Part-Time Entrepreneurship and Risk Tolerance

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This paper looks at the relationship between part-time entrepreneurship and risk tolerance. Part-time entrepreneurs split their time between entrepreneurial ventures and wage employment. I offer a simple model of entrepreneurial entry where individuals choose part-time, instead of full-time, entrepreneurship because they want to gain basic experience. This might be product, industry or market experience; or one related to individual-specific characteristics. People with a lower level of risk tolerance will need to first spend time acquiring this experience, and hence opting for an initial part-time involvement, before growing a full-size business. Empirical tests of the model implications are included.

INTRODUCTION

Part-time entrepreneurs are people who work at a regular wage job some of the time and work at their own businesses the other part of the time. Why do people become part-time entrepreneurs? Why don't they just devote all of their time to their own businesses? According to Katz & Green (2011), there are three main reasons for undertaking a part-time, as opposed to a full-time business: "when people want to gain basic experience, lack resources for a full-scale business, and when there is a narrow window of opportunity."

I offer a simple model of entrepreneurial entry where individuals choose part-time, instead of full-time, entrepreneurship because they want to gain basic experience. This basic experience might be product, industry or market oriented; or related to an individual-specific characteristic such as time management, for example. It can be argued that the lack of these types of experience may be perceived as a factor contributing to the higher risk of the future venture. People with a higher level of risk tolerance, then, may be willing to start a business without the proper experience. Those with a lower level of risk tolerance will need to first spend time acquiring this experience, and hence opting for an initial part-time involvement, before growing a full-size business.

Early studies on entrepreneurship do not deal with part-timers. Instead, they use self-employment as a proxy for entrepreneurship and focus on the selection of self - employment and the effect of different factors on this selection. These studies employ data from labor market surveys that treat respondents as either self-employed or wage workers, not allowing the two groups to overlap. Why should we devote research and time to part-time entrepreneurs? According to the Panel Study of Entrepreneurial Dynamics (PSED) three-quarters of new businesses start on a part-time basis. Similar evidence is reported by the Global Entrepreneurship Monitor, a large cross - national study on the level of entrepreneurial activity, which finds that 80 percent of nascent entrepreneurs are involved in a start-up while they have a job[1].

These findings conflict with the theories of entrepreneurial choice in which individuals choose between paid jobs and self-employment, and in which the complexity of entrepreneurial activity is not

reflected. In my model, individuals are risk averse and decide what proportion of time to spend in business. This set-up is closely related to Evans & Jovanovic (1989) model of entrepreneurial choice under liquidity constraints[2]. All previous studies include empirical work that relies extensively on household surveys, where respondents are classified as either self-employed or wage/salary workers. The focus of the current model is mainly on the proportion of time spent in business. For simplification, capital is not included. Entrepreneurial ability is unknown, instead, people hold an individual perception about their own ability. Thus, the decision to become a part-time entrepreneur depends on risk tolerance and perceived ability. The model predicts that the proportion of time someone will spend in a start-up is proportionately related to the perception of their entrepreneurial competences, skills and abilities. Thus, people with a lower risk tolerance will spend less time in business. Also, people with lower risk tolerance are more likely to become part-time entrepreneurs. Finally, those who strongly believe in their entrepreneurial ability will spent more time in business.

I test the implications of my model against data from the PSED, an extensive, nationally representative survey of the establishment of new businesses in US, that increased the level of attention given to nascent entrepreneurs[3]. Since the data was specifically created to follow both start-ups and nascent entrepreneurs, it provides an opportunity to look at factors affecting entry into entrepreneurship.

This study contributes to two branches of the entrepreneurship literature. The first branch deals with part-time entrepreneurship. The second branch explores the risk preferences of entrepreneurs. A common assumption in prior literature is that entrepreneurs are risk bearers. It originally comes from Knight (1921) and is more recently brought into light by Kihlstrom & Laffont (1979). Contrary to the concept of a risk-taker entrepreneur, there are some recent studies, both theoretical (Norton & Moore, 2002; Newman, 2007); and empirical (Van Praag & Cramer, 2001; (Wu & Knott, 2006; Caliendo, Fossen & Kritikos, 2009) showing that in terms of risk-aversion entrepreneurs and wage workers are similar. This does not negate the concept of entrepreneurs as risk bearers and risk takers, but instead to the possibility of a complex underlying explanation.

