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Wage job or new enterprise?

An experimental analysis of time allocation under risk-return tradeoffs

(a.k.a. Could it be time to leave your salaried job?
An experimental analysis of entrepreneurs' time allocation under risk-return tradeoffs)

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Many entrepreneurs take the initial steps in starting a business while working for someone else in a wage job. Because individuals differ in their risk propensity and in their decision goals, the tradeoff faced in time allocation decisions can be evaluated differently by different groups of individuals. The proposed research is to put forward normative prescriptions of time allocations and to contrast them with de facto time allocations between the wage job and the new enterprise. Two experiments – one with entrepreneurs and one with students – show that both groups deviate from the normative prescriptions. Entrepreneurs also appear to be more determined with their decision goals – striving for gains and avoiding losses – than are students.

1. Introduction

Roughly one out of four entrepreneurs takes the initial steps in starting a business while still working for someone else (EIM, 2009; Lévesque and MacCrimmon 1997). Many entrepreneurs thus face the crucial decision of dividing their limited amount of time between the wage job and the new enterprise. The reasons for spending time in both working activities are diverse. Entrepreneur might keep the wage job to earn a living and to generate income that can be invested in the new enterprise (Lévesque and MacCrimmon 1997). On the other hand, every hour spent on developing the new enterprise will likely bring potential returns faster.

The conditions under which entrepreneurs are ready to fully commit to their new enterprise are, nevertheless, unclear. A key determinant of that commitment is the certainty associated with wage earnings from a paid job versus the uncertainty (risk) associated with returns from the new enterprise. Consequently, not only does the magnitude of returns from both activities matters, but so does the risk (i.e., the variance of the potential return) associated with those activities. In this paper, we investigate the impact of the risk-return tradeoff on time allocation decisions. Specifically, we address the question of *how individuals should allocate their working time between the wage job and the new enterprise*. We contrast these time allocation prescriptions with *how individuals de facto allocate their time between the two activities.*

We were inspired by the work of Becker (1965) on time allocation to build a theoretical decision framework that describes the relationship between the enterprise's risk and return, as well as the

relationship between the returns from both working activities. We derive normative prescriptions for the optimal number of hours to allocate to the enterprise. That optimal number depends on the wage rate, the entrepreneur's risk propensity, and the magnitude (stakes) of the risk and return from the enterprise. We test our normative prescriptions in two controlled experiments – one with entrepreneurs and another one with students, where the respondents' time allocation decisions are associated with monetary payments.

We find the time allocation decisions of entrepreneurs and students to differ, and to be influenced by their risk aversion and their decision goals to avoid losses and to strive for gains. Entrepreneurs appear to be more willing to take risk than students, since the former group works more on average in their own enterprise when the risk increases with every additional hour allocated to the enterprise. We also find that entrepreneurs appear to strive more for gains with their time allocation decisions, whereas students tend to avoid losses. Moreover, entrepreneurs seem more determined to achieve their goals. Indeed, entrepreneurs who strongly avoid losses take less risk than students with the same goal, yet less loss avoiding entrepreneurs are more risk taking than less loss avoiding students. Furthermore, entrepreneurs who strongly strive for gains appear to take more risk than students with the same goal, and entrepreneurs who do not strive for gains are less risk taking than students.

These findings complement the economic and entrepreneurship literature on time allocation behavior, particularly when entrepreneurs face considerable risk-return tradeoffs with their new enterprises (e.g., in the high-tech sector). We also contribute to that literature by providing a model that integrates a tradeoff between a new enterprise's risk and return and the risk propensity of the entrepreneur who develops that new enterprise. We present experimental evidence that allows us to test the benchmark prescriptions from our decision model and to offer explanations from behavioral decision theory.

The remainder of the paper is organized as follows. In the second section, we present an overview of the literature we draw upon and more specifically articulate our contributions. The third section describes the situation faced by the decision makers. We then develop our normative theory, followed by the experimental setting. Next, we provide four decision scenarios, the normative prescriptions for each scenario and their experimental validation. Afterwards, we offer a multivariate analysis to identify the variables that may explain the time allocation decision, as well as the difference between the observed

and the prescribed time allocation decisions. We finally conclude with a discussion of our results, limitations and avenues for future research.

2. Literature review

Four streams of literature are important for our work. First, we present some peculiarities on the working hours and working conditions of entrepreneurs as compared to employees. The second research stream originates from behavioral decision making to explain the time allocation decisions of entrepreneurs. Third, we draw from the literature that portrays and explains behaviors when risk is present. These streams of literature are discussed in turn.

Several studies show that entrepreneurs work longer hours than employees (Carrington et al. 1996, Lin et al. 2000, Ajayi-Obe and Parker 2005, Parker et al. 2005). Reasons for long working hours include non-pecuniary benefits such as a strong desire to be 'their own boss' (Hamilton 2000, Block and Koellinger 2009), entrepreneurs' aim to 'insure' against a fluctuating income (Parker et al. 2005), and higher work demands (Ajayi-Obe and Parker 2005). These long working hours have been shown to generate potential health problems and low financial returns per hour invested in the new enterprise (Hamilton 2000, Moskowitz and Vissing-Jorgensen 2002). By providing some recommendations on how entrepreneurs should allocate their working time, our study is an attempt to help mitigate these problems.

Self-employed individuals have also a greater flexibility in their working conditions and working hours than employees (Wales 1973, Hyytinen and Ruuskanen 2007). Yet, the lack of a distinction between working time and leisure makes entrepreneurs' time allocation decisions more complex (Boulier 1979). Entrepreneurs enjoy spending their leisure time talking about the new enterprises (Kaish and Gilad 1991), but they also are less satisfied than employees with their working time, even though they overall enjoy their work more than employees (Ajayi-Obe and Parker 2005). Hence, entrepreneurs do differ from employees with respect to various time allocation dimensions, but there does not exist yet an integrated theory of time allocation for entrepreneurs.

Closer to our attempt herein is the work of Camerer et al. (1997), who have compared actual time allocation decisions of self-employed individuals with normative benchmarks. Using a field study, they find that self-employed taxi drivers did not behave as classic labor economics would predict. Instead, they

worked fewer hours daily when demand was high, yet working more hours when demand was low. Such behavior was interpreted as narrow bracketing. In other words, those taxi drivers had optimized their income over the very short time horizon of only a day. We complement Camerer et al.'s work with a varied sample of entrepreneurs and with the use of a more controlled environment (i.e., laboratory experiments). Lévesque and Schade (2005) also consider normative benchmarks, in addition to two work-related alternatives, to show that when individuals allocated time between a wage job and a newly formed enterprise they did not rationally optimize but rather used "intuitive optimization techniques" such as an anchoring-and-adjustment heuristic. We build from this work to offer a theoretical decision model that explicitly models the tradeoff between risk and return in a way that the individual's risk propensity is relevant for the optimal time allocation. We validate this theoretical framework with students and entrepreneurs, whereas Lévesque and Schade (2005) only used a student sample.

