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Beyond Simple Utility: Incentive Design and Trade-Offs for Corporate Employee-Entrepreneurs

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To strengthen the theoretical foundations of incentive system design for corporate entrepreneurship, we develop a moderated model of new venture participation, integrating financial, risk, and effort factors to more comprehensively understand the limits of economic utility maximization theory. We make explicit the trade-offs and opportunity costs for corporate employee-entrepreneurs. We use a conjoint field experiment to collect data on 1952 decisions made by 61 corporate employees to test how risk and effort moderate an employee's decision to participate in a new corporate venture. We find that these factors do interact to affect the choice to engage in corporate entrepreneurship projects.

Introduction

On a recent airline flight, one of the authors of this study came across the following career advice column letter regarding a potential employee-entrepreneur:

> My boss wants to give me a challenging new assignment, but not more money. I'm so upset I don't know what to do. I work for a founder-managed start-up. We just brought a major investor on board, and for the first time we're swimming in cash. However, I apparently don't warrant a share of the largesse. . . . We are a 'hot' company, which, by my estimation means that in the next 18 to 36 months we could either go IPO, sell, or crash and burn. Sure, I'd like to step up to be around for the upside, but I don't want to be taken advantage of. And I definitely don't want to work 60- to 70-plus hours a week for the high privilege of sitting in a better chair on the deck of the Titanic . . . I'll admit that this is the best shot that I've ever had in my career, both in terms of my job and in terms of the potential. I'd love to just

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go for it one more time, but I am having trouble with the 'just believe' part.—Don't Take Me for Granted (Asher, 2007, p. 53).

What answers does current research on corporate entrepreneurship have to offer this employee and his or her company? While a number of researchers have examined why individuals leave employment to start their own ventures (see Douglas & Shepherd, 2000, 2002), less attention has been paid to why individuals choose to become leaders of, or participate in, corporate entrepreneurial ventures in fast-growing or mature organizations. The empirical literature is not particularly revealing on what can be done to motivate and encourage this complex decision, yet employee participation in such ventures is a key part of their success (Hornsby, Kuratko, & Zahra, 2002). Thus, given what we know about entrepreneurs, occupational choice, and compensation theory, how can we design better corporate entrepreneurship incentive systems? In this study we develop a model of trade-offs involved in this choice and test the model in a field experiment with corporate employees as subjects.

Corporate entrepreneurship has been defined as "the process whereby an individual or group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization" (Sharma & Chrisman, 1999, p. 18). In general, these processes and actions need to be proactive, innovative, and involve risk-taking in order to be considered entrepreneurial (Miller, 1983). The goals of these actions can be long-term "organizational development" and "cultural change," midterm "strategic benefits" and "real-option development," and short-term "quick financial returns" (Miles & Covin, 2002, p. 34). Sharma and Chrisman identify two general categories of corporate entrepreneurial actions: corporate venturing and strategic renewal. In our study of reward and incentive systems for corporate entrepreneurship, we focus on corporate venturing, which "refers to corporate entrepreneurial efforts that lead to the creation of new business organizations within the corporate organization" (Sharma & Chrisman, p. 19) and may lead to organizational entities that reside either inside (internal corporate venturing) or outside (external corporate venturing) of the existing organizational domain (Sharma & Chrisman, pp. 19–20).

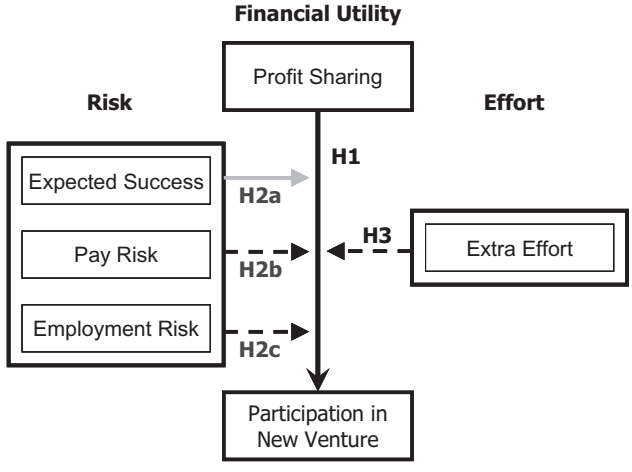
Scholars have long been interested in explaining the corporate environmental factors that encourage organizational members to act entrepreneurially (for two reviews see Dess et al., 2003; Zahra, Jennings, & Kuratko, 1999). In empirical research, reward and incentive systems have been identified as a critical dimension of corporate entrepreneurship activity. Common survey measures, such as the Corporate Entrepreneurship Assessment Inventory (Hornsby et al., 2002) and Entrepreneurial Management (Brown, Davidsson, & Wiklund, 2001), respectively include "rewards/reinforcement" and "reward philosophy" as factors.

Although rewards are important in corporate entrepreneurship, few researchers address the theoretical foundations of incentive system design for the corporate venturing context and recognize the existence of trade-offs and opportunity costs in this decision-making context. Opportunity costs have been acknowledged in the entrepreneurial decision (Amit, Muller, & Cockburn, 1995; Cassar, 2006) but have not been incorporated into the corporate entrepreneurship literature. While corporate entrepreneurship research has captured a number of variables that demonstrate main-effect relationships with the willingness to engage in corporate venturing, we take the perspective that utility is more complex and therefore must include opportunity costs and trade-offs between these factors when evaluating the corporate venture choice.

Following the prior theoretical and empirical work of Douglas and Shepherd (2000, 2002), we employ utility maximization theory as an initial framework for incentives and

Figure 1

Model for Employee Participation in New Corporate Ventures



Note: Solid line = positive relationship; dashed line = negative relationship.

compensation for corporate entrepreneurship, and propose a corresponding set of direct-effect and moderation hypotheses. In a conjoint-based field experiment, we conduct a series of decision-making scenarios with corporate employees to test the combination of factors that affect an employee's decision to participate in a new corporate venture. Based on our findings, we discuss promising future paths that theorists and empirical researchers can follow to develop a more comprehensive model of employee motivation and behavior under conditions of uncertainty.

Theoretical Background

To lay the groundwork for our model, we build on the prior work of Douglas and Shepherd (2000) and review the concept of utility maximization as it relates to financial incentive schemes. Next, we investigate two general conditions under which an individual may deviate from pure financial utility maximization, namely risk and effort. Further, we incorporate opportunity cost factors for employees and allow for trade-offs between these factors. After our initial hypothesis regarding utility maximization, we review the moderating impact of the risk dimension. Then we consider the moderating impact of the effort dimension. Figure 1 captures these elements in our overall model. We propose that a higher success probability enhances the motivating effect of financial incentives (profit sharing), whereas higher pay risk, job risk, and work effort diminish this effect. These interaction effects reflect the economic concept of expected utility, which reflects the utility of a potential outcome and the expectation of that outcome. Here we treat both expectation and outcome as independent and potentially interacting variables because they represent distinct properties of a corporate entrepreneurship project (e.g., profit sharing can be high with the success probability of the project being high or low).