THEORETICAL BACKGROUND

The Model

A risk-averse entrepreneur has to make a decision on how much time to spend in their start-up. Let θ be the individual perception of entrepreneurial ability. θ is a random variable with mean $\bar{\theta}$ and $\theta = \bar{\theta} + e$, where e itself is a random variable with mean zero.

The entrepreneurial production function is defined as $y = \theta\delta^{\gamma}$, where δ is the proportion of time spent in the start-up, $0 \leq \delta, \gamma \leq 1$. Individuals can work in a paid job and also choose to be involved in a start-up. The total amount of hours spent in work is fixed and normalized to 1. Thus, an involvement in both a paid job and a start-up means that the two activities are exercised on a part-time basis. Since $0 \leq \gamma \leq 1$ and since there is only one factor of production, γ represents the returns to scale of the production process, which is decreasing, or also the output elasticity of the proportion of time spent in business.

The distinctive feature in the above definition is the property of decreasing returns to scale. This assumption has been employed since the general equilibrium analysis conducted by Lucas (1978) and repeatedly reappeared in Cressy (1996), Dunn & Holtz-Eakin (2000), Evans & Jovanovic (1989), Holtz-Eakin, Joulfaian & Rosen (1994) and Gentry & Hubbard (2000). Using data on new Japanese firms, Harada (2004) examines the validity of this assumption, and finds empirical evidence that the entrepreneurial production function exhibits decreasing returns to scale. This result suggests that there is a rent from entrepreneurial ability.

The net income for an entrepreneur is[4]

$$\pi(\delta;\theta) = \theta\delta^{\gamma} + (1-\delta)w = (\theta\delta^{\gamma} - \delta w) + w \quad (1)$$

When $\delta = 1$, the net entrepreneurial income becomes $\pi(\theta) = \theta$. For those individuals who do not choose entrepreneurship ($\delta = 0$), and who continue with their wage jobs, $\pi = w$. The objective of the entrepreneur is to maximize her expected utility of profit (net income):

$$\max_{\delta} E[u(\theta\delta^{\gamma} + (1-\delta)w)] \quad (2)$$

When the expected utility is well behaved, differentiating inside the expectation leads to the following first and second-order conditions:

$$E[u'(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma\delta^{\gamma-1} - w)] = 0 \quad (3)$$

$$E[u''(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma\delta^{\gamma-1} - w)^2 + u'(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma(\gamma-1)\delta^{\gamma-2})] \leq 0 \quad (4)$$

The assumption that the entrepreneur is risk-averse, or that $u' < 0$, ensures that the second-order condition is satisfied. The first-order condition determines the amount of time, $\delta = \delta^*(\theta)$ that the entrepreneur will spend in the start-up as a function of their own entrepreneurial ability perception.

Comparing δ when people are uncertain about θ with the case when they know their entrepreneurial ability beforehand is useful in supporting the main idea of the paper. The first order condition in (3) can be rewritten as

$$E\left[u'(\theta\delta^{\gamma} + (1-\delta)w)\theta\right] = E\left[u'(\theta\delta^{\gamma} + (1-\delta)w)\frac{w}{\gamma\delta^{\gamma-1}}\right] \quad (5)$$

Subtracting $E[u'(\theta\delta^{\gamma} + (1-\delta)w)\bar{\theta}]$ from both sides of (5) results in

$$E\left[u'(\theta\delta^{\gamma} + (1-\delta)w)(\theta - \bar{\theta})\right] = E\left[u'(\theta\delta^{\gamma} + (1-\delta)w)\left(\frac{w}{\gamma\delta^{\gamma-1}} - \bar{\theta}\right)\right] \quad (6)$$

The left-hand side of (6) represents the covariance between θ and marginal utility. The covariance is negative due to the fact that when θ is high, the entrepreneurial profit is high, and the marginal utility is low. Thus, the right-hand side of (6) is negative as well. Or, $\frac{w}{\gamma\delta^{\gamma-1}} - \bar{\theta} \leq 0$, resulting in

$$\delta \leq \left(\frac{\bar{\theta}\gamma}{w}\right)^{\frac{1}{1-\gamma}} \quad (7)$$

When people are uncertain about their entrepreneurial ability, they are more likely to spend less time in their start-up than when they know their ability beforehand.

