

6-9-2007

MOTIVATION AND PARTICIPATION IN CORPORATE ENTREPRENEURSHIP: THE MODERATING EFFECTS OF RISK, EFFORT, AND REWARD

Erik Willard Monsen
Max Planck Institute of Economics, [monsens@econ.mpg.de](mailto:monsen@econ.mpg.de)

Todd Saxton
Indiana University

Holger Patzelt
Max Planck Institute of Economics

Recommended Citation

Monsen, Erik Willard; Saxton, Todd; and Patzelt, Holger (2007) "MOTIVATION AND PARTICIPATION IN CORPORATE ENTREPRENEURSHIP: THE MODERATING EFFECTS OF RISK, EFFORT, AND REWARD," *Frontiers of Entrepreneurship Research*: Vol. 27: Iss. 21, Article 1.

Available at: <http://digitalknowledge.babson.edu/fer/vol27/iss21/1>

This Paper is brought to you for free and open access by the Entrepreneurship at Babson at Digital Knowledge at Babson. It has been accepted for inclusion in Frontiers of Entrepreneurship Research by an authorized administrator of Digital Knowledge at Babson. For more information, please contact digitalknowledge@babson.edu.

THE STEVENS INSTITUTE OF TECHNOLOGY
WESLEY J. HOWE AWARD FOR EXCELLENCE IN RESEARCH
ON THE TOPIC OF CORPORATE ENTREPRENEURSHIP

**MOTIVATION AND PARTICIPATION IN CORPORATE
ENTREPRENEURSHIP: THE MODERATING EFFECTS OF RISK,
EFFORT, AND REWARD**

Erik Monsen, Max Planck Institute of Economics, Germany

Todd Saxton, Indiana University, USA

Holger Patzelt, Max Planck Institute of Economics, Germany

ABSTRACT

We integrate research from entrepreneurship, occupational choice, and employee involvement literatures to explain what encourages participation in new corporate ventures. We propose that an employee's basic decision to participate in a corporate venture project is based on the expected utility of the project's incentive package, and that these perceptions are moderated by personal motivations to make that decision, as explained by the concept of valence in expectancy theory. We test our hypotheses through a conjoint-based experiment with 61 part-time MBA students. Our results show that venture characteristics, personal motivations, and interaction effects should be considered in designing new corporate ventures.

INTRODUCTION

While we know a fair amount about what motivates an entrepreneur to start a new independent business, we know relatively little about what motivates individual employees to act entrepreneurially on behalf of their employer. In particular, what contextual factors encourage/hinder individual employees to participate in an innovative and risky new corporate venture? Further, what attitudinal factors moderate their decision making process? To answer these questions, we integrate prior research from the entrepreneurship, occupational choice, human resource, and employee involvement literatures.

On the one hand, prior research on entrepreneurial motivation identifies extrinsic rewards, independence/autonomy, and intrinsic rewards as key motivational factors which drive an individual entrepreneur's decision to start a business (Kuratko et al., 1997). On the other hand, research on occupational choice and self-employment suggests that attitudes toward risk, effort and independence are key driving factors (Douglas & Shepherd, 2002). Thus, given what we know about entrepreneurs, occupational choice, and compensation theory, how can we design better corporate entrepreneurship incentive systems using both economic and behavioral theories?

For this study, we define corporate entrepreneurship as entrepreneurial acts including individual and team actions within an established organization as well as an organization-firm's actions within a market or industry. These actions need to be proactive, innovative, and involve risk-taking in order to be considered entrepreneurial (Miller & Friesen, 1983). Entrepreneurial acts fall into three major categories: internal corporate venturing, strategic renewal, and industry redefinition (Stopford & Baden-Fuller, 1994). In our study of reward and incentive systems for corporate entrepreneurship, we concentrate on the first two modes, internal corporate venturing and strategic renewal (cf. Sharma & Chrisman, 1999).

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 the empirical research literature, 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, Kuratko, & Zahra, 2002) and Entrepreneurial Management (T. E. Brown, Davidsson, & Wiklund, 2001) respectively include "rewards/reinforcement" and "reward philosophy" as a factor.

While rewards are important in corporate entrepreneurship, few researchers address the theoretical foundations of incentive system design for the corporate venturing context. In fact, in reviewing the entrepreneurship literature we have found only one prior study that models the corporate venturing process, including the reward system, *from a theoretical perspective*. Jones and Butler (1992) took an agency theory approach and found that innovations in organizational structure and organizational controls and rewards can mitigate and solve agency problems. While they make a number of prescriptive suggestions regarding reward systems (outcome based contracts, promotions, large monetary premiums tied to individual and group performance, equity ownership and stock options for employees at all levels) and identify a number of areas of concern (linking performance to reward, equity in rewards and procedures, and the time dimension), their reasoning is limited by their economic-focused agency theory perspective. Even Jones and Butler (1992) admit that behavioral and social factors are missing from their model: "Exploring the interplay amongst economic and behavioral factors would be interesting empirically." (1992: 747). Following these thoughts, we feel that it is important to explore the interactions of factors that go beyond economic utility maximization and corresponding trade-offs made in real-world decision making processes.