Regarding risk attitude, studies have compared entrepreneurs' risk propensity with that of managers (Begley and Boyd 1987, Brockhaus 1980), bankers (Sarasvathy et al. 1998), and employees (Caliendo et al. 2009). The results have, however, been mixed. Some studies have indicated that risk propensity is higher among entrepreneurs than other individuals (Caliendo et al. 2009; Stewart and Roth 2001), while others cannot discriminate between entrepreneurs and non-entrepreneurs (e.g., Brockhaus 1980, Parlich and Bagby 1995, Norton and Moore 2006). Recent empirical work has shown that risk propensity varies among entrepreneurs and that they are influenced by their employment background (Caliendo et al. 2009, Elston et al. 2006).

Another key difference between entrepreneurs and non-entrepreneurs is risk perception. Risk perception is seen as a driver of entrepreneurial decisions, because lowering the perception of a business' riskiness influences individuals to start a business (Simon et al. 2000). Forlani and Mullins (2000) conducted an experiment by considering the risk inherent in new enterprises, entrepreneurs' differing perceptions of those risks, and differences in propensities to take risk. Parlich and Bagby (1997) have shown that entrepreneurs perceive risky business situations more positively by focusing on the opportunities, while managers rather emphasize the threats. Furthermore, entrepreneurs have been shown to be more overconfident than managers, potentially lowering the risk aversion of the former group due to

optimism with respect to future events (Busenitz and Barney 1997). These studies on risk propensity and risk perception highlight the importance of comparing entrepreneurs and non-entrepreneurs because it can help identify entrepreneurial traits and resulting behavior.

Standard economic models as well as standard models in decision making look at optimizing with respect to a reduced set of goals; often just monetary outcomes (or the utility derived from them) and probabilities (and the linear combination of both). More recent work in decision making tries to more appropriately account for actual decision makers' behavior. Noteworthy in this regard is the work of Krantz and Kunreuther (2007) that attributes behavior to different goals or aims that individuals might pursue in a certain decision situation (e.g., "I found my own venture in order to become rich" or "I found my own venture to be independent"). Individuals are likely to have multiple goals and to weigh them to reach the best outcome of a decision. Prospect theory (Kahneman and Tversky 1979, Tversky and Kahneman 1992) goes a slightly different way and is often considered the theory of choice to predict risk taking behavior, because of its ability to nicely account for the actual behavior of decision makers. Specifically, when the various alternatives involve losses, most individuals are risk taking (from the convexity of the value function in the loss domain). In situations with only pure gains, individuals are rather risk averse (from the concavity of the value function in the gain domain). But when both gains and losses are involved, as is the case in our experiments, losses have a greater impact on preferences than gains due to loss aversion and risk-averse behaviors dominate.

Even though some studies have relied on prospect theory and acknowledged the importance of goals in the decision-making process (e.g., Krantz and Kunreuther 2007), we are unaware of any that explicitly integrates entrepreneurs' goals to explain their time allocation. Two types of goals with a special relevance for risky decision situations are *prevention* and *promotion* (Higgins 1997). The *regulatory focus concept* poses that some individuals (depending on the situation) are more interested in avoiding losses whereas others are more interested in striving for gains.

3. Decisional context and expected utility

Let us consider an individual who earns a fixed (net) return (income) for each hour spent at a wage job. The individual has also invested time and money in a newly formed enterprise and is therefore

committed to spend a minimum amount of time ε every day. There is a maximum of τ working hours that can be devoted either to the current wage job or to developing the new enterprise.[1] The key decision is how many hours, h, to allocate to the enterprise; then τ-h hours can be devoted to the wage job. Time allocation h is restricted to be above the minimal threshold, ε, for the enterprise to stay alive and below the maximum number of working hours, τ (the individual's work tolerance). Because they should prefer more income to less, rational individuals should select a time allocation that maximizes their utility – an increasing function of the total expected (net) return from both working activities.

We investigate time allocation decisions for new enterprises with different characteristics. These characteristics are represented by different combinations of *expected return* and *variance on the return*. A business enterprise with a large expected return and a large variance is labeled 'high stake,' or high s, and the opposite 'low stake,' or low s ($s > 0$). One can think in terms of a high stake for startups in the high-tech industry where enormous gains may be expected, but also significant losses can be encountered as the randomness surrounding the purchase of expensive manufacturing equipment may result in unprofitable business when the resulting demand is low. On the other hand, low-stake enterprises are associated with less ambitious startups such as setting up a consulting business at home.

The marginal return V from an increase in the stakes s is affected by the individual's number of hours allocated to the new enterprise and by some risky outcome, which probability distribution cannot be controlled by that individual. For example, the return of an ice-cream producer depends on the number of hours that producer works in the business and on weather conditions (a risky outcome). In a hot summer, the demand for ice cream can suddenly increase, but rainy weather may also decrease demand substantially. The random variable X represents this risky outcome and, as a result, $V=V(h,x)$ where x is a realization of X. Time h allocated to the new enterprise is the only input variable. Any other inputs are assumed fixed, or their quantities are established beforehand.

The individual decides on a time allocation by facing a wealth W, where $W(h) = \omega\,[\tau\text{-}h] + s\,V(h,x)$. The first term on the right-hand side represents the (risk-free) return associated with the wage job,

[1] A future specification of the model may take into account the total time allocation of an individual where the individual simultaneously decides on how much time to spend on relaxation, hobbies, free time, sleep, the enterprise, and the wage job. We assume a stepwise optimization where the first step – the allocation of total working and free time – already took place.

whereas the second term is the new enterprise's risky return.[2] Since the latter is uncertain, the total wealth is uncertain at the time of the time allocation decision. We select a linear functional form for the marginal return from the increase in the stakes of the new enterprise, where $V(h,x)=f(h)+g(h)x$, with $E[X]=0$ and $Var[X]=\sigma^2$. The stakes s thus affects linearly both the expected return $sf(h)$ and the standard deviation of that return $sg(h)\sigma$.

Expected return $sf(h)$ increases as the number of hours allocated to the enterprise is increased, i.e. $df/dh > 0$. However, the expected return randomly varies of an amount $sg(h)x$. We consider two cases. The first case occurs when $dg/dh>0$ and allocating more hours to the enterprise yields more risk (e.g., the individual has more time to make more risky attempts), then allocating more time to the enterprise creates a tradeoff between increasing that enterprise's return and risk (for a given random outcome x). This tradeoff occurs because both the certain component $sf(h)$ (a utility) and the uncertain component $sg(h)x$ (a disutility) increase with h.