Comparative Statics

After substituting $\delta = \delta^*(\theta)$ for δ, the first-order condition can be written as

$$E\left[u'((\bar{\theta} + e)\delta^{*\gamma}(\bar{\theta}) + \left(1 - \delta^*(\bar{\theta})\right)w((\bar{\theta} + e)\gamma\delta^{*(\gamma-1)}(\bar{\theta}) - w)\right] = 0. \quad (8)$$

After differentiating with respect to $\bar{\theta}$

$$\frac{d\delta^*}{d\bar{\theta}} = -\frac{E[u''(\theta\delta^{\gamma}+(1-\delta)w)(\theta\gamma\delta^{\gamma-1}-w)\delta^{\gamma}+u'(\theta\delta^{\gamma}+(1-\delta)w)\gamma\delta^{\gamma-1}]}{E[u''(\theta\delta^{\gamma}+(1-\delta)w)(\theta\gamma\delta^{\gamma-1}-w)^2+u'(\theta\delta^{\gamma}+(1-\delta)w)\theta\gamma(\gamma-1)\delta^{\gamma-2}]} \quad (9)$$

$$\frac{d\delta^*}{d\bar{\theta}} = \frac{\delta^{\gamma}E[u''(\theta\delta^{\gamma}+(1-\delta)w)(\theta\gamma\delta^{\gamma-1}-w)]}{-SOD} + \frac{\delta^{\gamma-1}E[u'(\theta\delta^{\gamma}+(1-\delta)w)\gamma]}{-SOD} \quad (10)$$

The second term is positive since the expression in the denominator is the second-order derivative, which is assumed to be negative in (4). The sign of the first term depends on the degree of absolute risk aversion. Let x be the net entrepreneurial profit such that $\gamma\theta\delta^{\gamma-1} = w$. Under the assumption of decreasing risk aversion, it follows that

$$\frac{-u''(\theta\delta^{\gamma}+(1-\delta)w)}{u'(\theta\delta^{\gamma}+(1-\delta)w)} \leq \frac{-u''(x)}{u'(x)} \; for\; \gamma\theta\delta^{\gamma-1} \geq w \quad (11)$$

$$\frac{-u''(\theta\delta^{\gamma}+(1-\delta)w)}{u'(\theta\delta^{\gamma}+(1-\delta)w)} \geq \frac{-u''(x)}{u'(x)} for\; \gamma\theta\delta^{\gamma-1} \leq w \quad (12)$$

If both sides are multiplied by $-u'(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma\delta^{\gamma-1} - w)$, then

$$u''(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma\delta^{\gamma-1} - w) \geq \frac{-u''(x)}{u'(x)}u'(\theta\delta^{\gamma} + (1-\delta)w)(\theta\gamma\delta^{\gamma-1} - w) \text{ for all } \theta \quad (13)$$

After taking expectations on both sides of (13), the right-hand side has an expected value of zero; thus, making the first term in (10) positive. As people gain more experience in their start-up, their own entrepreneurial ability perception changes, and assuming decreasing risk aversion, they will start devoting more time to their businesses.

Testable Implications

The basic model described above predicts that the amount of time someone spends in a start-up is proportionately related to the perception of their entrepreneurial competences, skills and abilities. Thus, people with a lower risk tolerance will spend less time in business. Also, people with lower risk tolerance are more likely to become part-time entrepreneurs. Those who strongly believe that in their entrepreneurial ability will spend more time in business.

The testable implications of the model can be summarized in the following three propositions:

Proposition 1: People with a lower level of risk tolerance are more likely to choose part-time entrepreneurship.

Proposition 2: People with a lower risk tolerance spend less time in business, or risk tolerance and the amount of time spent in business are positively related.

Proposition 3: People who believe in their entrepreneurial ability spent less time in business, or, ability and the amount of time spent in business are positively related.

