Determinants of Portfolio and Serial Entrepreneurship: Theory and an Application to Vietnam*

By

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Abstract

This paper deals with the issue of portfolio and serial entrepreneurship in Vietnam. We present an occupational choice model for entrepreneurs, in which, based on their individual skills and on the quality of their business, entrepreneurs can keep their original business, expand it in new sectors (portfolio entrepreneur), shut it down to either start a new one (serial entrepreneur) or to enter the labor market. We test our theory using a 10-year panel dataset of more than 4000 non-state manufacturing firms from 2001 to 2010. We estimate an occupational choice model and a survival model, using different methodological treatments to correct for unobserved heterogeneity and endogeneity. We find that (i) both serial and portfolio entrepreneurs are endowed with stronger human capital than their novice counterparts; (ii) high-skilled entrepreneurs facing low business quality are more likely to become habitual ones; (iii) the current business of a serial entrepreneur is endowed with less technological resources; (iv) regarding the impact of investment capital, both serial and portfolio entrepreneurs are more likely to run smaller and less capital intensive businesses; (v) finally, both serial and portfolio entrepreneurs survive longer than their novice counterparts do. Our findings shed new light on industrial policy in transition and post-transition countries, suggesting that public financial resources should be devoted also to serial and portfolio entrepreneurs, rather than only to nascent and start-up novice ones.

Keywords: Portfolio entrepreneurship, serial entrepreneurship, occupational choice, transition countries, industrial policy.

JEL codes: F02; L26; L53.

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1 Introduction

No opportunity is exploited nor does any venture come to exist, survive, or grow without entrepreneurs taking action. A substantial body of research has developed on the emergence of new entrepreneurial opportunities, arguing that some people are better at identifying and exploiting such opportunities than others (Shane, 2000). However, at the same time, opportunity-focused research has so far had little to say in relation to why some people become serial and portfolio entrepreneurs while others remain novice entrepreneurs (Carter and Ram, 2003; Parker, 2014).

In other words, while the choice between entering entrepreneurship for the first time (therefore becoming 'novice' entrepreneurs), and engaging in wage employment is largely explored in the literature (cf. among many others, Evans and Leighton, 1989; Santarelli et al., 2009), the study of habitual entrepreneurship is still relatively under-developed.

Habitual entrepreneurs are experienced entrepreneurs who own more than one business, either sequentially (serial entrepreneurs) or concurrently (portfolio entrepreneurs). They are widespread (Parker, 2014) and empirical studies (mostly in developed countries) do indicate that habitual entrepreneurs have superior economic performance (Wright et al., 1998; Westhead and Wright, 1999; Astebro and Bernhardt, 2003; Hyytinen and Ilmakunnas, 2007; Wiklund and Shepherd, 2008; Chen, 2013). It then becomes important to understand what transforms a novice entrepreneur into a habitual one.

In this paper we aim to contribute to this emerging area in two ways: First, we present a theoretical model of occupational choice, where, after learning the quality of the current business, entrepreneurs can choose to become habitual (either serial or portfolio), to remain novice, continuing their current business, or to return to the labor market as wage workers. We extend the Plehn-Dujowich’s (2010) occupational choice model by encompassing the additional possibility of portfolio entrepreneurship. Second, we test our model empirically, using a novel dataset from Vietnam. The purpose of the empirical part is two-fold: (i) exploring the impact of human capital, organizational technological/capabilities, and financial circumstances on the occupational choice of entrepreneurs; and (ii) exploring and comparing the survival of novice, serial and portfolio entrepreneurs given their individual characteristics and business quality, which is of importance to policy makers on allocating scarce resources and business development services within the country.

The availability of Vietnamese data is particularly interesting for a series of motives. Vietnam can be considered as a post-transition country, since it abandoned central planning in 1986, joined the Association of Southeast Asian Nations in 1995, liberalized trade with the United States in 2001 and became a member of the World Trade Organization in 2007. In the country’s transformation from a planned into a capitalist economy, a class of young and dynamic business owners in the
private sector with strong entrepreneurial spirit, started to play an important role in boosting economic growth. Moreover, despite the prevalence of habitual entrepreneurship as an engine for fast-growing companies and ‘therefore of key economic importance’ (Storey, 1994: 112), the factors constituting and determining behavior and roles of habitual entrepreneurs in those developing and transition countries which have been considered as a fertile repository of entrepreneurial activities (cf. Santarelli and Tran, 2013) are little understood and explored. Therefore, this study is also one of the first attempts to explore the issue of habitual entrepreneurship in transition countries. In Vietnam, the presence of habitual entrepreneurs, both of the portfolio and the serial type has been even more common than in advanced countries. Thus, the key question here is how these entrepreneurs perform after their first start-up, which ultimately leads to the assessment of their actual impact on economic growth. The Vietnamese experience offers a privileged environment to perform this analysis.

Finally, our study can shed new light on industrial policy-making, both in transition and in developed countries. Most of the support from the government (both in terms of financial resources, administrative support and business development services) so far has been limited to nascent and start-up novice entrepreneurs. Whether or not this is a sensible policy and one likely to boost economic growth depends on the relative performance of novice entrepreneurs vis à vis habitual ones.

The paper is organized as follows. Section 2 surveys the theoretical and empirical literature on novice, portfolio, and serial entrepreneurship. Section 3 presents an occupational choice model of serial and portfolio entrepreneurship. Section 4 describes the database. Section 5 discusses the econometric methodology and the empirical specification of our model. Section 6 gives an overview of the empirical findings, and section 7 concludes.

2 Literature review

From the theoretical viewpoint, an extensive theoretical literature analyzes the occupational choice between novice entrepreneurship and paid employment (for a review, see Parker, 2009). Recently, Plehn-Dujowich (2010) has proposed a more sophisticated model in which an entrepreneur has three occupational choices: wage employment, novice and serial entrepreneurship. In equilibrium, a highly-skilled entrepreneur shuts down a business of low quality to become a serial entrepreneur whereas a low-skill entrepreneur shuts down a business of low quality to enter the labor market. Further, a decrease in the wage or in the serial startup cost, or an increase in the startup capital, enhances the contribution of serial entrepreneurs to entrepreneurial activity and promotes new firm formation.
Very few theoretical contributions exist on portfolio entrepreneurship. Parker (2014) looks into three occupational choices: novice, portfolio, or serial entrepreneurs and claims that i) higher opportunity-exploitation ability is associated with portfolio entrepreneurship rather than with serial and novice entrepreneurship (see also Parker and van Praag, 2010); ii) a sequence of opportunities whose returns covary negatively (diversifying opportunities) promotes portfolio entrepreneurship at the expense of both novice and serial entrepreneurship; iii) synergies between successive opportunities promote portfolio entrepreneurship over novice entrepreneurship, unless the initial opportunity is sufficiently valuable; iv) individuals with low (moderate) (high) risk aversion are more likely to be serial (portfolio) (novice) entrepreneurs, respectively (for experimental evidence, see Koudstaal et al., 2015). In another theoretical paper aimed at singling out the possible relationship between the typology of entrepreneurship and the likelihood of a venture to be successful or doomed at failure, Sarasvathy et al. (2013) contend that entrepreneurs can amplify their expected success rates by designing their careers as temporal portfolios that exploit the contagion processes embedded in serial entrepreneurship. While the advantages from holding concurrent portfolios that exploit heterogeneity are well known within the field of the portfolio diversification literature, the same advantages can be achieved in the serial (entrepreneurship) context through contagion.

Also from the empirical viewpoint, portfolio entrepreneurship has not received all the deserved attention. In fact, portfolio entrepreneurship was largely ignored by researchers until the level of analysis shifted from the firm to the individual. Sieger et al (2011) propose that using the firm as the unit of analysis might lead to underestimate the prevalence of portfolio entrepreneurship, since owning and managing multiple businesses could be considered as a normal diversification activity at the firm-level. While the ultimate goal of strategic diversification is to maximize managerial efficiency or risk diversification, reasons for engaging in portfolio entrepreneurship may include growth aspirations, wealth, value maximization, and providing career opportunities for family members (Mulholland, 1997). In other words, portfolio entrepreneurship is a process through which entrepreneurial diversification occurs.

However, significant differences among the three types of founders have been identified in the existing empirical literature. These attain to the entrepreneur’s personal background, but also to the firm’s organizational level.

Several studies have underlined the cruciality of the entrepreneur’s personal background. In a paper dealing with 621 firms in the UK, Westhead and Wright (1998) find that habitual entrepreneurs were younger than novice ones when they started their first business. Focusing on a sample of 440 entrepreneurial ventures in China, Li et al. (2009) show that habitual entrepreneurs
are better at developing networks and at managing organizations than novices, although they do not necessarily achieve higher levels of venture performance. It seems that habitual entrepreneurs may be subject to “entrepreneurial euphoria” and tend to be overconfident about their understanding of market dynamics.

Comparing 2,253 novice and habitual entrepreneurs in Sweden, Wiklund and Shepherd (2008) observe that, in general, higher endowment of human and social capital enhances the likelihood of being involved in portfolio entrepreneurship. Whereas more educated novice and habitual founders are more likely to engage in portfolio entrepreneurship, habitual founders tend to engage in subsequent acts of portfolio entrepreneurship more commonly than novice founders. In turn, novice and habitual founders who use business networks more frequently are more likely to engage in portfolio entrepreneurship than those who use business networks less frequently. Presenting 4 case studies of family firms with explicit portfolio entrepreneurial activities, Sieger et al. (2011) show that industry-specific human capital is positively associated with portfolio entrepreneurship in family firms, with decreasing relevance at later stages of the portfolio entrepreneurship process. Meta-industry social capital (defined in terms of political networks and business networks developed beyond the core industry of the family) is found to be positively related to portfolio entrepreneurship, with increasing relevance at later stages of the portfolio entrepreneurship process.

