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Going Short-Term or Long-Term? CEO Stock Options and Temporal Orientation in the Presence of Slack

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ABSTRACT

Research summary. We draw on behavioral agency theory to explain how decision heuristics associated with CEO stock options interact with firm slack to shape the CEO's preference for short or long-term strategies (temporal orientation). Our findings suggest CEO current option wealth substitutes for the influence of slack resources in encouraging a long-term orientation, while prospective option wealth enhances the positive effect of slack on temporal orientation. Our theory offers explanations for non-findings in previous analysis of the relationship between CEO equity based pay and temporal orientation and provides the insights that CEO incentives created by stock options: (1) enhance the effect of available slack upon temporal orientation; and (2) can both incentivize and de-incentivize destructive short-termism, depending upon the values of current and prospective option wealth.

Managerial summary. We explore how compensation design can play a role in affecting the CEO's preference for short or long-term strategic projects. When the CEO has accumulated option wealth, they are more likely to invest in the long-term. Yet when they have a large number of recently granted options with the potential to generate significant wealth in the event of successful risk taking, the CEO is more likely to prefer the short-term in order to achieve their personal wealth gains more quickly. The more liquid assets the firm holds, the weaker both of the aforementioned effects. An implication for boards is that they should anticipate CEO short-termism if the CEO has been granted new options, underlining the potential negative consequences of option compensation.

INTRODUCTION

Managerial short-termism – particularly in the United States – has been described as both widespread and destructive by various management scholars (Drucker, 1986; Jensen & Murphy, 1990; Laverty, 1996; Marginson & McAulay, 2008; Mueller & Reardon, 1993; Walsh & Seward, 1990). Short-termism becomes an agency problem when managers sacrifice longer-run profitability in favor of shorter-term profits, motivated by private gains and temporal preferences (c.f., Jensen, 2008; Jensen and Murphy, 1990; Walsh and Seward, 1990). Some shareholders may also have a short-term outlook (Bolton et al., 2006) meaning that short-termism may not always lead to incentive misalignment problems between managers and shareholders. However, one finds an unusual consensus in management literature that pre-occupation with short-term share price gains is at the expense of longer-term value creation, implying that short-termism is inconsistent with the goals of all but short-term oriented investors. As noted by Peter Drucker, pressure by capital markets for positive quarterly growth "…constantly pushes top managements toward decisions they know to be costly, if not suicidal, mistakes." (1986: 31). Consistent with this view, the negative ramifications of short-termism have been discussed by many high profile public figures and regulatory committees as having contributed to the severity of the Great Recession (e.g., Basel Committee, 2009; Gigler, Kanodia, Sapra & Venugopalan, 2014; Geithner, 2009). The value creation associated with a longer-term managerial focus suggests that shareholders with extended horizons (e.g., Berkshire Hathaway) and other important stakeholders – employees, customers and the economy as a whole – have a keen interest in ensuring executives adopt a longer temporal orientation.

Despite the widely held view that temporal orientation is instrumental to firm survival and the prosperity of the economy as a whole, the theoretical frameworks used to explore this

phenomenon remain underdeveloped. A first step in this direction was achieved by Souder and Bromiley (2012) who drew upon behavioral theory of the firm to determine if temporal orientation is driven by firm performance or incentive alignment using stock options. While they find support for the role of performance and available slack, they failed to find evidence that stock options influenced temporal orientation, leading them to conclude that it is "interesting that we cannot find evidence supporting one of the conceptual tenets justifying stock grants" (pp. 563). These conclusions suggest that there is a need to go in search of novel theoretical approaches to explain the link between CEO compensation and firm temporal orientation. We argue that the lack of support for agency-based predictions regarding the relationship between CEO stock option pay and temporal orientation rests on the failure of traditional agency theory to account for and incorporate the findings of behavioral research and in particular, the insight that agent equity grants do not consistently lead to alignment of interests between agent and principal (Martin, Gomez-Mejia & Wiseman, 2013; Wiseman & Gomez-Mejia, 1998).

The fusion of prospect theory with agency theory in behavioral agency research has been instrumental in enhancing our conception of risk in explaining the relation of incentives to agent risk taking (cf. Wiseman & Gomez-Mejia, 1998). The theories are considered complimentary given that: (1) agency theory suggests the managerial agent will behave opportunistically, necessitating incentive alignment mechanisms that limit the costs opportunism imposes upon shareholders; and (2) prospect theory facilitates the prediction of individual decision making in response to uncertain future outcomes regarding personal wealth. In combining these theories, behavioral agency research has shown how in response to equity incentives, opportunistic agents (CEOs) use heuristics when making strategic choices that will effect personal wealth through

their impact upon firm performance and the share price (e.g.,. Devers et al., 2008; Larraza-Kintana et al., 2007; Martin, et al., 2013).

An important theoretical advancement that has emerged from behavioral agency research is that agent choice is best characterized as a mixed gamble in which both gains and losses are possible (Bromiley, 2009; Martin et al, 2013). That is, agents make decisions in a context of uncertainty in which their strategic choices have the potential for both positive and negative consequences to personal wealth. In addition, agents value these consequences differently by giving more weight to possible losses than to equal amounts of gain. This "loss aversion" reflects an inherent preference for avoiding losses relative to attracting gains (Tversky and Kahneman, 1991). Finally, agents are myopic in their preference for avoiding losses by discounting losses in the future relative to losses in the present (Thaler et al, 1997). In combination, these positivist findings regarding agent choice behavior provide a foundation for examining the role of incentives in shaping temporal orientation.

In this study, we extend behavioral agency research by examining how agent incentives may influence a firm's temporal orientation in the presence of available slack (resources available to fund adaptation or strategic initiatives; March & Simon, 1958). Though prior research examined inter-temporal preferences of decision makers (e.g., Bernartzi & Thaler, 1995, 1999; Chrisman & Patel, 2012), the linkage between research on individual choice under uncertainty and temporal orientation is yet to be applied to studying the consequences of CEO equity based pay for firm temporal orientation. To fill this void we draw upon: (1) the concepts of agent risk bearing and myopic loss aversion to explain how CEO *current option wealth* is likely to be associated with temporal orientation; (2) the uncertainty reduction preferences of individuals to explain how prospective option wealth is likely to be associated with the firm's

temporal orientation; and (3) research demonstrating the positive effect of slack upon temporal orientation (e.g., Jensen, 1986; Souder & Shaver, 2010), allowing us to analyze how CEO decision heuristics augment or overwhelm the role of slack in temporal orientation.

We extend prior temporal orientation and behavioral agency research in several ways. First, we develop a more textured understanding of how CEO stock options influence firm temporal orientation, thereby offering behaviorally grounded explanations for previous non-findings. In particular, we demonstrate that CEO incentives created by stock options can moderate the role of available slack in shaping temporal orientation such that the wealth effects of stock options may substitute for the effects of slack resources on temporal orientation. Thus we provide a richer understanding of the behavioral effects of equity based pay and its role in influencing firm temporal horizon.

Second, we refine knowledge regarding the role of available slack in shaping firm temporal orientation through demonstrating the importance of considering contingencies related to CEO compensation. Prior research examining the effect of available slack had not integrated the role of behavioral decision theory at the individual level, such as theory analyzing inter-temporal preferences (eg., Bernartzi & Thaler, 1995). In doing so, we introduce a more nuanced behavioral perspective to the examination of firm temporal orientation. Finally, we enhance understanding regarding inter-temporal preferences at a point in time when executive short-termism is being increasingly institutionalized and criticized for imposing costs upon society (cf. McKinsey Quarterly, 2013; Souder & Bromiley, 2012).