Financial Utility Maximization

In economic theory, a standard assumption is that individuals are financial utility maximizers. Using economics as a starting point, Douglas and Shepherd (2000) build a

model of career choice where entrepreneurship, either internal or external, can in fact be a utility maximizing response. In particular, their model outlines how "incentive contracts, such as profit-sharing bonus schemes, may be designed to induce employee behavior" and "higher levels of work effort" (2000, p. 236). Generally speaking, increasing profit-sharing bonuses induces greater levels of work effort, depending on an employee's attitude to work and income, up to a certain maximum level of effort that an employee is willing (2000, pp. 236–237) and able to provide (2000, pp. 238–239). Initial empirical support for the fundamental underlying assumptions is presented in Douglas and Shepherd (2002). Thus, the utility maximization approach has been applied successfully to both theoretically explain and empirically verify individuals' decisions to engage in entrepreneurship. This motivated us to pursue this theoretical route, as opposed to behavioral theory alternates, such as expectancy theory (Porter & Lawler, 1968; Vroom, 1964).

The economic logic of the common practice of profit sharing for managers and professional-service workers performing novel tasks was outlined by Alchian and Demsetz (1972) and underscored by Fama (1991), who stated that where outputs and inputs are noisy and required skills are uncertain, estimates of expected utility evolve slowly. "As a result, and in line with the predictions of principal-agent theory, the salary payoffs of these agents are typically combined with an incentive payoff to discipline their supply decisions" (Fama, p. 43). Examining major corporations with corporate venturing programs, Block and Ornati (1987) find in fact that variable calculable bonuses based on venture return on investment (e.g., profit sharing) is the most preferred method to improve venture managers' performance. For an extensive review of the literature on profit sharing and gainsharing, see Welbourne and Gomez-Mejia (1995).

The theory here is clear. Enhanced incentives, in the absence of other trade-offs or opportunity costs, increase the odds of securing desired behaviors. Thus, the initial hypothesis of our model as a replication of this past work states:

Hypothesis 1: The greater the profit-sharing incentive for employees, the greater the likelihood that employees will participate in a new corporate venture.

Beyond Simple Utility Maximization: Trade-Offs and Moderating Effects

We contend that in employee decisions to participate in corporate entrepreneurship, it is necessary to consider trade-offs between other factors that can have a moderating effect over and above the basic economic decision-making process. This is also grounded in economic theory, with an explicit recognition of opportunity costs involved in such a decision. Opportunity cost has a long and rich tradition in economic thought, from Cantillon to John Stuart Mill to Schumpeter (Thornton, 2006). Opportunity costs are typically described as the foregone benefit of the next available alternative as a consequence of making a choice (see Cassar, 2006). While limited, some research has explored the role of opportunity costs in the decision to pursue entrepreneurial endeavors. In a fairly comprehensive examination of the issue, Amit et al. (1995) find that employees who left firms to start ventures earned, on average, 12% less than their counterparts who remained at their jobs. Cassar extends this finding by noting that potential entrepreneurs with higher opportunity costs expect higher growth from their ventures if they do leave employment for entrepreneurial pursuits—in other words, the payoff must be higher commensurate with the foregone benefit.

These studies lend support to the role of opportunity costs but leave many unanswered questions, particularly those related to opportunity cost in the corporate entrepreneurial

context at the employee level. While opportunity cost is intuitively appealing, it is difficult to operationalize (Amit et al., 1995). Most studies use income prior to leaving employment as the best proxy; indeed, this neatly captures the economic cost or foregone benefit of the lost income, although other dimensions of opportunity cost such as time are not considered. In the corporate entrepreneurship context though, such an indicator is not as easily identifiable. Employees are not leaving the firm and losing the associated income when they engage in corporate entrepreneurship. They do, however, face foregone benefit when they do so, in the form of job security and effort or time that may be involved in the new initiative. As such, two factors with precedent in the entrepreneurial context that have been previously identified as important regarding choosing an entrepreneurial career are income and job security risk and effort (Douglas & Shepherd, 2000). In the following paragraphs, we will propose testable hypotheses that address the moderating effects of risk and effort on the basic financial utility maximizing decision. By incorporating opportunity cost in these forms in the corporate entrepreneurial decision, we offer a more robust model of the employee decision to engage.

Risk and Utility Maximization

It is well accepted that individual risk-taking behavior is important for entrepreneurship in existing organizations, also known as corporate entrepreneurship or intrapreneurship (Antoncic, 2003). The traditional perspective to model individual risk-taking behavior in corporate entrepreneurship is based on agency theory (see Jones & Butler, 1992; Mosakowski, 1998), which is rooted in the premise that without appropriate monitoring and control mechanisms, individual agents will minimize personal risk and maximize personal gain, which may not be in the best interests of the owners of the firm (see review papers by Eisenhardt, 1989; Nilakant & Rao, 1994). Generally speaking, "individuals typically derive disutility from risk" (Douglas & Shepherd, 2002, p. 83) and "consequently, they have no incentive to undertake highly uncertain (entrepreneurial) projects and will prefer those with a low level of risk" (Jones & Butler, p. 736). In other words, the more expectation of success (less risk) employees attribute to a corporate entrepreneurship project, the more utility they will expect from this project and the more likely the employees will participate.

Further, it can be anticipated that the expectation of success not only has a direct effect on the employees' motivation to participate but that it also moderates the motivating effect of profit sharing on the employees' participation decision. In the words of traditional economic thought, this interaction of expectation of success and profit sharing reflects the concept of expected utility. Imagine, for example, an employee who is offered a certain profit-sharing incentive for participating in a corporate entrepreneurship project. This employee will derive a certain level of utility from the profit-sharing incentive and will thus have a certain tendency to participate in the project. If, at the same time, the employee has a high expectation of success for the project, then he or she will perceive a high probability that the incentive will materialize, and thus his or her expected utility of the profit sharing offered increases. In contrast, if the employee perceives low expectation of success, then there is a strong probability that the employee will not gain any benefits from an offered profit-sharing incentive, simply because there is quite likely no profit. Thus, in line with traditional economic thinking, the expected utility that the employee derives from a certain level of profit sharing will be lower when expectations of success are low, and profit sharing will be less effective in motivating the employee to participate in the corporate venturing project in this case. Thus,

Hypothesis 2a: The positive relationship between profit sharing and the likelihood that employees will participate in a new corporate venture is more positive when the expectation of success is high than when the expectation of success is low.

To incorporate opportunity cost, we need to more explicitly examine what happens when the choice to engage results in risks other than the success of the project itself. Specifically, if additional financial or other outcomes are simultaneously put at risk that would not be at risk if the employee did not engage, the total expected utility of the incentive package decreases. These additional financial outcomes could include performance-based variable pay (that is, pay risk) and potential loss of one's job (that is, job risk). These potential losses are not incurred if the individual chooses not to get involved in corporate entrepreneurship. If the individual does choose to do so though, then these additional possible indirect costs or trade-offs may play an important role in the decision process. For example, Jones and Butler (1992) state that employees may prefer lower risk, less profitable projects, as "such projects will keep them employed" (Jones & Butler, p. 736).