Focusing on the role of innate ability in serial entrepreneurship, Chen (2013) finds for a young cohort of U.S. firms between 1979 and 1994 that learning by doing is less important than selection on ability in explaining both the formation and the early performance of serial businesses. The only exception to this empirical regularity occurs when an entrepreneur creates a new firm in an industry closely related to her past business experience.

Under certain circumstances, and substantially consistent with the theoretical prescription of Sarasvathy et al. (2013) summarized above, individuals choose habitual entrepreneurship as a way to overcome the limits to firm growth encountered by single business ownership. This has been shown to be the case of developing countries, in relation to which a literature dating back to Long (1979) has highlighted the prevalence of multiple business ownership of the portfolio entrepreneurship type. This leads Carter and Ram (2003) to conclude that whenever individual firm growth is restricted, for example by fiscal or sectoral considerations, multiple business ownership may be used as an instrument for achieving growth through the development of a portfolio of entrepreneurial interests.

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2For an enlightening case-study showing how this strategy was pursued in the Italian petrochemical industry, see Zamagni (2007).
As far as the organizational level is concerned, Westhead et al. (2005) observe, for a sample of 354 firms in Scotland, that portfolio entrepreneurs have more diverse experiences, and more resources and organizational capabilities (skills, knowledge, et.) than serial entrepreneurs. Besides, on average, they seem to offer more attractive growth prospects. Tihula and Huovinen (2010), focusing their analysis to a sample of 245 Finnish firms with 20-49 employees provide interesting empirical evidence about the presence of managerial teams in small firms. They distinguish solo entrepreneurs (i.e. entrepreneurs who run by themselves the firm that they own) from entrepreneurs who share responsibility with small groups of managers from different functional areas and other key persons (managerial team). Their findings show that solo entrepreneurship is more common among the novice entrepreneurs, and that there are more management teams in firms owned by portfolio entrepreneurs than in firms owned by serial entrepreneurs. Of course this result might indicate that these firms are bigger than other firms.

By definition, ex-entrepreneurs meanwhile turned wage employees would become serial entrepreneurs should they decide to re-enter entrepreneurship over time. Using a longitudinal matched employer-employee database comprising 176,747 entrepreneurs in Portugal, 19,074 of which re-enter entrepreneurship after having worked as paid workers, Amaral et al. (2011) study the possible impact of ex-entrepreneurs’ general (education, skills, abilities) and specific human capital (skills and knowledge relevant to managing and operating a business) on their likelihood of re-entering entrepreneurship over time. Results show that not only the success or failure of individuals’ previous entrepreneurial experience plays a role on re-entry, but also their endowment of human capital. Particularly, a negative effect of general human capital and a positive effect of specific human capital on the hazard of becoming serial entrepreneurs is found.

Interestingly, having been a habitual entrepreneur in the past might facilitate the future creation of a subsequent or concurrent new business. According to Rerup (2005), habitual entrepreneurs may get stuck in their success and failure trap. First, those who lack experience generally frame a problem and search for solutions from their past experience, i.e. they are still learning. It becomes harder for them to recognize industry and technological changes, and thus modify the heuristics that worked in the past. They repeat actions that appeared to have produced the success or experiment with new ideas hoping to find alternatives that will make their next venture successful.

Sometimes, the economic activities of entrepreneurs are not confined to the ownership of a firm. In fact, they are found to encompass a variety of income-generating activities, such as wage labor, non-earned income and profit from secondary business ventures, in which case we observe portfolio entrepreneurship. Carter et al. (2004) study the behavior of 18,561 business owners in the
UK to detect the relative importance of different income-generating activities for entrepreneurs. Over one quarter of business owners are found to have additional income sources: interestingly, 22.3% of portfolio entrepreneurs report a dependence on one business as their main source of income suggesting that their enterprise portfolio contains one main firm and one or more smaller and less profitable firms. Among novice, single business entrepreneurs, 27.5% rely upon ‘other’ income-generating activities. In general, income that is earned from wage employment, accrues from investments, or derives from pensions or social security is vital to the overall survival and viability of the owner and her firm. The plurality of income-generating activities and of the sources of financing for firms is particularly common in developing and transition countries. In this respect, our study represents an important contribution, analyzing the experience of a fast growing and dynamic post-transition economy, like Vietnam is.

3. The Theoretical Model

In this Section, we extend the model in Plehn-Dujowich (2010), introducing portfolio entrepreneurship. Time is infinite and discrete. There is a continuum of entrepreneurs, characterised by a idiosyncratic level of opportunity exploitation ability (or entrepreneurial skill) \( s \in [0, \infty) \), which is observable and distributed according to the function \( G(\cdot) \).\(^3\) We assume that entrepreneurs are price takers; that they cannot take a short position in risky investments; and that they are subject to a standard budget constraint and credit rationing. This implies that they are unable to acquire more capital after start-up. Let \( K \) be the initial investment in physical capital. Such startup capital \( K \) evolves according to \( K_1 = \beta (1 - \delta) K \) where \( \delta \in (0,1) \) is the rate of capital depreciation or utilization of resources, and \( \beta \in (0,1) \) is the time discount factor. We assume no initial entry cost. Thus, an individual with skill \( s \) has two choices: he may either become a novice entrepreneur or enter the labor market as an employee. In the latter case, the individual’s lifetime earnings are equal to \( w_s \), where \( w \) is the exogenous wage (Jovanovic, 1994; Jovanovic and MacDonald, 1994).

An entrepreneur launches a business with an initial investment \( K \). The business is characterized by an uncertain quality \( q \in [0, \infty) \), distributed according to the cumulate density function \( F(\cdot) \).\(^4\) Following Plehn-Dujowich (2010), the profits for an entrepreneur with skill \( s \) running a business with quality \( q \) are \( \pi(q, s) K \), where \( \pi_s > 0 \) and \( \pi_q > 0 \). Also, \( \pi_{qs} > 0 \), i.e., entrepreneurial skills

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\(^3\) The distinctive traits of an entrepreneur’s human capital (education and experience) are typically used as indicators of entrepreneurial skill. We follow this practice in the empirical part of this paper.

\(^4\) As indicators of business quality we use initially unknown organizational capabilities, such as technological and innovation capabilities that result in successful R&D activities or allow the firm to absorb knowledge from outside.
and organizational capabilities are complements. A profit function satisfying these assumptions is 
\[ \pi(q, s)K = qs^{1+\alpha}K, \text{ with } \alpha > 0. \]

After learning the quality of his business, a novice entrepreneur has four choices: (i) maintain his 
business in operation; (ii) shut down the business to enter the labor market; (iii) shut down the 
business to launch a new venture, thus becoming a serial entrepreneur. Such operation will cost him 
a proportion \( T \in (0,1) \) of his remaining capital; (iv) set up another business besides the current one 
to exploit a new opportunity. In this case, he becomes a portfolio entrepreneur. Since he cannot 
obtain more capital by assumption, he has to invest a proportion \( \lambda \in (0,1) \) of his remaining capital 
in the new venture. In analogy with the serial entrepreneurship case, the cost of such operation is a 
proportion \( T\lambda \) of his remaining capital.

Since we are interested in studying cases in which both serial and portfolio entrepreneurship are 
feasible, we assume that the cost \( T \) of launching a new firm is not too high. Particularly, as shown in 
Appendix 1, we need that \( T < \frac{\lambda}{1+\lambda^2-\lambda}. \)

Let \( V(q, s, K) \) denote the value function of an entrepreneur with skill \( s \) who is currently running a 
business with quality \( q \). After the first period as novice, the entrepreneur learns the quality of his 
business and has to decide whether to maintain the business in operation, shut down the business to 
enter the labor market, shut down the business to launch a new venture, or launch a new business 
besides the current one. Of course, he will choose in order to maximize his expected profits, and the 
Bellman equation is given by

\[
V(q, s, K) = qs^{1+\alpha}K + \beta \max \left\{ V_c(q, s, (1-\delta)K); ws; E_s[V_s(q', s, (1-T)(1-\delta)K)]; E_p[V_c(q, s, (1-\delta)\lambda K) + V_s(q', s, (1-\delta)(1-\lambda)K)] \right\}
\]

where \( V_c \) denotes the continuation value of maintaining the business and \( V_s \) denotes the present value of 
setting up a new venture.

We can thus derive the following Proposition, which is illustrated in Figure 1. The proof is in 
Appendix 1.

**Proposition 1.** In equilibrium, the occupational choices of individuals are as follows. There exists 
quality thresholds \( \hat{q} > \bar{q} \), and skill levels \( \bar{s} > \bar{s} > s \), such that

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5 Notice that the adopted profit function presents an elasticity with respect to skill equal to \( 1 + \alpha \) and thus greater than 
the elasticity of labor income with respect to \( s \) (which is equal to 1). This is in line with the empirical literature (see 
Plehn-Dujowich, 2010 and references therein).

6 With no loss of generality, if an individual exits entrepreneurship, he loses all his remaining capital.

7 The parameter \( \lambda \) represents the optimal minimum investment size for that type of business.
1. An individual with skill \( s \in [0, \bar{s}) \) (i.e., low-skilled individual) never becomes an entrepreneur and enters the labor market.