For the second case, the risk-return tradeoff disappears when the random amount at which the expected return from the enterprise varies decreases, for any given risky outcome x, as the number of hours allocated to the enterprise is increased, i.e. $dg/dh < 0$ (e.g., the individual has more time to verify what has already been developed and, as a result, reduce risk). Thus, allocating more hours in the enterprise results in more return and less risk. However, the time allocation decision is not necessarily obvious because it depends on how the return from the wage job, and its corresponding expected utility, compares to that of the new enterprise. We tease out the risk-return tradeoff within the enterprise, as well as the tradeoff born from comparing the risky return from the enterprise to the risk-free return from the wage job.

We assume that every individual obeys an exponential utility function $U(W)=-e^{-\alpha W}$, where α reflects that individual's risk propensity.[3] We take into consideration the fact that both risk-averse (i.e., $\alpha > 0$) and risk-prone individuals (i.e., $\alpha < 0$) appear among entrepreneurs (e.g., Caliendo et al. 2009) and students. This utility function, along with a normally distributed outcome X (and thus W), lead to a nice

[2] We assume no cost of effort since the number of total working hours is fixed.
[3] The underlying assumption is thus that these individuals possess a constant absolute risk aversion.

property of our model: For any alternative *W*, the individual is indifferent between maximizing expected utility and selecting the maximum of $E(W) - \frac{1}{2}\alpha Var(W)$, where $E(\cdot)$ is the expectation and $Var(\cdot)$ the variance operators (e.g., Freund 1956). Therefore, in order to maximize expected utility, the individual selects a time allocation h^* that maximizes

$$E(W) - \frac{\alpha}{2} Var(W) = \omega\,(\tau - h) + s \cdot f(h) - \frac{\alpha}{2}[s \cdot g(h) \cdot \sigma]^2 . \tag{1}$$

The first- and second-order conditions for the optimization of (1) are, respectively,

$$-\omega + s\frac{df(h)}{dh} - \alpha s^2 \sigma^2 g(h)\frac{dg(h)}{dh} = 0 \tag{2}$$

$$\text{and } s\frac{d^2 f(h)}{dh^2} - \alpha s^2 \sigma^2 \left[\left(\frac{dg(h)}{dh}\right)^2 + g(h)\frac{d^2 g(h)}{dh^2}\right] < 0 . \tag{3}$$

We note that Eq. (3) always holds when *f* is *concave* and *g* is *convex* (strict concavity or convexity need not be when $\alpha > 0$). That is, when the return from the enterprise increases at a decreasing rate from allocating more time to that business, but the risk associated with that return increases at an increasing rate. In this case, there exists a unique optimal time allocation h^*. This optimum must satisfy Eq. (2), and is an interior solution for which hours should be allocated to both working activities whenever $\varepsilon < h^* < \tau$.

However, when Eq. (3) does not hold, the optimum will be a corner solution (e.g., when *f* and *g* are *strictly concave* and $\alpha < 0$, i.e., both the return from the enterprise and the risk associated with that return increase at a decreasing rate from allocating more time to that business and the individual is risk-taker). In this case, there exist conditions under which the new enterprise dominates the wage job and all working hours τ should be allocated to the enterprise. There also exist conditions under which the wage job dominates the enterprise and the minimum number of hours ε should be allocated to the enterprise to keep it alive. We omit straightforward mathematical derivations and provide our normative prescriptions in a table in the appendix.

4. Experimental settings

For the purpose of our experiment, we select linear functional forms, where $f(h) = f_1 + f_2 h$ and $g(h) = g_1 + g_2 h$ with f_1, f_2 and g_1 positive. We further select numerical values for our model

parameters that keep the optimal time allocation decision h^* in the interval $[\varepsilon, \tau]$. Specifically, we select the minimum number of hours ε to keep the enterprise alive to be 1. The maximum number of working hours τ is 10 (per day). The wage rate is 30 Euros. The standard deviation of the risky return σ from the enterprise is 35, the baseline expected value from the enterprise f_1 is 0.05, and the expected return from the enterprise per hour is 0.4. Accordingly, the baseline expected risk from the enterprise g_1 is 0.02. The enterprise's risk per hour g_2 is either 0.02 or -0.03. Assuming some common values for the risk propensity α, we calibrated the stakes *s* to obtain an optimal number of hours in the enterprise within the interval [1,10]. We acknowledge that different numerical values would provide different prescribed and observed time allocations. However, the purpose of this exercise does not depend on these values per se, but on how they differ. Consequently, these numerical values are used without a loss of generality.

When the enterprise's risk increases with every additional hour allocated to it (i.e., $g_2 > 0$), we select four different values for the enterprise's stakes *s*, leading to an inverse U-shaped relationship between *s* and the optimal time allocation h^*. In other words, the optimal number of hours in the enterprise increases as *s* increases if and only if *s* is small enough (i.e., $s < 2w / f_2$, as shown in the appendix). The selected numerical values for *s* are 90, 109, 150 and 240. When more hours in the enterprise lead to less risk (i.e., $g_2 < 0$), *s* is 54.7, 59.3, 73.5 or 80. The appendix (Table A1) offers the values of h^* for three different levels of risk aversion.

By combining these different values for stakes with either an increasing or decreasing risk per hour allocated to the enterprise, we create eight different decision scenarios.[4] For each scenario, we provide the decision makers with a table that portrays the distributions of returns from the enterprise and the wage job, dependent on the number of working hours in the enterprise. We offer an example of such table in the appendix (Table A2), including information on the wage rate, enterprise's risk and return, all depending on the number of hours worked in the enterprise. That table also includes the probabilities for the normally distributed return for the enterprise to fall within a certain interval.

[4] We keep the total number of working hours, wage rate, base return from the enterprise, return per hour in the enterprise, and the base risk from the enterprise's return in all scenarios constant and only vary the enterprise's risk per hour and the stakes.

Our experiments were conducted with 38 undergraduate business and economics students and additionally with 28 entrepreneurs. The students were on average 21 years old and participated in the experiment in the laboratory of a university in a major German city in December 2008. The entrepreneurs in our sample were individuals who started their own business within the last five years. We chose to investigate entrepreneurs in this early stage of the entrepreneurial process because in this phase it is more likely that they (still) have a wage job (or at least they can still remember their time allocation when they did). They were on average 34 years old and the majority worked in the business service industry or in artistic industries such as fashion and graphic design. They participated in the experiment with the help of a mobile computer laboratory, with the experimenter meeting them outside their offices and being present during the experiment to answer questions. The experiment with the entrepreneurs took place in September 2009 in the same German city as for the students.

The risk propensity of each of our 66 respondents was measured with a lottery comparison (McCord and de Neufville 1986), which offers the advantage of no certainty effect (Allais 1953) where individuals overweight certain gains relative to gains that are probable (Kahneman and Tversky 1979). In this task, individuals stated a probability that makes them indifferent between two lotteries (as detailed in the appendix). Our sample resulted in four risk-prone students, two risk-prone entrepreneurs, as well as five students and one entrepreneur who were risk neutral. We therefore restricted our analysis to the 54 respondents who exhibited risk aversion.

