LUND UNIVERSITY
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The Process of Firm's Entry, Survival and Growth: A Conceptual and Empirical Analysis

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Abstract: This study aims at providing a better understanding of the process of entrepreneurial activities. By reviewing recent literature on start-ups, it establishes the micro foundations of firm's entry and exit, etc., and characterizes the features of founder, firm and regional context. Statistical data of start-ups in 2005 and their performance in the following three years are drawn from Statistics Sweden, to allow empirical examination of the theoretical findings. This study suggests that the motivations for entrepreneurial activities are entrepreneurs' expectations on their characteristics and abilities; and the process of entrepreneurial activities consists of different phases and stages. For entrepreneurs the empirical findings exhibit the irrelevance of financial support, and the negative impacts of partnership. Policy-makers are advised to pay specific attention to regional environment for promoting business performance.

Key words: Entrepreneurship, entry, survival, growth, factors

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1. Introduction

Entrepreneurship has been commonly recognized as an underlying force of economic development, in particular in the sense of productivity improvement. Economic theories have frequently stressed the role of entrepreneurship in the last decade. As Enrico Santarelli and Marco Vivarelli conclude, "by serving as a conduit for both entirely new knowledge and knowledge spillovers, entrepreneurship is the missing link between investment in new knowledge and economic growth"[1].

However, the paucity of detailed explanation of entrepreneurial activities at micro level has largely limited the practical application, for both policy-makers and entrepreneurs. An explicit review on entrepreneurship-related literature made by Jeremy Short et al. pointed out the fact that "conceptual articles outnumber empirical studies, and empirical efforts often lack formal hypotheses and rigorous methods. These findings suggest that social entrepreneurship research remains in an embryonic state.[2]" To provide practical implications for entrepreneurs and policy-makers, rather than considering entrepreneurship as a holistic actor in the macro economy, it's necessary to understand the details of entrepreneurial activities, which calls on knowledge about the mechanisms of how entrepreneurial activities take place and evolve, and the role of factors in the process.

Although some efforts have been made to establish models for explaining the process of entrepreneurial activities (hereafter referred to as "the process") and exploring the role of some factors, those researches either overemphasize one aspect while neglecting others, or just post a list of factors without theoretical foundation. For instance, a large quantity of literature is devoted to understand a specific

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[1] Santarelli, Enrico, Vivarelli, Marco, "Entrepreneurship and the process of firms' entry, survival and growth", Industrial and Corporate Change Volume16, Issue3 (2007): pp. 455-488
[2] Short, Jeremy C. Moss, Todd W. Lumpkin, G. T., "Research in social entrepreneurship: past contributions and future opportunities", Strategic Entrepreneurship Journal, Volume 3, Issue 2 (2009): pp. 161-194

determinant of firm's post-entry performance, such as industry-specific variables[3], the entrepreneur-associated factors e.g. gender[4] and ethnic origin[5], contextual factors i.e. regional and spatial characteristics[6], etc. Those studies elaborate on the role of a certain factor or a series of sub-factors, for instance "region" as a series consists of regional economic condition, infrastructure, population, etc.; however, little is known about the overall picture of the process, e.g. entrepreneurs' decision-making, firms' performance over time. This study aims to give such an overview of the process.

As summarized by Jeremy Short et al.[7], in fact there are mainly three questions to be addressed by entrepreneurship studies: first, the outcome of entrepreneurial activities, i.e. their impacts on the business and the economy; second, the motivations for entrepreneurial activities; third, the process of entrepreneurial activities. The first question, as mentioned above, has been frequently stressed in previous studies since the term "entrepreneur" was coined. This study actually provides a throughout understanding of last two questions. For this purpose, it first divides the process into stages, and then investigates the role of factors in each stage. As a start point, chapter 2 reviews relevant theories to explain the research gap that this study proposes to fill in, namely the necessity of rethinking the process. In chapter 3 it summarizes models and factors that are concerned in the process, to demonstrate the overall mechanism as well as the microeconomic foundations of firm's entry, survival and growth. The theoretical findings are examined by empirical evidence. By drawing data from start-ups' statistics in Sweden, chapter 4 illustrates the overall picture of start-ups' performance, and provides empirical

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[3] Audretsch, D. B., and Mahmood, T., "New firm survival: New results using a hazard function", Review of Economics and Statistics, 77 (1995): pp. 97–103

[4] Boden, R., and Nucci, A., "On the survival prospects of men's and women's new business ventures", Journal of Business Venturing, 15 (2000): pp. 347–362.

[5] Holger Bonin, Amelie Constant, Konstantinos Tatsiramos, Klaus F. Zimmermann, "Native-migrant differences in risk attitudes", Applied Economics Letters, Volume 16, Issue 15, (2009): pp. 1581 – 1586

[6] Christine Tamasy, "Determinants of Regional Entrepreneurship Dynamics in Contemporary Germany: A Conceptual and Empirical Analysis", Regional Studies, Vol. 40.4 (April 2006): pp. 365–384

[7] Short, Jeremy C. Moss, Todd W. Lumpkin, G. T., 2009, p2

evidence for the impacts of specific factors. Chapter 5 gives the conclusion and suggestions.

2. Theories Review and the Need of Rethinking

2.1 Entrepreneurship and Economic Growth Models

Although entrepreneur is variously defined in relevant literature- "risk taker/manager"[8] as a function of the market in economics, "a societal function destroying old patterns and replacing them with new ones"[9] as an individual in behavioral science, or "the emergence of new organizations/opportunities"[10] as a process in management studies, etc. - it's quite clear that in general entrepreneur is the agent of innovation introduction. As it's being observed that entrepreneurship (innovation) accounts for significant part of economic growth, unsurprisingly more attention should be paid to it instead of factor investment/accumulation as in classical static growth models.

