a more optimistic assessment of the likelihood of success from risk taking (e.g., Isen, Nygren, and Ashby, 1988). For example, people in whom positive affect has been induced are less likely to accept a gamble with the potential for material losses even though they have a higher expectation of winning (e.g., Isen and Geva, 1987).

It is argued that positive affect causes individuals to show greater negative utility for potential losses as they wish to maintain their positive affective state (Arkes et al., 1988; Nygren et al., 1996). Reflecting an aversion to emotional utility losses, individuals in a positive affective state avoid actions that threaten their mood (Wegener, Petty, and Smith, 1995). Said differently, under conditions of positive affect, the potential for loss carries a greater negative utility as, in addition to the material loss, an individual risks losing their positively valued affect (Isen and Geva, 1987). Thus, the increased sensitivity to potential losses is goal directed—a conscious effort to protect and maintain affect.

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6 The psychology and decision theory literatures on affect and decision making focus primarily on the impact of positive affect. While there is robust theory and empirical support for the impact of positive affect, the impact of negative affect—unpleasant emotional states—is less certain (for a discussion, see Isen, 2008).
The theoretical reasoning underpinning affect maintenance suggests that it influences decision making by increasing the negative utility of potential losses (Isen, 2008). In a behavioral agency setting, real and meaningful potential losses equate to the concept of risk bearing: the endowed wealth that is included in the agent’s estimate of losses in the event of unsuccessful risk taking. As it relates to equity incentives, CEO assessment of current equity wealth represents risk bearing, negatively influencing strategic risk taking (Wiseman and Gómez-Mejía, 1998). The psychology literature on affect maintenance (e.g., Arkes et al., 1988) suggests that this prediction can be extended by adding an affect related dimension to CEO wealth.

Similar to behavioral agency literature that has added a socioemotional dimension to wealth-at-risk of loss (risk bearing) when predicting risk behavior (Gómez-Mejía et al., 2007), we suggest that affect related utility creates an additional dimension of wealth-at-risk. Specifically, we reason that, as positive affect increases the utility at-risk of loss, positive affect increases CEO risk bearing. That is, positive affect creates a non-financial utility that is at-risk of loss, contributing to an agent risk bearing, or perception of the personal losses that would be incurred in the event of failed risk taking on behalf of the firm. If risk taking is unsuccessful, not only is equity wealth lost due to declines in the share price; utility associated with positive affect is also likely to be negatively influenced. Hence, we reason that positive affect accentuates CEO risk bearing associated with current equity wealth. Affect maintenance logic suggests that, in such a setting, executives are likely to be more risk averse—less willing to take risk in an attempt to preserve existing wealth. Said differently, in a positive affective state, the CEO will be motivated to limit the risk of events such as personal financial losses. Accordingly, we posit that positive affect amplifies the negative relationship between CEO current equity wealth and strategic risk taking.
Hypothesis 1: Positive affect amplifies the negative relationship between the current wealth in CEO equity incentives and strategic risk taking.

Next, we develop our arguments regarding the influence of affect on the relationship between the prospective wealth in CEO equity incentives and strategic risk taking. Recall that the uncertain future—prospective—wealth inherent to CEO equity incentives describes the potential gains to option wealth if risk taking is successful (Martin et al., 2013). That is, prospective wealth incentivizes risk taking as per classical agency theory (Murphy, 1999).

Again, the psychology literature on affect and decision making provides a basis for refining this prediction. Recall that the impact of affect on decision making is frame dependent: when considering possible losses, affect increases loss aversion; when considering possible gains, affect increases estimates of the probability of success (Johnson and Tversky, 1983; Nygren et al., 1996). Decision theorists refer to the phenomena whereby people in a positive affective state have a higher expectation of success from risk taking as affect congruence (Slovic et al., 2002; Schwarz, 2011; Schwarz and Clore, 1983). It is thought that positive affect cues positive material in memory (Baddeley, 1990; Eich, 1995). As affect serves as a retrieval cue, affect congruent material is more psychologically available than affect incongruent material (Johnson and Tversky, 1983). Thus, decisions—including personally relevant and complex judgments—become infused with affect (Forgas, 1995; Forgas and George, 2001). For example, there is abundant evidence that people in a positive affective state tend to see more positive aspects in relatively neutral material and rate such material more positively (Garcia-Marques et al., 2004; Kraiger, Billings, and Isen, 1989). As affect acts as a heuristic in the decision making process, individuals make affect congruent decisions (Frijda, 1988; Schwarz, 2011; Clore, Schwarz and Conway, 1993; Schwarz and Clore, 1983). Notably, affect congruence is thought to occur even when the affective state is mild and unrelated to the decision at hand (Arkes et al.,
In sum, due to affect congruence, positive affect increases an individual’s expectation of success from risk taking (Arkes et al., 1988; Johnson and Tversky, 1983).