We also looked at two different goals, prevention and promotion or being focused on avoiding losses vs. on generating gains, respectively (Higgins 1997). Although psychological scales are available to measure this concept, given the overall complexity and duration of our experiments, we opted to only measure the orientation towards those goals via two simple questions after each decision in the eight scenarios on five point Likert scales that ranges from “I fully agree” to “I do not agree at all”:

Which goals did you just pursue with your decision?

(a) I generally want to avoid losses.

(b) I generally strive for large chances of high gains.

The experiment was programmed with the software *z-tree* (Fischbacher 1999). All respondents selected, in the eight different decision scenarios, the number of hours they wanted to allocate to the new enterprise. The scenarios differed with respect to risk (increasing or decreasing with every hour in the enterprise) and the stakes of the enterprise. The order of all scenarios was randomly determined separately for each respondent. In order to make sure that the respondent understood the relationship between expected returns, risk, and their decision, they were required to answer questions where the answer could be found in the table that was provided to them (as the one exemplified in the appendix). At the end of the experiment, one out of the eight scenarios was randomly selected. Depending on the respondent's decision in that respective scenario, again a random device determined the actual return from the respective return distribution. For students, 70 units of the experimental currency refer to one Euro, for entrepreneurs it was 35.

5. Scenario analysis

We now exemplify the analysis of four out of our eight decision scenarios. In this section, we only chose these four because they represent different combinations of stakes and risk that are not much different from the combinations in the other four scenarios (which provided similar results). For each scenario, we give an example, derive the normative prescription and analyze the actual time allocation behavior.

5.1 Low stakes (s = 109), increasing risk

Consider a self-employed security guard who requires only low financial investments to start the business. The guard faces limited losses, but also limited earning potential. Moreover, the longer the guard works (especially at night), the more tired she gets and the higher the probability that she makes mistakes. Due to this higher probability, the risk surrounding the return increases as the guard works more hours in her new enterprise.

The optimal number of hours h^* the security guard should work in her business enterprise depends on her level of risk aversion. Highly risk-averse individuals should work rather few hours in the enterprise (e.g., 1.6 hours as per Table A1 in the appendix) since the risk increases with every additional hour. When

working a low number of hours in the enterprise, risk-averse individuals avoid much of the risk and still have enough time to work in the risk-free wage job. On the other hand, less risk-averse individuals are likely willing to bear more risk and should therefore spend more of their time in their enterprise in order to maximize their utility (e.g., 6.7 hours as per Table A1 in the appendix).

To test if respondents facing such a scenario behave as per our model prescriptions, we verify whether the prescribed h^* may explain the observed time h^o allocated to the enterprise. We use a Tobit regression, since we defined the dependent variable, h^o, as left and right censored to the minimum of 1 and the maximum work tolerance of 10 hours per day, respectively. We find a significant positive relationship between the prescribed and the observed number of hours in the enterprise ($\beta = .36$, $p < 0.10$). Consequently, our respondents appear to have decided in the right direction, even though they do not allocate the exact optimum predicted by our decision model. This result is in line with studies on bounded rationality and the use of decision heuristics (e.g., Gigerenzer et al. 1999), where when facing a large amount of information, individuals do not optimize but rather use rules of thumb. Since the individual level of risk aversion determines h^*, we can further conclude that risk propensity predicts time allocation behavior imperfectly, although in the prescribed direction (because in the regression used to predict h^o, the coefficient of h^* is positive and significant). We also included two control variables in the Tobit regression: a dummy variable for entrepreneur versus student; and an interaction effect between this dummy and h^*. We find that entrepreneurs work significantly more hours in their enterprise than students ($\beta = 3.74$, $p = 0.10$). However, the interaction effect is not significant. In other word, entrepreneurs and students do not differ with respect to the positive relationship between the prescribed and observed number of hours allocated to the enterprise.

Subsequent to their time allocation decision, we also asked our respondents for their decision goals. On a five point Likert scale, we asked: (1) whether they want to avoid losses; and (2) whether they strive for high gains. We included these two decision goals into a Tobit regression in order to explain the number of hours in the business. We find that the respondents who strive for high gains worked more hours in the new enterprise compared to those with other goals ($\beta = -1.39$, $p < 0.01$). However, this main effect disappears when we include an interaction effect between the gain motive and being an

entrepreneur ($\beta = -1.56$, p < 0.10). In other words, entrepreneurs who strongly strive for high gains spent more time in the business than students with an equally strong motive for high gains. Striving for gains means something different to entrepreneurs – they take more risk to achieve this goal since they work longer (and hence increase the risk) in the enterprise than students. We also find that, although both students and entrepreneurs with a strong gain motive worked more than would be optimal given their risk propensity, the entrepreneurs' absolute deviation from optimum was even larger ($M_{students}$ = 2.87, $M_{Entrepreneurs}$ = 3.88, Mann-Whitney U (280) = -1.43, $p_{one\text{-}sided}$ < 0.10). On average, the deviation for students and entrepreneurs are positive, implying that they both work too much in the enterprise.

5.2 High stakes (*s* = 150), increasing risk

Consider now a mobile-phone producer who requires large financial investments in order to produce a device that facilitates writing text messages. This producer might generate high returns when he manages to convince numerous customers to buy his product, but he also faces the risk of failing, as do many high-tech firms (Timmons and Spinelli 2004). So far, the producer has developed a simple text writing tool that can be marketed. However, there may be a significant increase in returns from investing more time to develop a more sophisticated device. If further investment in development is unsuccessful, the invested time may be lost along with the possibility to market the simpler device due to the threat of competition. Thus, the longer hours invested in the enterprise are likely to generate riskier returns.

From our prescriptive model, highly risk-averse individuals should work only a few hours (e.g., 2 hours as per Table A1 in the appendix) in the business (because the risk increases with every additional hour). Less risk-averse individuals willing to bear more risk should, instead, spend more time in their enterprise (e.g., 8 hours as per Table A1 in the appendix).

A Tobit regression was again performed to test if the prescribed optimal time h^* could explain the actual time allocated to the enterprise h^o. We find a significant positive relationship between h^* and h^o ($\beta = .37$, p = 0.05), which again suggest that our respondents have decided in the right direction, even though they do not reach the predicted optimum, and risk propensity predicts time allocation behavior imperfectly, although in the prescribed direction (since the individual level of risk aversion determines h^* and in the regression used to predict h^o, the coefficient of h^* is positive and significant). By including a

dummy variable to distinguish our two samples (entrepreneurs versus students) and one for the interaction effect between this dummy and h^*, we find that entrepreneurs work more hours in their enterprise than students ($\beta = 4.43$, $p < 0.05$), but again the interaction effect is not significant.

Since the prescriptions from our model are not fully met, we again test whether decision goals may explain part of these time allocation decisions. In a Tobit regression, we find that the respondents who wanted to avoid losses worked significantly less hours in the enterprise than those who were less loss avoiding ($\beta = 1.19$, $p < 0.05$). Also, there exists a significant interaction effect between being an entrepreneur and striving for high gains ($\beta = -2.17$, $p < 0.01$). That is, entrepreneurs work more hours in their enterprise when they strive for gains compared to students with the same decision goal.