2. An individual with skill \( s \in [\bar{s}, \infty) \), (i.e., a high-skilled individual) becomes a novice entrepreneur, and then, after the first period:
   a. An entrepreneur with skill \( s \in [\tilde{s}, \bar{s}) \), (i.e. low-skilled entrepreneur)
      i. If business quality \( q \in [0, \tilde{q}(s)) \), he shuts down his current business to enter the labor market.
      ii. If business quality \( q \in [\tilde{q}(s), \infty) \), he maintains his current business in operation.
   b. An entrepreneur with skill \( s \in [\bar{s}, \tilde{s}) \) (i.e., an averagely skilled entrepreneur)
      i. If business quality \( q \in [0, \bar{q}) \) (i.e., a bad business), he shuts down his current business to enter the labor market.
      ii. If business quality \( q \in [\bar{q}(s), \infty) \) (i.e., an average business), he dismantles a portion \( 1 - \lambda \) of his current business and invests a proportion \( \lambda \) of his remaining capital in a new venture, becoming a portfolio entrepreneur.
      iii. If business quality \( q \in [\bar{q}(s), \infty) \) (i.e., a good business), he maintains his current business in operation, remaining a novice entrepreneur.
   c. An entrepreneur with skill \( s \in [\tilde{s}, \infty) \) (i.e., a high-skilled entrepreneur)
      i. If business quality \( q \in [0, \tilde{q}) \) (i.e., a bad business), he shuts it down to launch a new venture and thus becomes a serial entrepreneur.
      ii. If business quality \( q \in [\tilde{q}(s), \hat{q}) \) (i.e., an average business), he dismantles a portion \( 1 - \lambda \) of his current business and invests a proportion \( \lambda \) of his remaining capital in a new venture, becoming a portfolio entrepreneur.
      iii. If business quality \( q \in [\hat{q}, \infty) \) (i.e., a good business), he maintains his current business in operation, remaining a novice entrepreneur.

4. Data description

The dataset used in our empirical investigation is a 10-year panel of Vietnamese small and medium private manufacturing enterprises covering the period from 2001 to 2010. The dataset is extracted from five waves of the Danish International Development Agency (DANIDA) surveys
(carried out in 2002, 2005, 2007, 2009, and 2011) providing highly detailed information on various aspects of entrepreneurs and their firms. These SMEs surveys stemmed from the collaboration of different institutions: the Central Institute for Economic Management (CIEM) in Hanoi, Vietnam and the Ministry of Labor, Invalids and Social Affairs of Vietnam, the Department of Economics of the University of Copenhagen and the Royal Embassy of Denmark in Vietnam. The surveys are designed with the objective of collecting and analyzing data representative of the private sector as a whole in Vietnam. This means that not only large or formally registered enterprises are interviewed, but also a substantial number of non-registered household / family businesses are studied in order to gain a comprehensive understanding of the SMEs dynamics in Vietnam. Including firms unregistered with the authorities is an important contribution in capturing the significant impact of the informal sector as a unique entrepreneurial feature of Vietnam.

Despite being carried out at different points in time, all the surveys use a questionnaire sharing the same structure and many of the same features to ascertain that the way they are implemented is as similar as possible. Further, the analysis of the development of enterprises is possible when they are traced and followed up over time. The 2011 study made use of the sample collected from the 2009 survey which in turn was a follow-up of the 2007 one, and so on. Each survey round provides financial information and economic data of the two most recent years. For instance, the 2011 survey provides such information for 2009 and 2010; the 2009 survey does for 2007 and 2008. Thus, in aggregation, this makes up an unbalanced 10-year panel dataset with exiting and entering firms during those 10 years.

The surveyed sample was drawn randomly from a complete list of enterprises, where a stratified sampling procedure was used to make sure that an adequate number of enterprises with different ownership structures was included for each province. We thus have households, private firms, partnerships / cooperatives, limited liability and joint stock companies (for a comprehensive understanding of the surveys, see Rand and Tarp, 2007). For reasons of implementation, ten provinces were chosen for the stratified sampling: two urban cities (Hanoi and Hochiminh City), and seven provinces (Hai Phong, Ha Tay, Phu Tho, Nghe An, Quang Nam, Khanh Hoa, Lam Dong and Long An). The population of non-state manufacturing enterprises is based on the Establishment Census and the Industrial Survey 2004-2006 from the General Statistics Office (GSO, 2007).

The sample adopted in our analysis was extracted from the original master dataset based on the following criteria: (i) Since our analysis focuses on the occupational choice of entrepreneurs through entering, maintaining or exiting entrepreneurship, we focus on individuals and not on firms. Particularly, we focus on the owners. Individuals answering the questionnaire could be either the owners or the managers of the firms, we include only the former. We are therefore implicitly
assuming that owners, rather than managers, are fully responsible for entrepreneurial decisions on maintaining, closing or expanding their businesses, which is plausible and realistic for SME’s. (ii) Given that we study the behavior of individual entrepreneurs, rather than that of firms, we classified a reported change of ownership in the current survey as an exit of the ex-owner in the previous survey from entrepreneurship, even though the firm is still in operation with a different owner. The current owner will be recoded as a new entrepreneur. To sum up, we follow the life of entrepreneurs for the 10-year period, rather than the life of firms. Our extracted sample consists of 18,850 observations covering 4508 entrepreneurs. Table 1 documents the survival rate of entrepreneurs to link the five surveys in our sample. An entrepreneur was marked as ‘dead’ when he either declared in the survey that the business had been shut down or that there had been a change of ownership through a sales transaction.

<table>
<thead>
<tr>
<th>Survey</th>
<th>2002</th>
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<th>2007</th>
<th>2009</th>
<th>2011</th>
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<td><strong>Categories</strong></td>
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<td>of surveyed firms</td>
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<td>Surviving entrepreneurs in 2002</td>
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<tr>
<td>Surviving from 2002</td>
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<td>New entrants in 2005</td>
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<td>Surviving from 2005</td>
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<td>New entrants in 2007</td>
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<td>Surviving from 2007</td>
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<td>New entrants from 2009</td>
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<td>Surviving from 2009</td>
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<td>New entrants in 2011</td>
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<td><strong>Total analyzed entrepreneurs</strong></td>
<td>1050</td>
<td>2350</td>
<td>2189</td>
<td>2010</td>
<td>1826</td>
</tr>
</tbody>
</table>

The dataset contains a wide range of variables on entrepreneurial demographic characteristics, technological and organizational capabilities, and economic performance of firms which can be used for the empirical analysis. The sample includes 3156 novice entrepreneurs (70%), 225 portfolio entrepreneurs (5%); and 1127 serial entrepreneurs (25%). It is obvious that SMEs’ owners are more vulnerable to the challenges from the external environment, they are more likely to fail in their initial start-ups and then attempt to restart as serial entrepreneurs, rather than holding the risk of setting up multiple businesses simultaneously. This explains the relatively small proportion of portfolio entrepreneurs in our sample. No statistically-significant differences were found among the three groups of entrepreneurs with regard to their main industrial activity. In terms of their geographical location, almost all portfolio entrepreneurs are located in urban cities with an
abundance of business opportunities (Hanoi, Hochiminh city) whereas serial entrepreneurs are somewhat evenly distributed across 10 provinces.

5 Econometric Strategy

5.1 Hypotheses

It is our research interest to investigate what leads an entrepreneur to choose a specific occupational choice after learning the quality of their current business. In order to address such issue, ideally we should consider a two-stage process in which, upon learning the quality of his current business in the first stage, the entrepreneur decides whether to exit, remain or expand. In other words, current business quality leads to new occupational choices. However, our dataset does not allow us to observe the future choices of the entrepreneur given his current business performance. We only can tell who exits entrepreneurship and who remains during the 10 years of our observational period. Instead, we can observe the past occupational choices of the entrepreneur and the subsequent performance and survival of his current business, i.e. the occupational choice leads to the current business performance / survival.

Therefore, to test the predictions of our theoretical model, we investigate two equations as follows: an occupational choice equation (i.e., the likelihood of being a novice, a serial or a portfolio entrepreneur) and a survival equation (i.e., the likelihood of exiting the current business). Moreover, we will attempt to test from part 2 of Proposition 1 onwards.

By means of the first equation, we can investigate what determines the entrepreneur to become a serial or a portfolio entrepreneur given his time-invariant entrepreneurial skills (education, experience, age, gender) and his time-variant business quality (proxied by technological capabilities) and financial conditions. Interaction terms between entrepreneurial skills and business quality will be included to partly address point b and c of Proposition 1, part 2. Due to the limitation of our data as mentioned above, we are not able to capture the evidence for a causal relation from the current business quality to the future occupational choice of the entrepreneur. However, since entrepreneurial skills such as education and industry experience are somewhat invariant overtime, we can explore the causal relationship between business owners’ entrepreneurial skills and their propensity to become novice or habitual entrepreneurs given their current business quality. We assume that, ceteris paribus, (i) habitual entrepreneurs generally have higher entrepreneurial skills

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8 Unfortunately, we cannot observe the entrepreneurs’ behavior after their exit, and thus fail to conclude whether they exit the business permanently or temporarily, whether they enter paid employment or search for other entrepreneurial opportunities. The surveys from which our data were extracted follow up the life of firms, rather than the life of entrepreneurs after their exit.

9 Obviously, the surveys do not consider individuals who are not entrepreneurs, and thus we cannot test point 1 with our data.
than their novice counterparts; (ii) a novice entrepreneur with a high-quality business is more likely to remain a novice one; and (iii) a novice entrepreneur with higher education, facing a low-quality business is more likely to become a habitual entrepreneur.