Therefore, we propose an integrated model in which an employee's basic decision to participate in a corporate venture project is based on the expected utility (Douglas & Shepherd, 2000) associated with the project's incentive package (e.g. performance-based variable pay, profit/gain sharing, extra work/effort, job/employment risk, and expected success), and that these basic perceptions are moderated by an individual's personal motivations to make that decision, as explained by the concept of valence in expectancy theory (Vroom, 1964).

To test our hypotheses, we conduct a conjoint-based field experiment with 61 part-time MBA students at a mid-western U.S. university. Participants are confronted with 32 corporate venture opportunities and are asked how likely they would participate. In addition, we ask survey questions regarding entrepreneurial motivations, personal attitudes, and demographics.

Of five incentive scheme elements tested, only variable pay does not impact corporate venture participation. Moreover, we find significant interaction effects: extrinsic motivation moderates both the profit-sharing/participation and success-probability/participation relationships; intrinsic motivation moderates the effort-participation relationship; and autonomy motivation moderates the job-risk/participation relationship. We show that venture characteristics, personal motivations, and their interactions should be considered when designing a corporate new venture. More broadly, we demonstrate why and how utility theory can be extended by expectancy theory to better understand occupational choice and self-employment decisions.

To explain how we attained these results, we will first review the theory supporting our research model and hypotheses. Following that, we will present in more detail our research sample, methodology, measures, and experimental design. After presenting the results of our research, we will conclude this paper with a discussion of our results, including their theoretical and practical implications.

THEORY

On the one hand, prior research on entrepreneurial motivation identifies extrinsic rewards,

independence/autonomy, and intrinsic rewards as key motivational factors which drive an individual entrepreneur's decision to start a business (Kuratko et al., 1997). On the other hand, research on occupational choice and self-employment suggests that attitudes toward risk, effort and independence are key driving factors (Douglas & Shepherd, 2002).

We propose an integrated model in which an employee's basic decision to participate in a corporate venture project is based on the expected utility (Douglas & Shepherd, 2000) associated with the project's incentive package (e.g. performance-based variable pay, profit/gain sharing, extra work/effort, job/employment risk, and expected success), and that these basic perceptions are moderated by an individual's personal motivations to make that decision, as explained by the concept of valence in expectancy theory (Vroom, 1964). These factors are combined in our research model depicted in Figure 1.

Bonuses and Utility Maximization

In economic theory, a standard assumption is that individuals are utility maximizers. Using economics as a starting point, Douglas & 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: 236) (2000: 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: 236-237) and able to provide (2000: 238-239). (For an extensive review of the literature on profit sharing and gainsharing, see Welbourne & Gomez-Mejia, 1995). Initial empirical support for the fundamental assumptions underlying is presented in Douglas & Shepard (2002). Thus, the basic hypothesis of our model states

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

Financial 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 (Antonicic, 2003). The traditional perspective to model individual risk-taking behavior in intrapreneurship is based on agency theory (cf. Jones & Butler, 1992; Mosakowski, 1998). Typically speaking, "individuals typically derive disutility from risk", which can in turn reduce one's intention to act entrepreneurially (Douglas & Shepherd, 2002: 83). Therefore, factors which impact either the level of risk or the corresponding level of utility can impact the perceived level of total expected utility and in turn the degree of employee participation in the new entrepreneurial venture.

On the one hand, one can directly manipulate the perceived level of risk. For example, if the likelihood that an entrepreneurial project is going to succeed is relatively high, one can expect a correspondingly lower level of participation. Thus,

Hypothesis 1b. The greater the expectation of success for the new corporate venture, the greater the likelihood that employees will participate in a new corporate venture.

On the other hand, one can directly manipulate the perceived level of utility. Specifically, when additional financial outcomes are put at risk, the total expected utility of the incentive package decreases. These additional financial outcomes could include performance-based variable pay (e.g. pay risk) and potential loss of one's job (e.g. job risk). Once again, for greater levels of pay and job risk, one can expect correspondingly lower levels of participation. Thus,

Hypothesis 1c. The greater the pay risk, the lesser the likelihood that employees will participate in a new corporate venture.

Hypothesis 1d. The greater the job risk, the lesser the likelihood that employees will participate in a new corporate venture.

Work and Utility Maximization

It is also well accepted that entrepreneurs and employees in entrepreneurial new ventures need to work harder and longer than traditional employees. That said, “individuals typically derive disutility from work effort”, which can in turn reduce one’s intention to act entrepreneurially (Douglas & Shepherd, 2002: 83). In other words, factors which moderate the level of work can impact an employee’s perceptions of total expected utility of a new corporate venture opportunity. Therefore, greater levels of required work effort result in correspondingly lower levels of employee participation. Thus,

Hypothesis 1e. The greater the required effort, the lesser the likelihood that employees will participate in a new corporate venture.

Beyond Simple Utility Maximization: Trade-offs and Moderating Effects

In this paper, we contend that in employee decisions to participate in corporate entrepreneurship, it is necessary to consider trade-offs between environmental factors that can have a moderating effect, over and above the basic rational economic decision making process. Are there other alternate theoretical perspectives which would allow us to model and empirically capture the impact additional expected effort? One logical place is to look for such a theory to explain employee involvement in new ventures is the extensive research literature on employee involvement in large corporations. In this literature, expectancy theory (Vroom, 1964) has demonstrated itself to be the most promising framework to predict employee involvement (Allen, Lucero, & Van Norman, 1997).