EMPIRICAL MODEL AND ESTIMATION

To investigate the relationship between risk tolerance and ability on part- and full-time entrepreneurship I estimate the effect of risk tolerance on the choice of part-time versus full-time entrepreneurship using a probit regression model. The dependent variable is an indicator of choice between part-time and full-time entrepreneurship. The choice is estimated as a function of personal characteristics X (age, gender, race, education, household income, wealth, marital status, work and managerial experience, labor-force participation variables, and region) and risk preference and self-perception of ability and learning variables.

To investigate the relationship between risk tolerance and the proportion of time spent in business, I estimate a regression where the dependent variable is the number of hours per week spent in the start-up with the same set of independent variables described above. I perform the estimation for the whole sample of nascent entrepreneurs, as well as separately for the subsamples of part-time and full-time entrepreneurs.

DATA: PANEL STUDY OF ENTREPRENEURIAL DYNAMICS

The PSED is an extensive, nationally representative survey of the establishment of new businesses in the US that follows both nascent entrepreneurs and start-ups. Nascent entrepreneurs are respondents who have been involved in a start-up for the past 12 months, expect to be at least partial owners of the business, and have not had a positive cash flow for more than three months. The date consists of 830 nascent entrepreneurs and 431 comparison group members, at least 18 years old. In this study, I use data from Wave 1, which is completed between 1998 and 2000.

Nascent entrepreneurs are divided in two groups: part-time entrepreneurs and full-time entrepreneurs. Those who spend 35 hours a week or more in their business ventures are considered full-time entrepreneurs. The sample used in the study contains a total of 1049 individuals, 386 are from the control group and 663, nascent entrepreneurs. Further, from the nascent entrepreneurs, 469 are part-time entrepreneurs and 194 are full-time entrepreneurs. To correct for differences in selection probabilities and ensure that the estimated results are representative of the entire U.S. population, I developed individual case weights for both nascent entrepreneurs and the control group. The data is described in detail in Gartner (2004). Summary statistics by group (control group, part-time entrepreneurs, full-time entrepreneurs) of the variables used in the study are presented in Table 1.

TABLE 1
DESCRIPTIVE STATISTICS: PANEL STUDY OF ENTREPRENEURIAL DYNAMICS
WAVE 1(1998-2000), N=1,049

Variable	Control Group N=386		Part-time Entrepreneur N=469		Full-time Entrepreneur N=194	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Groups	94%	(0.24)	4%	(0.2)	2%	(0.13)
Age	42.80	(13.95)	38.36	(11.20)	39.07	(11.19)
Male	45%	(0.50)	62%	(0.48)	68%	(0.47)
Race						
White	75%	(0.43)	69%	(0.46)	69%	(0.46)
Black	10%	(0.30)	19%	(0.39)	15%	(0.36)
Hispanic	6%	(0.24)	8%	(0.27)	11%	(0.32)
Other	8%	(0.28)	5%	(0.21)	4%	(0.20)
Foreign Born	6%	(0.24)	7%	(0.25)	7%	(0.26)
Either parent foreign born	15%	(0.36)	14%	(0.35)	14%	(0.35)
Education						
Less than high school	5%	(0.22)	3%	(0.16)	2%	(0.15)
High School	24%	(0.43)	21%	(0.41)	27%	(0.44)
Some college	37%	(0.48)	39%	(0.49)	34%	(0.48)
College or more	33%	(0.47)	37%	(0.48)	37%	(0.48)
Marital Status						
Married	60%	(0.49)	68%	(0.47)	66%	(0.47)
Experience						
Years of work experience	12.25	(9.40)	11.01	(8.54)	10.87	(8.74)
Years of managerial experience	8.21	(8.80)	7.51*	(7.87)	9.18*	(8.88)
Labour-force participation						
Full-time wage employment	54%	(0.50)	62%**	(0.48)	25%**	(0.44)
Part-time wage employment	16%	(0.37)	19%	(0.39)	17%	(0.38)
Unemployed	12%	(0.33)	2%	(0.14)	1%	(0.10)
Retired	17%	(0.38)	8%	(0.27)	10%	(0.31)
Current busin. owner w/ full-time wage emp.	8%	(0.27)	21%	(0.41)	17%	(0.37)
Current busin. owner w/ part-time wage emp.	5%	(0.21)	11%	(0.31)	14%	(0.34)
Current busin. owner w/ no wage emp.	10%	(0.30)	13%**	(0.34)	51%**	(0.50)
Either parent business owner	49%	(0.50)	52%	(0.50)	50%	(0.50)
Helped start other businesses	47%	(0.50)	22%	(0.42)	28%	(0.45)
Financial resources						
Household net worth	$190,097	($449,004)	$205,641	($802,788)	$233,766	($641,602)
Median net worth	$80,000		$60,000		$58,000	
Household income	$54,147	($42,235)	$57,497	($79,405)	$55,024	($49,389)
Median income	$45,000		$45,000		$45,000	