THEORY AND HYPOTHESES

CEO Decision Making

A large volume of literature has examined the effect of the managerial agent – or the CEO – upon firm decision making and firm performance. Traditional agency theory argues that top managers as agent are likely to have significant influence over the firm due to the dispersion of shareholders who find it difficult and costly to monitor agent behavior (Berle & Means, 1932; Jensen & Meckling, 1976). Building upon this seminal agency research, finance and behavioral scholars have further demonstrated the influence of the CEO upon firm decision making by providing theoretical explanations for the relationship between pay-based mechanisms for creating incentive alignment and strategic decision making. For instance in the finance and accounting literature, a strong relationship has been demonstrated between the dynamic characteristics of CEO stock options and strategic decisions such as R&D, CAPX or how much debt to carry (Chava & Purnanandum, 2010; Cohen et al., 2000; Guay, 1999; Rajgopal & Shevlin, 2002). Separately, upper echelons theory and strategic leadership research has been useful in supporting the importance of senior managers, especially the firm's chief executive officer in shaping firm behaviors (Chatterjee & Hambrick, 2007; Hambrick & Finkelstein, 1987). Looking across these literatures suggests that CEOs play an important role in determining firm behavior, and that a CEO's characteristics combined with incentive structures influence the choices CEOs make on behalf of the firm.

Considerable empirical evidence has been generated to support the conclusion that CEO level factors influence firm behavior. Within an agency context, CEO risk preferences associated with their equity and cash compensation have been shown to significantly influence firm behaviors such as acquisitions and divestments (Sanders, 2001), as well as R&D, CAPX and leverage decisions (e.g., Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013; Sanders & Hambrick, 2007). Within organizational scholarship this stream of behavioral agency

research has drawn heavily on prospect theory to challenge neo-classical agency theory assumptions regarding risk preferences. In particular, the behavioral agency view recognizes that individuals frame choices around a reference point of endowed wealth, and are fundamentally *loss-averse* in choosing among alternatives promising both gain and loss possibilities (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991).

A recent extension of this literature in the context of strategic management was offered by Bromiley (2009) who noted that, in contrast to the pure gambles described in prospect theory research in which individuals choose between only losses, or between only gains of varying amounts and probabilities, real world strategic choices involve the potential for both gains and losses simultaneously. That is, most choice situations are *mixed gambles* in which the possible outcomes of the decision include both losses and gains to wealth. Within the context of incentive alignment, CEOs are likely to be aware that their strategic choices could increase or decrease the value of firm-specific wealth presenting them with a mixed gamble. Thus, the CEO is likely to use heuristics that allow them to estimate these prospective gains and prospective losses in their personal wealth when making strategic decisions under uncertainty. For example, *prospective wealth* is a heuristic reflecting the possible gains in option wealth that a CEO may realize if strategic risk taking is successful. This prospective wealth goes beyond a forecast of future performance and instead signals the full wealth creating potential existing options may deliver if everything goes well. Given that CEOs are prone to strong beliefs in their own ability to influence outcomes (Chatterjee & Hambrick, 2007; Hiller & Hambrick, 2005) and to optimism about the future (Hribar & Yang, 2015), it is likely that this heuristic regarding possible gains to personal wealth will play a role in choosing among alternatives that could impact personal wealth. Conversely, due to loss aversion, CEOs are also keenly aware of what may be lost if

exogenous forces undermine their chosen strategy. In the context of stock options, the accumulated cash value of options, or *current wealth,* reflects the potential losses to endowed wealth if risk taking is unsuccessful and the stock price falls (Martin et al., 2013). Prospective wealth and current wealth present two heuristics that CEOs might consider when making decisions that could impact personal wealth.

The study of heuristics has been central to the study of individual decision making. Research on decision making suggests that due to cognitive limitations individuals will look for fast and frugal guide posts or heuristics that inform their decision making, which result in certain decision biases (Tversky & Kahneman, 1974). For instance, individuals are argued to be biased toward the use of metrics that are most readily available when making decisions (for example, the availability heuristic; Tversky & Kahneman, 1974). Individuals are also known to exhibit optimism bias in forecasting (Kahneman & Lovallo, 1993). We extend behavioral agency theory by examining how heuristics associated with CEO stock options influence the CEO's temporal orientation when making strategic decisions under uncertainty. Specifically, we argue that CEO decisions regarding their temporal preferences are associated with the presence or absence of uncommitted financial resources (slack), but will also be guided by the heuristics of: (1) current option wealth, and (2) prospective option wealth.

Our paper proceeds as follows. First, we offer a baseline hypothesis regarding the role of available slack in encouraging longer temporal horizons within the firm. Second we analyze separately the effects of CEO current and prospective wealth on within-firm changes in temporal orientation. Finally, we examine how CEO current and prospective wealth separately substitute for or enhance the association between available slack and temporal orientation.

Temporal Orientation and Available Slack

While various antecedents to inter-temporal choice have been discussed in the management literature (e.g., Brealey & Myers, 1996; Gray & Whittaker, 2003; Marginson & McAulay, 2008) available slack has been of great interest in recent times due to the unprecedented levels of cash being held on US corporate balance sheets.[1] Available slack (or *x-efficiency*) represents financial and other resources accumulated over time that are in excess of that required by the firm to operate efficiently (Davis & Stout, 1992; Greenley & Oktemgil, 1998; Leibenstein, 1966) and can fund strategic initiatives, such as adaptation or expansion via investment (March & Shapira, 1958). Slack in the form of surplus cash reserves has been demonstrated to extend the time horizons of a firm's investments, given it (1) insulates the firm, at least to some degree, to the pressures for short-term performance gains; and (2) increases the probability that the firm will be solvent in the future to reap the benefits of longer-term investments (Gray & Whittaker, 2003; Souder & Shaver, 2010). In part, this is because available slack reduces the firm's vulnerability to failure by providing a liquidity buffer in the event of loss, meaning long-term survival is likely (Bourgeois, 1981; Bromiley, 1991; Bruner, 1988).

In sum, prior research suggests the presence of slack resources provides CEOs with flexibility to allocate resources across different time horizons within their firm while also satisfying the short-term performance demands. Thus, we offer the baseline hypothesis:

> *H1: Available slack will be positively related to long-term orientation in investment choices.*

CEO Current Wealth and Temporal Orientation

The concept of myopic loss aversion has been used to analyze the inter-temporal preferences of decision makers in a business context. This theory was originally used to examine investor time horizons in the context of preferences for stocks and bonds in their portfolios.

[1] US non-bank corporates held $1.64 trillion in cash on their balance sheets at the end of 2013.

Identified within the broad research building on prospect theory, myopic loss aversion suggests that longer evaluation periods reduce aversion to potential future losses (Benartzi & Thaler, 1995; Thaler, Tversky, Kahneman, & Schwartz, 1997). This occurs because the decision maker is less concerned by loss events in the distant future relative to potential losses that are not so distant, meaning prescience with regard to future losses declines as the time line extends (Loewenstein & Thaler, 1989; Thaler et al., 1997). Myopic loss aversion has also proven useful in describing family principals' loss aversion associated with R&D investments (Chrisman & Patel, 2012). However, this derivative of prospect theory has been mostly applied to analyzing decision making of individuals choosing between different investment alternatives with uncertain payoffs over different time periods (cf. Benartzi & Thaler, 1999).