We can now also compare the time allocated to the enterprise in this scenario to that of the previous scenario. Our model prescribes that individuals should work more hours in the enterprise when the stakes increases (here from $s = 109$ to $s = 150$). By comparing the average time spent in the enterprise between the two scenarios, we find that students significantly decrease their hours allocated to the enterprise (from 5.8 to 4.9 hours, $p < 0.10$) when its stakes increases. Thus, opposite to what our model prescribes, students prefer to work less in the business when the potential for gains and losses increases. This behavior might reflect caution and fear of losses, since students rather relinquish potential gains that are associated with higher stakes and a higher number of hours in the enterprise. Entrepreneurs behave differently by not significantly changing the average number of hours allocated to the enterprise when its stakes increases (from 6.8 to 6.3 hours, $p > 0.50$). In other words, entrepreneurs react less to a change in situational characteristics and keep the number of hours in the enterprise at a relatively high level. By comparing the deviations of students and entrepreneurs from optimum, we find again that entrepreneurs deviate more (on average) than students ($M_{students} = 2.75$, $M_{Entrepreneurs} = 3.96$, Mann-Whitney U (290) = -1.26, $p_{one\text{-}sided} < 0.10$). However, on average students work too few hours in the enterprise, whereas entrepreneurs work too much.

5.3 Low stakes (s = 59.3), decreasing risk

Now consider a self-employed taxi driver. The upside and downside potential for returns are rather limited, and also financial investment to start the business is rather low. If the taxi driver works only one hour, her returns are riskier because she may have many customers due to rain or no customers due to a traffic jam. However, she may decrease the risk of her returns when she works longer hours, because there is a high probability that she has at least some customers during the day and is not stuck in a traffic jam the entire day. Thus, driving the taxi more hours allows for smoothing out the risk surrounding the return.

Highly risk-averse individuals should work many hours in this enterprise (e.g., 8.5 hours as per Table A1 in the appendix) since the risk on return decreases with every hour. Less risk-averse individuals should work less hours (e.g., 5 hours as per Table A1 in the appendix) in the enterprise and put more hours into the wage job. Testing for a positive relationship between the prescribed and observed number of hours in the enterprise, we find no significant relationship, and the controls (being an entrepreneur and the interaction effect between the latter and h^*) do not show any significant relationship. Consequently, we cannot confirm our model's prescriptions in this scenario. We further tested whether goals (avoiding losses and striving for gains) influence time allocation. A Tobit regression reveals that the respondents striving for gains work less in the enterprise than others ($\beta = 1.60$, $p < 0.01$). This finding is intuitive, because working fewer hours in the enterprise is associated with a higher risk on return, and thus potentially higher gains. Overall, we find no differences between entrepreneurs and students in this scenario.

5.4 High stakes (s = 73.5), decreasing risk

Lastly, consider a biotechnology firm ready to launch a new product. Since demands for new products are difficult to predict, the potential for high returns is there, but high losses may also be incurred. The entrepreneur may reduce the risk surrounding the return by conducting market research, investing time in networking with potential stakeholders, and obtaining commitments from potential customers. Thus, the enterprise's risk decreases with every additional hour the entrepreneur invests in it.

Both highly and less risk-averse individuals should spend their entire working time of ten hours in the enterprise. Testing for a significant relationship between the prescribed and observed number of hours in the enterprise, we find no relationship and the controls (being an entrepreneur and the interaction effect between the latter and h^*) do not show any significant relationship. Again, we thus cannot confirm our model's prescriptions in this scenario.

When we compare this scenario with the previous one and test if the risk-averse respondents work more hours on average in the enterprise when the stakes increases (here from s = 59.3 to s = 73.5), we find that they do (from 6.0 to 7.3 hours, $p < 0.05$). This increase is in line with our theoretical prescriptions, even though the increase is insufficient based on our prescriptions (where it should increase from 5.5 to 9.5 hours). We further tested whether the goals to avoid losses and to strive for gains could explain the number of hours in the enterprise. Striving for gains leads to less hours ($\beta = .96$, $p < 0.10$). Moreover, entrepreneurs appear to work marginally more hours in the enterprise than students ($\beta = 5.23$, $p < 0.10$). In other words, in this scenario entrepreneurs prefer to take less risk than students.

6. Time allocation sensitivity

We further analyze how individuals change the number of hours in the enterprise when the risk surrounding its return increases. Rather than considering only two scenarios as we did in the previous section, we must consider the four potential scenarios, enabling us to investigate the U-shaped relationship between the stakes and the prescribed optimal number of hours in the enterprise. That is, up to the point where stakes is small enough (i.e., $s < 2w/f_2$), the number of hours should increase with an increase in the stakes. Afterwards, the risk associated with the higher stakes becomes so high that any risk-averse individuals should reduce the number of hours in the enterprise as stakes increase. This prescribed relationship for students and for entrepreneurs is illustrated in Figure 1. Even though the levels of risk aversion do not differ significantly between both groups, entrepreneurs are slightly more risk averse than students. This higher level of risk aversion leads to a slightly lower optimal number of hours that entrepreneurs should spend in the enterprise in scenarios where risk increases with every additional hour in the enterprise. Also illustrated in Figure 1 is the relationship between the stakes and the *observed*

number of hours in the enterprise. Opposite to our prediction, entrepreneurs work more hours in the enterprise than students in all four potential scenarios. Entrepreneurs and students also react to different stakes. Both groups reduce the number of hours in the enterprise too early. That is, when the stakes increases from its second to third value, entrepreneurs and students reduce the number of hours rather than increasing them, as would have been optimal.

……
(Insert Figure 1 about here)
……

We complete the sensitivity analysis by investigating the effect of the two goals, avoiding losses vs. striving for gains. We conducted a multivariate analysis, where we ran several panel Tobit regressions jointly for the four scenarios with increasing risk and jointly for the four scenarios with decreasing risk. As per Table 1, when the risk surrounding the enterprise's return increases with every additional hour allocated to it (Model 1), entrepreneurs work more in the enterprise than students $(\beta = 2.07, p < 0.10)$. When we add decision goals to our analysis (Model 2), avoiding losses leads to less hours in the enterprise $(\beta = .83, p < 0.01)$. Also, the prescribed number of hours in the enterprise is positively associated with the observed number of hours $(\beta = .19, p < 0.10)$. Furthermore, the interaction effect between being an entrepreneur and striving for gains is significant. Figure 2 illustrates this interaction effect and shows that entrepreneurs who strongly strive for gains work more hours in the enterprise than students. On the other hand, entrepreneurs with a weaker strive for gains work less hours in the enterprise and thus take less risk than students. In other words, entrepreneurs are more forceful with achieving their goal to strive for gains when they allocate their time.