There is an overlap in cognition associated with affect congruence and CEO prospective wealth in that both focus on positive outcomes. Prospective equity wealth “goes beyond a forecast of future performance and instead signals the full wealth generating potential existing options may deliver if all goes well” (Martin et al., 2016). As it is uncertain, and thus not endowed, prospective equity wealth is not framed as wealth at-risk of loss from risk taking (Martin et al., 2013). Instead, prospective wealth represents the opportunity for gain from successful risk taking. As potential gains are emphasized in the context of prospective wealth, affect congruence—rather than affect maintenance—is likely to be operative in the relationship between affect, prospective wealth, and risk taking (Isen, 2008; Isen and Patrick, 1983). We reason that, due to affect congruence, CEOs in a positive affective state are likely to estimate a higher probability of success from risk taking and thus form a more optimistic assessment of the prospective wealth in their equity incentives. As estimates of success and payoff are positively related to the likelihood that an individual takes risk (Kahneman and Tversky, 1979), we theorize that positive affect amplifies the risk taking associated with the prospective equity wealth.

Accordingly, we posit that positive affect amplifies the relationship between the prospective wealth in CEO equity incentives and strategic risk taking.

**Hypothesis 2:** Positive affect amplifies the positive relationship between the prospective wealth in CEO equity incentives and strategic risk taking.

Next, we extend our study by describing how the impact of affect on the interplay between equity incentives and strategic risk taking varies with the extent to which CEOs expect to be held accountable for their decisions.

**CEO accountability**
Studies in psychology suggest that the impact of affect on decision making diminishes when an individual expects to be held to account for their decisions (Bodenhausen et al., 1994; Lerner et al., 1998). Anticipation of accountability is thought to lead to individuals engaging in conscious preemptive self-monitoring of their judgment processes (Tetlock, 1985; Tetlock and Kim, 1987). As conscious self-monitoring of judgment processes increases, decision making is thought to become less prone to the influence of incidental affect (Han, Lerner, and Keltner, 2007). In a similar spirit, management scholars have pointed to the role of accountability in tempering the impact of CEO traits such as hubris upon firm behavior (e.g., Hayward and Hambrick 1997).

We reason that the impact of affect on decision making diminishes with the extent to which a CEO expects that they will have to account for their decisions. We focus our attention on institutional ownership as an indicator of a CEO’s accountability for their decisions. Agency theorists argue that, compared to situations of defuse ownership, concentrated institutional ownership increases the extent to which managerial agents can be held to account (Jensen and Meckling, 1976). In recent years, institutional ownership has emerged as a mechanism of particular interest to management research on how monitoring influences top management decision making and firm behavior (Connelly, Tihanyi, Certo, and Hitt, 2010; Connelly, Tihany, Ketchen, Carnes and Ferrier, 2016; Shi, Connelly, and Hoskisson, 2016; Washburn and Bromiley, 2014).

Scholars interested in the role of institutional ownership in holding executives to account commonly delineate between passive and active institutional owners (e.g., Connelly et al., 2010; Porter, 1992). Passive institutional owners are those that buy and hold an equity position in a firm as part of an index-type trading strategy. Hence, passive institutional owners trade a firm’s stock following broad indices and independent of executives’ strategic choices. As passive
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institutional owners buy in and out of firms based on a quasi-index trading strategy, they are thought to have “abdicated” their monitoring role and play little or no part in holding executives to account (Connelly et al., 2010). Active institutional owners are those that selectively buy and/or sell stakes in specific firms based on current performance and/or future prospects. Active institutional owners are thought to have a strong influence on executive accountability (Connelly et al., 2010).

We reason that, due to greater accountability, the impact of affect on CEO decision making diminishes as active institutional ownership increases. Specifically, by leading to preemptive self-monitoring, the heightened accountability associated with active institutional ownership diminishes the impact of affect on CEO decision making. Accordingly, we posit that the impact of affect on the interplay between equity incentives and strategic risk taking is attenuated by the level of active institutional ownership.

Hypothesis 3a: Active institutional ownership attenuates the impact of positive affect on the negative relationship between the current wealth in CEO equity incentives and strategic risk taking.

Hypothesis 3b: Active institutional ownership attenuates the impact of positive affect on the positive relationship between the prospective wealth in CEO equity incentives and strategic risk taking.