We suggest that the concept of myopic loss aversion will have utility when examining the implications of CEO current wealth for their temporal orientation. Myopic loss aversion results in greater aversion to losses with regard to the short-term relative to the long-term, making CEOs feel that a longer-term investment will pose less threat to their current wealth. Hence, the CEO with greater current wealth will be less averse to the prospective losses (that is, the prospective loss of current wealth if risk taking is unsuccessful), when the prospective losses are more distant in the future. Conversely, the CEO will have a stronger aversion to the prospect of shorter-term losses, suggesting that when they have wealth-at-risk of loss (risk bearing in the form of current wealth), they will push the potential loss into the future; this can be achieved through extending the time horizon of their investments.

We further suggest that as CEO current wealth (risk bearing) increases, the stronger will be their incentive to push uncertainty and thus the firm's investment horizons into the future. This is because the strong negative utility associated with losing accumulated wealth relative to

distant outcomes, increases with the value of wealth that is lost (Kahneman & Tversky, 1979; Bromiley, 2009). Said differently, the higher the amount of current wealth that is vulnerable to loss, the more likely individuals are to find ways of limiting threats to wealth in the present. Thus, the intensity of the myopic loss aversion effect (or preference for losses in the future over losses in the present) increases with the value of CEO current wealth, or potential losses.

Taken together, the above arguments suggest that in order to protect current option wealth, CEOs will adopt a longer-term orientation given they have less aversion to losses in the distant future than to losses experienced today. In addition, the CEO's preference for pushing potential losses to current wealth into the future will increase with the magnitude of current wealth. In sum, we suggest that within-firm changes in temporal orientation will be positively related to CEO current wealth.

Hypothesis 2: CEOs' current wealth will be positively related to their long-term orientation in investment choices.

CEO Prospective Wealth and Temporal Orientation

The other heuristic associated with stock options that may influence CEO choice behavior is prospective wealth. As noted previously, prospective wealth reflects future increases in wealth should strategic choices be successful as anticipated by optimistic and self-confident CEOs (Martin et al., 2013). The higher the magnitude of prospective wealth relative to current wealth, the higher the prospective gains in the mixed gamble and the more likely the CEO will accept risk to current wealth in pursuing potential increases to wealth. We now utilize this decision heuristic (prospective wealth) to predict CEO temporal orientation.

Behavioral decision research informs us that individuals have an inter-temporal preference for wealth today over an uncertain future payoff. This is referred to as the *certainty effect* and is based on the principle that individuals are averse to the uncertainty created by

deferred cash flows; an implication of this effect is that individuals underweight less certain outcomes relative to outcomes that are more certain (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). An extension of the certainty effect within prospect theory research is the immediacy effect, which describes how decision makers place greater value on payoffs that are received immediately. The immediacy and certainty effects have been used by behavioral finance scholars to explain the behavioral logic justifying the discounting of cash flows (to penalize the more time distant cash flows); for instance, extremely high discount rates have been found to be applied to cash flows even for relatively minor time delays (Benzion, Rapoport & Yagil, 1989; Thaler, 1981).

In addition to the certainty and immediacy effects that have emerged from the study of inter-temporal choice and behavioral decision research is the *magnitude effect*. Survey and experimental research examining inter-temporal choice has revealed that higher values (or magnitudes) of cash flows are discounted less aggressively than lower values (Benzion et al., 1989; Lowenstein, 1988; Thaler, 1981). Thaler (1981) found that individuals were indifferent between $15 now and $60 in a year, a multiple of four; yet when the amount received today was $250 the value in one year of indifference was $300. Note that the discount factor required to equate $300 to $250 is significantly lower than that required to equate $15 with $60. This suggests that the incentive to reduce the uncertainty of future cash flows – through bringing anticipated payoffs forward – increases with the value of the prospective future gain (cash inflow). Said differently, the higher the prospective payoff, the more likely individuals are to find ways of reducing the time related uncertainty, meaning the intensity of the certainty effect – or preference for more certainty regarding prospective wealth gains by bringing cash flows forward – increases with the magnitude effect (Prelec & Lowenstein, 1991).

In the context of CEOs and prospective wealth, it follows from the magnitude and certainty effects that the CEO will have more incentive to bring prospective gains forward as the value of those prospective gains increases. In other words, if potential wealth represents possible additions to wealth from their stock options, CEOs are likely to take actions that realize this gain sooner rather than later. As a result, the CEO's tendency toward short-termism, or the tendency to invest in strategies or projects with shorter time horizons, is likely to be greater at higher levels of CEO prospective wealth. Thus, we predict that there will be a negative relationship between the magnitude of CEO prospective wealth and within-firm changes in the time horizons of strategic investments (or temporal orientation).

Hypothesis 3: CEOs' prospective wealth will be negatively related to their long-term orientation in investment choices.

CEO Option Heuristics as Moderators of the Slack Effect

As noted above, available slack provides CEOs with the flexibility to pursue a longer-term perspective due to the resources and insurance qualities it offers. However given the role of CEO self-interest in shaping firm behaviors, the likelihood that the firm acts (or not) on the opportunity provided by available slack is likely to be also driven by CEO preferences for protecting or enhancing their stock option wealth. That is, given that behavioral agency research has also demonstrated the role of compensation related decision heuristics and opportunism in CEO decision making (cf. Devers et al., 2008; Martin et al., 2013), we argue it is necessary to consider how CEO incentives may interact with the presence of slack resources to shape temporal orientation. As per our second hypothesis, when current wealth is high, CEOs are more strongly incentivized to push outcomes from their investments further into the future in order to avoid having these outcomes threaten the value of current wealth. Given both slack and CEO

current wealth are argued to positively influence temporal orientation, it is possible that current wealth either *substitutes* for, or *enhances* the influence of slack on temporal orientation.

Substitution and enhancement represent different mechanisms through which exogenous variables interact when explaining how they influence the endogenous variable (c.f., Podsakoff, MacKenzie & Bommer, 1996: pp. 281). Substitution occurs when one factor compensates for weakness in another factor, where both have the same directional influence on the dependent variable. For example, Tosi and colleagues (1997) found that monitoring substituted for weak incentive alignment in controlling agent opportunism. If CEO current wealth substitutes for slack resources, we would expect (1) current wealth (the substituting variable) to have significant within-firm main effect influence upon temporal orientation in the same direction as available slack; and (2) the moderating effect to have a different sign to the within-firm main effects (that is, a negative and significant moderating effect of current wealth upon available slack) (Howell, Dorfman & Kerr, 1986; Podsakoff et al., 1996).[2]

By opposing the direction of the main effect, the moderating effect results in a gradual erosion (or tapering) of the influence of available slack (the substituted variable) upon temporal orientation, as CEO current wealth (the substituting variable) increases in value. The substitution effect of CEO current wealth means that, (1) although available slack continues to influence temporal orientation, its influence decreases as CEO current wealth increases; and (2) if slack declines and current wealth increases, temporal orientation will remain consistent, as the effect of declining slack is compensated for by increasing current wealth. This argument suggests that

[2] Leadership research has long dealt with the question of whether contextual variables substitute for or enhance the effect of leadership behaviors upon employee performance outcomes or behaviors. Substitution occurs when: (1) the main effect of the moderator is significant; (2) the sign of the interaction is in the opposite direction to the predicted main effect; and (3) the substitute must be in the same direction as the main effect (cf. Podsakoff et al., 1996; Shin & Zhou, 2003).

while slack may provide an opportunity to extend the temporal orientation of the firm, the CEO current wealth effect – driven by myopic loss aversion and self-interest – becomes increasingly dominant as current wealth increases. Thus, the desire to protect current wealth from loss may lead CEOs to be less influenced by the opportunities provided by the presence or absence of slack when deciding whether to pursue longer or shorter time horizons.