The survival equation aims to investigate what determines the entrepreneur to close his business, i.e., to exit entrepreneurship, given his entrepreneurial skills, current business quality and financial conditions. This equation can addresses directly point \(a\) and partly point \(b, c\) of Proposition 1, part 2. Particularly, with the interaction term between entrepreneurial skills and current business quality, we are able to determine whether a low or averagely-skilled entrepreneur facing a low-quality business exits entrepreneurship (points \(a.i, b.i\)), while still remaining in entrepreneurship with a high-quality business (point \(a.ii\)). On the other hand, we also study the interaction effects of entrepreneurial skills, business quality, and the likelihood of being a serial / portfolio entrepreneur in the survival equation. From such interaction terms, although we cannot test whether a highly-skilled entrepreneur facing a low-quality business will be more likely to become a habitual entrepreneur (as stated exactly in our theory), we can conjecture that a habitual entrepreneur facing a low-quality business will be less likely to exit entrepreneurship, and that this effect is even stronger when the habitual entrepreneur is endowed with high entrepreneurial skills.

To sum up, we propose the following hypotheses:

**H1:** In general, novice entrepreneurs are more likely to have lower entrepreneurial skills than habitual entrepreneurs (serial and portfolio) ; and thus

**H2:** Facing a low quality business, novice entrepreneurs with lower entrepreneurial skills are more likely to exit entrepreneurship; but

**H3:** Facing a low quality business, novice entrepreneurs with higher entrepreneurial skills are more likely to become habitual (serial or portfolio) entrepreneurs

### 5.2. Methodology

Entrepreneurial life is often dynamic and discontinuous, with periods spent out of entrepreneurship and reentering (such as temporary inactivity, parental leave, labor market pull). If these occupational decisions (year after year) are correlated with unobserved factors affecting entrepreneurial performance, estimations are likely to be biased. Different estimation techniques have been proposed to take into account the unobserved heterogeneity and the sample selection bias that would result in individual effects to be correlated with the explanatory variables (for a review, see Dustmann and Rochina-Barrachina, 2007). Taking these problems into account, to test H1, H2, and H3, we propose a two-stage process as follows:

**a. The occupational choice equation**
The occupational choices of the entrepreneur are mutually exclusive. After learning the quality his current business, the occupational outcome for entrepreneur \( i \), \( y_i \) is one of \( m \) occupational alternatives (wage employee, novice, serial or portfolio entrepreneur). We set \( y_i = j \) if the outcome is the \( j \)th alternative, \( j = 1, 2, ..., m \). The probability that the outcome for entrepreneur \( i \) is alternative \( j \), conditional on his entrepreneurial skills \( (s_i) \), on the business quality \( (q_i) \) and the initial capital investment \( (K_i) \) of his current business is

\[
p_{ij} = \Pr(y_i = j) = F_j(s_i q_i K_i, \theta), \quad j = 1, ..., m; i = 1, ..., N
\]  

(2)

where different functional forms of \( F_j(.) \) correspond to different multinomial models. Only \( m - 1 \) of the probabilities can be freely specified because their probabilities sum to one. For instance, \( F_m(.) = 1 - \sum_{j=1}^{m-1} F_j(.) \). Multinomial models therefore require a normalization.

In this paper, we apply the multinomial logit model since its parameter estimates are easier to interpret than in some other multinomial models.

b. The survival equation

This equation explores the likelihood that each type of entrepreneurs (novice, serial and portfolio) exits entrepreneurship \( (z_i) \) given his entrepreneurial skills \( (s_i) \), his current business quality \( (q_i) \), and his financial investment \( (K_i) \). The dependent variable \( z_i \) takes only two values: exit or remain, so its distribution is unambiguously Bernoulli. Thus,

\[
z = \begin{cases} 
1 & \text{(exit) with probability } p \\
0 & \text{(remain) with probability } 1 - p 
\end{cases}
\]

Given our interest in modeling \( p \) as a function of \( s_i, q_i, K_i \), there is no loss of generality in setting the outcome values to 1 and 0. The probability mass function for the observed outcome, \( z \), is \( p^z(1 - p)^{1-z} \), with \( E(z) = p \) and \( Var(z) = p(1 - p) \). A regression model is formed by parameterizing \( p \) to depend on an index function \( s'q'K'\beta \), where \( \beta \) is a vector of unknown parameters. Particularly,

\[
p_i \equiv \Pr(z_i = 1 \mid s q K) = F(s'_i q'_i K'_i \beta) \quad (3)
\]

Similar to the occupational choice equation, MLE will be applied to maximize the associated log-likelihood function

\[
Q(\beta) = \sum_{i=1}^{N} [z_i \ln F(s'_i q'_i K'_i \beta) + (1 - z_i)\ln(1 - F(s'_i q'_i K'_i \beta))]
\]  

(4)

where

\[
F(s'_i q'_i K'_i \beta) = \beta_1 s_{it} + \beta_2 q_{it} + \beta_3 K_{it} + portfolio_{it} + serial_{it} + \gamma_i + u_{it}
\]  

(5)
in which $\gamma_i$ represents time-constant factors like ability or motivation of the entrepreneur; $u_{it}$ is the usual error term. Since the selection indicator $portfolio_{it}$ and $serial_{it}$ could potentially link to unobserved $u_{it}$, this may represent an endogenous problem for our analysis. The ML estimators from (4) will be inconsistent if any regressor is endogenous. For instance, changes in personal life (maternity leave or getting married) and the macroeconomic environment (booms and busts) likely influence the entrepreneur’s unobserved motivations and efforts in sustaining, restarting or expanding his business, i.e. his occupational choices $portfolio_{it}$, $serial_{it}$. These motivations and efforts obviously affect his business survival $z_i$. In conclusion, $\gamma_i$ can be arbitrarily correlated with $s_{it}, c_{it}, K_{it}, portfolio_{it}$, and $serial_{it}$.

Indeed, the Wald test of exogeneity (Table 2) indicates the presence of endogeneity of $portfolio_{it}$, and $serial_{it}$ at a 0.05 significance level. Two broad approaches are used to correct for endogeneity in binary model: (i) the structural approach specifies a complete model that explicitly models both nonlinearity and endogeneity (ML or two-stage least squares can be used with this approach); (ii) the alternative semiparametric approach defines a residual for the equation of interest and uses an instrumental variables (IV) estimator (for a review, see Cameron and Trivedi, 2009). We will apply both approaches in our analysis.

For our second approach, we need to figure out IVs. Since necessity entrepreneurship is very common in transition countries (Brixiova, 2013), being an entrepreneur is one of the appealing occupational choices for the unemployed to escape from jobless situations and for employees in the labor market to improve their low and constant wages. Given favorable conditions, upon discovering potentially profitable opportunities, entrepreneurs are motivated to reenter entrepreneurship (serial entrepreneurs) or invest into another business (portfolio entrepreneurs) to improve their family income. We use two IVs to reflect these favorable conditions. The first IV correcting for the endogeneity of $portfolio_{it}$ and $serial_{it}$ is the share of kids (under 15 years old) in the entrepreneur’s household. Jennings et al. (2013) claim that entrepreneurial motivation is stronger when the entrepreneur has more children. Thus, we predict that the share of kids will be positively related to the likelihood of being a serial or portfolio entrepreneur. However, the number of kids in the family intuitively does not affect the survival of his firm. The second IV is the type of dwelling where the entrepreneur stays: a villa / permanent self-contained house or an unsettled house. This reflects the economic condition of the entrepreneur which strongly influences his propensity to enter or diversify into a new venture. With the same necessity reasoning, the entrepreneur will have stronger incentives to re-launch a firm or expand his current one in order to boost up his current poor living conditions. But the survival of his firm certainly has no relation with whichever type of his dwelling.
Our two endogenous regressors \( \text{portfolio}_{it} \) and \( \text{serial}_{it} \) are modeled as a function of exogenous regressors and IVs:

\[
\begin{align*}
\text{serial}_{it} &= \pi_1 s_{it} + \pi_2 q_{it} + \pi_3 K_{it} + \pi_4 \text{kidshare}_{it} + \pi_5 \text{dwelling}_{it} + \sigma_{it} \\
\text{portfolio}_{it} &= \delta_1 s_{it} + \delta_2 q_{it} + \delta_3 K_{it} + \delta_4 \text{kidshare}_{it} + \delta_5 \text{dwelling}_{it} + \nu_{it}
\end{align*}
\]

(6)

The structural model approach specifies the distributions of \( F(s_i'q_i'K_i'\beta) \), \( \text{portfolio}_{it} \) and \( \text{serial}_{it} \) in (5) and (6). It is assumed that \((u_i, \sigma_i, \nu_i)\) are jointly normally distributed. For this approach, estimation is by ML. Alternatively, the less structural approach (semi-parametric) uses the IV estimation methods for the linear regression model. This requires fewer distributional assumptions, though if linear IV is used, then then binary nature of the dependent variable \( z_{i} \) (exit or remain) is ignored. Estimation is by two-stage least-squares (2SLS).

c. Variables

**Entrepreneurial survival:** Dummy variable that attains value 1 if the entrepreneur leaves entrepreneurship, and 0 otherwise. The entrepreneur exits entrepreneurship in two scenarios: (i) he himself closes his business (for instance, because of bankruptcy) or (ii) he sells his business, so a change of ownership is reported.

**Categories of entrepreneurs:** A categorical variable presenting different, mutually exclusive occupational choices for an entrepreneur. The variable attains value 1 if the entrepreneur is a serial entrepreneur, 2 if he is a portfolio entrepreneur, and 0 if he remains a novice entrepreneur. Serial entrepreneurs are those who answered ‘yes’ to the question “before establishing the present enterprise, did you own any other enterprise?”. Portfolio entrepreneurs are those who answered ‘yes’ to the question “does the owner currently have more than one enterprise?”