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*), and 3) the amount of value they place on these outcomes (*valence*). (Porter & Lawler, 1968; Vroom, 1964) (as summarized in Bartol & Locke, 2000: 111). What is attractive about this model is that the moderation effects are explicitly built into the model. That said, expectancy theory is not without criticism, which need to be considered when applying the model (Ambrose & Kulik, 1999: 236-241; Van Eerde & Thierry, 1996).

Drawing on the concept of *valence*, we propose that the motivation behind joining a new venture can influence or moderate the direct effects of incentive package elements. For example, financial elements will be valued more by employees who are extrinsically motivated, and thus financial elements will have more impact on their decision to participate. Similarly, incentive elements that relate to goal achievement and personal identity will be valued more by employees who are intrinsically motivated, and thus these elements will have more impact on their decision to participate. Further, incentive elements related to influence over one’s own job and career destiny will be valued more by employees who are motivated by autonomy, and thus these elements will have more impact on their decision to participate.

Regarding the moderating effect of extrinsic motivations on the basic financial utility maximizing decision, we propose the following testable hypotheses:

Hypothesis 2a. The positive relationship between profit sharing incentive and the likelihood that employees will participate in a new venture is more positive when extrinsic motivation is high than when extrinsic motivation is low.

Hypothesis 2b. The positive relationship between expectation of success and the likelihood that employees will participate in a new venture is more positive when extrinsic motivation is high than when extrinsic motivation is low.

Hypothesis 2c. The negative relationship between pay risk and the likelihood that employees will participate in a new venture is more negative when extrinsic motivation is high than when extrinsic motivation is low.

Regarding the moderating effect of intrinsic motivations on the basic financial utility maximizing decision, we propose the following testable hypotheses:

Hypothesis 3a. The positive relationship between expectation of success and the likelihood that employees will participate in a new venture is more positive when intrinsic motivation is high than when intrinsic motivation is low.

Hypothesis 3b. The negative relationship between job risk and the likelihood that employees will participate in a new venture is less negative when intrinsic motivation is high than when intrinsic motivation is low.

Hypothesis 3c. The negative relationship between required effort and the likelihood that employees will participate in a new venture is less negative when intrinsic motivation is high than when intrinsic motivation is low.

Regarding the moderating effect of autonomy motivations on the basic financial utility maximizing decision, we propose the following testable hypothesis:

Hypothesis 4. The negative relationship between job risk and the likelihood that employees will participate in a new venture is less negative when autonomy motivation is high than when autonomy motivation is low.

Our Research Model

Our final research model consists of a basic reward factor (degree of profit sharing as an uncertain, entrepreneurial reward), three risk factors (expected success, employment risk, and pay risk), one effort factors (required effort), the moderating effect of motivations (extrinsic, intrinsic, and autonomy) and a decision outcome of employees to participate in the new venture or not (see Figure 1).

METHODS

To test our hypotheses, we conduct a conjoint-based field experiment with 61 part-time MBA students at a mid-western U.S. university. Participants are confronted with 32 corporate venture opportunities and are asked how likely they would participate. In addition, we ask survey questions regarding entrepreneurial motivations, personal attitudes, and demographics. In this section, we present in more detail our research sample, methodology, measures, and experimental design.

Sample

The sample of our study is 61 employees who are part-time MBA students at a Mid-Western U.S. university. Twenty-eight percent of them were female. They were on average 28.2 years old (standard deviation 6.0 years), had 6.7 (std. dev. 3.9) years total work experience, worked for 5.1 (std. dev. 3.4) years in their current industry, had a firm tenure of 3.5 (std. dev. 2.4) years, and held their current positions on average for 2.3 (std. dev. 1.7) years. Thirty-nine percent were front line employees, 12 percent held lower, 20 percent middle, and 8 percent upper management positions. Seven percent were on a pure technical and 64 percent on a pure management track. Moreover, 15 percent had worked in start-up companies before, and 26 percent had participated in corporate venturing projects. Finally, the current firms of the participants employed on average 27,000 (std. dev. 53,000) people and were 78 (std. dev. 56) years old.

Methodology

In this study we are interested in the decisions of employees to participate in new venture creation and the underlying factors that influence these decisions. We therefore had to rely on a method which allowed us to collect real time data on the decisions of individuals without introspective and self-report biases commonly found in interview and survey data (Fischhoff, 1988; Shepherd & Zacharakis, 1997). An appropriate method for collecting these data is conjoint analysis (Shepherd & Zacharakis, 1997). This experimental approach draws on the assumption that decisions of individuals can be decomposed into an underlying structure of factors influencing these decisions (P. Green, Krieger, & Wind, 2001). In the conjoint experiment, individuals are confronted with profiles which describe a hypothetical decision situation on the basis of certain values of attributes which represent the underlying factors. The individuals then make an assessment of how they would decide in the described situation. Scholars have applied conjoint analysis in entrepreneurship (Shepherd & Zacharakis, 1999; Zacharakis & Meyer, 1998) and strategy (Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004; Pablo, 1994) research as well as many other areas (P. E. Green & Srinivasan, 1990).