In contrast to substitution, enhancement occurs when the moderating role of one factor – in this case, CEO current wealth – amplifies the effect of another (available slack) on a criterion variable. Given that both current wealth and available slack are predicted to encourage a longer-term perspective, it may be possible that the presence of current wealth simply enhances the positive association between slack and temporal orientation. Under this view, the presence of CEO current wealth is expected to enhance the importance of slack in choosing between near-term and long-term orientation. In other words, CEOs view slack as an enabler of the decision to extend the firm's temporal orientation and are more likely to use slack for this purpose when they have something to lose, namely current wealth. In the absence of slack and its performance buffering qualities (Bourgeois, 1981; Bromiley, 1991; Bruner, 1988; Myers, 1977; Opler & Titman, 1994; Tan & Peng, 2003), CEO discretion regarding temporal orientation may be limited since reallocating resources from current operations toward longer-term investments may undermine operational effectiveness in the present, ultimately increasing threats to current wealth.

Conceptually, the above arguments for substitution and enhancement suggest two possible mechanisms through which CEO current wealth moderates the (within-firm) effect of slack upon firm temporal orientation. The substitution argument suggests a stronger role for CEO myopic loss aversion in pushing the firm's investment horizons out into the future, given substitution

suggests that the CEO's personal wealth and inter-temporal preferences will gradually erode, or partially substitute for declines in the influence of available slack in driving temporal orientation. In support of the theoretical logic underlying the substitution argument, behavioral decision research has demonstrated persistently strong effects of CEO loss aversion as well as myopic loss aversion upon their decision making (Kahneman & Tversky, 1979; Thaler, Tversky, Kahneman & Schwartz, 1997; Tversky & Kahneman, 1992), and has been shown to shape CEO investment choices (Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013) and earnings manipulation (Zhang et al., 2008). Thus, we predict that the within-firm substitutive effect is likely to prevail:

Hypothesis 4: CEO current wealth substitutes for rather than enhances the positive effect of available slack upon long-term orientation in investment choices

In addition to current wealth, CEO prospective wealth may also moderate the influence of slack resources on temporal orientation. As argued previously slack leads to a longer temporal orientation, while higher CEO prospective wealth leads to a shorter temporal orientation. If, as argued, prospective wealth encourages a short-term orientation, this form of wealth should play a different role in moderating the association between slack and temporal orientation. In this case given that potential wealth and slack exhibit opposite influences, their interaction could either neutralize (attenuate) or enhance (reinforce) the association between slack and temporal orientation.[3]

Neutralization occurs when the presence of one factor – through a moderation effect – inhibits the influence of another factor, thus neutralizing its influence on the criterion. For example, in the presence of high prospective wealth, CEOs may ignore the opportunity presented

[3] Note that a substitution effect is not possible (according to the classification of interaction effects by Howell et al., 1986) given the main effects of CEO prospective wealth and slack are predicted to have different directional effects (unlike the situation for CEO current wealth and slack), excluding the possibility of substitution.

by slack resources in order to shorten the time horizon for realizing prospective gains. That is, driven by the immediacy and certainty effects, a CEO may eschew the opportunity to make longer-term investments that slack provides in order to shorten investment horizons when potential wealth is large. (Kahneman & Tversky, 1979; Prelec & Lowenstein, 1991). Thus, according to this view, at higher levels of prospective wealth, slack should exhibit less influence on temporal orientation then when prospect wealth is low. This neutralization effect could occur if the CEO's desire to capture future potential wealth sooner rather than later attenuates the perceived benefits of using the firm's slack. In other words, investing in the short-term in order to capture prospective returns immediately in the presence of abundant slack, would occur if the CEO is willing to ignore the opportunity costs of short-termism (namely, longer-term under-performance). These arguments suggest that at higher levels of prospective wealth, increases in slack are less likely to lead to longer temporal orientation; this equates to an argument that CEO prospective wealth neutralizes the positive effect of slack upon firm temporal orientation.

As an alternative to neutralization, prospective wealth may also enhance the effect of slack resources on temporal orientation. Under this scenario, despite the desire to capture future potential wealth sooner, CEOs may recognize that the presence of slack mitigates much of the risk to this future wealth (Opler & Titman, 1994; Tan & Peng, 2003), thus reducing the effects of biases in favor of immediacy and certainty. Further, the higher levels of available slack may convince CEOs that increases in temporal orientation will ultimately increase their payoffs (prospective gains) over the long run, given longer-term strategies are argued to out-perform a series of short-term strategies (Marginson & McAulay, 2008; Mueller & Reardon, 1993; Walsh & Seward, 1990). In other words, making longer-term investments avoids the opportunity costs that may coincide with a short-term strategy. Therefore, in the calculation of risk and returns

associated with longer-term strategies, CEOs may recognize that: (1) the presence of slack buffers long-term performance against downside risk; and (2) longer-term investments are likely to have larger payouts that enhance the value of prospective future wealth gains. As a result, CEOs may look to extend their time horizon when slack is abundant and prospective wealth is large. Conversely, in the absence of slack and its risk buffering effects on performance, CEOs would be strongly motivated to shorten the time between investment and investment payoffs in order to capture returns and thus potential wealth sooner, rather than accept the risk of larger payoffs in the future. This view suggests that the presence of potential wealth enhances the importance of slack to decisions regarding temporal orientation.

The above arguments suggest two mechanisms by which the CEO prospective wealth may moderate the positive slack effect upon temporal orientation. CEO prospective wealth either: (1) neutralizes the effect of slack on temporal orientation; or (2) enhances the slack effect. However, we find the enhancement argument more compelling, given this logic is more consistent with our main effect argument in Hypotheses 1 that slack improves the probability of success in long-term projects. That is, the enhancement argument is consistent with the logic that increases in slack are more likely to result in increases in temporal orientation when the CEO has more to gain (higher prospective wealth) from these longer-term projects, given those gains can be amplified and risks of failure reduced due to higher available slack. Thus:

> *Hypothesis 5: CEO prospective wealth enhances rather than neutralizes the positive effect of available slack upon long-term orientation in investment choices.*

METHODOLOGY

Data

We extracted data for this study from Execucomp and Compustat between 1996 and 2011. Compustat provides us with 10-K reports for US publicly traded corporations. Execucomp

database also provides data from proxy statements of publicly traded firms. Consistent with Souder and Bromiley (2012), manufacturing firms were chosen (industry, or 'sic' codes between 2,000 and 4,000) because of the greater relevance of capital expenditure to these firms and the criticality of capital expenditure to our temporal orientation measure. Due to the importance of straight-line depreciation, we only include firms using this depreciation policy (82% of the firms in our sample), which is the most common depreciation policy (Souder & Bromiley, 2012). We include 6,012 CEO-year observations in our analysis.