……...
(Insert Table 1 and Figure 2 about here)
……...

When the risk on the enterprise's return decreases with every additional hour (Model 5 and Model 6), we find that striving for gains leads to fewer hours in the enterprise $(\beta = 1.02, p < 0.01)$. Also, the interaction effect between being an entrepreneur and avoiding losses is significant $(\beta = -.95, p < 0.05)$. In other words, as shown in Figure 3, entrepreneurs who want to avoid losses work more in the enterprise and thus choose less risky time allocations than students who have the same focus. At the other extreme,

among those who are less focused on avoiding losses, entrepreneurs work less hours in the enterprise and take more risks than students. Consequently, entrepreneurs' time allocations are again more in line with their goals than students' time allocations. This finding holds despite the tendency for entrepreneurs to focus more on gains than students, and despite the fact that students are more focused on avoiding losses than entrepreneurs.[5]

……...
(Insert Figure 3 about here)
…….

Lastly, absolute deviations from the prescribed number of hours are more difficult to explain with our regressions (Models 3, 4, 7, 8 in Table 1). In scenarios where the risk of the enterprise's return decreases with every additional hour (Models 7 and 8 in Table 1), our respondents deviate less when the stakes of the enterprise is small ($\beta = -.45, p < 0.05$) . With high stakes, the tradeoff between the wage job and the enterprise becomes apparently more obvious, which moves the respondents more towards the prescribed time allocation.

7. Conclusion

In line with Knight's (1965) idea of the entrepreneur as a risk taker, our entrepreneurs were more risk taking than students (although most of our respondents were risk averse). Parlich and Bagby (1997) have demonstrated that entrepreneurs take risks because they perceive risky business situations more positively than managers as they focus on the opportunity rather than the threat. Their reasoning as well as our findings are also in line with entrepreneurs being more promotion focused than other individuals. In our experiments, pronounced risk taking means that entrepreneurs work more hours in their enterprise than students do in scenarios where risk increases with every additional hour allocated to the enterprise. These longer working hours are consistent with recent evidence in labor economic literature (Carrington et al. 1996, Lin et al. 2000, Ajayi-Obe and Parker 2005, Parker et al. 2005).

Even though the relationship between the prescribed and observed number of hours in the enterprise is positive, our model cannot perfectly predict the decisions of the respondents. Therefore, we

[5] In scenarios with increasing risk ($M_{Entrepreneurs} = 2.22$, $M_{Students} = 2.42$, $p_{one\text{-}sided} < 0.10$) and in scenarios with decreasing risk ($M_{Entrepreneurs} = 2.54$, $M_{Students} = 2.74$, $p_{one\text{-}sided} < 0.10$), entrepreneurs strive more for gains than students. In scenarios with increasing risk, students are more loss averse than entrepreneurs ($M_{Entrepreneurs} = 2.51$, $M_{Students} = 2.28$, $p_{one\text{-}sided} < 0.10$).

also analyzed individuals' deviations from the optimum. In scenarios where the risk surrounding the enterprise's return decreases, the absolute deviation from the optimum became smaller as the stakes of the enterprise increased. A potential explanation may be that the tradeoff between the enterprise and the wage job became more salient and explicit as the stakes increased, making it obvious to allocate numerous hours in the enterprise (since the risk is then reduced yet the return increased). These insights suggest that entrepreneurs should examine whether they work too much in their business, and whether splitting their working time between a wage job and the enterprise can create a higher return than committing all working hours to the enterprise. Starting a business on a part-time basis can be a valuable alternative at the very beginning, since it limits the invested resources and the likelihood of failure.

One of the personality traits attributed to entrepreneurs is their high level of need for achievement (Collins et al. 2004), whereby they exhibit a strong desire for accomplishments. Being more determined with decision goals, as per our findings, might be an expression of this trait. Our entrepreneurs pursued their goals more forcefully than students. Entrepreneurs who highly focused on avoiding losses were less risk taking, as were those who did not strive for gains. Entrepreneurs who were less focused on avoiding losses took more risks, as did entrepreneurs who strove for gains. These observations are also consistent with regulatory focus theory (Higgins 1997) since the prevention focus on loss avoidance leads to different decisions than the promotion focus on possible gains. We add to this theory and the entrepreneurship literature by showing that entrepreneurs do not only differ with respect to their focus from non-entrepreneurs but also with respect to how much they are determined to follow their focus and to commit to their goal.

These findings imply that entrepreneurs should contemplate how much they are focused on avoiding losses and consider that this determination influences their risk-taking behavior – perhaps in a suboptimal way. Moreover, it might be useful for loss avoiding entrepreneurs to determine their level of affordable losses before they start comparing an enterprise's expected returns from different time allocations.

Of course, this research is not without limitations. In real decisional contexts, entrepreneurs might not behave as per our experimental scenarios, which would limit the external validity of our conclusions.

However, testing the prescriptions of our theoretical model, controlling all potential influencing factors, and testing the influence of increasing and decreasing risk would have been impossible in a field study. Therefore, we opted for an experiment with a high internal validity for theory testing. In order to mitigate the limitations in external validity, the respondents received real monetary payments that were tied to their decisions, thus aligning our work with the quality criteria of experimental economics (Smith 1976).

One of the reasons for entrepreneurs to work longer hours in the enterprise than students did may be that entrepreneurs enjoy non-pecuniary benefits such as a strong desire to 'be their own boss' (Hamilton 2000, Block and Koellinger 2009). Even though our model did not capture such benefits, the entrepreneurs in our sample might still have taken these benefits into account (Burns 1985). Possibly, they might have brought their positive experiences from working independently into the lab, which consequently led to a high number of hours allocated in the business. However, since entrepreneurs worked more than students in the enterprise only for scenarios where the enterprise's risk on return increased as more hours were allocated into it, non-pecuniary benefits cannot completely explain the time allocation behavior of our sampled entrepreneurs. Moreover, if we assume that all decisions by entrepreneurs are influenced by non-monetary factors to the same extent, the comparison between our different decision scenarios should not be invalidated. However, future research should try to incorporate non-pecuniary effects when modeling entrepreneurs' decisions.