Besides its potential to produce data free of introspection biases, conjoint analysis has further advantages for our research. First, it allows for the analysis of two-way interactions between research variables at the level of the decision (Level 1) and the individual (Level 2) (Hitt & Barr, 1989), which is necessary to test our hypotheses. Moreover, conjoint analysis meets the basic criteria outlined by Shane, Locke, & 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. (2003) 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." (2003: 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 experiments 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 (T. R. Brown, 1972; Hammond & Adelman, 1976). In order to further enhance external validity of our measures, we (i) derived the research hypotheses from a strong theoretical basis (Shepherd & Zacharakis, 1997), and (ii) 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 setup and the

decision drawn by the participants were similar to those in real world setting 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 or not (independent variables).

Dependent Variable. The dependent variable of our study is the employee's likelihood to participate in the new corporate venture team. The venture was described as being a new, innovative project that requires that 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 corporate venture; the third, risk-taking, is reflected by the independent variables (Miller & Friesen, 1983). Further, it was stated that in case 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 participant to consider the project under current conditions in Germany and that the type and scope of the project is similar to projects their company was currently or previously engaged in, with the exception of the independent variables. Framed by the following independent conditions, we asked employees to assess the likelihood participating in the new corporate venture on a seven-point Likert-type scale anchored by the end points "Yes, I would definitely participate" and "No, I would definitely not participate".

Independent Variables at the Decision Level (Level 1). Profiles in our conjoint experiment consisted of five independent variables. One of these attributes described the profit sharing, two attributes the risk, and two attributes the effort associated with the new corporate venture. ProfitShare stood for the profit sharing of the venture and had the levels high (in case the venture succeeds you receive a considerable portion of its gains (10 % of the first three years)) and low (in case the venture succeeds you receive a minimal portion of its gains (0.5 % of the first three years)). The levels for pay risk were 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 were 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). SuccessProb described the employees' expectations of success and had 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 stood for the employees' 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)).

Independent Variable at the Individual Level (Level 2). Sources of entrepreneurial motivation were measured with scales that were developed by Kuratko, Hornsby, & Naffziger (1997). These scales were originally used to measure the importance of extrinsic rewards (3 items), independence/autonomy (5 items), and intrinsic rewards (5 items) to practicing entrepreneurs. To reframe these questions for the corporate venturing context, respondents were asked to consider each motive in the following context: "I would participate in one of my company's entrepreneurial projects [...]".

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 the 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 used four Level 2 control variable that might potentially influence the decisions of employees to participate in new corporate ventures: self-efficacy, organizational citizenship behaviors, risk taking, and age.

Self-efficacy, or confidence in achieving goals and overcoming challenges across a variety of work contexts, has been shown to be key in the areas of motivation and goal setting (Bandura, 1997; Locke & Latham, 1990) and entrepreneurial behavior (Markman, Balkin, & Baron, 2002). The eight items used were developed by Chen, Gully, & Eden (2001) and represent their New General Self-Efficacy (NGSE scale). *Organizational citizenship behaviors* reflect the extent to which the individual currently does extra work above and beyond the call of duty. Starting with a thirty-four-item measure of organizational citizenship behavior from Van Dyne, Graham, and Dienesch (1994), a subset of 12 items were extracted based on 600 respondents from all levels of a U.S.-based healthcare facility (Koberg, Boss, Goodman, Boss, & Monsen, 2005). *Risk taking*, or willingness to take risks, was evaluated using a decision making instrument where respondents were asked to choose between two lottery scenarios. *Age* was determined by asking the respondent to report the decade of their birth (e.g. Pre 1940, 1940-1949, 1950-1959, 1960-1969, 1970-1979, 1980-1989).

Experimental Design

In 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 consisted 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 a time-consuming and not easily manageable task. In order to address this problem, we employed an orthogonal fractional factorial design (Hahn & Shapiro, 1966), which allowed us to reduce the number of original attribute combinations to 16, resulting in 32 profiles (fully replicated) in each experiment, similar to other studies (Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004; Shepherd & Zacharakis, 1999). An advantage of this design is that inter-correlations between attributes are zero, thus eliminating issues of multicollinearity and increasing the robustness of experimental results (Huber, 1987). We used the fractional factorial design that confounded main effects and all two-way interactions of most interest (interactions between trust and control variables) with other two-way and higher order interactions, which are of least interest. Therefore, it is unlikely that the latter will bias the results of our study (P. E. Green & Srinivasan, 1990).

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 was not included in the statistical analysis.

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 of our sample responded reliably ($p < 0.05$) with a mean correlation of 0.73. This is consistent with values published in previous studies such as Shepherd (1999: 0.69) and Choi and Shepherd (2004: 0.82). Moreover, 98 percent of the individual models were statistically significant ($p < 0.01$) with a mean R^2 of 0.77 (Choi & Shepherd, 2004: 0.72; Shepherd, 1999: 0.78). These numbers indicate that the employees in our sample performed the conjoint

experiment consistently and their decisions display high explanatory ability.

Table 1 shows the descriptive statistics and Pearson correlations of our Level 2 research variables. All correlations between these variables are modest with a maximum of 0.492 suggesting that multicollinearity is not a problem in our dataset.