SAMPLE, DATA AND VARIABLES

Sample

Our initial sample consists of all publicly traded manufacturing firms in the Compustat database from the years 1994 to 2013. We limit our sample to manufacturing firms (SIC codes between 2,000 and 4,000) because of the relevance of variables that Miller and Bromiley (1990), as well as others (cf., Hoskisson, Hitt, and Hill, 1993; Martin et al., 2013) argue reflect the strategic risk of the firm. Such variables include capital expenditures, R&D spending, and long-term debt. We
merge this sample with Standard and Poor’s (S&P) ExecuComp and Integrated Surface (ISD) databases. The Integrated Surface database provides data on local weather conditions that we use to construct our affect measure (discussed in detail below). ExecuComp provides annual data on CEO compensation for the firms in the S&P 1500. The S&P 1500 combines three leading indices, the S&P 500, the S&P MidCap 400, and the S&P SmallCap 600, which represent the large-cap, mid-sized, and small-cap segments of the U.S. equity market, respectively. We obtain data on institutional ownership and institutional ownership classification from the CDA/Spectrum database and Brian Bushee’s homepage, respectively. We obtain firm financial information from the Compustat Fundamental Annual files, and CEO characteristics from the RiskMetrics database. To facilitate comparison of the coefficients, all non-binary explanatory variables in regression analysis are standardized with a mean of zero and standard deviation of one. A final sample of 8,432 firm-year observations was available to test our hypotheses.

**Measures**

*Strategic risk taking*. In order to be consistent with the prior research that we build upon, our measure of risk uses factor analysis of three variables perceived by executives as positively related with firm risk: R&D expense, capital expenditure, and long-term debt (Devers *et al*., 2008; Kish & Campbell, 2016; Larraza-Kintana *et al*., 2007; Martin *et al*., 2013). R&D spending is the annual expense on research and development; capital expenditure is the spending on property, plant, and equipment; long-term debt is debt with maturity beyond one year held on the balance sheet. Our factor analysis produced a single factor explaining 66 percent of the variance, suggesting that these three variables could be grouped into a composite indicator of strategic risk taking. The factor loadings were 0.59 for R&D expense, 0.53 for capital expenditure, and 0.61

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for long-term debt; the eigenvalue was 1.98. Accordingly, we calculated a single risk taking variable as the zero-mean standardized factor score for this common factor. This variable is positively related to risk taking.\(^8\)

**Current Wealth.** Consistent with prior behavioral agency research (Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013), *Current wealth* is calculated, using data from Execucomp, as the number of options from each option grant, multiplied by their corresponding spread (for in-the-money options) on the final day of the fiscal year. This is a heuristic for the CEO’s potential losses if risk taking fails, given that negative firm outcomes will negatively impact the share price and therefore the value of the CEO’s options. Hence, this variable is positively related to CEO risk bearing.

**Prospective Wealth.** This variable estimates the potential additional wealth that the CEO could realize, if risk taking is successful, as reflected by increases in the share price (Coffee, 1988; Murphy, 1999). To estimate prospective gains due to future share price increases, we use the average increase in the Dow index which was 6.8% (Martin et al., 2013). We use the life of the CEO’s stock options to estimate the period over which the CEO can increase the share price to create additional value prior to their expiry. Therefore, we raise \((1 + 6.8\%)\) to the power of the number of years remaining (a weighted average across the options held, shown below in our equation as “\(time\)”) prior to realizing the value in the stock options. We subtract the present day stock price so that we capture only the additional wealth the CEO stands to gain due to stock price increases. Hence, we use the formula:

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\text{Prospective Wealth} = \text{Number of Options Held} \times [(1.068^{\text{time}} \times \text{Stock Price}) - \text{Stock Price}]
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\(^8\) As per prior research (Devers et al., 2008; Martin et al., 2013; Kish-Gephart and Campbell, 2015), we use an unscaled measure of our dependent variable, thereby avoiding potential spurious correlations among the denominators of both right- and left-side variables (Krönmal, 1993, 1995; Wiseman, 2009). Instead of scaling our dependent variable we include firm size as one of the controls in our regressions.
The number of options held is calculated as unexercisable plus exercisable stock options. Stock price is the share price at the end of the year. To calculate average time to expiry we use the Core and Guay’s (2002) estimation technique (Martin et al., 2013). We use a weighted average of time to expiry across exercisable, unexercisable, and newly granted options.

**Affect.** As discussed, extensive prior research shows that weather—and, in particular, the amount of sunshine—primes affect. To construct our measure of affect, we collect weather data from the Integrated Surface Database (ISD), which is available from the National Oceanic and Atmospheric Administration. The database contains hourly weather observations from over 20,000 active and inactive weather stations worldwide. We collect the data from all active weather stations located in the U.S. We follow prior research by measuring affect using the amount of cloud cover in the area where a firm is headquartered. The ISD measures sky cover in oktas (i.e. eighths), where sky cover is reported as follows: 0 oktas cover is CLR (clear sky), 1–2 oktas cover is FEW (few clouds), 3–4 oktas cover is SCT (scattered clouds), 5–7 oktas cover is BKN (broken clouds), and 8 oktas cover is OVC (overcast or full cloud coverage). We assign to each of these categories an integer value on a scale of one to five, where one indicates clear sky (CLR) and five indicates full cloud coverage (OVC). For each weather station, we compute a daily sky-cover index by averaging hourly cloud coverage between 6 a.m. and midnight and define a particular day as sunny if it had an average cloud cover less than or equal to two (that is, if it had either clear sky or few clouds). Then, for each weather station, we calculate the seasonally adjusted monthly number of sunny days as the number of sunny days in a given month minus the average number of sunny days in that particular month and in that particular location over the entire sample period.