More specifically, besides their negative direct effect on the employees' decisions to participate in a new venture, pay risk and job risk may negatively moderate the impact of profit sharing on the employees' participation decisions. If an employee derives a particular level of financial utility from a certain profit-sharing incentive offered, then simultaneously perceived job risk and/or pay risk will decrease this level of utility because job risk and pay risk represent potential opportunity costs of participation. For example, in a situation where the employee has a greater probability of losing his or her job, his or her expected income decreases, and this diminishes the financial expectations the employee has been offered by the profit-sharing incentive. Similarly, when the expected performance of the venture is less, his or her expected performance-based pay decreases, and this leads to lower financial expectations than profit-sharing incentives without pay risk. Thus, these potential opportunity costs are associated with disutility for the potential corporate entrepreneur (Douglas & Shepherd, 2002). Therefore, for a given level of profit sharing, the derived utility for the employee is diminished by job risk and pay risk, and the likelihood of participation decreases. In contrast, when job risk and/or pay risk are low, the employee has little opportunity costs to consider as associated with these two factors and will derive the full level of utility from the profit-sharing incentive offered.

These arguments are also consistent with prior work on incentive systems. Specifically, Schwartz (1978) found for incentive systems for outside sales force personnel that "low salary combined with high commission was perceived as the strongest compensation arrangement to encourage above average sales personnel to produce more," with the rationale that individuals are most strongly motivated by incentives over which they have control (p. 20). Thus,

Hypothesis 2b: The positive relationship between profit sharing and the likelihood that employees will participate in a new corporate venture is less positive when pay risk is high than when pay risk is low.

Hypothesis 2c: The positive relationship between profit sharing and the likelihood that employees will participate in a new corporate venture is less positive when job risk is high than when job risk is low.

Work and Utility Maximization

Entrepreneurs and employees in entrepreneurial new ventures do not only encounter opportunity costs in terms of income and job risk—they also encounter different work routines and patterns, and may work harder and longer than traditional employees (Douglas & Shepherd, 2002). Thus, an additional opportunity cost can be time trade-off—engaging in entrepreneurial activity can mean less time for other activities, and the perception of more work can in turn reduce one's intention to act entrepreneurially; "individuals typically derive disutility from work effort" (p. 83).

In addition to having a direct negative effect on the employees' motivations to participate in corporate venturing activities, it can be expected that the additional opportunity costs employees derive from additional work effort will further diminish the participation motivation emanating from profit-sharing incentives. That is, for the financial utility derived from a given profit-sharing incentive, the simultaneous opportunity costs caused by additional work effort lead to lower levels of financial utility employees will associate with the given profit-sharing incentive level. For example, Douglas and Shepherd (2000) propose that "higher levels of work effort may be induced by the promise of a bonus or profit share" (p. 236) because the disutility of extra work effort may be "outweighed by the utility derived from the income earned" (p. 240). In other words, "if the worker believes that his future wages will depend on his past performance, he may be induced to put forth costly, unobservable effort" (Cantor, 1988, p. 344).

More specifically, putting more effort and time into participation in new corporate venturing projects diminishes the employees' opportunities to create financial gains or other utility by pursuing nonwork-related activities. For example, in his or her spare time, the employee may have earnings from other job opportunities, or he or she may derive utility from relaxing or spending time with family. Not being able to pursue these activities represents disutility and therefore an opportunity cost for the potential corporate entrepreneur that will diminish the utility derived from sharing the venture's potential profit. However, if employees expect that participation in the corporate venturing project requires little additional work, they will attribute the maximum levels of financial utility to the profit sharing offered because no opportunity costs arise from additional work effort. Therefore, the motivating effect of profit sharing is higher than when employees expect low amounts of additional work to be associated with project participation. Thus,

> **Hypothesis 3:** The positive relationship between profit sharing and the likelihood that employees will participate in a new corporate venture is less positive when the required effort is high than when the required effort is low.

In summary, our final model consists of a basic reward factor (degree of profit sharing as an uncertain entrepreneurial reward), three moderating risk factors (expected success, employment risk, and pay risk), one moderating effort factor (required effort), and a decision outcome of employees to participate in the new corporate venture or not (see Figure 1). In this way we incorporate the direct effect of rewards, as well as the moderating effect of opportunity costs that affect how great those rewards must be to solicit the desired behavior.

Methods

Sample

The sample for our study is composed of 61 corporate employees in an evening master of business administration (MBA) program at a midwestern U.S. university. This sample

Table 1

Sample Characteristics

Demographic	Mean value or percentage	Standard deviation
Personal demographics		
Female (%)	28	NA
Age (years)	29	5.5
Professional experience		
Work experience (years)	6.7	3.9
Industry experience (years)	5.1	3.4
Firm tenure (years)	3.5	2.4
Current position (years)	2.3	1.7
Organizational rank		
Frontline employees (%)	39	NA
Lower management (%)	20	NA
Middle management (%)	33	NA
Upper management (%)	8	NA
Career track[†]		
Technical track (%)	7	NA
Management track (%)	61	NA
Both technical and management	28	NA
Not applicable or no answer	5	NA
Entrepreneurial experience		
Start-up experience (%)	15	NA
Corporate venturing experience (%)	26	NA
Firm demographics		
Firm employees	26,000	53,000
Firm age (years)	77	56

[†] Percentages do not add up to 100% because of rounding.
NA, not applicable.

is particularly suited for our purpose as the participants (1) are all employees at the time of the experiment, and (2) are in line, entry, or middle management positions and likely targets for involvement in corporate entrepreneurship activities. Table 1 describes the characteristics of the participants. Twenty-eight percent are female. They are on average 29 years old, have nearly 7 years work experience, have worked for over 5 years in their current industry, with a firm tenure of 3.5 years, and have held their current positions on average for over 2 years. Thirty-nine percent are frontline employees, and 20%, 33%, and 8% hold lower, middle, and upper management positions, respectively. Seven percent are on a pure technical track, 64% on a pure management track, and 28% are on mixed technical and management track. Moreover, 15% have worked in start-up companies before and 26% have already participated in corporate venturing projects. The current firms of the participants employ, on average, 26,000 people and are typically established companies.

Methodology

In this study we are interested in the decisions of employees to participate in new corporate venture creation and the underlying factors that influence these decisions. We

therefore need to use a method that allows us to collect real-time data on the decisions of individuals that is less sensitive to introspective and self-report biases commonly found in interview and survey data (Fischhoff, 1988; Shepherd & Zacharakis, 1997). In other words, instead of asking respondents in a questionnaire to self-report their preferences, for example, for risk, it is better to use a method that allows us to observe and infer their preferences through their decisions and choices, such as conjoint analysis. For instance, research using conjoint analysis has found that venture capitalists understand their own judgments only to a limited extent (Zacharakis & Meyer, 1998) and that their "in use" decision policies differ substantially from their "espoused" decision policies (Shepherd, 1999b). This suggests that conjoint analysis is better suited to examine employee participation decisions than interviews and survey data. Further, conjoint experiments have been used successfully to study individuals' decisions to engage in entrepreneurship (Douglas & Shepherd, 2002). Finally, given that it is costly to observe employee-entrepreneurs in the field and unethical to experimentally manipulate their real-world occupational setting, an alternate method for collecting these data is metric conjoint analysis based on hypothetical decision-making scenarios (Louviere, 1988; Shepherd & Zacharakis).