**Serial entrepreneur / Portfolio entrepreneur:** Dummy variables respectively attaining value 1 if the individual is either a serial or a portfolio entrepreneur, and 0 otherwise.

**Explanatory variables:** Based on the model presented above, we introduce three groups of explanatory variables: (1) entrepreneurial skills \( s_{it} \), proxied by human capital characteristics (number of schooling years, experience as an employee, experience as a manager, industry experience); (2) organizational and technological capacity \( q_{it} \), proxied by innovation intensity, the share of technical employees, and the share of employees with managerial knowledge and expertise over total labor; (3) total initial capital \( K_{it} \) in each year, proxied by the logarithm of total asset of the firm.
Group 1: Human capital is assumed to be one of the main drivers of successful entrepreneurship, increasing the owners’ capacity to pursue generic entrepreneurial tasks and to discover and exploit business opportunities (Shane and Venkataraman, 2000). Start-up entrepreneurs with a greater endowment of human capital should be more efficient in running their business than those with less human capital (Santarelli and Tran, 2013). Thus, human capital is a proxy for entrepreneurial skills. Among human capital components, education, as prior knowledge, increases a person’s stock of information and skills useful for the pursuit of an entrepreneurial opportunity, improves entrepreneurial judgement (Shane, 2000), enhances entrepreneurial alertness (Westhead et al., 2005), and boosts up entrepreneurial performance (Van der Sluis et al., 2003). Education is measured by the number of schooling years for each entrepreneur. With respect to the experience of entrepreneurs, we include three types of experience. Industry experience has been found to have a strong effect: entrepreneurs are more likely to be successful if they have preexisting knowledge of buyers and suppliers, and understand operational issues in their industry (Bosma et al., 2004). Since entrepreneurship plays a core organizing function, managerial experience can be transformed into entrepreneurial skills to improve entrepreneurial performance (Van Praag, 2005). However, empirical evidence on the effect of managerial experience upon entrepreneurship is mixed (Bosma et al., 2004). Finally, we consider also labor force experience (i.e., having previously worked as an employee), although there is little evidence supporting the view that labor force experience has a meaningful impact on venture performance (Bosma et al., 2004). These experience variables are dummies which attain value 1 if the entrepreneur holds the corresponding experience, and 0 otherwise.

Group 2: Technological and organizational capabilities enable firms to develop new products and processes and to absorb knowledge from outside more effectively (Cohen and Levinthal, 1990; Spulber, 2014). They are proxied by three variables. First, innovation intensity measured as the ratio of the investment on innovation activities and the total annual revenue of the firm. We allow for a non-linear relationship by including its squared value in the regression. Second, the share of technical employees in the total labor force of the firm, which reflects the internal technological capacity and the skills endowment that help firms to absorb incoming spillovers and protect their knowledge from various appropriation mechanisms (Garcia-Quevedo et al., 2014). Third, the share of managerial employees who possess managerial knowledge and expertise that facilitates organizational change, thus allowing the firm to respond to dynamic and competitive challenges.

Group 3: The initial financial situation of the entrepreneur determine his likelihood to incur in capital constraints, and thus shape his subsequent entrepreneurial performance (Dawson et al.,
Three variables will be adopted to reflect the initial capital investment of the entrepreneur: (i) the economic size of the firm, i.e. the logarithm of the total assets of the firm. A quadratic term is also added to establish a non-linear relationship between the initial financial investment and entrepreneurial performance; (ii) the debt ratio of the firm (ratio of total debts to total assets), to isolate the effect of a firm’s leverage capacity on its performance;11 (iii) whether or not the entrepreneur owns the land housing the firm’s main production facility.

Control variables: Beside age and gender of the entrepreneur, we include firm size, taken as the natural logarithm of the total labor force. A quadratic term is also added to establish a non-linear relationship between firm size and its performance. We then isolate location and ownership type of the firm. Finally, a dummy is added to take any divergence or mismatch arising from different surveys into account. Appendix 3 presents the descriptive summary statistics and pair-wise correlation matrix of all adopted variables.

6 Estimation results

6.1 The occupational choice equation

Table 2 presents the results of the ML estimation of the multinomial occupational choice model when novice entrepreneur and serial entrepreneur are respectively used as the base category. Changing the base category enables us to interpret and compare estimation results across mutually exclusive occupational choices. So, for instance, when novice entrepreneurs are used as the base category, parameters measure the effect of the regressors as compared to novice entrepreneurs. Similarly, when serial entrepreneurs are used as the base category, the effect measured by the parameters should be interpreted in comparison with serial entrepreneurs. Regressors are jointly statistically significant at the 0.01 level (likelihood ratio test $\chi^2(44) = 8690^{**}$).

Looking at the first model, in which the base category is novice entrepreneurs, (first two columns in Table 2), the signs of most of the estimated parameters are strikingly contradictory between the serial and the portfolio equation (e.g., this is true for most of the variables proxying business quality, financial circumstances and for most control variables, whereas the signs of the estimated parameters of human capital variables are consistent for both equations).

Entrepreneurial skills $s$ have a significant effect on the propensity to engage in habitual entrepreneurship. Education, industry experience, and managerial experience all increase the propensity of an occupational transition to habitual entrepreneurship and this effect is consistent

---

10 An entrepreneur with personal saving covering total investment does not need to acquire external loans that may put his business at sustainability risk.

11 While Opler and Titman (1994) find that highly leveraged firms lose a substantial market value and impose greater risks to owners and creditors than their more conservatively financed competitors. Teece (1982) finds that debts reduce the chances of bankruptcy through flexible asset deployment.
across serial and portfolio entrepreneurs. Both serial and portfolio entrepreneurs are endowed with stronger human capital than their novice counterparts. They are more likely to spend longer years in education, possess richer experience from the industry and have previously worked as managers. For example, if the entrepreneur were to increase his schooling years by one year, the multinomial log-odds for serial entrepreneurs relative to novice would increase by 0.044 units, while holding all other variables in the model constant, whereas those for portfolio relative to novice would increase by 0.098 units. This pool of formal and tacit knowledge enables them to seize business opportunities timely and efficiently through either re-establishing a new venture after temporarily exiting entrepreneurship (serial) or diversifying into a new (possibly related) business (portfolio) (Stam et al., 2006; Spulber, 2012; Santarelli and Tran, 2013; Santarelli and Tran, 2016). This supports hypothesis H1, according to which, in general, novice entrepreneurs are more likely to have lower entrepreneurial skills than habitual entrepreneurs. However, labor force experience from previously working as an employee has a negative impact on the entrepreneurs’ motivation to take further entrepreneurial risks rebuilding a failed business or expanding their current one. For them, the opportunity cost of restarting or expanding their business is significantly higher than staying still or returning to paid employment; and thus employee experience may stimulate entrepreneurs to shut down their business to enter the labor market if the quality of their business is not up to their expectation (Hyytinen and Ilmakunnas, 2007).

With respect to the effect of organizational quality $q$ on the transition to habitual entrepreneurship, innovation intensity and the share of technical employees yield opposite results for the propensity to become serial and portfolio entrepreneurs. While the latter increases the propensity to expand the current business (portfolio), reducing the likelihood to restart after exit (serial), innovation intensity seem to be crucial for expansionary efforts only (and not statistically significant for serial entrepreneurs). Managerial resources, on the other hand, play an essentially important role for both restarting and expanding the current business. The current business of a serial entrepreneur is therefore endowed with less technological resources (i.e., lower investment into innovation activities and fewer R&D employees), than the one of both a novice and a portfolio entrepreneur. A possible explanation of such finding is that innovation increases the firm’s external absorptive capacity and requires high sunk costs to develop a corresponding large internal knowledge base. Thus, portfolio entrepreneurs are more motivated to invest heavily in innovation and technological skills in order to achieve greater adaptability and ability to absorb knowledge spillovers in new industries / businesses. Serial entrepreneurs, on the other hand, given their start-up experience, would rather remain relatively flexible and simple, so that they may be able to reboot their business, possibly in another business line. Technological resources which are industry-
specific appear as a huge investment cost deterring their restarting efforts. Nevertheless, the final variable indicating organizational capabilities (i.e., the share of managerial employees) is positively associated with the likelihood of being a habitual entrepreneur. Managerial knowledge and expertise are crucial for both serial and portfolio entrepreneurs to initiate any structural and organizational changes resulting in either resolving the current business to launch a new venture or diversifying into a new business.

The interaction between entrepreneurial skills and business quality tells us some interesting results. First, the significant and positive interaction of managerial experience and managerial resources in both columns indicates that keeping the level of managerial quality of the business constant, novice entrepreneurs are more motivated to become habitual (either serial or portfolio) entrepreneurs when they have previous managerial experience. Thus possessing managerial skills strengthens their motivation to relaunch or expand their business no matter what quality the business is endowed with. Second, the indirect effect of prior industry experience on habitual entrepreneurial propensity is amplified for novice entrepreneurs possessing rich technological resources, although this effect is only significant for the transition to portfolio entrepreneurship. Thus, entrepreneurial motivation to either reboot or expand business will be enhanced by a relevant combination of individual-level entrepreneurial skills and business-level organizational quality, specifically by high industry experience of the entrepreneur and low industry-specific technological resources of the firm or high managerial experience and low managerial resources. These two findings support hypothesis H3 proposing that, facing a low quality business, novice entrepreneurs with higher entrepreneurial skills are more likely to become habitual (serial or portfolio) entrepreneurs.