The ISD database also provides the location coordinates of each weather station (i.e.,
latitude and longitude). For each firm in Compustat, we calculate its geographic distance from each weather station based on the harvesine distance formula.\(^9\) The location coordinates of Compustat firms are recorded at the ZIP code level. Then, we calculate firm-level seasonally adjusted monthly number of sunny days by taking the average values of all the weather stations within a 50-kilometer radius of the firm’s ZIP code centroid in a given month. Last, we average out the firm-level seasonally adjusted monthly number of sunny days over the entire fiscal year to obtain the annual affect indicator (Affect). A higher value of Affect indicates relatively sunnier weather than usual around a firm’s headquarters, and thus a more positive affective state.

**Active institutional ownership.** We use CDA/Spectrum and Brian Bushee’s institutional investor classification data (http://acct.wharton.upenn.edu/faculty/bushee/IIClass.html) to construct our measure of active institutional ownership. We define ownership by active institutions (Active institutional ownership) as the difference between the total institutional ownership and ownership by passive institutions. Total institutional ownership is the number of firm’s shares held by institutional investors divided by the number of firm’s shares outstanding. Ownership by passive institutions is the sum of the number of shares held by quasi-indexed institutional investors divided by the total number of shares outstanding.\(^10\)

**Control variables.** To control for the amount of CEO wealth invested in the firm, we include a measure of CEO stock ownership (CEO stock ownership) which is calculated as the proportion of total shares outstanding currently held by the CEO. We control for the influence of firm size due to the substantial correlation between firm size and investment related risk

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\(^9\) The harvesine formula calculates distance between location 1 and 2 as \(d_{1,2} = 2 \times R \times arcsin(min(1, \sqrt{A}))\), where \(R\) is the earth’s radius (approximately 6,371 kilometers), \(A = sin^2(\frac{\Delta lat}{2}) + cos(lat_1) \times cos(lat_2) \times sin^2(\frac{\Delta lon}{2})\). In this expression, \(\Delta lat = (lat_2 - lat_1)\) and \(\Delta lon = (lon_2 - lon_1)\), where lat and lon refer to latitude and longitude, respectively.

\(^10\) Quasi-indexed institutional investors are characterized as institutions with high diversification and low turnover, consistent with passive index-type, buy-and-hold behavior (Bushee, 1998).
measures (Devers et al., 2008; Larraza-Kintana et al., 2007; Sanders and Hambrick, 2007). We measure Firm size as the natural log of the firm’s total assets, given that assets are an indication of a firm’s capacity for raising long-term debt and investing in R&D or CAPX (Larraza-Kintana et al., 2007). We also include measures of the CEO’s tenure (CEO tenure) and CEO age (CEO age), and a dummy variable indicating dual occupation of CEO and Chairman of Board of Directors’ roles (CEO/Chairman duality). We also include firm-level dummies (i.e., firm-fixed effects controls) and year dummies (i.e., year-fixed effects).

RESULTS
We report the descriptive statistics for our sample in Table 1. As untabulated results indicate that the highest variance inflation factor (VIF) among the explanatory variables is 2.22—which is well below the common threshold of 5 (O’Brien, 2007)—we conclude that multicollinearity does not pose a concern in our analysis.

[Hypothesis 1 (2) predicted that positive affect amplifies the negative (positive) relationship between current (prospective) wealth and strategic risk taking. To test Hypotheses 1 and 2, we regressed Risk taking on the lagged values of Current wealth and Prospective wealth (both interacted with Affect and separately) and a set of control variables discussed earlier. The key variables of interest are the interaction terms Current wealth×Affect and Prospective wealth×Affect.

We report the results in Table 2 using a set of nested models. Model 1 includes control variables only. Model 2 includes Current wealth, Prospective wealth, and controls. In Model 3, we add Affect as a stand-alone explanatory variable. Model 4 is our fully specified model, which includes the moderating influence of Affect on the CEO equity incentives–risk taking]
relationship. The corresponding standard errors adjusted for heteroskedasticity and clustering by firm are in parentheses. All models were estimated with both firm- and year-fixed effects included. The coefficient for the interaction term \( \text{Current wealth} \times \text{Affect} \) is negative and significant \((b = -0.024, \text{p-value} = 0.042, \text{see also Figure 1})\), providing support for Hypothesis 1. The coefficient for the interaction term \( \text{Prospective wealth} \times \text{Affect} \) is positive and significant \((b = 0.027, \text{p-value} = 0.017, \text{see also Figure 2})\), providing support for Hypothesis 2. Change in \( R^2 \) of the model from adding these two interaction terms is significant \((F\text{-statistic} = 20.10, \text{p} < 0.01)\).