Dependent Variable

Since a CEO's temporal orientation when making investment choices cannot be measured directly, we use *asset durability* as a proxy. Use of this indicator is supported by prior research of Souder and Bromiley (2012) who argue that the magnitude of investment in durable assets provides a reasonably accurate measure of top management's temporal orientation, or investment horizon. Asset durability is measured as the annual investment in property, plant and equipment (PP&E) divided by depreciation expense. Using annual investment in PP&E scaled by depreciation allows for the temporal use of panel data to analyze how the temporal orientation changes from year to year in response to changes in CEO firm-specific wealth. Accounting standards inform us that property, plant and equipment are defined as assets with a useful life greater than one year. Because the asset acquired is used over multiple years, firms using the straight-line method of deprecation are required to create an equal expense each year over the asset's life. The average life of the assets is referred to as asset durability (Souder & Bromiley, 2012). Given that depreciation expense is calculated as gross assets divided by useful life, we can calculate useful life by dividing gross assets by total depreciation expense (for firms using straight-line depreciation). Thus:

$$Asset\ Durability_{it} = Gross\ PPE_{it} / Depreciation\ Expense_{it}$$

An alternative to this approach is isolating the depreciation expense that relates to current year CAPX in order to calculate the useful life of asset purchases in the current period. Useful life or asset durability would then be current year CAPX divided by the estimated depreciation expense relating to that CAPX (Souder & Bromiley, 2012). However, estimated current year depreciation expense for current year purchases will only be recorded for the portion of the year the newly acquired capital asset was used (International Accounting Standard, or IAS 16) which, in our calculation could increase the estimated life-span of the asset beyond its actual useful life. This occurs because we don't know when during the year the asset was first used. New (current year) CAPX averages approximately 10% of gross assets, significantly limiting its effect in our aggregate calculation. While changes in new CAPX durability are likely to capture a number of investment decisions throughout the year, we will capture the average durability of assets that have been added to the asset portfolio during this period.

Independent Variables

Current wealth. We use the same measure of current wealth, or risk bearing inherent to stock options, as adopted by previous BAM research (Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013). This is calculated using a variable from Execucomp: being the product of: (1) number of options from each option grant, and (2) their corresponding spread (this is the market price, minus the exercise price; the latter being the price at which the CEO can purchase the stock) for options that have a market price above the exercise price (are in-the-money) on the final day of the fiscal year. Wiseman & Gomez-Mejia (1998) argue that estimations of personal wealth will include future salary or bonuses if they are considered assured. Extending this view, Tortella et al. (2005) and Devers et al. (2008) argue that executives will include estimates of the

value of their stock options in their assumed personal wealth. The cash value of stock options, as calculated above, is a useful heuristic for estimating current firm-specific wealth that is likely endowed in calculations of overall personal wealth, given that the resulting values are reported annually in the firm's proxy statement, and the relevant variables used in calculating this value are easily attainable for the CEO.

Prospective wealth. This is the estimation of potential future additional wealth or potential gains to the value of stock options held by the CEO in their mixed gamble (Martin et al., 2013). Thus, in our measurement of this construct, we attempt to estimate future increases in the CEO's current wealth, due to successful (yet risky) strategic investments. To do so, consistent with Martin et al. (2013), we use the average Dow increase during the period of the study; this was 7.0%. Note that we deduct the present day stock price so that we include only the additional wealth they would gain from future stock price increases. We multiply our calculation by the number of options held, given this will capture their total gains from stock price increases. The calculation is:

$$\textit{Prospective Wealth} = \textit{Number of Options Held} \times [(1.068^{time} \times \textit{Stock Price}) - \textit{Stock Price}]$$

We calculate the number of options held by the CEO as the sum of unexercisable and exercisable stock options in Execucomp. Price is the firm's stock price at fiscal year-end. Average time to expiry is calculated using the Core and Guay (2002) estimation, since actual time to expiry is unavailable prior to 2006. This is calculated using a weighted average of time to expiry based upon the number of options in the three categories of options (exercisable, unexercisable and new grants). Robustness tests are also performed using various periods of time and rates of annual price increase (other than the estimations above) in our calculation of prospective wealth (refer Results).

Available slack. This is a measure of resources held by the firm that can provide a buffer against economic turbulence, provide funds for adaptation or to finance strategic investments (Bromiley, 1991; Davis & Stout, 1992; Greenley & Oktemgil, 1998). Thus, it captures a firm's liquid assets and is measured as a firm's cash and short-term securities in year t-1 (Souder & Bromiley, 2012). Unscaled variables are preferable as they reduce the possibility of spurious associations due to correlation between denominators of both right and left side variables (Kronmal, 1993; 1995; Wiseman, 2009; Martin et al., 2013). In the context of our study, total assets (the potential scalar) are highly correlated with depreciation expense (the denominator in our dependent variable).

Controls. We include several control variables that if not included could result in biased findings. Each of these variables are lagged (*t-1*), given that they are likely to influence the temporal orientation decision of the CEO in the following year (*t*) (Souder & Bromiley, 2012). First, we control for *firm size* using firm sales. Firm size may proxy for firm resources and therefore capability to embark on longer-term projects. In addition, since most of our measures are related to firm size, such as our measure of slack and capital expenditures, including this control reduces the likelihood of spurious results (Wiseman, 2009). We control for *R&D* expenditure given it is an alternate use of firm resources. A firm's raising of new capital may reflect its capability for making strategic investments and is measured as the *change in financing*, or net cash flows from financing activities (Souder & Bromiley, 2012). Another important influence is likely to be *firm performance*, which we control for using cash flow return on assets (CFROA) given this excludes depreciation from the numerator and denominator (important given depreciation influences our dependent variable; Sounder & Bromiley, 2012).

We also control for CEO level influences. First we control for the compensation related variables: *cash pay* and value of *shares owned*. Cash pay has been shown to influence CEO risk

preferences (Devers et al., 2008), which could also account for changes in temporal orientation. We calculate cash pay as the percentage of total compensation paid as salary and bonus. Value of shares, is also a measure of risk bearing and thus risk preference of the CEO that may influence inter-temporal choice, given agency theory suggests that share ownership affects agent behaviors (Nyberg, Fulmer, Gerhart, & Carpenter, 2010; Gomez-Mejia, Berrone & Franco-Santos, 2010); thus, consistent with previous research predicting temporal orientation, we control for the value of CEO shares owned divided by CEO total compensation, which gives an indication of the significance of shares owned relative to other forms of compensation (Devers et al., 2008; Martin et al., 2013). We also control for other CEO level variables found to influence risk preferences including CEO *gender* (coded as 1 for male and 0 for female), *age* and *tenure*. Finally, we control for dual occupation of the CEO and board chairman roles (*duality*; coded as 1 if also chairman, or 0 otherwise) as a measure of the influence of the CEO over the firm's temporal decision. Each of these CEO level controls are consistent with research predicting CEO risk behavior within BAM research (eg., Devers et al., 2008; Martin et al., 2013).