Regarding the impact of investment capital K, we consistently find that habitual entrepreneurs are more likely to reside in smaller and less capital intensive businesses (variable Form size). It is easier for entrepreneurs (possibly necessity-driven) with less capital invested in the current business to mobilize their free working capital and other sources of fund to re-launch another business or take over other businesses. In the same fashion, owning the land housing the main production facility would deter the motivation to re-launch a new venture to reap short-term profit opportunities, since owners can rent the land they own to substitute for their entrepreneurial income. However, land ownership is favourable to business diversification activities of portfolio entrepreneurs. They can easily exploit different entrepreneurial opportunities on the land they own without any concerns for the rent or leasing-related risks. The statistically significant parameters of debt ratio in the portfolio equations indicate that indebted entrepreneurs are more likely to become portfolio entrepreneurs who can use their leverage conditions to undertake other profitable but risky
investments. But since their numerical magnitude are quite small (0.000), debt ratio seems not to exert an economic impact on habitual entrepreneurship different from the one for novice entrepreneurs. In Vietnam, entrepreneurs are generally more interested in short-term profit opportunities, rather than long-term growth. Thus, it is reasonable that their businesses remain small or highly-leveraged so that they can exit, diversify, and re-enter flexibly.

Finally, there is a consistent finding that older firms and male entrepreneurs are more likely to become habitual entrepreneurs. Businesses need to be strong and experienced enough when their owners initiate the transition to the serial and portfolio stage. Regarding the effect of IVs, we do witness the prevalence of necessity-driven entrepreneurship: entrepreneurs with more kids are more motivated to become habitual entrepreneurs with the hope of raising income for the family. Poorer entrepreneurs, who live in bad condition houses, and unemployed individuals have higher incentives to try and grasp potential entrepreneurial rewards with the hope of getting out of their poverty.

The second model (last two columns in Table 2) presents estimation results when serial entrepreneurs are used as the base category. Interpretation needs to be adjusted with comparison being made to serial entrepreneurs. Estimation results in the third column (i.e., the likelihood to be a novice entrepreneur rather than a serial one) are thus exactly the same as in the first column but with an opposite sign (the first column measured the likelihood to be a serial entrepreneur rather than a novice one). The final column measures portfolio propensity compared with serial one. A noteworthy finding that supports our theory is that portfolio entrepreneurs are more likely to have higher entrepreneurial skills and business quality than serial ones. Especially a high-skilled serial entrepreneur having a high business quality will be motivated to expand his business (and thus become a portfolio one), rather than continuing to play the restart-up game. This is indicated by the significant and positive interactions between entrepreneurial experience and organizational resources.

### Table 2: Occupational choice for novice entrepreneurs

<table>
<thead>
<tr>
<th>Base category</th>
<th>Novice</th>
<th>Serial</th>
</tr>
</thead>
</table>

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### Table 2: Estimation Results of the Survival Equation

<table>
<thead>
<tr>
<th></th>
<th>Serial</th>
<th>Portfolio</th>
<th>Novice</th>
<th>Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schooling years</td>
<td>0.044** (0.007)</td>
<td>0.098** (0.013)</td>
<td>-0.044** (0.007)</td>
<td>0.054** (0.014)</td>
</tr>
<tr>
<td>Industry experience</td>
<td>0.463** (0.055)</td>
<td>0.846** (0.086)</td>
<td>-0.463** (0.055)</td>
<td>0.383** (0.092)</td>
</tr>
<tr>
<td>Employee experience</td>
<td>-5.895** (0.167)</td>
<td>-1.298** (0.082)</td>
<td>5.895** (0.167)</td>
<td>4.597** (0.183)</td>
</tr>
<tr>
<td>Managerial experience</td>
<td>0.393** (0.157)</td>
<td>0.293* (0.124)</td>
<td>-0.393** (0.157)</td>
<td>-0.101 (0.23)</td>
</tr>
<tr>
<td>Innovation intensity</td>
<td>-0.087 (0.087)</td>
<td>0.457** (0.134)</td>
<td>-0.087 (0.087)</td>
<td>0.369** (0.145)</td>
</tr>
<tr>
<td>Innovation intensity squared</td>
<td>0.017 (0.017)</td>
<td>-0.083** (0.029)</td>
<td>0.017 (0.017)</td>
<td>-0.065* (0.031)</td>
</tr>
<tr>
<td>Share of technical employees</td>
<td>-0.256* (0.124)</td>
<td>1.624** (0.541)</td>
<td>-0.256* (0.124)</td>
<td>1.368** (0.546)</td>
</tr>
<tr>
<td>Share of managerial employees</td>
<td>0.496** (0.147)</td>
<td>1.43** (0.195)</td>
<td>0.496** (0.147)</td>
<td>1.927** (0.221)</td>
</tr>
<tr>
<td>Managerial exp x share of managerial employees</td>
<td>2.105** (0.767)</td>
<td>0.286* (0.122)</td>
<td>-2.105** (0.767)</td>
<td>2.391** (0.951)</td>
</tr>
<tr>
<td>Industry exp x share of technical employees</td>
<td>0.311 (0.180)</td>
<td>1.537** (0.579)</td>
<td>-0.311 (0.180)</td>
<td>1.848** (0.589)</td>
</tr>
<tr>
<td>Land ownership</td>
<td>-0.135** (0.045)</td>
<td>0.635** (0.083)</td>
<td>0.135** (0.045)</td>
<td>0.77** (0.088)</td>
</tr>
<tr>
<td>Debt ratio</td>
<td>0.000 (0.000)</td>
<td>0.000* (0.000)</td>
<td>-0.000 (0.000)</td>
<td>0.000* (0.000)</td>
</tr>
<tr>
<td>Investment capital</td>
<td>-0.000** (0.000)</td>
<td>-0.000** (0.000)</td>
<td>0.000** (0.000)</td>
<td>0.000** (0.000)</td>
</tr>
<tr>
<td>Investment capital squared</td>
<td>0.000 (0.000)</td>
<td>0.000** (0.000)</td>
<td>-0.000 (0.000)</td>
<td>-0.000** (0.000)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.565** (0.081)</td>
<td>-0.946** (0.114)</td>
<td>0.565** (0.081)</td>
<td>-1.511** (0.128)</td>
</tr>
<tr>
<td>Firm size squared</td>
<td>0.111 (0.016)</td>
<td>0.16** (0.021)</td>
<td>-0.111 (0.016)</td>
<td>0.272** (0.024)</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.001 (0.002)</td>
<td>0.019** (0.003)</td>
<td>-0.001 (0.002)</td>
<td>0.019** (0.004)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.002 (0.002)</td>
<td>-0.001 (0.003)</td>
<td>0.002 (0.002)</td>
<td>0.001 (0.004)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.171** (0.048)</td>
<td>0.072 (0.083)</td>
<td>-0.171** (0.048)</td>
<td>0.243** (0.088)</td>
</tr>
<tr>
<td>Share of kids in the household</td>
<td>0.096* (0.0519)</td>
<td>0.259* (0.133)</td>
<td>-0.096* (0.0519)</td>
<td>-0.356 (0.216)</td>
</tr>
<tr>
<td>Type of dwelling</td>
<td>0.269** (0.046)</td>
<td>0.397** (0.079)</td>
<td>-0.269** (0.046)</td>
<td>0.127 (0.084)</td>
</tr>
<tr>
<td>Private firms</td>
<td>0.611** (0.096)</td>
<td>0.481** (0.159)</td>
<td>-0.611** (0.096)</td>
<td>-0.129 (0.171)</td>
</tr>
<tr>
<td>Partnership / cooperatives</td>
<td>-0.203 (0.139)</td>
<td>0.576** (0.233)</td>
<td>0.203 (0.139)</td>
<td>0.78** (0.25)</td>
</tr>
<tr>
<td>Limited liability</td>
<td>0.627** (0.091)</td>
<td>0.679** (0.151)</td>
<td>-0.627** (0.091)</td>
<td>0.051 (0.161)</td>
</tr>
<tr>
<td>Joint stock</td>
<td>-0.029 (0.2)</td>
<td>0.583* (0.278)</td>
<td>0.029 (0.2)</td>
<td>0.612* (0.311)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.738** (0.173)</td>
<td>-3.833** (0.292)</td>
<td>0.738** (0.173)</td>
<td>-3.095** (0.314)</td>
</tr>
</tbody>
</table>

Likelihood ratio test \( \chi^2(44) = 8690** \)

No. of observations 17984 17984

Note: *: significant at 5% level; **: significant at 1% level. Standard errors are in parentheses.

### 6.2 The survival equation

Table 2 presents the estimation results of the survival equation in three treatments: (i) random effect logit model; (ii) IV probit model; and (iii) IV 2SLS model. The first model assumes that all regressors are exogenous while the other two models use IVs to control for the endogenous serial and portfolio selection.
The Wald test of exogeneity for serial and portfolio selection variables indicates the endogeneity of these variables at a 0.05 significance level. Thus, the IV probit and the IV 2SLS model, which treat endogeneity, give more consistent and efficient estimation results than the random-effect logit model does. The higher and more significant Wald statistic of the IV probit model also indicates its superiority, based on which we interpret the results.

In general, both serial and portfolio entrepreneurs are less likely to exit entrepreneurship across all three methodological treatments. Their businesses on average could survive longer, especially when they are highly-skilled. On the other hand, the statistically significant and negative interaction effect of entrepreneurial experience and business quality indicates that, ceteris paribus, entrepreneurs will have a stronger motivation to remain in their business if they have both high entrepreneurial skills and high business quality. In other words, this supports hypothesis H2, which proposes that novice entrepreneurs with lower entrepreneurial skills facing a low quality business are more likely to exit entrepreneurship.