[Figures 1 and 2 about here]

The influence of affect on the strength of the CEO equity incentives–strategic risk taking relationship is economically meaningful. Results for Model 4 suggest that for a typical firm in our sample, the coefficient for \( \text{Current wealth} \) is \(-0.055\) when \( \text{Affect} \) is at its sample mean. Thus, the results reported in Table 2 suggest that a one standard deviation increase in \( \text{Affect} \) results, on average, in an increase of 43 percent in the strength of the negative relationship between \( \text{Current wealth} \) and strategic risk taking. Results for Model 4 also suggest that, for a typical firm in our sample, the coefficient for \( \text{Prospective wealth} \) is \(0.073\) when \( \text{Affect} \) is at its sample mean. This suggests that a one standard deviation increase in \( \text{Affect} \) results, on average, in an increase of 36 percent in the strength of the positive relationship between \( \text{Prospective wealth} \) and risk taking.

Next, we tested Hypotheses 3a and 3b, which predict that active institutional ownership should attenuate the influence of affect on the current wealth-strategic risk taking and prospective wealth-strategic risk taking relationships, respectively. To test these hypotheses, we first split the sample into two sub-samples based on the sample median of \( \text{Active institutional ownership} \). We then re-estimated our baseline model twice, once using the low active institutional ownership sub-sample (i.e., observations with \( \text{Active institutional ownership} \) below
Affect and CEO Risk Taking

sample median) and once using the high active institutional ownership sub-sample (i.e., observations with *Active institutional ownership* above sample median), and compared the magnitude of the coefficients for the interaction terms *Current wealth* × *Affect* and *Prospective wealth* × *Affect* across the two sub-samples. The results are reported in Table 3 and show that, for the low active institutional ownership sub-sample, the coefficient for *Current wealth* × *Affect* remains negative and significant and the coefficient for *Prospective wealth* × *Affect* remains positive and significant (both *p*-values < 0.01). In contrast, for the high active institutional ownership sub-sample, both coefficients are insignificant (smallest *p*-value = 0.308). The difference between the coefficients for *Current wealth* × *Affect* across the two sub-samples is negative and significant (*p* < 0.01), suggesting that the impact of affect on the relationship between current wealth and strategic risk taking is stronger for the firms with low active institutional ownership. Further, the difference between the coefficients for *Prospective wealth* × *Affect* across the two sub-samples is positive and significant (*p* < 0.01), suggesting that the impact of affect on the relationship between prospective wealth and strategic risk taking is stronger for the firms with low active institutional ownership. Collectively, these results suggest that monitoring by active institutional investors attenuates the influence of affect on the equity incentives-strategic risk taking relationship, and thus provide support for Hypotheses 3a and 3b.  

11 For completeness, we conducted a supplemental test using a sample split based on passive institutional ownership. The (untabulated) results show that the differences between the coefficients for both *Current wealth* × *Affect* and *Prospective wealth* × *Affect* across the two sub-samples are insignificant (smallest *p*-value = 0.260). These results are consistent with the view that passive institutional investors buy in and out of firms based on a quasi-index trading strategy, and thus play little or no role in holding executives to account (Connelly *et al.*, 2010).
We carried out several (untabulated) robustness tests. Recall that we use relative amount of sunshine in the area where firm is headquartered as an affect-priming construct. This measure could potentially be correlated with the occurrences of natural disasters driven by extreme weather conditions in the area where firms’ headquarters are located. Hence, in the first test, we considered the possibility that our results reflect disruptions in corporate activities caused by such extreme weather conditions. To address this concern, we collected the data on extreme weather conditions from the National Centre for Environmental Information. Using this data, we constructed two variables: (1) a natural-disaster dummy variable which takes a value 1 if the area where a firm’s headquarters are located experienced extreme weather conditions in that year, and 0 otherwise, and (2) the (log-transformed) amount of damage caused by these extreme weather conditions. We then modified our baseline models to include these two variables (each interacted with both Current wealth and Prospective wealth and separately) as additional control variables in our model. Including these variables has no material impact, suggesting our results are unlikely to be driven by extreme weather conditions influencing the equity incentives–strategic risk taking relationship.

We also considered the possibility that our CEO incentive variables are endogenous. The possibility that an omitted correlated variable explains our results is remote: such an omitted variable would have to impact on risk taking in a manner that is (a) moderated by affect and (b) further moderated by institutional ownership. This is consistent with the view that testing for moderating effects helps establish causality and that endogeneity is not likely to systematically bias estimates of interaction coefficients (Rajan and Zingales, 1998; Withers et al., 2014). Nonetheless, to examine this issue, we re-estimated our baseline model using industry-level current wealth and industry-level prospective wealth as instruments for Current wealth and
Prospective wealth, respectively. The (untabulated) partial F-statistics for exclusion of our instruments from the first-stage regressions were both above the critical value of 8.96 (Stock, Wright, and Yogo, 2002)—suggesting that the weak instrument problem does not pose a concern in our analysis.12

DISCUSSION AND CONCLUSIONS

We explored the influence of mood (affect) on the behavioral consequences of agent (CEO) equity incentives. Agency theory—and the assumption of rational managerial agents—has provided the dominant lens for research on the consequences of executive incentives. To provide a more fine-grained understanding of incentive responsiveness, management scholars have drawn on prospect theory to explore how the role of incentives varies with decision framing. We extend the behavioral agency literature on executive incentives by examining the role of executive affect. We show that positive affect amplifies loss aversion when incentives are perceived as creating the potential for significant loss. Moreover, positive affect amplifies risk taking when the potential for gains is emphasized. These findings are consistent with several insights from the psychology literature.