Model Specifications and Robustness Tests

We used fixed effects models in order to estimate how asset durability – or the average useful life of assets held by the firm – changes in response to stock option heuristics (Certo & Semadeni, 2006; Halaby, 2004; Sanders, 2001; Souder & Bromiley, 2012). This choice of model allows us to deal with heteroskedastic error terms and autocorrelation that can lead to biased and inconsistent results in panel data (Bliese, 2000; Certo & Semadeni, 2006; Kenny & Judd, 1986). We chose to use fixed effects over random effects based on Hausman (1978) specification tests on the regressions for each hypothesis and found that fixed effects models were appropriate (x^2 = 436.7; $p < 0.001$). As a result, our analyses were estimated using *xtreg* function in STATA with

the fixed effects option (*fe*). We winsorized our (non-binary) variables at the 1% level because of extreme outliers in the data set. Our non-binary variables have also been standardized with a mean of zero and standard deviation of one, for ease of interpretation. We lag all variables, as noted above, on the assumption that information at the CEO's disposal today will influence the temporal orientation of strategic investments made in the following year (Souder & Bromiley, 2012). Our results were robust to adding a variable that denoted change of CEO. We also considered the issue of endogeneity for prospective wealth and current wealth. However, tests of endogeneity using the procedure suggested by Sanders and Hambrick (2007) found no evidence of endogeneity, nor were our wealth variables significantly predicted by our measure of temporal orientation (asset durability). Finally, the change in R squared from the reduced models (to the left of each regression in Table 2) was significant for main effects and interactions.

RESULTS

Refer to Table 1 for the correlation matrix and descriptive statistics of the pre-standardized variables. The mean of asset durability at 12.46 appears reasonable given that the useful life of assets (according to accounting standards) ranges from 5 to 30 years, with 10 years being the most common category (typically used for land, plant and machinery). A high value asset that is likely to form a large proportion of total assets is buildings, commonly with a 20 year life (often used for buildings made of wood and concrete). Thus, an average useful life between these two common categories of approximately 12 years is reasonable.

**** Insert Tables 1 and 2 about here ****

Table 2 presents the regression models predicting asset durability, our operationalization of temporal orientation. Note that an R squared of approximately 0.1 is common in models predicting temporal orientation (Souder & Bromiley, 2012). Examining first our main effects

model, we obtain support for Hypothesis 1, our baseline hypothesis predicting a positive main effect ($b=0.051$; $p<0.01$) of available slack upon temporal orientation. Hypothesis 2 predicting a significant and positive main effect of current wealth upon temporal orientation is weakly supported ($p=0.07$). One interpretation of these results is that to fully understand the relationship between CEO current wealth and temporal orientation, it is necessary to consider the context of this relationship, such as firm available slack (modeled as an interaction with slack; see H4 results commentary below).

Hypothesis 3 predicting a significant negative main effect of CEO prospective wealth is supported. That is, where CEO prospective wealth is largest, the firm's asset durability and thus the CEO's investment horizon tends to be shortest ($b=-0.031$; $p<0.05$). This suggests that CEOs focus on near-term investment horizons in pursuit of attracting additional wealth. Given our dependent variable is the average asset durability across all fixed assets purchased at different points in time, the change in durability of assets purchased in the focal year will be larger than the change in the average durability of all assets held during the year. To interpret the results of our regressions in unstandardized terms of our dependent variability, we assume firms replace assets once every twelve years (which is the mean of asset durability of all firms as per Table 2), meaning that a one standard deviation increase in CEO prospective wealth increases asset durability (of assets purchased in the focal year) on average by approximately 2 years.

Turning to the interactions between our CEO stock option heuristic variables and available slack we also find support for our predictions. Hypothesis 4 predicts that CEO current wealth substitutes for the positive effect of available slack upon long-term orientation in investment choices. Results support the substitution effect of CEO current wealth given that the main effect of current wealth is now significant and positive ($b=0.031$; $p< 0.01$); slack is no

longer significant; and the interaction between slack and current wealth is significant in the opposite direction of the main effects (b=-0.012; p<0.05). As can be observed in Figure 1a the relationship between available slack and temporal orientation remains positive at higher levels of CEO current wealth (shown by the broken line), indicating that while the effect of slack is weakened at high levels of current wealth, it's effect is not completely overwhelmed (substituted for) by CEO current wealth. Said differently, the role of slack in shaping temporal orientation is gradually tapered as CEO current wealth increases. Looking further at this association we find that temporal orientation is longest across all levels of slack when current wealth is high. Further, temporal orientation is longer when current wealth is high and slack is low, than when slack is high and current wealth is low. This supports the view that CEO current (stock option) wealth is an important driver of temporal orientation, consistent with the logic of Hypothesis 2. This is interesting in that it provides support for the idea that mechanisms intended to align the incentives of agent and principal, such as stock options, perversely lead the agent (CEO) to subordinate firm level factors, such as slack that should allow them to adopt a long-term orientation. That is, the available slack that provides the flexibility to pursue a long-term strategy is less likely to be instrumental as CEO current wealth increases.

***** Insert Figures 1a and 1b about here *****

Hypothesis 5 predicts that CEO prospective wealth enhances the positive effect of available slack upon long-term orientation in investment choices. Results from the interaction model support this prediction since the coefficient of the interaction of CEO prospective wealth with slack is positive and significant (b=0.023; p<0.001), while the main effect of prospective wealth remains negative and significant (b=-0.05; p<0.001) and available slack as a main effect is not significant. The depiction of this association in Figure 1b shows that as prospective wealth

increases, the positive influence of slack on temporal orientation becomes greater. (shown by the broken line). Thus, it appears that although temporal orientation is generally shorter when prospective wealth is high, the presence of available slack appears to embolden the CEO to gamble on a longer-term horizon. Interestingly, when prospective wealth is low, asset durability is greater across all levels of slack. This suggests that at lower levels of prospective wealth, other factors may intervene to increase temporal orientation suppressing the importance of slack on temporal orientation. Given that our results for Hypothesis 4 underline the strength of the myopic loss aversion effect (and the substitution effect of current wealth for slack), it is possible that in the absence of prospective wealth, current wealth becomes the driving factor in determining temporal orientation. That is, when there is minimal prospective wealth to pursue, loss-averse CEOs will turn their attention toward protecting current wealth via a longer-term orientation. In sum, Hypothesis 5 is supported.

DISCUSSION & CONCLUSION

This study has drawn upon prospect theory and agency theory to analyze how two decision heuristics associated with option wealth – prospective and current wealth – interact with available slack to influence CEO and therefore firm temporal orientation. Our findings are two-fold: (1) CEO current wealth (agent risk bearing) leads to longer temporal horizons in investment decisions (reflected by higher levels of asset durability) and higher levels of current wealth substitutes for the effect of slack on temporal orientation; (2) CEO prospective wealth and thus the promise of future potential gains lead to shorter temporal orientation and this effect accentuates the importance of slack in determining temporal orientation when choosing among assets with different life-spans. These findings extend theory in a number of ways.

First, by bringing a behavioral agency approach to investigating CEO temporal orientation, we have contributed to the literature examining short-termism and its antecedents. There has been a surprising dearth of empirically supported theory that assists our understanding of the compensation related causes of short-termism. Despite the development of inter-temporal preference research in the context of investment choices by finance scholars (Bernartzi & Thaler, 1995), this stream of behavioral decision theory is yet to be utilized to examine the relationship between CEO stock options (as a form of equity based pay) and their inter-temporal preferences. This is in stark contrast to the rich stream of literature examining the relationship between CEO compensation and strategic risk taking (e.g., Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013). A consequence of the lack of behavioral research examining CEO inter-temporal preferences and how they relate to CEO compensation, is that management literature has provided no clear guidance to inform the present debates in regulatory circles regarding how CEO compensation can be used to help limit the short-termism that regulators have suggested significantly contributed to the Great Recession (Geithner, 2009).