Our statistical analysis is based on 32 decisions of each of the 61 student-employees and thus 1952 data points in total. Those, however, are likely to be auto-correlated because the decision models of individuals differ according to their experiences and values (Hambrick & Mason, 1984). We therefore applied hierarchical linear modeling (HLM), which is ideally suited for nested data (Bryk & Raudenbush, 1992; Hofmann, 1997) and commonly used in conjoint studies (e.g., Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004). Our results, which were computed with HLM Version 6 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004), are presented in Table 2.

The results in Columns 2 and 3 of Table 2 show that the employees in our sample significantly use all Level 1 predictor variables except for pay risk to decide whether they would participate in a new venture of their company or not. That is, employees' willingness increases with (i) decreasing job risk, (ii) decreasing effort, (iii) increasing success probability, and (iv) increasing success probability associated with the new venture. Thus, Hypotheses 1a, 1b, 1d, and 1e are supported, while Hypothesis 1c is not.

While not hypothesized, Row 3 of Table 2 (e.g. intercepts) shows that of the Level 2 motivation variables only intrinsic motivation is associated with a increased willingness to participate in new corporate ventures (in case that the Level 1 stimuli are absent), where as there is no significant association between extrinsic motivation and desire for autonomy with employees' willingness to participate.

The main part of our model proposed interaction effects between Level 2 motivation variables and Level 1 variables. As Columns 4 through 9 in Table 2 demonstrate, we do indeed find four of the proposed interactions to be statistically significant at the 5 % level. Specifically, the interactions between (i) extrinsic motivation and profit sharing (Columns 4 and 5), (ii) extrinsic motivation and success probability (Columns 4 and 5), (iii) intrinsic motivation and required effort (Columns 6 and 7), and (iv) desire for autonomy and job risk (Columns 8 and 9) are significant. Thus, Hypotheses 2a, 3c, and 4 are supported, Hypothesis 2b is significant but in the contrary direction, and Hypotheses 2c, 3a, and 3b are 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 Level 1 independent variables. We draw separate lines representing the high and low levels of Level 2 variables (Figure 2).

Figure 2A demonstrates that employees are more willing to participate in a new corporate venture when the profit sharing is high than when it is low, and this positive relationship is more positive when the employees display high levels of extrinsic motivation than when they have low levels of extrinsic motivations. This finding provides support for Hypothesis 2a. Figure 2B demonstrates that employees are more willing to participate in a new corporate venture when the probability of success is high than when it is low, and this positive relationship is less positive when the employees' extrinsic motivation is high than when job risk is low. This is in contrast to Hypothesis 2b, which predicted that the positive relationship between willingness to participate and probability of ventures success would be more positive for extrinsically motivated employees. Figure 2C demonstrates that employees are less willing to participate in a new corporate venture when the required effort is high than when it is low, and this negative relationship is less negative when the employees' intrinsic motivation is high than when it is low. This finding provides support for Hypothesis 3c. Finally, Figure 2D demonstrates that employees are less willing to participate in a new corporate venture when the job risk is high than when it is low, and this

negative relationship is less negative when the employees have a high desire for autonomy than when they have a low desire for autonomy. We conclude that Hypothesis 4 is also supported.

DISCUSSION

Of five incentive scheme elements tested, only variable pay does not impact corporate venture participation. Moreover, we find significant interaction effects: extrinsic motivation moderates both the profit-sharing/participation and success-probability/participation relationships; intrinsic motivation moderates the effort-participation relationship; and autonomy motivation moderates the job-risk/participation relationship. Based on these results, there are three issues that require more detailed analysis: First, why did pay risk have neither a significant direct nor significant moderation effect? Second, why does expected project success have a more positive moderating effect for low instead of high extrinsic motivation? Third, why were the remaining three hypothesized moderator effects not found to be significant?

One possible explanation is prospect theory, which proposes that the framing of the decision in terms of losses and gains can impact the final decision (Kahneman & Tversky, 1979). For example, an individual may be more risk prone if their pay is at risk (a certain loss) than if only their profit sharing bonus was at risk (an uncertain gain). Thus, application of prospect theory may give us insights into how certain losses and uncertain gains in an incentive package can affect an individual's decision to participate in a new corporate venture.

CONCLUSIONS AND IMPLICATIONS

We show that venture characteristics, personal motivations, and their interactions should be considered when designing a corporate new venture. This has implications for both managers and researchers.

For managers, we draw three practical conclusions. Depending on the source of motivation, different incentive package elements need to be emphasized. For employees with higher extrinsic motivation, profit sharing has a stronger positive impact (Figure 2a). For employees with lower intrinsic motivation, greater work effect has a stronger negative impact (Figure 2c). For employees with lower autonomy motivation, greater job risk has a stronger negative impact (Figure 2d). These are trade-offs that managers will need to have in mind when considering the optimal profit-sharing bonus package for a new corporate venture.

For researchers, we demonstrate why and how utility theory can be extended by expectancy theory to better understand occupational choice and self-employment decisions. Outside of the entrepreneurship literature, in a recent special topic forum in the *Academy of Management Review*, Steers, Mowday, and Shapiro (2004) call for new motivation theories to address the changing realities of the 21st century. Hopefully this study will inspire others and help to develop a more comprehensive motivational theory which is broad enough to encompass all of the complexities of the corporate entrepreneurship context, in particular, and 21st century employment, in general.