Our work makes several contributions. Kahneman’s (2002) arguments regarding the need to consider the role of affect in behavioral decision research was a timely reminder that predictions of risk behavior were likely to benefit from considering boundaries due to affect. While the study of affect is not new to management literature, its integration to behavioral agency and the study of CEO behavioral response to incentives is, to our knowledge, previously

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12 As the number of instruments equals the number of potential endogenous variables, the model has no overidentifying conditions. Therefore, the Sargan statistic for overidentifying conditions is not relevant or reported. In addition, it is unlikely that industry-level current wealth and prospective wealth variables are correlated with potential omitted firm-level attributes. Hence, these variables provide suitable instruments for our purposes. The influence of affect documented in Table 2 remains significant when using instrumental variable estimation approach suggesting that our findings are unlikely to be driven by endogeneity effects.
unexplored. We contribute to behavioral agency and governance research more generally by offering theoretical explanations for affect as a boundary condition for BAM’s predictions of agent risk behavior (cf. Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013; Wiseman and Gómez-Mejía, 1998).

Various empirical studies by behavioral agency scholars have provided support for BAM’s prediction (e.g., Larraza-Kintana et al., 2007; Lim and McCann, 2013; Martin et al., 2013). However, inconsistencies have been identified when examining different forms of CEO (agent) wealth-at-risk, such as non-linear relationships between different forms of equity wealth and strategic risk taking (Devers et al., 2008). The behavioral agency literature also is considered nascent and under-developed, given that it has been applied in a narrow range of empirical contexts: mainly U.S. publicly listed firms and using strategic risk taking as the operationalization of agent risk taking. Similarly, few studies have elucidated—empirically and theoretically—boundary conditions that allow us to understand the limitations of BAM’s predictions. We extend BAM by highlighting the role of affect in behavioral responses to executive incentives. While the role of affect has largely been overlooked to date, executive decision making is laden with uncertainty, providing ample opportunity for personal disposition to influence behavior (Gerstner et al., 2013). Collectively, our findings suggest that executive affect matters to the behavioral consequences of incentives and that the role of affect varies systematically with the framing of incentives.

More broadly, our work contributes to management studies on the interplay between emotion and decision framing. We describe how a positive affect amplifies the relationship between decision frames and strategic risk taking—increasing risk bearing when potential losses are emphasized and encouraging risk taking when potential gains are emphasized. Our finding
that positive affect increases loss aversion in the presence of gains builds on Mannor, Wowak, Bartkus and Gómez-Mejía (2015)’s recent work on the interplay between job anxiety decision framing and risk aversion. Mannor et al. (2015) argue that anxious executives are more likely to focus on potential losses and thus are more risk averse in the presence of gains. We shift the emphasis to equity incentives while also describing how a positive affect leads to greater concerns regarding potential losses and thus risk aversion; that is, our analysis goes beyond emotion and the focus on losses. We also extend this research by highlighting the role of accountability as an important boundary condition in the relationship between affect and executive decision making under risk. As we focus on institutional ownership as a source of CEO accountability, our findings, point to a novel relationship between institutional ownership and firm strategy. Prior literature suggests that institutional investors may influence strategic outcomes (David, Hitt, and Gimeno, 2001; Connelly et al., 2010; Tihanyi, Johnson, Hoskisson, and Hitt, 2003); however, our understanding of institutional investors’ influence on firm behaviors and outcomes remains under-developed (Boyd and Solarino, 2016). Our findings highlight the role of institutional ownership in shaping the impact of affect on the relationship between incentives and strategic risk taking.

Our findings also contribute to research in management on the relationship between executives’ psychological state and decision making. To date, scholars have given particular attention to how executives personality traits—such as hubris, core self-evaluation, narcissism, and humility (impact on decision making and firm outcomes—Chatterjee and Hambrick, 2007, 2011; Hayward and Hambrick, 1997; Ou et al., 2014; Patel and Cooper, 2014; Simsek et al., 2010). We add further insight to this research stream by demonstrating the impact of affect on CEO decision making and how the impact of affect varies with the level of institutional
ownership. As the influence of institutional ownership is largely attributable to active institutional owners, the evidence is consistent with our argument that increased accountability attenuates the impact of affect on executive decision making.