Other noteworthy findings include: (i) consistent with previous empirical findings (see Santarelli and Tran, 2013), human capital, measured by years in education and different types of entrepreneurial experience, is significantly and positively associated with the entrepreneur’s survival. Entrepreneurs with industry experience and management experience are also found to outperform their unexperienced peers; (ii) Technological and organizational capabilities, proxied by the share of technical and managerial employees, play a crucial role in sustaining small and medium-sized firms (consistent with Tran and Santarelli, 2014). These capabilities enable entrepreneurs to be responsive to dynamic changes in the market and thus transform their entrepreneurial efforts into observable material outcomes; and (iii) we found a consistent negative and nonlinear effect of capital investment on firm exit (although not economically strong): other things kept constant, more initial investment capital will lead to higher survival propensity; but once an optimal level of investment capital is reached, a further increase in investment will not lead to the proportional increase in entrepreneurial survival. And finally, smaller and younger firms are found to be more vulnerable to bankruptcy; and older entrepreneurs can survive longer due to their accumulated experience. The insignificant ‘share of kids’ and ‘type of dwelling’ in the random-probit model indicate the exogeneity of these variables in explaining the survival propensity; and thus they are valid IVs for the IV probit and IV 2SLS model.

Table 3: Exit of novice, serial and portfolio entrepreneurs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Random-effect logit model</th>
<th>IV probit model1</th>
<th>IV 2SLS model</th>
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<th>Feature</th>
<th>Serial entrepreneurs</th>
<th>Portfolio entrepreneurs</th>
<th>Schooling years</th>
<th>Industry experience</th>
<th>Employee experience</th>
<th>Managerial experience</th>
<th>Serial x experience</th>
<th>Portfolio x experience</th>
<th>Innovation intensity</th>
<th>Share of technical employees</th>
<th>Share of managerial employees</th>
<th>Managerial exp x share of managerial employees</th>
<th>Industry exp x share of technical employees</th>
<th>Land ownership</th>
<th>Debt ratio</th>
<th>Investment capital</th>
<th>Investment capital squared</th>
<th>Firm size</th>
<th>Firm size squared</th>
<th>Firm age</th>
<th>Age</th>
<th>Gender</th>
<th>Share of kids in the household</th>
<th>Type of dwelling</th>
<th>Private firms</th>
<th>Partnership / cooperatives</th>
<th>Limited liability</th>
<th>Joint stock</th>
<th>Intercept</th>
<th>Wald statistic</th>
<th>Wald test of exogeneity</th>
<th>Observations</th>
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<tr>
<td>Partnership / cooperatives</td>
<td>0.192 (0.133)</td>
<td>0.152** (0.064)</td>
<td>0.182* (0.086)</td>
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<tr>
<td>Limited liability</td>
<td>0.34** (0.084)</td>
<td>0.194** (0.039)</td>
<td>0.226** (0.056)</td>
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<td>0.302** (0.108)</td>
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<td>-1.306** (0.171)</td>
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<tr>
<td>Wald statistic</td>
<td>$\chi^2(27) = 3856.83^{**}$</td>
<td>$\chi^2(25) = 852.38^{**}$</td>
<td>$\chi^2(25) = 429.13^{**}$</td>
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<td>Wald test of exogeneity</td>
<td>$\chi^2(2) = 3.85$</td>
<td>$\chi^2(2) = 3.7$</td>
<td>$p$-value $= 0.049$</td>
<td>$p$-value $= 0.054$</td>
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Note: *: significant at 5% level; **: significant at 1% level. Standard errors are in parentheses. \(^1\): clustering at the firm or entrepreneur level

7 Conclusions
Although serial and portfolio entrepreneurs constitute a large component of entrepreneurial activity, the body of theory about habitual entrepreneurship is relatively under-developed. This paper attempts to explain why some people become serial or portfolio while others remain novice entrepreneurs, or even exit entrepreneurship to return to the labour market. We propose a model wherein an individual not only has the usual options of becoming an entrepreneur or a paid worker, but also once an entrepreneur, he faces the possibility of either shutting down his business to return the labor market or launch a new venture and even carrying the option to manage multiple businesses simultaneously. In equilibrium, an entrepreneur maintains his business in operation if it is sufficiently profitable regardless of his skills. If the firm is of low quality, a low-skilled entrepreneur shuts down it to enter the labor market. A medium-high skilled one will become a serial entrepreneur, launching a new venture. A high skilled entrepreneur also has the option of becoming a portfolio entrepreneur if the business quality is up to an acceptable level.

For empirical evidence, we test the relevance of the model using a rich dataset from Vietnam, a dynamic and fast-growing post-transition country in Southeast Asia. We obtain some noteworthy findings that support our model propositions. First, there is a consistency in the significant effect of entrepreneurial skill, proxied by education, industry experience, and managerial experience in increasing the propensity of occupational transition to habitual entrepreneurship. Thus, both serial entrepreneurs and portfolio entrepreneurs are endowed with stronger human capital than their novice counterparts. Second, the interaction between entrepreneurial skills and business quality supports our theory that low-skilled novice entrepreneurs having a low quality business will likely exit entrepreneurship to find other employment opportunities; but high-skilled ones facing low quality business will attempt to relaunch their business (and thus become serial entrepreneurs) or strengthen it through diversification activities (become portfolio entrepreneurs). On the other hand, the current business of a serial entrepreneur is endowed with less technological resources, i.e. lower investment into innovation activities and fewer R&D employees, than the one of a portfolio entrepreneur. In other words, portfolio entrepreneurs are more motivated to invest heavily in innovation and technological skills for greater adaptability and to absorb knowledge spillovers in new industries / businesses; whereas serial entrepreneurs, given their start-up experience, would rather remain relatively flexible and simple, aiming at short-term profit opportunities. Furthermore, regarding the impact of investment capital, we consistently find that habitual entrepreneurs are more likely to run smaller and less capital intensive businesses. Finally, both serial and portfolio entrepreneurs exhibit longer survival performance than their novice counterparts do. Other factors, like human capital, experience and technology, significantly affect entrepreneurial performance in a manner consistent with previous empirical findings in Vietnam (see Santarelli and Tran, 2013).
Although this study focuses on habitual founders of businesses, the theoretical section of the study has not focused specifically on other types of habitual entrepreneurs, such as serial corporate entrepreneurs. On the other hand, serial entrepreneurship entails entrepreneurs bouncing back from business failure. Vietnam is characterized by a dynamic market economy with numerous entrepreneurial opportunities; and thus, ‘failed entrepreneurs’ always have chances to return and try their luck. We have not separated serial entrepreneurship with different restart-up motivations in our model: learning from failure, experimenting with luck, or truly exploiting a newly-recognized opportunity. This will be a promising field for future research.

The present study has some implications for policy-makers, especially with respect to decisions concerning the allocation of resources and business development services to assist entrepreneurs. Most of the support from the government so far has been limited to nascent and start-up novice entrepreneurs, who, according to this study, seem to have poorer performance than habitual ones. Thus, it is time that policy makers in transition and post-transition countries target resources and supporting services to serial and portfolio entrepreneurs as a way to boost up national economic growth.
Appendix 1: Proof of Proposition 1

Assume first that an entrepreneur never shuts down his business to enter the labor market. Then, the entrepreneur has three options: (i) keep his current business; (ii) shut down his business to become a serial entrepreneur; (iii) open a new venture besides his current one, becoming a portfolio entrepreneur.

If the entrepreneur decides to keep his original business in operation, the present value of doing so is $V_c(q,s,K)$. This can be rewritten as follows, recalling the definition of profits in Section 3 above:

$$V_c(q,s,K) = qs^{1+\alpha}K + \beta V_c[q,s,(1-\delta)K] = qs^{1+\alpha}K + \beta(1-\delta)V_c(q,s,K) \quad (A1)$$

The second equality in expression (1) derives from the recursive nature of $V_c(q,s,K)$, so that $V_c(q,s,(1-\delta)K) = (1-\delta)V_c(q,s,K)$

Thus we have

$$V_c(q,s,K) = \frac{qs^{1+\alpha}K}{1-\beta(1-\delta)} \quad (A2)$$

which is strictly increasing in $q$, $s$ and $K$.

Let $V_s(q,s,K)$ denote the present value of shutting down the business to set up a new venture (being a serial entrepreneur):

$$V_s(q',s,K) = qs^{1+\alpha}K + \beta E[V(q',s,(1-T)(1-\delta)K)]$$

$$= qs^{1+\alpha}K + \beta(1-T)(1-\delta)E[V(q',s,K)] \quad (A3)$$

Let $V_p(q,s,K)$ denote the present value of maintaining (part of) the current business and launching also a new venture (being a portfolio entrepreneur):

$$V_p(q',s,K) = qs^{1+\alpha}K + E[V_c(q,s,\lambda(1-\delta)K) + V_s(q',s,(1-\lambda)(1-\delta)(1-T\lambda)K)] =$$

$$= qs^{1+\alpha}K + \lambda(1-\delta)E[V_c(q,s,K)] + (1-\lambda)(1-\delta)(1-T\lambda)E[V_s(q',s,K)] \quad (A4)$$

We know from Plehn-Dujowich (2010) that an entrepreneur with skill $s$ is indifferent between maintaining the business in operation versus shutting down the business to set up a new venture if $q = \hat{q}$, where $\hat{q}$ is unique and is defined as follows:

$$(1-\delta)V_c(\hat{q},s,K) \equiv E[V_s(q',s,(1-T)(1-\delta)K)] \quad (A5)$$

so that, using (A2)

$$\hat{q} = \left[\frac{1-\beta(1-\delta)(1-T)E[V_s(q',s,K)]}{s^{1+\alpha}K}\right] \quad (A6)$$

Similarly, an individual is indifferent between maintaining his business and investing part of his capital in a new venture, thus becoming a portfolio entrepreneur if

$$(1-\delta)V_c(\hat{q},s,K) \equiv \lambda(1-\delta)E[V_c(\hat{q},s,K)] + (1-\lambda)(1-\delta)(1-T\lambda)E[V_s(q',s,K)] \quad (A7)$$

Using (A2),

$$\hat{q} = \left[\frac{1-\beta(1-\delta)(1-T\lambda)E[V_s(q',s,K)]}{s^{1+\alpha}K}\right] \quad (A8)$$

Given that $\lambda \in (0,1)$, it is immediate to check that $\hat{q} > \hat{q}$.