Metric conjoint analysis is an experimental approach that draws on the assumption that decisions of individuals can be deconstructed into an underlying set of factors influencing these decisions (Green, Krieger, & Wind, 2001). In a metric conjoint experiment, individuals are confronted with profiles that describe a hypothetical decision situation on the basis of certain values of attributes that represent the underlying factors (Louviere, 1988; Priem & Harrison, 1994). The individuals then make an assessment of how they would decide in the described situation. Scholars have applied conjoint analysis in entrepreneurship (Brundin, Patzelt, & Shepherd, 2008; DeSarbo, MacMillan, & Day, 1987; Shepherd, 1999b; Shepherd & Zacharakis, 1999, 2003; Zacharakis & Meyer, 1998) and strategy research (Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004; Pablo, 1994), as well as in many other areas (Green & Srinivasan, 1990; McMullen & Shepherd, 2006).

Besides its potential to produce data with a lesser degree of introspective and self-report bias than survey research, conjoint analysis has further advantages for our research. First, it allows for the analysis of two-way interactions between research variables (Hitt & Barr, 1989), which is necessary to test our hypotheses 2 and 3. Moreover, conjoint analysis meets the basic criteria outlined by Shane, Locke, and Collins (2003) for measuring the effect of motivations on entrepreneurial decisions, including exploring settings with reasonably identical opportunities, using a sample of "entrepreneurs" from the same industry and region, and employing experimental designs involving making decisions in a controlled simulation. In particular, Shane et al. claim that "by measuring the motivations of potential entrepreneurs and examining the correlation between the motivations and the decisions made in these simulations, researchers could determine how motivations influence entrepreneurial decisions" (p. 270).

Despite the considerable advantages mentioned, it is important to note the limitations of conjoint experiments. One limitation is that the hypothetical profiles describing the decision situations are not real-world situations. Thus, one may argue that this type of experiment lacks external validity. Scholars have shown, however, that results obtained by the conjoint methodology are a good reflection of real-world decision-making behavior of individuals (Brown, 1972; Hammond & Adelman, 1976). In particular, despite the fact that these experimentally manipulated scenarios can result in unrealistic combinations, research has demonstrated that this does not significantly affect realistic decision making (Moore & Holbrook, 1990).

In order to further enhance the external validity of our measures, we (1) derived the research hypotheses from a strong theoretical basis (Shepherd & Zacharakis, 1997), (2)

guaranteed that individual answers and identities would be kept strictly confidential, (3) conducted a feedback session with participants after the experiment in order to evaluate whether they considered the described profiles as realistic and the decision-making tasks as feasible, and (4) included at the end of the experiment an open-ended question to ask which factors would motivate and prevent the employees to participate in a new venture of their company. All these additional data confirmed that our experimental design and the decisions made by the participants were similar to those in real-world settings and that the participants were able to imagine situations based on the descriptions in the experiment.

Measures

Hypothetical profiles in the conjoint experiment consisted of five attributes (independent variables), with each of them described by one of two possible levels (high or low), and a scale according to which the employees made their assessment whether they would participate in the described venture (dependent variable). In the appendices at the end of this paper we present the instructions for the experiment, parameter descriptions, and a sample scenario, as seen by the respondents.

Dependent Variable and Decision Task. The dependent variable of our study is the employee's likelihood to participate on the new corporate venture team. Framed by the following instructions and independent conditions, we asked participants to assess the likelihood of participating in the new corporate venture on a 7-point Likert-type scale anchored by the end points "Yes, I would definitely participate" and "No, I would definitely not participate" (see Appendix 3). The venture was described as being a new, innovative project that requires the individual employee's special abilities and experience. In addition, it was emphasized that the team needs to react quickly. These two conditions reflect the innovative and proactive aspects required of a corporate venture; the third, risk taking, is reflected by the independent variables (Miller, 1983). Further, it was stated that in the case of success, this project could lead to a new strategic business unit or an independent spin-off. This condition reflects the structural aspects of a new corporate venture (Sharma & Chrisman, 1999). Finally, we asked the participants to consider the project under current conditions, and that the type and scope of the project are similar to projects their company was currently or previously engaged in, with the exception of the independent variables (see Appendix 1 for the full text of the instructions).

Independent Variables. In our conjoint experiment, the scenario profiles consist of five independent variables (see Appendix 2 for the summary presented to participants). One attribute describes profit sharing, three attributes describe risk, and one attribute describes the effort associated with the new corporate venture. Reward stands for the profit sharing of the venture and has the levels high (in case the venture succeeds, you will receive a considerable portion of its gains [10% of the first 3 years]) and low (in case the venture succeeds, you will receive a minimal portion of its gains [.5% of the first 3 years]). The levels for pay risk are high (a high portion of your salary [30%] depends on the achievement of milestones and intermittent goals) and low (a minimal portion of your salary [2%] depends on the achievement of milestones and intermittent goals). The levels for job risk are high (there is a high probability [50%] that you will lose your job if the project fails) and low (there is a minimal probability [5%] that you will lose your job if the project fails). Expected performance describes the employees' evaluation of the project's success probability and has the levels high (you assume that the success chances of the project are high [85%]) and low (you assume that the success chances of the project are low [15%]). Effort

stands for the employee's required effort and is described by the levels high (participation in the venture requires a large amount of extra work [2 hours per day]) and low (participation in the venture requires a minimal amount of extra work [30 minutes per day]).

Control Variables. In order to control for the different organizational settings in which the employees of our sample operate, we asked the respondents to consider all other factors potentially influencing their decisions as constant across profiles. They were also instructed to assume that they are operating in today's economic environment and that the type of new venture project is similar to the types of ventures their company is currently engaged in (with the exception of the attribute levels presented). In addition to these instructions, we also collected information on each employee and their firm in a post-experiment questionnaire. These data are listed in Table 1 for informational purposes.

Experimental Design

In metric conjoint experiments, the issue of reliability of the assessments of participants is accounted for by replication of profiles and test–retest checks (Shepherd & Zacharakis, 1997). Profiles of our experimental design consist of five attributes, each of which is represented by two levels, yielding $2^5 = 32$ possible combinations. Full replication of these profiles would yield 64 assessments for each participant, which appears as a time-consuming and not easily manageable task. In order to address this problem, we employ an orthogonal fractional factorial design (Hahn & Shapiro, 1966; Louviere, 1988), which allows us to reduce the number of original attribute combinations to 16, resulting in 32 profiles (fully replicated) in each experiment, similar to other studies (Brundin et al., 2008; McMullen & Shepherd, 2006; Shepherd, 1999b; Shepherd & Zacharakis, 1999, 2003). An advantage of this design, as opposed to policy-capturing design that uses a randomized, non-orthogonal set of factors (see, for example, Hitt et al., 2004), is that statistical correlations between attributes are zero, thus eliminating issues of multicollinearity and increasing the robustness of experimental results (Huber, 1987; Louviere; Priem & Harrison, 1994). For example, as we will see later in the Results section in columns 1 to 4 of Table 2, including additional direct effects and interactions to the estimated model has no impact on the previously estimated coefficients, standard errors, *t*-values, or *p*-values. Further, research has confirmed that orthogonally manipulating conceptually correlated factors (for example, profit sharing and pay risk) does not significantly bias the outcomes of decision-making studies (Moore & Holbrook, 1990).