* Difference between part-time and full-time entrepreneurs significant at 5%
** Difference significant at 1%.

Risk Tolerance

Respondents were asked to choose between two types of new businesses, "alpha - a business that would provide a good living, but with little risk of failure and little likelihood of making you a millionaire," or, low earnings and low risk business; and "beta - a business that was much more likely to make you a millionaire but had a much higher chance of going bankrupt", or, high earnings and high risk business. As Gartner (2004) point out, the two types of business are also referred to as "eatwell" and "sleepwell" choices, after Rothschild's, the famous banker, opinion. Gartner (2004) reports that the difference between nascent entrepreneurs and the control group in terms of risk tolerance is not statistically significant.

Variables

The set of independent variables included in both regression models are: household net worth; household income; expected revenue in the first full year of operation; number of hours per week spent on a wage job; number of hours per week spent in leisure; demographic characteristics such as age, gender, race, education, work and managerial experience, and marital status and kids. In addition to the standard human capital, demographic and financial characteristics, I also include respondents' self-reported measures of ability, learning and risk tolerance. For ability and learning, using a five-point scale with one being completely disagree and five completely agree respondents evaluate: "Overall, my skills and abilities will help me start a business" and "For me, identifying business opportunities has involved several learning steps over time, rather than a one-time thing."

EMPIRICAL RESULTS

The results from the probit regression model are presented in Table 2. The dependent variable is a dummy variable for a choice of pat-time versus full-time entrepreneurship. Three specifications of the model are included. In all three of them the risk tolerance variable is statistically significant (at $p < 0.05$ in the first two, and at $p < 0.1$ in the third specification). Respondents who have a lower level of risk tolerance, as measured by their preference for alpha-type, low earnings/low risk, businesses, are more likely to be part-time entrepreneurs. While those who are willing to tolerate more risk, as measured by their preference for beta-type, high earnings/high risk, businesses, are more likely to be full-time entrepreneurs. The outcome supports Proposition 1. Foreign born respondents and those with more managerial experience are less likely to be part-time entrepreneurs. Nascent entrepreneurs who are small business owners, but also currently involved in a start-up, are less likely to be part-time entrepreneurs.

Table 3 presents the results from the regression model where the dependent variable is the number of hours per week spent in the start-up. In model one the respondents are from the subsample of part-time entrepreneurs. Hispanics and Other ($p < 0.05$, $p < 0.01$); those with some college ($p < 0.1$), college and graduate degrees ($p < 0.1$); as well as those with more managerial experience ($p < 0.05$) spend more time in their businesses. Part-time entrepreneurs for whom learning is an important part of the start-up process devote less time than those who see it as "one big thing" ($p < 0.01$). Respondents who believe that their ability will help with the start-up process spend more time in business than those who show doubt ($p < 0.01$). Age, gender, marital status, financial resources, whether the responded is a current business owner, and expected revenue do not seem to affect how much time part-time entrepreneurs spent in business. Finally, the level of risk tolerance has no effect for part-time entrepreneurs.

In model two the respondents are from the subsample of full-time entrepreneurs. For them, age, race, gender and educational characteristics, years of experience, financial resources, whether the respondent is a current business owner and how they feel about learning and the start-up process do not seem to have a statistically significant effect on the time spent on business. Being married has a negative effect ($p < 0.1$), while having kids positive effect ($p < 0.01$), on the time in business. Having higher expectations about the revenue in the first year of operation of the business has a positive effect ($p < 0.05$) on the amount of time spent in business. Contrary to the results obtained for the part-time group, full-time entrepreneurs who believe that their ability and effort will help with start-up process spend less time in business ($p < 0.01$).