Our study extends the psychology and decision theory literature on affect heuristics to the context of executive incentives. While decision theorists have extensively studied the interplay between affect, framing, and decision making in experimental settings, strategic risk taking is materially different in terms of the magnitude and complexity of decision. Our study adds to a sparse literature by extending insights on the role of affect in decision making under risk to the level of strategic decision making (e.g., Dunegan, Duchon, and Barton, 1992; Mittal and Ross, 1998; Staw and Barsade, 1993). Our findings advance the argument that affect can influence decision making under risk through both affect maintenance (Arkes et al., 1988) and affect congruence (Johnson and Tversky, 1983).

Our work also contributes to research on the embedded nature of executive decision making. Drawing on intuitional reasoning, prior studies have demonstrated the benefits of casting agents as socially embedded, rather than independent, actors (Crossland and Hambrick, 2011; Gómez-Mejía, Nunez-Nickel and Gutierrez, 2001; Westphal and Zajac, 2013; Wiseman et al., 2012). While executives are embedded within a social environment that shapes executives’ perceptions and behaviors, they are also embedded within a physical environment. We demonstrate that the physical embeddedness of principle–agent relationships impacts on the consequences of incentives. In particular, our work contributes to an emerging stream of management research examining how local influences—influences local to firms headquarters—shape executive decision making and firm outcomes (Husted, Jamali and Saffar, 2015; Lounsbury, 2007; Marquis and Lounsbury, 2007; Marquis, Glynn, and Davis, 2007; Pe’er and
Gottschalg, 2011). Complementing this line of research, we highlight the influence of the local physical environment and in particular local weather on executive decision making. In doing so, we provide a novel perspective on the relevance of weather in management research. To the extent that weather has been considered in prior studies, management scholars have focused on the relationship between extreme weather events’ impact and corporate citizenship (e.g., Tilcsik and Marquis, 2013), and how firms respond to climate change concerns (Reid and Toffel, 2009). In contrast, issues of weather affect have received limited attention.

**Limitations and future research**

As with most studies, ours has limitations that provide opportunities for further research. We have used a validated and available operationalization of affect (weather). However, affect can be influenced by factors other than weather, and future research would benefit from exploring other operationalizations of CEO affect. Our focus on weather as an affect primer is consistent with the argument that incidental affect (an affective state that is unrelated to the task at hand) influences decision making. Inherent affect (an affect directly related to the task at hand—such as the positive mood induced by successful risk taking) may also influence decision making. For example, in an experimental setting, Seo and colleagues (2010) found that positive affect associated with gains and losses attenuates the relationship between decision framing and risk taking. Future research could usefully examine the interplay between incidental and inherent affect and their impact upon CEO decision making and incentive responsiveness. Finally, there is limited prior work on CEO affect and decision making. We have adopted one approach to capturing the relationship between CEO affect and decision making—a natural experiment. Future research might usefully employ laboratory style experiments or survey based data drawn from CEO self-reports of affect.
Affect and CEO Risk Taking

References


Affect and CEO Risk Taking


Table 1
Descriptive Statistics and Correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Risk taking</td>
<td>0.000</td>
<td>1.000</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Current wealth</td>
<td>10,996</td>
<td>31,382</td>
<td>0.162</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Prospective wealth</td>
<td>16,902</td>
<td>35,901</td>
<td>0.316</td>
<td>0.702</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Affect</td>
<td>-0.396</td>
<td>3.562</td>
<td>0.017</td>
<td>-0.019</td>
<td>0.015</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Active institutional ownership</td>
<td>0.255</td>
<td>0.208</td>
<td>-0.066</td>
<td>0.047</td>
<td>0.031</td>
<td>0.007</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CEO/Chairman duality</td>
<td>0.548</td>
<td>0.497</td>
<td>0.085</td>
<td>0.052</td>
<td>0.092</td>
<td>-0.009</td>
<td>-0.025</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CEO tenure</td>
<td>6.134</td>
<td>7.247</td>
<td>-0.053</td>
<td>0.091</td>
<td>0.059</td>
<td>0.002</td>
<td>-0.014</td>
<td>0.170</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CEO age</td>
<td>53.246</td>
<td>13.221</td>
<td>0.007</td>
<td>0.037</td>
<td>0.031</td>
<td>0.038</td>
<td>0.015</td>
<td>0.164</td>
<td>0.205</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>CEO stock ownership</td>
<td>0.017</td>
<td>0.048</td>
<td>-0.079</td>
<td>-0.037</td>
<td>-0.076</td>
<td>-0.038</td>
<td>-0.098</td>
<td>0.060</td>
<td>0.313</td>
<td>0.122</td>
<td>1</td>
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<tr>
<td>10</td>
<td>Firm size</td>
<td>6.981</td>
<td>1.581</td>
<td>0.532</td>
<td>0.244</td>
<td>0.394</td>
<td>0.044</td>
<td>0.023</td>
<td>0.237</td>
<td>-0.062</td>
<td>0.049</td>
<td>-0.221</td>
</tr>
</tbody>
</table>