To ensure a robust and accurate data collection, we created four versions of the experiment based on a two-by-two matrix with two different orders of profiles within the experiment and two different orders of attributes within the profiles. We found no statistically significant differences between versions. We conclude that order effects do not play an important role in our study, confirming previous observations of other scholars (Orme, Alpert, & Christensen, 1997). We included a "practice" profile as a first evaluation task in order to familiarize the individuals with the decision situation before starting the experiment. The practice profile is not included in the statistical analysis (see Appendix 3 for a sample profile).

Results

We computed Pearson correlations between the original and replication profiles of the experiment as a test–retest of reliability. Ninety-three percent of participants in our sample respond reliably ($p < .05$) with a mean correlation of .73. This is consistent with values

Table 2

Employees' Decisions to Participate in a New Corporate Venture

	Continuous estimator random effects on level 2 null model			Continuous estimator random effects on level 2 profit share-only model			Continuous estimator random effects on level 2 main-effect model			Continuous estimator random effects on level 2 interaction-effect model			Continuous estimator fixed effects on level 2 interaction-effect model			Ordinal estimator fixed effects on level 2 interaction-effect model		
Variable	β	SE	*t*-ratio	β	SE	*t*-ratio	β	SE	*t*-ratio	β	SE	*t*-ratio	β	SE	*t*-ratio	β	SE	*t*-ratio
Level 1																		
Intercept	3.734	.079	47.00***	3.734	.079	47.00***	3.734	.079	47.00***	3.734	.079	47.00***	3.734	.079	47.00***	2.607	.169	15.42***
Main effect																		
Profit share				1.467	.097	15.05***	1.467	.097	15.05***	1.467	.097	15.05***	1.467	.097	15.05***	1.931	.135	14.29***
Job risk							−1.348	.096	−14.11***	−1.348	.096	−14.11***	−1.348	.096	−14.11***	−1.844	.140	−13.19***
Pay risk							.174	.114	1.52	.174	.114	1.52	.174	.114	1.52	.147	.152	.97
Effort							−.529	.079	−6.67***	.529	.079	−6.67***	.529	.079	−6.67***	−.737	.105	−7.00***
Success probability							1.707	.109	15.66***	1.707	.109	15.66***	1.707	.109	15.66***	2.308	.172	13.44***
Interactions																		
Profit share × job risk										−.377	.118	−3.20**	−.377	.118	−3.20**	−.488	.147	−3.32**
Profit share × pay risk										−.324	.121	−2.68*	−.324	.121	−2.68**	−.652	.166	−3.93***
Profit share × effort										.066	.092	.71	.066	.092	.71	−.090	.128	−.70
Profit share × success probability										.529	.106	4.97***	.529	.106	4.97***	.663	.130	5.09***
Variance analysis																		
Level 1																		
σ^2	3.719			3.114			1.284			1.162			1.837			NA		
R^2	.000			.163			.655			.687			.506			NA		
ΔR^2				.163			.492			.033			NA			NA		
Level 2																		
τ	.275			.294			.351			.356			.334			.688		
Proportion of variance																		
Level 1	.931			.914			.785			.766			.846			NA		
Level 2	.069			.086			.215			.234			.154			NA		

Decisions N = 1952; employees N = 61.
Estimated with hierarchical linear modeling (HLM Version 6): restricted maximum likelihood and robust SEs.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.
NA, not applicable; SE, standard error.

published in previous studies such as Shepherd's (1999a: .69) and Choi and Shepherd's (2004: .82). Moreover, 98% of the individual models are statistically significant ($p < .01$), with a mean R^2 of .77 (Choi & Shepherd: .72; Shepherd: .78). These numbers indicate that the employees in our sample performed the conjoint experiment consistently, and their decisions display high explanatory ability.

Our statistical analysis is based on the 32 independent decisions of each of the 61 student-employees, and thus results in 1,952 data points in total. Including both the 16 test and the 16 retest decisions for each individual in the analysis follows the model of prior studies (Brundin et al., 2008; McMullen & Shepherd, 2006; Shepherd, 1999b; Shepherd & Zacharakis, 1999, 2003) and serve to maximize the reliability of the results by including the slight differences between the responses to test and pretest scenarios in the analysis. The 32 decisions for each individual, however, are likely to be autocorrelated because the decision models of each individual are unique and differ from that of other individuals according to their experiences and values (Hambrick & Mason, 1984), and thus do not satisfy the independence condition for standard ordinary least squares (OLS) regression. We therefore apply hierarchical linear modeling (HLM), which is ideally suited for nested data (Hofmann, 1997; Raudenbush & Bryk, 2002) and commonly used in experimental decision-making studies (for examples, see Brundin et al., 2008; Hitt et al., 2004; McMullen & Shepherd, 2006). For reference in our study, *Level 1* refers to the decision level of analysis and *Level 2* refers to the individual level of analysis. Our results, which were computed with HLM Version 6 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004), are presented in Table 2. This table includes a stepwise presentation of the HLM results, an analysis of the explained variance within and across the two levels of analysis, and two robustness checks.

The first four columns in Table 2 represent a stepwise presentation of our HLM estimation using a random coefficients model. A random coefficients HLM model, as opposed to a fixed-effects HLM model, includes extra error terms at Level 2 to explicitly account for all potential heterogeneity between individuals (Raudenbush & Bryk, 2002). This makes redundant the use of individual-level control variables, which only partially account for individual-level heterogeneity. That said, for the special case of this paper, where we only examine the direct and moderating effects of decision-level (Level 1) variables, the manner in which we estimate coefficients and error terms at the individual level (Level 2) should have no impact on the results at the decision level (Level 1). This is an advantage of the HLM method, which estimates separate error terms for the two levels of analysis (decision/Level 1 and individual/Level 2) (Hofmann, 1997; Raudenbush & Bryk, 2002). In fact, the estimated model coefficients and standard errors in columns 4 and 5 of Table 2 are exactly the same, to at least six decimal points. *T*-values are the same to three decimal points, and *p*-values are the same to two decimal points. The only two substantial differences in the results of the two estimation approaches are the explained variance (R^2) at Level 1 and the proportion of variance at Level 2. Comparing the random coefficient and fixed-effects estimations therefore provides a first successful robustness check for our results.