Respondents with a lower risk tolerance, as measured by the preference for alpha-type, low earnings-low risk, businesses, spend less time in business ($p < 0.01$).

An alternative form to models one and two is model three where the whole sample of nascent entrepreneurs is used. A dummy variable for part-time entrepreneurs (one if part-time, zero if full-time entrepreneur) and interacted effects between the dummy variable and the three variables for ability, learning and risk tolerance respectively are included in the set of explanatory variables. Model three confirms the results obtained from the other two models. For full-time entrepreneurs (when the dummy and three interacted variables are all zero) who believe that their ability and effort will be helpful in the start-up spend more time in business ($p < 0.01$). The effect has the same magnitude in both models, the coefficient is 0.260 in model two and 0.319 in model three. Respondents with a lower risk tolerance spend less time in business ($p < 0.01$), with coefficients -0.616 and -0.798 for models two and three respectively. Similar to model two, how respondents feel about learning and the start-up process has no effect on the time spent in business. For part-time entrepreneurs (when the dummy variable is equal to one) the total effects of ability, learning and risk tolerance have to be calculated. In the case of ability, the total effect is -0.213 (-0.532 + 0.319), where both the interacted effect and the individual ability variable are significant at $p < 0.01$. For comparison, the effect of ability from model one is -0.178 at $p < 0.01$. The interacted effect of learning and being a part-time entrepreneur is 0.240 and significant at $p < 0.01$ (vs 0.250 at $p < 0.01$ for model one), but the individual effect is not statistically significant. Thus, confirming the results from models one and two, the effect of learning is statistically significant for the part-time group only. One difference observed in model three is that the effect of risk-aversion is significant for part-time entrepreneurs, while in model one the opposite was reported. The total effect of risk-aversion is -0.023 (0.775-0.798) at $p < 0.01$. The effect has the same sign for both the part-time and full-time group, but the magnitude is much smaller (-0.023 vs -0.798) for part-time entrepreneurs, which may be why the effect is not statistically significant in model one. The results are in support of Propositions 2 & 3.

TABLE 2
PROBIT ESTIMATION

Variable	N=455 (1)		N=452 (2)		N=452 (3)	
Age	-0.403	(0.346)	-0.324	(0.350)	-0.299	(0.371)
Male	-0.004	(0.148)	-0.0001	(0.150)	-0.097	(0.163)
Race						
Black	0.230	(0.174)	0.224	(0.176)	0.149	(0.182)
Hispanic	0.003	(0.322)	-0.046	(0.325)	-0.007	(0.328)
Other	-0.037	(0.445)	-0.012	(0.450)	0.074	(0.481)
Foreign Born	-0.575**	(0.291)	-0.590**	(0.291)	-0.604*	(0.333)
Education						
High School	-0.214	(0.439)	-0.128	(0.448)	-0.284	(0.512)
Some college	-0.104	(0.439)	-0.029	(0.447)	-0.152	(0.513)
College or more	-0.312	(0.450)	-0.248	(0.459)	-0.415	(0.523)
Marital Status						
Married	0.028	(0.164)	0.037	(0.165)	0.128	(0.178)
Experience						
Years of work experience	0.004	(0.010)	0.006	(0.010)	0.006	(0.010)
Years of managerial experience	-0.017*	(0.010)	-0.017*	(0.010)	-0.011	(0.011)
Current busn. owner w/ full-time wage emp.					-0.472**	(0.215)
Current busn. owner w/ part-time wage emp.					-0.928***	(0.221)
Current busn. owner w/ no wage emp.					-1.468***	(0.190)
Either parent business owner	-0.166	(0.167)	-0.133	(0.148)	-0.065	(0.159)
Helped start other businesses	-0.104	(0.164)	-0.095	(0.164)	-0.040	(0.183)
Financial resources						
Household net worth	0.008	(0.006)	0.006	(0.006)	0.012	(0.007)
Household net worth squared	0.000005	(0.00004)	0.00001	(0.00005)	-0.000003	(0.00006)
Household income	0.312	(0.050)	0.039	(0.051)	-0.018	(0.059)
Household income squared	0.002	(0.002)	-0.002	(0.002)	-0.001	(0.003)
Ability and effort help start business (1=completely agree, 5=completely disagree)			-0.125	(0.093)	-0.112	(0.096)
Startup result of a learning process (1=completely agree, 5=completely disagree)			-0.078	(0.067)	-0.073	(0.072)
Risk tolerance variable: 1 if alpha type of busn., 0 if beta type of busn.	0.451**	(0.185)	0.417**	(0.186)	0.348*	(0.020)
Region Dummies	Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes	
Constant	6.953	(1.287)	7.497	(5.610)	8.491	(1.445)
Wald Chi	1048.36		1087.82		625.70	
Log likelihood	-23.791		-23.471		-20.041	