27
The thresholds above were obtained comparing the various opportunities for the entrepreneur with the payoff from keeping his current business. However, a relevant threshold is the quality level \( q \) that renders the entrepreneur indifferent between becoming serial and portfolio. By definition, this occurs when, upon learning \( q \),

\[
(1 - T)(1 - \delta)E[V_s(q', s, K)] \equiv \lambda(1 - \delta)E[V_c(\tilde{q}, s, K)] + (1 - \lambda)(1 - \delta)(1 - T\lambda)E[V_s(q', s, K)]
\]

which can be rewritten as

\[
[(\lambda - \lambda^2 - 1)T + \lambda]E[V_s(q', s, K)] = \lambda E[V_c(\tilde{q}, s, K)] \quad (A9)
\]

Notice that, when \( T > \frac{\lambda}{1 + \lambda^2 - \lambda} \), then \( (\lambda - \lambda^2 - 1)T + \lambda < 0 \), which implies that the startup cost \( T \) is so high that for an entrepreneur it is never optimal to fully close his current business to invest in a completely new venture. Then, between serial and portfolio, the entrepreneur always chooses portfolio, for every \( q \in (0, \hat{q}) \). Given that we are interested in a case where both portfolio and serial entrepreneurship coexist, we assume that \( T < \frac{\lambda}{1 + \lambda^2 - \lambda} \).

Then, from (A10), portfolio and serial yield the same expected profit if

\[
E[V_c(\tilde{q}, s, K)] = mE[V_s(q', s, K)] \quad (A11)
\]

where \( m = \frac{(\lambda - \lambda^2 - 1)T + \lambda}{\lambda} \). Then, again using (A2), we obtain

\[
\tilde{q} \equiv \frac{[1 - \beta(1 - \delta)]mE[V_s(q', s, K)]}{s^{1 + \alpha K}} \quad (A12)
\]

It can be checked immediately that \( \tilde{q} < \hat{q} \), since \( m < 1 - T \). Thus, for given skill \( s \), if \( q \in (0, \tilde{q}) \), upon learning the quality of his business, the entrepreneur becomes serial; if \( q \in [\tilde{q}, \hat{q}) \), the entrepreneur becomes portfolio; if \( q \in [\hat{q}, \infty) \), the entrepreneur keeps his current business.

The above thresholds were obtained assuming that the entrepreneur never shuts down his current business to enter the labor market. In order to ascertain under which conditions this is an optimal behavior, we need to compute the expected value of the entrepreneur. Given the thresholds above, ex-ante, the expected value of the entrepreneur is

\[
E[V(q', s, K)] = \int_{0}^{\tilde{q}} V_s(q', s, K)dF(q) + \int_{\tilde{q}}^{\hat{q}} V_p(q', s, K)dF(q) + \int_{\hat{q}}^{\infty} V_c(q, s, K)dF(q)
\]

(A13)

Combining (A3), (A4) to compute \( E[V(q', s, K)] \) in (A13) and using (A2) we obtain the thresholds \( \tilde{q} \) and \( \hat{q} \), implicitly solving the following system of two equations in two unknowns:
\[
\begin{align*}
\frac{\hat{q}}{m} &= E(q) - \beta(1 - \delta) \int_0^\hat{q} q dF(q) + \beta(1 - \delta) \frac{1 - T}{1 - \lambda T} \int_0^\hat{q} q dF(q) + \beta(1 - \delta) \int_0^\hat{q} \hat{q} dF(q) \\
\frac{\hat{\hat{q}}}{1 - \lambda T} &= E(q) - \beta(1 - \delta) \int_0^{\hat{q}} q dF(q) + \beta(1 - \delta) \frac{1 - T}{1 - \lambda T} \int_0^{\hat{q}} \hat{q} dF(q) + \beta(1 - \delta) \int_0^{\hat{q}} \hat{q} dF(q)
\end{align*}
\]

(A14)

It can be seen that neither \( \hat{q} \) nor \( \hat{\hat{q}} \) depend on \( s \).

So far, we assumed that the entrepreneur never shuts down the firm to enter the labor market. For this to be optimal, it must be that the payoff from not shutting down upon learning \( q \) is higher than the earnings in the labor market. After the first period, if the entrepreneur does not leave to enter the labor market, he can shut down his current business to become serial, he can open a new firm besides his existing one, becoming portfolio, or he can keep his business. In order to study under which conditions entering the labor market is not optimal we need to consider the three cases separately.

The value from becoming a serial entrepreneur after one period, upon learning the quality of the current business, is \((1 - \delta)(1 - T)E[V(q', s, K)]\). From the definition of the threshold \( \hat{q} \), which does not depend on skill \( s \), we know that

\[
E[V(q', s, K)] = \frac{\hat{q} s^{1+\alpha K}}{(1 - \beta(1 - \delta))m}
\]

which is increasing in \( s \) and grows faster than \( ws \), since \( \alpha > 0 \).\(^\text{12}\) Hence, there is a unique value \( \tilde{s} \), such that \((1 - \delta)(1 - T)E[V(q', s, K)] \geq ws \) when \( s \geq \tilde{s} \) and \( \tilde{s} \) is equal to

\[
\tilde{s} = \left[ \frac{(1 - \beta(1 - \delta))mw}{(1 - \delta)(1 - T)\hat{q}K} \right]^{\frac{1}{\alpha}}
\]

(A16)

Similarly, the value from becoming a portfolio entrepreneur after one period \( s \) \((1 - \delta)(1 - T\lambda)E[V(q', s, K)]\), which is greater than \( ws \) for \( s \geq \tilde{s} \), where \( \tilde{s} \) is equal to

\[
\tilde{s} = \left[ \frac{(1 - \beta(1 - \delta))mw}{(1 - \delta)(1 - T\lambda)\hat{q}K} \right]^{\frac{1}{\alpha}}
\]

(A17)

It is immediate to see that \( \tilde{s} < \tilde{s} \). Thus, entrepreneurs with \( s > \tilde{s} \) are highly skilled: upon learning the quality of their current enterprise they become serial entrepreneurs if the quality of the business is below \( \hat{q} \), they become portfolio entrepreneurs if \( q \in [\hat{q}, \hat{\hat{q}}] \) and keep their current business if \( q > \hat{\hat{q}} \). Entrepreneurs with \( s > \tilde{s} \) do not have enough skill to become serial entrepreneurs, leaving their current business to start from scratch all over again. However, they may be able to start a new firm besides their current one. Such operation is less costly than starting a completely new business \((T\lambda \text{ as compared to } T)\) and therefore less skill \( s \) is required to make it profitable enough to outperform the labor market.

\(^{12}\) Notice that it is indifferent to obtain \( E[V(q', s, K)] \) from (A12) or from (A8). In fact, from (A14), \( \frac{\hat{q}}{m} = \frac{\hat{q}}{1 - \lambda T} \).
Consider now an individual who has to decide whether to enter the labor market or to become a novice entrepreneur, launching his first business. While his expected value on the labor market is $ws$, his expected value as entrepreneur is $E[V(q', s, K)]$, as given in (A13). Given the assumption of no initial entry costs, the individual optimally decides to become an entrepreneur if $E[V(q', s, K)] \geq ws$, that is, using (A15), if $s \geq \bar{s} = \left[\frac{(1-\beta(1-\delta))mw}{qK}\right]^\frac{1}{\alpha}$, where $\bar{s} < \bar{s}$. Thus, if $s \in (0, \bar{s})$, the individual enters the labor market directly, never investing in a business. If $s \in (\bar{s}, \bar{s})$, the individual is not sufficiently skilled to become either serial or portfolio but has enough skill to become an entrepreneur. Thus, he chooses between keeping the current business or shutting down to enter the labor market. If, upon learning the quality $q$, he decides to keep his business, his expected value is $V_C(q, s, (1-\delta)K)$. Then, he continues if $V_C(q, s, (1-\delta)K) \geq ws$, that is if $q \geq \bar{q}(s) = \frac{(1-\beta(1-\delta))w}{(1-\delta)s^\alpha K}$, which is decreasing in $s$ and, at $\bar{s}$, $\bar{q}(\bar{s}) > \bar{q}$. In this case, if the quality of his current business turns out to be low ($q < \bar{q}$), the entrepreneur shuts down his current business to enter the labor market.
### Appendix 2: Summary statistics and matrix of correlation

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<th>Ind exp</th>
<th>Empl exp</th>
<th>Mana exp</th>
<th>Inn intensity</th>
<th>Techni share</th>
<th>Mana share</th>
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<th>Land own</th>
<th>Debt ratio</th>
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*Note: * significant at 1% level. Observations: 18850.
Figure 1: Individual Occupational Choices
References