CONTACT: Erik Monsen; monsen@econ.mpg.de; (T): +49-3641-686736; Max Planck Institute of Economics, D-07745 Jena, Germany.

REFERENCES

- Allen, R. E., Lucero, M. A., & Van Norman, K. L. (1997). An Examination of the Individual's Decision to Participate in an Employee Involvement Program. *Group & Organization Management*, 22(1), 117-143.

- Ambrose, M. L., & Kulik, C. T. (1999). Old Friends, New Faces: Motivation Research in the 1990s. *Journal of Management*, 25(3), 231-292.
- Antonicic, B. (2003). Risk taking in intrapreneurship: Translating the individual level risk aversion into the organizational risk taking. *Journal of Enterprising Culture*, 11(1), 1-23.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Bartol, K. M., & Locke, E. A. (2000). Incentives and motivation. In S. L. Rynes & B. Gerhart (Eds.), *Compensation in organizations: Current research and practice* (pp. 104-150). San Francisco: Jossey-Bass.
- Brown, T. E., Davidsson, P., & Wiklund, J. (2001). An operationalization of Stevenson's conceptualization of entrepreneurship as opportunity-based firm behavior. *Strategic Management Journal*, 22(10), 953-968.
- Brown, T. R. (1972). A comparison of judgmental policy equations obtained from human judges under natural and contrived conditions. *Mathematics Bioscience*, 15(2), 205-230.
- Bryk, A., & Raudenbush, S. W. (1992). *Hierarchical linear models for social and behavioral research: applications and data analysis methods*. Newbury Park, CA: Sage.
- Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods*, 4(1), 62-83.
- Choi, Y. R., & Shepherd, D. A. (2004). Entrepreneurs' decisions to exploit opportunities. *Journal of Management*, 30(3), 377-395.
- Dess, G. G., Ireland, R. D., Zahra, S. A., Floyd, S. W., Janney, J. J., & Lane, P. J. (2003). Emerging issues in corporate entrepreneurship. *Journal of Management*, 29(3), 351-378.
- Douglas, E. J., & Shepherd, D. A. (2000). Entrepreneurship as a utility maximizing response. *Journal of Business Venturing*, 15(3), 231-251.
- Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory & Practice*, 26(3), 81-90.
- Fischhoff, B. (1988). Judgement and decision-making. In E. Sternberg & E. Smith (Eds.), *The psychology of human thought* (pp. 155-187). Cambridge, UK: Cambridge University Press.
- Green, P., Krieger, A., & Wind, Y. (2001). Thirty years of conjoint analysis: reflections and prospects. *Interfaces*, 31(3), S56-S73.
- Green, P. E., & Srinivasan, V. (1990). Conjoint analysis in marketing: new developments with implications for research and practice. *Journal of Marketing*, 54(4), 3-19.
- Hahn, G., & Shapiro, S. (1966). *A catalogue and computer program for the design and analysis of orthogonal symmetric and asymmetric fractional factorial designs*. Schenectady, NY: General Electric Corporation.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193-206.
- Hammond, K. R., & Adelman, L. (1976). Science, values, and human judgment. *Science*, 194(4263), 389-397.
- Hitt, M. A., Ahlstrom, D., Dacin, M. T., Levitas, E., & Svobodina, L. (2004). The Institutional Effects on Strategic Alliance Partner Selection in Transition Economies: China vs. Russia. *Organization Science*, 15(2), 173-185.
- Hitt, M. A., & Barr, S. H. (1989). Managerial selection decision models: examination of configural cue processing. *Journal of Applied Psychology*, 74(1), 53-61.
- Hofmann, D. A. (1997). An Overview of the Logic and Rationale of Hierarchical Linear Models. *Journal of Management*, 23(6), 723.
- Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. *Journal of Business Venturing*, 17(3), 253-273.
- Huber, J. (1987). *Conjoint analysis: How we got here and where we are*. Sequim, WA: Sawtooth Software Research Paper Series.
- Jones, G. R., & Butler, J. E. (1992). Managing internal corporate entrepreneurship: An agency theory