The second robustness check that we perform tests assumptions regarding our dependent variable. Given that the dependent variable is an ordinal and not a continuous variable, it would technically be better to use an ordinal instead of a continuous estimation technique; however, using the latter has two practical disadvantages. First, given that the variance at Level 1 and therefore the explained variance of the model (R^2) cannot be computed with the ordinal estimator, it is not possible to examine the relative impact of the various model elements. Second, given that the ordinal estimator is nonlinear, it is not accurate to use the results of the ordinal estimation for a linear interaction graph as we do

in Figure 2. For these two reasons, we focus on the results of the continuous estimator in the presentation and discussion of the results, and the results of the ordinal estimator are simply presented as a robustness check (see column 6 in Table 2). Although we see slight variations in the estimated parameters, which are to be expected, the estimated parameters are in fact the same in terms of sign and significance, demonstrating a second successful robustness check. Therefore, we can proceed with our presentation and interpretation of the results of the continuous estimator.

The results in columns 2 and 3 of Table 2 show that employees in our sample significantly consider all attributes except pay risk in deciding whether they would participate in a new venture of their company. For pay risk, however, we find a significant interaction (see Figure 2). Thus, employees' willingness to participate in a new corporate venture increases with increased profit sharing, as predicted by hypothesis 1. Moreover, employees' willingness increases with (1) decreasing job risk, (2) increasing success probability, and (3) decreasing effort associated with the new venture.

The main part of our model predicts interaction effects between the profit sharing, and risk and effort variables. As column 4 of Table 2 demonstrates, we do indeed find three of the proposed interactions to be statistically significant at the 1% level. Specifically, the interactions between profit sharing and pay risk, profit sharing and job risk, and profit sharing and success probability are significant, supporting hypotheses 2a, 2b, and 2c. As we do not find any significant interactions between profit sharing and required effort, we conclude that hypothesis 3 is not supported.

To better understand the nature of the significant interactions, we plot them on a y-axis of employees' willingness to participate in the new venture and an x-axis of profit sharing. We draw separate lines representing the high and low levels of success probability (Figure 2A), high and low levels of pay risk (Figure 2B), and high and low levels of job risk (Figure 2C), respectively. Figure 2A demonstrates that employees are more willing to participate in a new corporate venture when profit sharing is high than when it is low, and this positive relationship is more positive when the success probability is high than when the success probability is low. This finding provides support for hypothesis 2a. Moreover,

Figure 2

Interactions Between (A) Profit Sharing and Success Probability, (B) Profit Sharing and Pay Risk, and (C) Profit Sharing and Job Risk

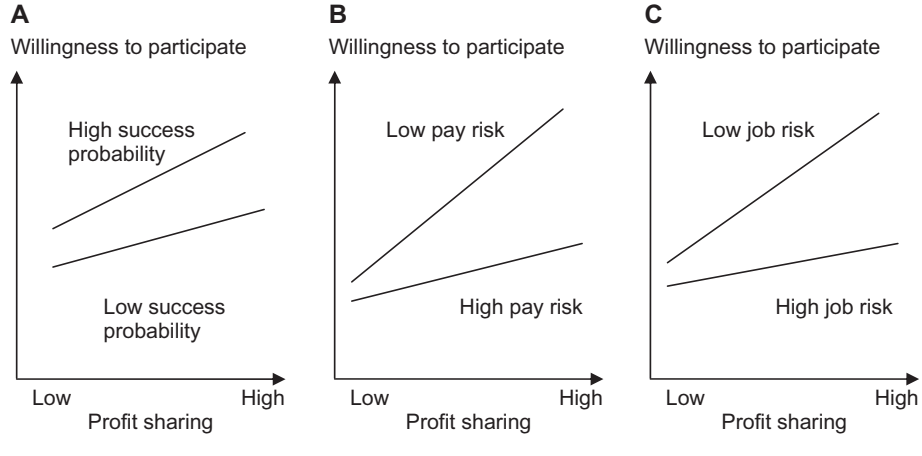


Figure 2B demonstrates that employees are more willing to participate in a new corporate venture when profit sharing is high than when it is low, and this positive relationship is less positive when pay risk is high than when pay risk is low. This finding provides support for hypothesis 2b. Finally, Figure 2C demonstrates that employees are more willing to participate in a new corporate venture when profit sharing is high than when it is low, and this positive relationship is less positive when job risk is high than when job risk is low. This finding provides support for hypothesis 2c.

Before discussing the implications of these results, it is important to examine the variance within, and between, the two levels of analysis in our research model, which are presented in the lower half of Table 2. While the HLM program does not report explained variance, such as R^2, this can be computed based on the reported variance components for Level 1 (σ^2) and Level 2 (τ) (see Raudenbush & Bryk, 2002):

$$\text{Incremental proportion of variance at Level 1: } R^2 = \left(\sigma^2_{\text{model 1}} - \sigma^2_{\text{model 2}}\right) / \sigma^2_{\text{model 1}}$$

$$\text{Total proportion of variance at Level 1: } \sigma^2_{\text{Level 1}} / \left(\sigma^2_{\text{Level 1}} + \tau_{\text{Level 2}}\right)$$

$$\text{Total proportion of variance at Level 2: } \tau^2_{\text{Level 2}} / \left(\sigma^2_{\text{Level 1}} + \tau_{\text{Level 2}}\right)$$

At the level of the individual decision (Level 1), profit sharing explains 16.3% of the variance and the other four incentive elements explain 49.2% of the variance. Further, the four interaction terms explain an additional 3.3% of the variance. Comparing the decision (Level 1) and individual (Level 2) levels of analysis, 76.6% of the variance is accounted for by Level 1 and 23.4% of the variance is accounted for by Level 2 variables. In other words, a significantly higher degree of variance is explained by the variables of interest in our study than by the individual preferences of the subjects. Therefore, we have additional confidence in the results presented in this study.

Discussion

In this paper we set out to develop a more integrative and theoretically robust model for understanding individual participation in corporate entrepreneurship projects, and to test this model in a field experiment using subjects close to the population of interest. Our basic thesis is that corporate entrepreneurship matters and that we need to better understand the interaction of incentives and effort with other key decision parameters to better understand and encourage participation in corporate venturing. In this section, we would like to further elaborate on these findings and explore other theoretical perspectives that could shed further light on intrapreneurial participation and behavior.

As predicted, we find that new venture participation is not just a matter of financial utility maximization. In fact, considerations of additional risk and expectations do moderate the basic relationship between the offer of a profit-sharing bonus and an individual employee's likelihood to participate in a new corporate venture. In particular, pay risk and job risk negatively, and expectations of success positively, moderate this basic relationship. Contrary to our expectations, required effort demonstrated no significant moderating effect. Of course, although not explicitly hypothesized, we did indeed find that three of the four new independent factors have direct effects on participation that are in line with the basic utility maximization concept (Douglas & Shepherd, 2000, 2002). In particular,

decreasing job risk, increasing expectations of success, and decreasing required effort all have a significant direct effect on employee participation in new ventures.