Dependent variable is part-time entrepreneurship dummy variable (1 if yes, 0 if no)
Significant at *10%, **5%, ***1%. Standard errors in ().

TABLE 3
TIME SPENT IN BUSINESS

Variable	Part-time Entrepreneur N=185 Model 1		Full-time Entrepreneur N=72 Model 2		Nascent Entrepreneurs N=257 Model 3	
Age	-0.004	(0.008)	0.008	(0.008)	0.001	(0.007)
Male	-0.145	(0.125	0.129	(0.190)	0.079	(0.103)
Race						
Black	0.080	(0.147)	0.215	(0.166)	0.036	(0.122)
Hispanic	0.618**	(0.257)	-0.400	(0.276)	0.372*	(0.224)
Other	0.720***	(0.274)	0.533	(0.331)	0.684***	(0.183)
Foreign Born	0.064	(0.315)	-0.210	(0.230)	-0.104	(0.228)
Education						
High School	0.602	(0.428)			0.574	(0.445)
Some college	0.752*	(0.413)	-0.113	(0.251)	0.621	(0.440)
College or more	0.761*	(0.426)	-0.261	(0.187)	0.609	(0.441)
Marital Status						
Married	0.148	(0.157)	-0.363*	(0.212)	0.057	(0.127)
Kids	-0.053	(0.038)	0.109***	(0.041)	0.008	(0.036)
Experience						
Years of work experience	-0.006	(0.009)	-0.002	(0.012)	-0.009	(0.007)
Years of managerial experience	0.020**	(0.009)	0.014	(0.012)	0.013*	(0.007)
Current busn. owner w/ full-time wage emp.	0.220	(0.135)	-0.525	(0.298)	0.153	(0.124)
Current busn. owner w/ part-time wage emp.	0.054	(0.194)	-0.164	(0.263)	-0.065	(0.156)
Current busn. owner w/ no wage emp.	0.124	(0.200)	0.141	(0.202)	0.102	(0.129)
Financial resources						
Household net worth	0.0001	(0.0003)	-0.00002	(0.004)	0.0002	(0.0002)
Household income	-0.026	(0.017)	0.007	(0.012)	-0.009	(0.010)
Expected revenue in first year of operation	0.00003	(0.000004)	0.00003**	(0.000001)	0.000009	(0.000008)
Number of hrs per week spent on a wage job	-0.015***	(0.004)	-0.029***	(0.03)	-0.021***	(0.002)
Number of hrs per week leisure	-0.013	(0.010)	0.001	(0.011)	0.011	(0.007)
Ability and effort help start business (1=completely agree, 5=completely disagree)	-0.178***	(0.072)	0.260***	(0.095)	-0.319***	(0.107)
Startup result of a learning process (1=completely agree, 5=completely disagree)	0.250***	(0.060)	0.042	(0.065)	0.015	(0.103)
Risk tolerance variable: 1 if alpha type of busn., 0 if beta type of busn.	-0.042	(0.132)	-0.616***	(0.215)	-0.798***	(0.189)
Part-time entrepreneur dummy variable (1 if Yes, 0 if No)					0.839	(0.684)
Interacted effects						
Part-time entrepreneur X Ability					-0.532***	(0.131)
Part-time entrepreneur X Learning					0.240**	(0.118)
Part-time entrepreneur X Risk tolerance					0.775***	(0.219)
Industry Dummies	Yes		Yes		Yes	
Constant	2.291	(0.690)	2.135	(0.637)	1.650**	(0.219)
F	3.78		212.82		6.60	
R^2	42%		74%		45%	