As Risk taking is a standardized factor score, by construction it has mean of zero and standard deviation of one.
Table 2
The Effect of Affect on the CEO Equity Incentives–Risk Taking Relationship

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current wealth</td>
<td>-0.047**</td>
<td>-0.047**</td>
<td>-0.055**</td>
<td>-0.055**</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td>(0.021)</td>
<td>(0.024)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Prospective wealth</td>
<td>0.060***</td>
<td>0.059***</td>
<td>0.073***</td>
<td>-0.024**</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.022)</td>
<td>(0.027)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Affect</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Current wealth × Affect</td>
<td>-0.024**</td>
<td>-0.024**</td>
<td>-0.031***</td>
<td>-0.031***</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.011)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Prospective wealth × Affect</td>
<td>0.027***</td>
<td>0.027***</td>
<td>0.023*</td>
<td>0.023*</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.011)</td>
<td>(0.013)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>CEO/Chairman duality</td>
<td>0.027**</td>
<td>0.024*</td>
<td>0.024*</td>
<td>0.027**</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>CEO tenure</td>
<td>-0.034***</td>
<td>-0.032***</td>
<td>-0.032***</td>
<td>-0.031***</td>
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<tr>
<td></td>
<td>(0.012)</td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.011)</td>
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<tr>
<td>CEO age</td>
<td>-0.006</td>
<td>-0.005</td>
<td>-0.005</td>
<td>-0.006</td>
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<tr>
<td></td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.007)</td>
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<tr>
<td>CEO stock ownership</td>
<td>0.031***</td>
<td>0.030***</td>
<td>0.030***</td>
<td>0.030***</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.011)</td>
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<td>(0.011)</td>
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<tr>
<td>Firm size</td>
<td>0.341***</td>
<td>0.329***</td>
<td>0.329***</td>
<td>0.325***</td>
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<tr>
<td></td>
<td>(0.064)</td>
<td>(0.062)</td>
<td>(0.061)</td>
<td>(0.060)</td>
</tr>
<tr>
<td>Obs.</td>
<td>8,432</td>
<td>8,432</td>
<td>8,432</td>
<td>8,432</td>
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<tr>
<td>Adjusted R²</td>
<td>0.864</td>
<td>0.866</td>
<td>0.866</td>
<td>0.867</td>
</tr>
</tbody>
</table>

The models were estimated using OLS with both firm- and year-fixed effects included. Standard errors are in parentheses and are adjusted for heteroskedasticity and clustering at firm level. All p-values are for two-tailed tests.

* p < 0.1.

** p < 0.05.

*** p < 0.01.
## The Effect of Affect on the CEO Equity Incentives–Risk Taking Relationship: The Role of Monitoring by Institutional Investors

<table>
<thead>
<tr>
<th></th>
<th>Low Active Institutional Ownership</th>
<th>High Active Institutional Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current wealth</td>
<td>-0.077**</td>
<td>0.002</td>
</tr>
<tr>
<td>Prospective wealth</td>
<td>0.076^</td>
<td>0.014*</td>
</tr>
<tr>
<td>Affect</td>
<td>0.002</td>
<td>0.004</td>
</tr>
<tr>
<td><strong>Current wealth × Affect</strong></td>
<td>-0.107***</td>
<td>-0.000</td>
</tr>
<tr>
<td><strong>Prospective wealth × Affect</strong></td>
<td>0.126***</td>
<td>0.002</td>
</tr>
<tr>
<td>CEO/Chairman duality</td>
<td>-0.003</td>
<td>0.010</td>
</tr>
<tr>
<td>CEO tenure</td>
<td>-0.028</td>
<td>-0.006</td>
</tr>
<tr>
<td>CEO age</td>
<td>-0.008</td>
<td>0.001</td>
</tr>
<tr>
<td>CEO stock ownership</td>
<td>0.041***</td>
<td>0.005</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.457***</td>
<td>0.163***</td>
</tr>
<tr>
<td>Obs.</td>
<td>3,866</td>
<td>3,866</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.897</td>
<td>0.881</td>
</tr>
</tbody>
</table>

The models were estimated using OLS with both firm- and year-fixed effects included. Standard errors are in parentheses and are adjusted for heteroskedasticity and clustering at firm level.

*p < 0.1, two-tailed  ^ p < 0.1, one-tailed

**p < 0.05, two-tailed

***p < 0.01, two-tailed
Figure 1
Interaction Plot for the Influence of Affect on the Current Wealth–Strategic Risk-taking Relationship

Low (high) CW denotes Current wealth one standard deviation below (above) its sample mean. Negative (positive) affect denotes Affect one standard deviation below (above) its sample mean.

Figure 2
Interaction Plot for the Influence of Affect on the Prospective Wealth–Strategic Risk-taking Relationship

Low (high) PW denote Prospective wealth one standard deviation below (above) its sample mean. Negative (positive) affect denotes Affect one standard deviation below (above) its sample mean.