- perspective. *Journal of Management*, 18(4), 733-749.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-292.
- Koberg, C. S., Boss, R. W., Goodman, E. A., Boss, A. D., & Mosen, E. W. (2005). Empirical Evidence of Organizational Citizenship Behavior from the Health Care Industry. *International Journal of Public Administration*, 28(5/6), 417-436.
- Kuratko, D. F., Hornsby, J. S., & Naffziger, D. W. (1997). An examination of owner's goals in sustaining entrepreneurship. *Journal of Small Business Management*, 35(1), 24-33.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: The effects of general self-efficacy and regretful thinking. *Entrepreneurship: Theory & Practice*, 27(2), 149-165.
- Miller, D., & Friesen, P. H. (1983). Strategy-making and environment: The third link. *Strategic Management Journal*, 4(3), 221-235.
- Mosakowski, E. (1998). Entrepreneurial resources, organizational choices, and competitive outcomes. *Organization Science*, 9(6), 625-643.
- Orme, B. K., Alpert, M. I., & Christensen, E. (1997). *Assessing the validity of conjoint analysis*: Sawtooth Software.
- Pablo, A. L. (1994). Determinants of acquisition integration level: a decision-making perspective. *Academy of Management Journal*, 37(4), 803-836.
- Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance*. Homewood, IL: R.D. Irwin.
- Raudenbush, S., Bryk, A., Cheong, Y. F., Congdon, R., & du Toit, M. (2004). *HLM 6: Hierarchical Linear and Nonlinear Modeling*. Lincolnwood, IL: Scientific Software International, Inc.
- Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13, 257-279.
- Sharma, P., & Chrisman, J. J. (1999). Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. *Entrepreneurship Theory & Practice*, 23(3), 11-27.
- Shepherd, D. A. (1999). Venture capitalists' assessment of new venture survival. *Management Science*, 45(5), 621-632.
- Shepherd, D. A., & Zacharakis, A. (1997). Conjoint analysis: A window of opportunity for entrepreneurship research. In J. Katz (Ed.), *Advances in Entrepreneurship, Firm Emergence and Growth* (Vol. III, pp. 203-248). Greenwich, CT: JAI Press.
- Shepherd, D. A., & Zacharakis, A. (1999). Conjoint analysis: A new methodological approach for researching the decision policies of venture capitalists. *Venture Capital*, 1(3), 197-217.
- Steers, R. M., Mowday, R. T., & Shapiro, D. L. (2004). Introduction to special topic forum: The future of work motivation theory. *Academy of Management Review*, 29(3), 379-387.
- Stopford, J. M., & Baden-Fuller, C. W. F. (1994). Creating corporate entrepreneurship. *Strategic Management Journal*, 15(7), 521-536.
- Van Dyne, L., Graham, J. W., & Dienesch, R. M. (1994). Organizational citizenship behavior: Construct redefinition, measurement, and validation. *Academy of Management Journal*, 37(4), 765-802.
- Van Eerde, W., & Thierry, H. (1996). Vroom's Expectancy Models and Work-Related Criteria: A Meta-Analysis. *Journal of Applied Psychology*, 81(5), 575-586.
- Vroom, V. (1964). *Work and motivation*. New York: Wiley.
- Welbourne, T. M., & Gomez-Mejia, L. R. (1995). Gainsharing: A critical review and a future research agenda. *Journal of Management*, 21(3), 559-609.
- Zacharakis, A. L., & Meyer, G. D. (1998). A lack of insight: Do venture capitalists really understand their own decision process? *Journal of Business Venturing*, 13(1), 57-76.
- Zahra, S. A., Jennings, D. F., & Kuratko, D. F. (1999). The antecedents and consequences of firm-level entrepreneurship: The state of the field. *Entrepreneurship Theory & Practice*, 24(2), 45-65.