The failure of prior research to find an effect of stock options on temporal orientation (e.g., Souder and Bromiley, 2012) has called into question the importance of incentives in driving strategic choices: "our empirical results raise new doubts about the ability of stock based pay to induce longer-term investments" (pp., 563). Our findings suggest that stock options can affect temporal orientation, but that its influence is more nuanced than prior research has recognized. In particular we find that heuristics associated with stock options influence firm temporal orientation through a risk bearing (CEO current wealth) and an incentive effect (CEO prospective wealth). However, in order to understand the relationship between these effects and firm temporal orientation, it is important to also consider them in the context of organizational

factors, and in particular, the availability of slack resources. Interesting, stock options are intended to align the incentives of the CEO and shareholders, however in the context of temporal orientation, they appear to incentivize the CEO to pursue private goals as opposed to leverage firm resources (slack) that would allow for longer time horizons. Thus, we extend our understanding of temporal orientation by presenting a more nuanced picture of the role of CEO stock options in temporal orientation. Given the discordant and complex effects of CEO stock options, it shouldn't be surprising that the accumulation of prior research has produced inconsistent findings when examining the role of stock options on strategic choice and managerial opportunism.

Second, we have noted that the presence of available slack on the balance sheets has never been greater, due to the accumulation of cash on corporate balance sheets over recent years. The consequences for shareholders of this increase in the average slack of US firms are usually discussed in terms of foregone investment opportunities; given executives appear to prefer stockpiling cash to investing in potentially value adding projects. An alternative perspective is that available slack (or resources available for strategic initiatives) increases the horizons of firm investments, reducing agency costs for shareholders with longer-term outlooks (c.f., Souder & Shaver, 2010). However, our theory suggests that it may be too simplistic to draw conclusions regarding the role of slack as increasing (or decreasing) agency costs related to firm temporal orientation, without considering how the effect of slack interacts with CEO decision heuristics associated with stock options. Our findings suggest that the slack effect is partially substituted by the current wealth effect and is significantly enhanced by the CEO prospective wealth effect. Thus, the consequences of slack for the agency costs associated with temporal

orientation (e.g., short-termism) cannot be understood without analyzing the wealth characteristics of CEO equity holdings.

Third, we provide the insight that myopic loss aversion and prospect theory's certainty and magnitude effects have utility in predicting CEO temporal orientation. As noted above, behavioral strategy has previously been applied in a limited number of empirical settings and used primarily to predict the magnitude of risk taking by the CEO in response to compensation design (Devers et al., 2008; Larraza-Kintana et al., 2007; Martin et al., 2013), inviting the criticism that it does not provide a richer understanding of a broader set of decision characteristics. This is consistent with criticism of behavioral strategy research based on its failure to assist in the understanding of the core concerns of strategic management research, including sources of heterogeneity in the quality of management conduct (Powell et al., 2011). Shifting the focus to examine temporal orientation and short-termism is an attempt to provide greater insights regarding behaviors and qualities of management – specifically their temporal orientation – associated with equity based pay.

Finally, with regard to recent advancements in literature examining temporal orientation, we contribute to this discourse by demonstrating the utility of Souder and Bromiley's (2012) operationalization of asset durability in furthering this research area, while also demonstrating how we have accepted the challenge posed by that study, by using alternate theoretical explanations to resolve the puzzle regarding how CEO equity based pay influences asset durability. A large impediment to the development of this research stream had been the absence of an accepted measure of temporal orientation; therefore their introduction of asset durability to this literature has greatly advanced the study of temporal orientation and short-termism. We offer a refinement to their measure that overcomes problems associated with not knowing purchase

dates of current year CAPX. We hope that this can further assist the value of this construct for future research.

On a practical level, shareholders who have their "say on pay" know little about the consequences of the pay they approve or reject, for the subsequent inter-temporal choices of their executives. By providing guidance regarding the effects of stock options and slack upon temporal orientation in investment choices, we advance both the temporal orientation and executive compensation literature. In doing so, we make progress toward addressing the aforementioned theoretical gaps and lack of practical guidance. The clear linkage between heuristics associated with stock options and temporal orientation provides guidance regarding levers of control available to the board and compensation committees for controlling executive short-termism. For instance, the board should closely monitor the CEO's stock option portfolio in order to ensure that they have "something to lose", or sufficient risk bearing that will contribute to a longer-term focus. According to our findings, where CEOs have newly granted options, that typically have negligible value yet large prospective gains, there is a significant risk that a short-term focus will be adopted. Thus, boards may consider using stock in addition to stock options for new CEOs, in order to counter-balance the prospective wealth and associated incentives created by new stock options. This will be especially important where there is low slack, which we find will accentuate any tendency toward short-termism.

Limitations and Future Directions

A limitation of our study is that our measure of temporal orientation is based solely upon decisions made with regard to property, plant and equipment. While these assets are central to the industries used in our study, there may be other measurements of temporal orientation that also capture investment horizons. We confined our study to the examination of stock options

given their prominence within executive pay packages. Clearly executive pay packages are far more complex raising questions about how the complexity and structure of modern compensation packages influence agent behavior. Finally, it is possible that CEOs vary in how they respond to decision heuristics, including current and prospective wealth. A promising guide for pursuing this idea would be regulatory focus theory (Higgins et al., 1994). This theory distinguishes between individuals who are promotion focused (i.e., seeking gains despite downside loss potential) and those who are prevention focused. That is, individual differences may assign different weights to gain and loss potential, altering the influence different elements of equity-based wealth have on temporal orientation.

Conclusion

In this study we show that CEO heuristics associated with their stock options do appear to influence temporal orientation; yet, this influence is understood by considering how these heuristics interact with available slack to impact temporal orientation. Thus, our theory and findings provide a more nuanced view of how CEO stock options influence firm behavior. We show that mechanisms intended to align the incentives of agent and principal through the use of equity forms of compensation (such as stock options) can perversely lead the agent to sub-ordinate firm level factors – such as the presence of slack – that would normally provide opportunities for making value-enhancing longer-term investments.

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TABLE 1: DESCRIPTIVE STATISTICS & CORRELATIONS

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Temporal orientation	12.46	5.63	1.000													
2 Firm performance	0.03	0.13	-0.009	1.000												
3 Gender	0.98	0.13	0.001	0.002	1.000											
4 Age	55.92	7.44	0.153	0.028	0.065	1.000										
5 Tenure	13.24	8.57	-0.022	0.030	0.070	0.335	1.000									
6 Duality	0.37	0.48	0.058	0.029	-0.036	0.142	-0.124	1.000								
7 CAPX	197.00	466.70	-0.070	0.047	-0.019	0.005	-0.094	0.094	1.000							
8 R&D	206.80	557.90	0.120	0.031	-0.023	0.040	-0.059	0.083	0.656	1.000						
9 Fixed pay percentage	0.57	0.33	0.008	-0.159	0.018	0.016	0.283	-0.177	-0.174	-0.167	1.000					
10 Change in financing	-0.01	0.12	-0.101	-0.213	0.006	-0.063	0.056	-0.062	-0.073	-0.072	0.054	1.000				
11 Share value/Total comp	1.03	3.53	-0.063	0.038	0.011	0.038	0.238	-0.005	-0.033	-0.049	0.238	0.016	1.000			
12 Firm size	4,060.80	8,729.30	0.105	0.057	-0.061	0.043	-0.123	0.147	0.679	0.868	-0.202	-0.102	-0.042	1.000		
13 Slack	441.50	1,185.80	-0.043	0.099	-0.040	-0.005	-0.139	0.135	0.829	0.659	-0.211	-0.072	0.005	0.720	1.000	
14 Current wealth	9,505.40	20,876.00	-0.078	0.185	0.024	0.011	0.020	0.113	0.244	0.259	-0.242	0.005	-0.031	0.265	0.272	1.000
15 Prospective wealth	17,455.50	29,372.00	-0.043	0.183	-0.006	0.012	-0.046	0.192	0.449	0.419	-0.262	-0.082	-0.023	0.455	0.469	0.718