Limitations also arise from our prescriptive framework. Considering a time horizon of only one day does not allow for future prospects. However, the time horizon could straightforwardly be expanded to weeks and months without changing the structure of the model. Also, a utility function with constant absolute risk aversion might not be optimal to describe real behavior, because risk attitudes may change when the wealth level of the decision maker changes (although such utility functions are also assumed in, e.g., capital asset pricing models, Sharpe 1964). Nevertheless, our results show a positive relationship between the predicted and observed number of hours allocated to the enterprise, offering support to the selected utility function to describe actual behavior. Although our measure of individuals' risk propensity avoids certainty effects (Kahneman and Tversky 1979) and does not rely on respondents' subjective self-estimations, we cannot tell how stable our measure is over time and in different contexts since we

measure it only once in a gain domain. Moreover, the lottery comparison method that requires individuals to match the probabilities of two lotteries in order to reach a status of indifference requires more cognitive effort than choice tasks between lotteries and certain amounts (Tversky et al. 1988). Finally, our study lacks comparability with existing studies that measured risk-taking behavior with a choice task between a lottery and a certain option or with the monetary amount invested in a risky alternative (e.g., Nosic and Weber 2009). Nevertheless, we believe that we contribute methodologically to existing literature in experimental economics by measuring risk-taking behavior as the investment of another important resource – time. To date, evidence on how entrepreneurs spend their time is quite limited, with some findings from the consumer behavior literature showing that individuals spend their time differently than money (e.g., Okada and Hoch 2005). This, along with our findings, makes the investigation of entrepreneurs' time allocation an interesting avenue for future research.

This article is a small but important step towards a better understanding of time allocations under risk-return tradeoffs. We offer a decision model of time allocation between a wage job and a new enterprise under various settings. We test the extent to which our model might prescribe actual time allocation decisions and offer recommendations on how individuals may reach the optimum. By comparing the behavior of entrepreneurs and students, we highlight differences with respect to risk-taking behavior and the goals they pursue. We thus hope to provide a clearer picture of how entrepreneurs make, and can improve, their time allocation decisions.

Appendix

Calculating risk propensity from a lottery comparison. The decision situation used for our lottery comparison is available upon request to the first author. We extract α by assuming rational individuals in the sense of Hammond (1998), whose system of axioms contains conditions of ordering, independence, and continuity and represents the weakest requirements on rationality as compared to other methods. From his findings (Lemma 4.3), it is possible to derive a lottery comparison method for 2 lotteries

$$L_A = \left[\tilde{p}, Y_{\min} + a(Y_{\max} - Y_{\min}); 1-\tilde{p}, Y_{\min}\right] \text{ and } L_B = \left[p_a, Y_{\max}; 1-p_a, Y_{\min}\right],$$

where individuals must report a probability p_a for two given uncertain outcomes $Y_{\min} < Y_{\max}$, a given parameter $a \in (0,1)$ and a probability $\tilde{p}$ so that they are indifferent between lottery L_A and L_B. This indifference condition leads to

$$\tilde{p} \cdot u\left(Y_{\min} + a\left(Y_{\max} - Y_{\min}\right)\right) + \left(1-\tilde{p}\right) \cdot u\left(Y_{\min}\right) = p_a \cdot u\left(Y_{\max}\right) + \left(1-p_a\right) \cdot u\left(Y_{\min}\right),$$

and for an exponential risk averse utility function $u(y) = -e^{-\alpha y}$ one has to compute the (unique) solution $\alpha > 0$ of $-\tilde{p}\left(e^{-\alpha\left(Y_{\min} + a\left(Y_{\max} - Y_{\min}\right)\right)}\right) - \left(p_a - \tilde{p}\right)\left(e^{-\alpha Y_{\min}}\right) + p_a \cdot \left(e^{-\alpha Y_{\max}}\right) = 0$. Compared to other forms of eliciting risk preferences such as certainty-equivalent-based methods, lottery comparisons possess an advantage (McCord and de Neufville 1986) in that no certainty effect is distorting findings since none of the alternatives included in the questionnaire is certain. Note that the certainty effect has already been demonstrated in Allais' (1953) paradox and has been treated in prospect theory (Kahneman and Tversky 1979).

Table A1: Normative prescriptions summary (risk-averse individuals)[†]

		Stakes s	90.0	109.0	150.0	240.0
Allocating *more hours* to the enterprise yields *more risk* ($g_2 > 0$)	$h^* = \frac{sf_2 - w}{\alpha s^2 \sigma^2 g_2^2} - \frac{g_1}{g_2} \in (\varepsilon, \tau)$ and $\partial h^* / \partial \tau = 0$ $\partial h^* / \partial w < 0$ $\partial h^* / \partial s \begin{cases} > 0 & \text{if } s < 2w/f_2 \\ < 0 & \text{if } s > 2w/f_2 \end{cases}$		Optimal number of hours in the enterprise h^*			
		Very risk averse $\alpha = 0.0009012$	1	1.6	2	1.6
		Medium risk averse $\alpha = 0.0004249$	2.6	4.5	5.4	4.5
		Less risk averse $\alpha = 0.0003034$	4	6.7	8	6.7
		Stakes s	54.7	59.3	73.5	80.0
Allocating *more hours* to the enterprise yields *less risk* ($g_2 < 0$)	$h^* = \frac{sf_2 - w}{\alpha s^2 \sigma^2 g_2^2} - \frac{g_1}{g_2} \in (\varepsilon, \tau)$ and $\partial h^* / \partial \tau = 0$ $\partial h^* / \partial w < 0$ $\partial h^* / \partial s > 0$		Optimal number of hours in the enterprise h^*			
		Very risk averse $\alpha = 0.0009012$	7.6	8.5	10	10
		Medium risk averse $\alpha = 0.0004249$	4.5	6.5	10	10
		Less risk averse $\alpha = 0.0003034$	2.2	5	10	10

[†] Because only a few respondents exhibited risk-prone or risk-neutral behavior, our analysis focuses on risk-averse individuals.

Table A2: Example of a return table where more hours in the enterprise lead to more risk, stakes *s* = 109

Return in talers							Probability distribution of total return											
Hours in the venture	Mean total return = wage + mean enterprise return	Wage	Expected enterprise return	Variation of expected enterprise return (standard deviation)	Maximum total loss in talers	Maximum total gain in talers	%, for return being exactly max. loss	%, for return being between max. loss and -800	%, for return being between -800 and -600	%, for return being between -600 and -400	%, for return being between -400 and -200	%, for return being between -200 and 0	%, for return being between 0 and 200	%, for return being between 200 and 400	%, for return being between 400 and 600	%, for return being between 600 and 800	%, for return being between 800 and max. gain	%, for return being exactly max. gain
1	319.05	270.00	49.05	152.60	-138.75	776.85	0.1%	0.0%	0.0%	0.0%	0.0%	1.8%	19.9%	48.4%	26.5%	3.2%	0.0%	0.1%
2	332.65	240.00	92.65	228.90	-354.05	1019.35	0.1%	0.0%	0.0%	0.1%	0.9%	6.3%	20.8%	33.5%	26.3%	10.1%	1.9%	0.1%
3	346.25	210.00	136.25	305.20	-569.35	1261.85	0.1%	0.0%	0.1%	0.6%	3.0%	9.2%	18.8%	25.4%	22.7%	13.4%	6.7%	0.1%
4	359.85	180.00	179.85	381.50	-784.65	1504.35	0.1%	0.0%	0.5%	1.7%	4.8%	10.2%	16.5%	20.4%	19.4%	14.0%	12.3%	0.1%
5	373.45	150.00	223.45	457.80	-999.95	1746.85	0.1%	0.4%	1.2%	2.9%	6.0%	10.2%	14.5%	17.1%	16.7%	13.5%	17.4%	0.1%
6	387.05	120.00	267.05	534.10	-1215.25	1989.35	0.1%	1.2%	1.9%	3.8%	6.6%	9.8%	12.9%	14.7%	14.5%	12.5%	21.8%	0.1%
7	400.65	90.00	310.65	610.40	-1430.55	2231.85	0.1%	2.3%	2.6%	4.4%	6.8%	9.3%	11.5%	12.8%	12.8%	11.6%	25.5%	0.1%
8	414.25	60.00	354.25	686.70	-1645.85	2474.35	0.1%	3.7%	3.1%	4.8%	6.8%	8.8%	10.4%	11.4%	11.5%	10.6%	28.6%	0.1%
9	427.85	30.00	397.85	763.00	-1861.15	2716.85	0.1%	5.2%	3.5%	5.0%	6.6%	8.2%	9.5%	10.3%	10.4%	9.8%	31.2%	0.1%
10	441.45	0.00	441.45	839.30	-2076.45	2959.35	0.1%	6.8%	3.8%	5.1%	6.4%	7.7%	8.7%	9.4%	9.5%	9.0%	33.3%	0.1%