It is not surprising that profit sharing is not the only factor that affects willingness to engage in a corporate venture. Indeed, it would be surprising if other aspects of risk and effort did not have some effect. What is both theoretically and empirically important though is that we model the complexity of the decision in a more interdependent and interactive way to better understand the perceived trade-offs potential participants may consider when making such a decision. Building on current corporate entrepreneurship models of action (Antoncic, 2003; Hayton, 2005; Kuratko, Ireland, Covin, & Hornsby, 2005), we take steps to construct a more robust model and begin to empirically demonstrate how incentive pay may be used to offset perceived trade-offs in expectations of success as well as pay and job risks.

Interestingly, while we did see a direct negative effect of additional effort on participation, we did not see a corresponding moderating effect of additional effort on the relationship between profit sharing and participation. One possible explanation is expectancy theory (Porter & Lawler, 1968; Vroom, 1964), which has demonstrated promise as a framework for predicting employee involvement in large corporations (Allen, Lucero, & Van Norman, 1997) and occupational choice (Wanous, Keon, & Latack, 1983). Expectancy theory proposes that individuals make choices based on (1) their *expectancy* that their efforts will result in a certain level of performance, (2) their expectancy that their performance will result in valued outcomes (*instrumentality*), (3) the amount of value they place on those outcomes (*valence*), and (4) the decision based on the interaction of these three factors (Porter & Lawler; Vroom).

Of particular interest for our study are more recent findings regarding expectancy theory that suggest "that expectancy is more related to cognitions (intention and preference) rather than directly to action (performance, effort, and choice)" (Gatewood, Shaver, Powers, & Gartner, 2002, pp. 200–201; see also Van Eerde & Thierry, 1996). In other words, the expectancy, instrumentality, and valence drive behaviors, regardless of how much effort individuals expect to invest. Consistent with Gatewood et al.'s (2002) and Van Eerde and Thierry's interpretation of expectancy theory, we see in our study that expected payoff in profit sharing does indeed drive choice at all levels of effort. Thus, expectancy theory is a potentially valuable additional theoretical framework of corporate entrepreneurship participation and may be suitable for investigating the impact of effort in more detail in future studies. Of particular interest would be the conditions under which additional effort is not a deterrence to an entrepreneurial career.

Managerial Implications

Businesses depend on entrepreneurial activities to survive and thrive in competitive markets. Further, they depend on their employees to willingly engage in projects that extend the firm in new directions. For such businesses, we draw two practical conclusions. First, as diagrammed in Figures 2B and 2C, the impact of profit sharing on motivation to participate is diminished by higher pay risk and job risk, that is, profit sharing is a more useful instrument to motivate participation when pay and job risks are low than when they are high. Second, as diagrammed in Figure 2A, profit sharing better motivates participation when success probabilities of the entrepreneurial project are high. Thus, profit sharing appears to be a good instrument to motivate participation when pay risk and job risk are low, and when the probability of success is high. These are trade-offs that managers will need to have in mind when considering the optimal profit-sharing package for a new corporate venture. As attracting employees to participate in corporate venturing is

essential in dynamic environments, firms must recognize the complexity of the decision that employees face to volunteer for such posts, and must design not just pay but other job factors accordingly.

In light of what we have learned in this study, let us now reexamine the career advice column letter presented in the Introduction of this paper:

> My boss wants to give me a challenging new assignment, but not more money. I'm so upset I don't know what to do. I work for a founder-managed start-up. We just brought a major investor on board, and for the first time we're swimming in cash. However, I apparently don't warrant a share of the largesse. . . . *[i.e., low profit sharing]* . . . We are a 'hot' company, which, by my estimation means that in the next 18 to 36 months we could either go IPO, sell, or crash and burn *[i.e., high expected success and high employment risk]*. Sure, I'd like to step up to be around for the upside, but I don't want to be taken advantage of. And I definitely don't want to work 60- to 70-plus hours a week for the high privilege of sitting in a better chair on the deck of the Titanic . . . *[i.e., high extra effort]* . . . I'll admit that this is the best shot that I've ever had in my career, both in terms of my job and in terms of the potential. I'd love to just go for it one more time, but I am having trouble with the 'just believe' part.—Don't Take Me for Granted (Asher, 2007, p. 53).

Given this new project's parameters (e.g., low profit sharing, high expected success, high employment risk, and high extra effort), our model and findings make clear why this individual is uncertain about participating in this new corporate venturing project.

Limitations and Future Research

Our study has limitations that provide avenues for future research. First, it is not the purpose of our paper to investigate the moderating role of individual differences in new venture participation. However, research has shown that, for example, entrepreneurial goals and motivations (Kuratko, Hornsby, & Naffziger, 1997; Shane et al., 2003), personality (Åmo & Kolvereid, 2005; Becherer & Maurer, 1999), perceptions of risk and uncertainty (Sauner-Leroy, 2004), and rank within the organization (Hornsby et al., 2002) can impact the behavior of employees. Future studies may use these factors as individual-level moderating variables in a similar decision-making experiment and investigate how they influence the participation of employees in corporate venturing projects.

Second, in the framework of this field experiment, we were limited to the number of incentive and situational parameters that we could manipulate and test. Other compensation and incentive package elements may have different motivating effects for corporate employee entrepreneurs. For example, elements that deserve attention in future studies are equity and stock ownership options (Block & MacMillan, 1993; Block & Ornati, 1987; Jones & Butler, 1992; Welbourne & Cyr, 1999), individual vs. group vs. organization level rewards (Gomez-Mejia, Welbourne, & Wiseman, 2000; Jones & Butler; Lawler, 2000), incentive intensity (Zenger & Marshal, 2000), other nonfinancial and intrinsic sources of motivation (Block & MacMillan; Kuratko et al., 1997; Schwartz, 1978; Sykes, 1992), as well as issues of independence and control (Douglas & Shepherd, 2000, 2002).

Third, it is also likely that the organizational setting in which employees work influences their participation decision. For example, inherent differences in risk taking, available rewards, and required effort may be different for small vs. large firms (Moates & Kulonda, 1990; Zenger & Lazzarini, 2004), may depend on entrepreneurial goals and firm strategies (Miles & Covin, 2002; Stewart, Carland, Carland, Watson, & Sweo, 2003), and may vary across the firm's life cycle (Ciavarella, 2003; Leung, 2003; Rutherford,

Butler, & McMullen, 2003). There are also a number of related human resource practices (Cardon & Stevens, 2004; Carlson, Upton, & Seaman, 2006; Hayton & Kelley, 2006; Hornsby & Kuratko, 2003; Jack, Hyman, & Osborne, 2006; Leung, Zhang, Wong, & Foo, 2006) that potentially influence entrepreneurial behavior of employees. It would be interesting to investigate how these practices enhance or diminish the participation of employees in corporate venturing programs.

Fourth, the participants were a convenience sample of 61 corporate employees attending an evening MBA program at a midwestern U.S. university. However, propensity to participate in a new venture, attitudes to risk and effort, and in particular the perceived utility of the individual incentive elements may be influenced by many personal characteristics that include, but are not limited to, gender, age, personal economic circumstances, and alternate job opportunities. In terms of these characteristics, employees who participate in an evening MBA program may not be representative of the broader working population of potential corporate employee-entrepreneurs. For this reason, future studies should include respondents from a more representative sample of workers, industries, and regions, both inside and outside of the United States.