Figure 1: Research Model and Hypotheses

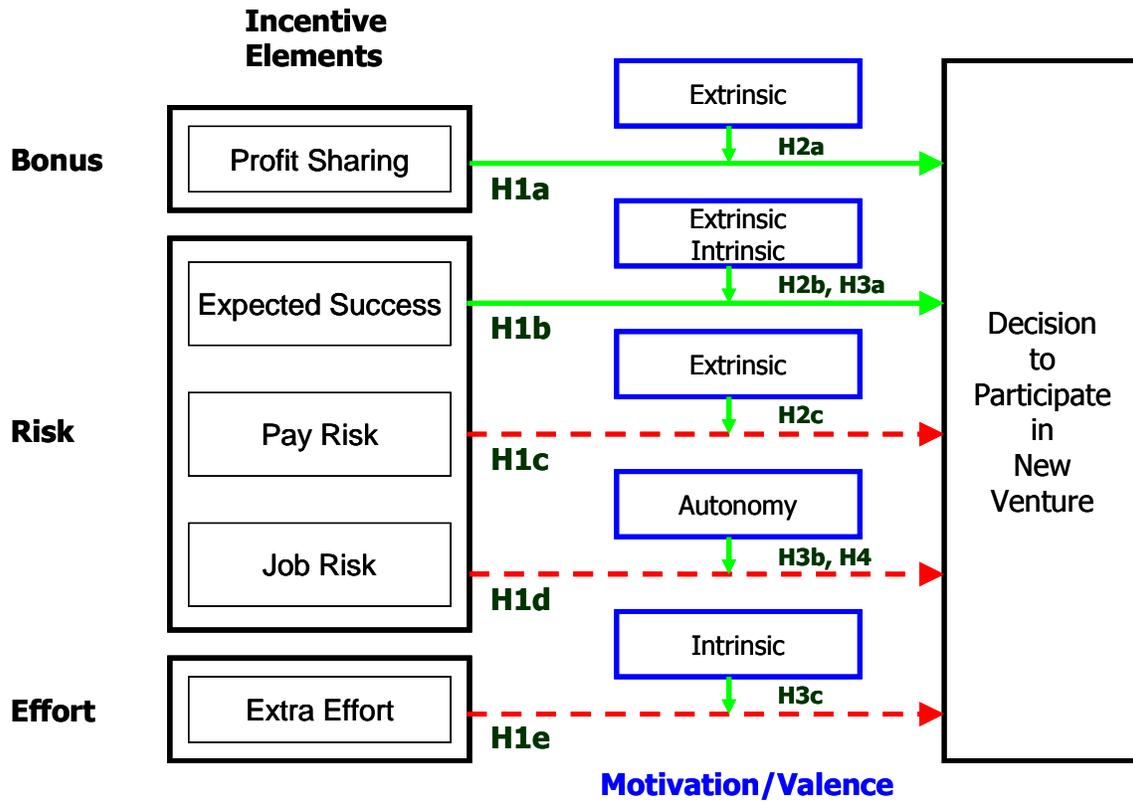


Figure 2: Results for Interactions of Incentive Elements and Motivations

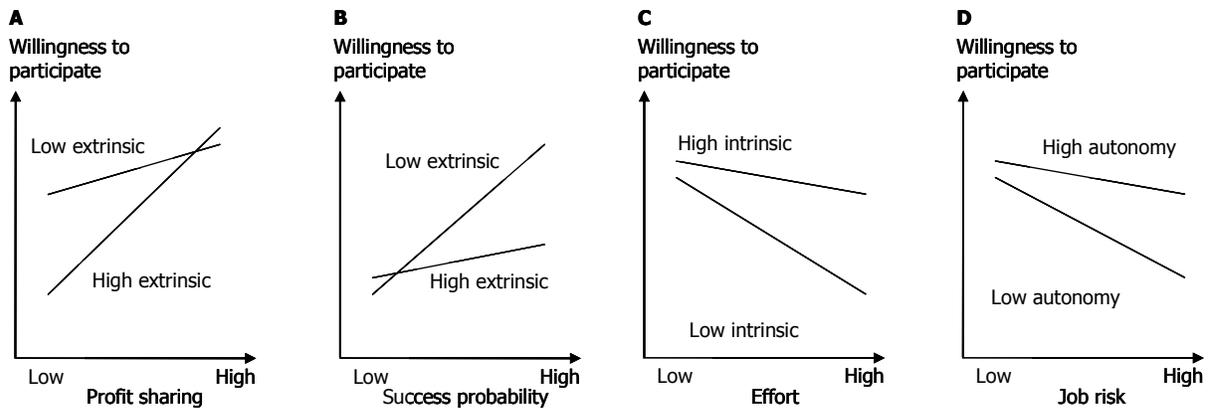


Table 1: Descriptive Statistics and Correlations

		Mean	S.D.	1	2	3	4	5	6
1	Extrinsic	5.985	1.099	1					
2	Intrinsic	4.451	1.288	0.312	1				
3	Autonomy	5.683	1.163	0.492	0.415	1			
4	Self-efficacy	6.084	0.624	0.401	0.261	0.382	1		
5	Org. citizenship	5.269	0.716	0.339	0.459	0.297	0.542	1	
6	Risk taking	1.934	1.138	0.152	0.225	0.202	0.192	0.283	1
7	Age	28.213	5.517	-0.298	-0.066	-0.071	-0.023	-0.140	-0.162

All correlations with absolute value above 0.2 are significant ($p < 0.05$), $n = 61$

Table 2: Employees' Decisions to Participate In a New Corporate Venture

Decision criteria	Main Effects		Extrinsic		Intrinsic		Autonomy	
	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio
Intercept	3.73 (.07)	52.59***	-0.07 (.08)	-0.92	0.17 (.05)	3.28**	-0.00 (.05)	-0.04
Job risk	-1.35 (.09)	-15.63***	-0.15 (.08)	-1.89	0.10 (.09)	1.07	0.20 (.08)	2.53*
Pay risk	0.17 (.10)	1.71	0.17 (.10)	1.73	0.05 (.07)	0.71	-0.10 (.08)	-1.18
Required effort	-0.53 (.07)	-7.58***	0.09 (.07)	1.22	0.23 (.09)	2.58**	-0.10 (.08)	-1.26
Profit sharing	1.45 (.09)	16.82***	0.24 (.09)	-2.72**	0.10 (.09)	1.20	0.06 (.08)	.077
Success probability	1.71 (.10)	17.67***	-0.26 (.10)	-2.52*	0.05 (.09)	0.54	0.14 (.010)	-1.280
Decision criteria	Self-efficacy		Org. citizenship		Risk taking		Age	
	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio	Coeff (std err)	t-ratio
Intercept	0.13 (.15)	0.85	0.06 (.12)	0.50	0.02 (.06)	0.38	-0.02 (.01)	-1.38
Job risk	0.21 (.11)	1.87	-0.08 (.15)	-0.49	0.01 (.07)	0.11	-0.03 (.02)	-1.57
Pay risk	0.30 (.21)	1.45	-0.13 (.20)	-0.68	0.03 (.07)	0.40	-0.05 (.03)	-1.69
Required effort	-0.12 (.12)	1.01	-0.09 (.13)	-0.71	0.05 (.06)	0.78	-0.01 (.01)	-0.94
Profit sharing	-0.00 (.15)	-0.03	-0.24 (.19)	-1.25	0.04 (.06)	0.61	-0.00 (.02)	-0.18
Success probability	0.14 (.10)	1.40	-0.10 (.17)	-0.60	-0.06 (.09)	-0.73	-0.06 (.02)	-2.89**

*p<.05; **p<.01; ***p<.001; n=1952 decisions nested within 61 employees