Dependent variable is number of hours per week spent in business
Significant at *10%, **5%, ***1%. Standard errors in ()

DISCUSSION AND CONCLUSIONS

Part-time entrepreneurs are people working at their own businesses while also holding a paid outside job. One may argue that they need extra time to develop their entrepreneurial abilities. In a learning-by-doing setup, individuals might become part-time entrepreneurs because they do not know their entrepreneurial ability ahead of time. Initially, they would prefer to spend only a fraction of time in entrepreneurship, without the risk of starving if their ability turns out to be low. Based on their expectations, entrepreneurs choose the amount of time to spend in business and amount of capital to invest.

Attitude towards risk is another factor worth investigating more deeply. A common assumption in prior literature is that entrepreneurs are risk bearers. It originally comes from Knight (1921) and is more recently brought into light by Kihlstrom and Laffont (1979). Contrary to the concept of a risk-taker entrepreneur, there are some recent studies, both theoretical (Newman 2007) and empirical (Wu and Knott 2006), showing that risk aversion is more plausible among entrepreneurs.

I offer a model predicting that the proportion of time someone will spend in a start-up is proportionately related to the perception of their entrepreneurial competences, skills and abilities. Thus, people with a lower risk tolerance will spend less time in business, and are more likely to become part-time entrepreneurs.

I develop a set of three testable implications: people with a lower level of risk tolerance are more likely to choose part-time entrepreneurship; those with a lower risk tolerance and those who believe in their entrepreneurial ability spend less time in business. I test the implications empirically against data from the PSED. I estimated a probit model, where the dependent variable is the probability of becoming a part-time entrepreneur. My empirical findings show that entrepreneurs with a lower risk tolerance are more likely to be part-time entrepreneurs, an outcome that supports Porposition1.

Next, I estimated the effect of risk tolerance and ability on the amount of time entrepreneurs devote to their businesses. I performed the estimation separately for part-time and full-time entrepreneurs. I found that risk tolerance does not affect the amount of time part-time entrepreneurs spent in business. For full-time entrepreneurs, those with a lower risk tolerance spent less time in business. One possible explanation might be that part-time entrepreneurs have already decided against being involved on a full time basis, due to risk aversion and/or possibly other factors. Thus, given the fact that somebody is already a part-time entrepreneur, risk tolerance does not seem to affect how much time they will devote to their businesses. These results are in support of Proposition 2.

The results from the estimation of the effect of ability on the time spent in business show opposite effects for part-time versus full-time entrepreneurs. Part-time entrepreneurs who believe that their ability and effort will help in the start-up process spend more time in business, while full-time entrepreneurs holding the same believe spend less time in business. This results support Proposition 3. It might be that entrepreneurs who made the decision to be involved in their businesses on a full time basis have already taken their abilities into consideration.

ENDNOTES

1. Among companies started by part-time entrepreneurs are Apple, Dell, Facebook, Ford Modeling Company, Microsoft, Netscape, and Yahoo (Katz & Green, 2011).
2. Other studies on entrepreneurship and liquidity constraints include Blanchflower & Oswald (1998), Evans & Leighton (1989), Holtz-Eakin, Joulfaian & Rosen (1994), Cressy (1996), Xu (1998) and Hurst & Lusardi (2004).
3. PSED counterparts are also available for other countries. See, for example, Samuelsson & Davidsson (2009) in the case of Sweden and van Gelderen, Thurik & Bosma (2005) in the case of the Netherlands. Other studies about nascent entrepreneurship abroad employ alternative sources of information about the creation of new businesses, Wennberg & Lindqvist (2010), Caliendo, Fossen & Kritikos (2009), Wagner

(2007), Caliendo & Kritikos (2010), Carod, Solís & Bofarull (2007), Colombier & Masclet (2008) and Bergmann & Sternberg (2007).

4. In Evans & Jovanovic (1989) and Xu (1998) *w* is not a part of the entrepreneur's net income, because every individual is either an entrepreneur or a wage worker, but not both.

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