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Table 1: Panel Tobit regressions[†]

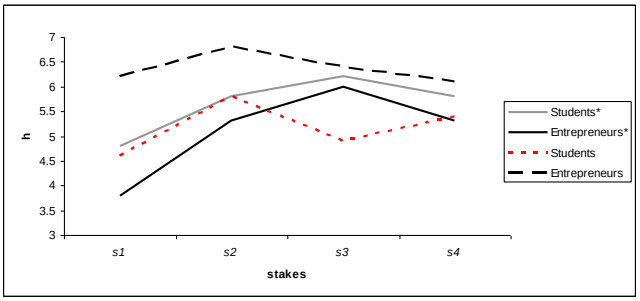
(*** p < 0.01, ** p < 0.05, * p < 0.10)

Model	1	2	3	4	5	6	7	8
Risk	increasing	increasing	increasing	increasing	decreasing	decreasing	decreasing	decreasing
Dependent variable	h	h	$\lvert h-h^* \rvert$	$\lvert h-h^* \rvert$	h	h	$\lvert h-h^* \rvert$	$\lvert h-h^* \rvert$
Independent variables								
h^*	.13 (.10)	.12 (.06)*	-	-	-.06 (.10)	-.02 (.09)	-	-
Stakes	.14 (.26)	.21 (.22)	.10 (.19)	.09 (.19)	.49 (.33)	.38 (.31)	-.45 (.23)**	-.44 (.23)*
Entrepreneur	2.07 (1.17)*	4.23 (1.77)**	.52 (.82)	1.00 (1.61)	-.76 (1.08)	2.91 (1.97)	.06 (.93)	1.59 (1.77)
Entrepreneur x Stake	-.32 (.39)	-.53 (.32)*	.06 (.28)	.04 (.28)	-.27 (.37)	.18 (.34)	.02 (.33)	.02 (.33)
Avoiding losses		.83 (.26)***		-.08 (.24)		-.04 (.32)		.27 (.29)
Striving for gains		-.36 (.28)		.38 (.26)		1.02 (.30)***		.30 (.27)
Entrepreneur x avoiding losses		.59 (.39)		.36 (.33)		-.95 (.44)**		-.16 (.40)
Entrepreneur x striving for gains		-1.49 (.39)***		-.55 (.36)		-.54 (.44)		-.46 (.39)
Constant	4.44 (.91)***	3.26 (1.27)**	2.90 (.56)***	2.17 (1.18)*	6.06 (.75)***	3.30 (1.40)**	4.23 (.63)***	2.84 (1.24)**
Groups (Obs)	54 (216)	54 (216)	54 (216)	54 (216)	54 (216)	54 (216)	54 (216)	54 (216)
LL	-490.46	-437.51	-480.15	-476.89	-486.31	-469.79	-485.55	-484.27
Prob>Chi2	.23	.00	.36	.19	.10	.00	.07	.20

[†] *Entrepreneur* is a dummy variable (1 = entrepreneur, 0 = student), *Avoiding losses* is a 5 point Likert scale (I generally want to avoid losses. 1-I strongly agree, …, 5- I do not agree), *Striving for gains* is a 5 point Likert scale (I generally strive for large chances for high gains. 1-I strongly agree, …, 5- I do not agree).

Figure 1: Inverse U-shaped relationship between h^*, or h^o, and s †

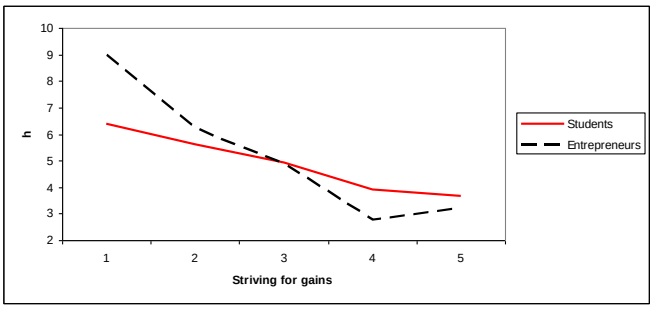
(risk increases with every additional hour in the enterprise)



† The curves *students** and *entrepreneurs** picture the prescribed number of hours in the enterprise when its stakes increases from S1 (s = 90.0) to S4 (s = 240.0). The other two curves picture instead the observed number of hours.

Figure 2: Interaction effect on h^o between being an entrepreneur and striving for gains †

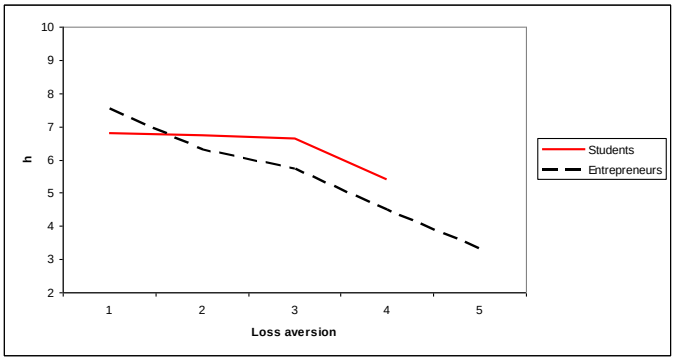
(risk increases with every additional hour in the enterprise)



† Striving for gains was measured on a 5 point Likert scale (I generally strive for large chances for high gains. 1-I strongly agree, …, 5- I do not agree)

Figure 3: Interaction effect on h^o between being and entrepreneur and loss avoidance †

(risk decreases with every additional hour in the enterprise)



† Avoiding losses was measured on a 5 point Likert scale (I generally want to avoid losses. 1-I strongly agree, …, 5- I do not agree)