Correlations are significant at $p<0.05$ where absolute value of correlation exceeds 0.03.
N=6,012

TABLE 2: DEPENDENT VARIABLE: TEMPORAL ORIENTATION (t)

	Controls		Main Effects		Interactions	
	Beta	*S.E.*	*Beta*	*S.E.*	*Beta*	*S.E.*
Firm performance $_{t-1}$	0.005	(0.008)	0.004	(0.008)	0.005	(0.008)
Gender $_{t-1}$	-0.000	(0.093)	0.010	(0.093)	-0.000	(0.093)
Age $_{t-1}$	-0.009	(0.012)	-0.011	(0.012)	-0.011	(0.012)
Tenure $_{t-1}$	0.052**	(0.017)	0.053**	(0.017)	0.054**	(0.017)
Duality $_{t-1}$	-0.042†	(0.022)	-0.043†	(0.022)	-0.042†	(0.022)
R&D $_{t-1}$	-0.153***	(0.021)	-0.178***	(0.024)	-0.181***	(0.024)
CAPX $_{t-1}$	0.084**	(0.028)	0.093***	(0.028)	0.086**	(0.028)
Cash pay $_{t-1}$	0.022*	(0.009)	0.023*	(0.009)	0.022*	(0.009)
Change in financing $_{t-1}$	-0.032***	(0.008)	-0.034***	(0.008)	-0.034***	(0.008)
Share value $_{t-1}$	-0.053***	(0.013)	-0.054***	(0.013)	-0.053***	(0.013)
Firm size $_{t-1}$	-0.132***	(0.030)	-0.148***	(0.031)	-0.158***	(0.031)
Slack $_{t-1}$			0.052**	(0.018)	0.019	(0.021)
Current wealth $_{t-1}$			0.019†	(0.011)	0.031**	(0.012)
Prospective wealth $_{t-1}$			-0.031*	(0.013)	-0.050***	(0.014)
Current wealth $_{t-1}$ x Slack $_{t-1}$					-0.012*	(0.006)
Prospective wealth $_{t-1}$ x Slack $_{t-1}$					0.023***	(0.007)
Constant	0.070	(0.097)	0.053	(0.097)	0.064	(0.097)
R squared within	0.067		0.070**		0.072**	
N	6,012		6,012		6,012	

Key: *** denotes p value of less than 0.001; ** denotes p value of less than 0.01; * denotes p value of less than 0.05; † denotes p value of less than 0.1.
Industry and year dummies are included in the regressions but not listed in this table.
The R squared presented is within-firm for our fixed effects models.
Note that the symbols next to R squared denote the significance of the change in R squared from the model to the left.
Regression models are estimated using standardized variables.

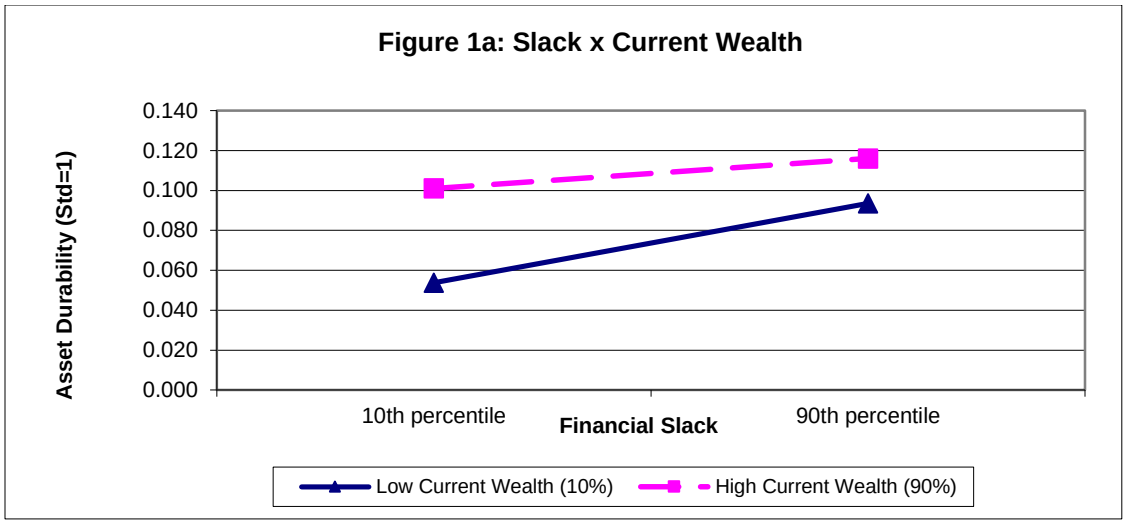
Figure 1a: Slack x Current Wealth
Asset Durability (Std=1)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10th percentile
Financial Slack
90th percentile
Low Current Wealth (10%)
High Current Wealth (90%)

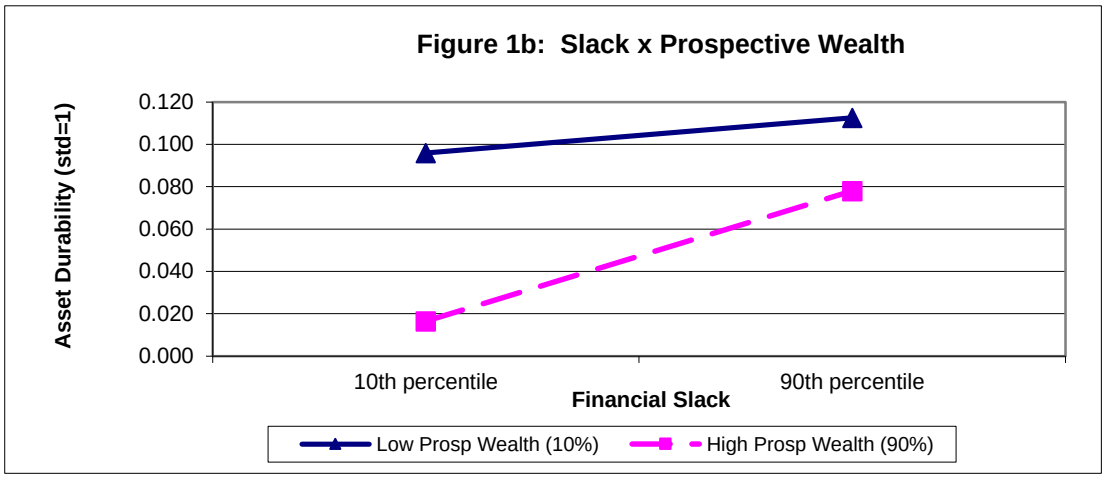
Figure 1b: Slack x Prospective Wealth
Asset Durability (std=1)
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10th percentile
Financial Slack
90th percentile
Low Prosp Wealth (10%)
High Prosp Wealth (90%)