Fifth, while utility is traditionally modeled as a curvilinear function (see, for example, Douglas & Shepherd, 2000), in our conjoint experiment we follow the example of Douglas and Shepherd (2002) and likewise apply linear manipulations, setting the five-modeled incentive elements as either high or low. Although this is an approximation, we do not believe it to be a substantial limitation for two reasons. First, even if the utility function is curvilinear, our first-order linear assumption should be sufficient, as long as we manipulate the conjoint parameters in a segment of the utility curve that is either rising or falling and not bending back on itself. Given that our manipulations are moderate deviations relative to their current job situation, this assumption should hold. Second, our robustness check with the ordinal estimator, presented earlier in the Results section, demonstrates that the nonlinear ordinal estimator, which allows for variable interval size in the dependent participation variable, produces comparable results to the linear continuous estimator (see, for example, columns 4 and 6 in Table 2). Nonetheless, we suggest that future studies could include trichotomous (low, medium, high) instead of dichotomous (low, high) manipulations in order to more precisely model possible nonlinear effects such as rates of diminishing returns. For example, the marginal disutility of an extra hour of work increases with each additional hour of work, until all 24 hours of the day are exhausted (compare, for example, Locke & Latham, 1990, p. 208).

Sixth, social desirability may be an issue of concern in this study. As has been shown in recent research on judgments of technological opportunities, social desirability can influence evaluations of risk (Fleming, Townsend, Lowe, & Ferguson, 2007). An individual can act in a socially desirable manner when he or she has a motivation (e.g., personality, perceived social norms, and outcome expectation) and the ability (e.g., intelligence, experience, and test characteristics) to do so (Snell, Sydell, & Lueke, 1999). Drawing on Snell et al.'s model of social desirability, we have three reasons to believe that this is not a major issue in this study. First, any differences in personality and perceived social norms will be accounted for in the HLM estimation by the error term at the level of the individual (Level 2) and thus will not impact the analysis of the decision-level (Level 1) model. Second, given that participation in the experiment was voluntary, that they were offered no financial or other incentives, and that they were informed in advance that their individual responses were kept strictly confidential, they had no extrinsic reason to expect that socially desirable responses would benefit them in any way. Third, given the relative complexity of the decision-making task in a conjoint experiment in which respondents need to consider multiple constructs simultaneously, it is reasonable to assume that individuals are less able

to intentionally manipulate their answers than in less complex survey designs in which individuals consider only one construct at a time. Finally, to confirm these assumptions, we probed the respondents in the debriefing session after the experiment, and the participants reported that they did not feel swayed in either direction as to what they might have thought the experiment was looking for in terms of behaviors or decisions.

Finally, our study presents one scenario typical of a type of corporate entrepreneurship project—a new initiative that may lead to an independent business unit or spin-off. As we note in the Introduction, corporate entrepreneurship encompasses a wide variety of activities and initiatives (Sharma & Chrisman, 1999, p. 19). It would be important to further explore other types of corporate entrepreneurial activities such as strategic renewal, explicit spin-ins and spin-outs, and alliances and acquisitions, to determine how this set of factors affects participation in a wider range of engagements necessary for corporate redirection and success.

Conclusions

Firms depend on the willing engagement of employees to lend their efforts to entrepreneurial projects. These might include new product development, initiatives to explore new markets and technologies, and new business arenas with very different rules of engagement. Yet, such projects often carry very different levels of risk and effort. This study suggests how firms might manage financial rewards, security of employment, and likelihood of venture success to motivate employees to enthusiastically participate in entrepreneurial initiatives critical to the company's evolution and long-term performance. Our research extends work in the stream of corporate entrepreneurship to include a wider set of variables and incorporates interactions between important elements of incentives and behavior. We hope these results will provide new directions for this important research area.

Appendix 1

Instructions for Conjoint Experiment

Instructions

As an employee, you are asked in this survey to judge a number of hypothetical corporate venturing projects of your employer and to make a decision on whether you would participate in the project.

Description of the Corporate Venturing Project

Your company has asked you and other select employees to participate in a new, innovative project that requires your special skills and expertise. The situation requires that you act quickly and change jobs to a new assignment. This new project, if successful, could grow into a new business unit within the company, or if appropriate, it may be spun out as a new independent company.

To motivate you to participate in the project, your company is offering additional incentives. In the following scenarios, the incentive plan and the nature of the project are described by five parameters, which are defined on the next page. Each parameter has two levels, either "low" or "high."

Your Task

Please assess each hypothetical venturing program and respond by circling the number on the following scale that best represents your assessment. We have circled 2 below as an example of a response where you probably would not participate, but you have not completely excluded the possibility.

NO, definitely not participate	1	(2)	3	4	5	6	7	YES, definitely participate

Please make the decision as best as you can based upon the information provided, under the assumption that all other parameters of the project and the environment are constant across all of the hypothetical projects. Assume that you are operating in today's economic environment in the United States and the scale and scope of the hypothetical projects are similar to the types of projects your company is currently or has previously been engaged in (with the exception of the parameter levels presented).

After assessing the projects, you will be asked to answer additional questions. Your answers to these questions will help us to better understand your judgments and will be handled confidentially.

Appendix 2

Parameter Descriptions for Experiment

Parameter Descriptions

Parameter	Level	Description
Employment risk	High	There is a high probability (50%) that you and the other project group members will lose your jobs if the project fails.
	Low	There is a low probability (5%) that you and the other project group members will lose your jobs if the project fails.
Pay risk	High	A major portion of your and the group members' salary (30%) will be determined by meeting project milestones and performance goals.
	Low	A minimal portion of your and the group members' salary (2%) will be determined by meeting project milestones and performance goals.
Required effort	High	Participation in the project will require a large amount of extra work from every member of the project group beyond your typical current working hours (2 hours per day).
	Low	Participation in the project will require a small amount of extra work from every member of the project group (30 minutes per day).
Expected performance	High	Overall, you estimate that the project has a high probability of success (80%).
	Low	Overall, you estimate that the project has a low probability of success (15%).
Reward	High	If the project succeeds, you and the other group members will share a substantial portion of the project's profits (10%) from the first three years.
	Low	If the project succeeds, you and the other group members will share a minimal portion of the project's profits (0.5%) from the first three years.

You are asked to consider each of the following descriptions as a separate project, independent of all the others. Please do not refer back to pages where you have already given an assessment of the project.

Appendix 3

Sample Scenario for Experiment

Situation 1: dxo

1. Employment risk	High	High probability (50%) that you will loose your job if the project fails
2. Pay risk	Low	Minor portion of salary (2%) determined by milestone and performance goals
3. Required effort	High	High demand of extra work per day (2 hours)
4. Expected performance	Low	Low probability of project success (15%)
5. Reward	High	Substantial profit sharing (10%) if project succeeds

Assessment

Based on the description of the entrepreneurial project above, how do you rate the likelihood that you would participate in the project? Please circle your response on the scale below.

NO, definitely not participate	1	2	3	4	5	6	7	YES, definitely participate

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