Innovation, or technological change, was treated as an exogenous factor in the early neoclassic growth models. The "residual" from this growth accounting approach, although had been refined by introducing more production factors and theoretically perfecting the concept, still turned out to be critical and remained unexplained. Labeling the residual as "TFP" to a certain extent reveals technology's impact on economic growth: in economics total-factor productivity (TFP) is the portion of output not explained by inputs, thus it can be deemed as a measure of technological change. However, it doesn't necessarily provide a solid theoretical background, i.e. it's hard to distinguish the contribution of technological upgrading from other possible factors that might also contribute to the residual. Not only had the lack of clear concept and measurement of technological change limited the explanatory power of this model, the unexplained causal links as well as weak assumptions

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[8] Lowell W. Busenitz, "Entrepreneurial Risk and Strategic Decision Making: It's a Matter of Perspective", Journal of Applied Behavioral Science vol. 35 no. 3 (September 1999): pp. 325-340
[9] Amitai Etzioni, "Entrepreneurship, adaptation and legitimation: A macro-behavioral perspective", Journal of Economic Behavior & Organization Volume 8, Issue 2 (June 1987): Pages 175-189
[10] Woolley, Jennifer L., "Studying the Emergence of New Organizations: Entrepreneurship Research Design", Entrepreneurship Research Journal, Vol. 1, Iss. 1 (2011): Article 5

concerning perfect competition, constant returns to scale, etc., violated its viability, in particular in explaining the role of innovation.

Later studies on innovation and economic growth have mostly followed two traditions, namely the evolutionary and neoclassical approaches. The neoclassic tradition considers innovation as "weak uncertain", where the possibility distribution of innovation is predictable. Together with some other assumptions, i.e., increasing returns to scale, innovation was integrated into those growth models. By introducing the notion of Schumpeterian competition, these new growth models take firm (or entrepreneur) innovation behavior into account, which provides reasonable explanations of how innovation happens at micro level- innovations are carried out by entrepreneurs. For instance, Philippe Aghion and Peter Howitt explain this process as "research firms are motivated by the prospect of monopoly rents that can be captured when a successful innovation is patented. But those rents in turn will be destroyed by the next innovation…"[11] The assumption of increasing returns to scale, on the other hand, is partly explained by the technological spillovers, as Bart Verspagen claimed, "even though the production functions of firms at the micro level are characterized by constant returns to scale, the R&D spillovers that flow from one firm to rest of the economy imply increasing returns at the aggregate level"[12]. Those spillovers can be realized by either imperfect IPR protections or network effects, through learning by doing, R&D investment, international trade involving R&D intensive firms, etc.

The evolutionary tradition, contrary to the neoclassic views, considers innovation as "strong uncertain", based on which the behavior rules are loosely defined, namely the "rules of thumb". Those behavior rules construct the micro foundation for evolutionary analysis which is much more realistic comparing to that of neoclassic

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[11] Philippe Aghion and Peter Howitt, "A Model of Growth Through Creative Destruction", Econometrica, Vol. 60, No. 2 (Mar., 1992): pp. 349
[12] Jan Fagerberg, David C. Mowery, Richard R. Nelson, "The Oxford handbook of innovation", Oxford University Press, USA (April 13, 2006): p503

approach. Rather than imposing all kinds of assumptions on individual and social behaviors, the evolutionary approach explains the aggregate economic performance by selection and the generation of novelty. The economic growth is therefore portrayed as selections of completely random mutations based on commercial efficiency, since these mutations are being constantly carried out, novelty and efficiency are also being constantly added to the economy. Besides this descriptive analyzing way, the evolutionary approach also provides some formal growth models. Nelson and Winter[13] built the first evolutionary growth model by using production techniques with a fix ratio of labor and capital, where heterogeneity is defined in terms of firms. In their model, novelty takes place by firms' search activities, which are initiated only when the firms' rates of return falls below a certain level.

2.2 Entry as a Vehicle for Technological Upgrading

An ideal implication from above discussed growth theories - assuming that entrepreneurs make their decisions (entry, exit, etc.) rationally - is that new firm formation is a vehicle for technological upgrading, which can be conducive to economic growth (at least in developed countries), employment generation and unemployment reduction. Either by creating something totally new or developing new combinations of existing resources, the entry and survival of new firms is generally accompanied with higher efficiency, which means lower unit product price or higher production (actually they are the same thing) in this context. Given that the productivity of existing firms is at a certain level, in a perfect competition market, the entry of a new firm with productivity below this level would be meaningless, since it wouldn't survive competition against existing firms and there is no room for their higher cost products. Therefore, for rational entrepreneurs, they would only make an entry decision when their firms are, or at least they believe so, more efficient than incumbent firms; and the survivals would be the truly more efficient

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[13] ibid, p500

firms that have higher productivity than the previous level. The higher efficiency of new entrants could be linked to firm-specific advantages from innovation, such as better product, optimized production process, better access to resources, etc., which lower cost or improve production efficiency, or both. In short, new firms should replace the obsolete old firms in this case, as Enrico Santarelli and Marco Vivarelli suggest, "one should observe a negative cross-sectional correlation between entry and exit rates, in particular over short-time intervals."[14]

In fact, the entry (or formation) of new firms may not always be on the right track. Even though the result of new firms' entry seems to be for improving the current economy in terms of technological upgrading etc., the motive of each firm's formation is certainly not that macro-oriented, instead, it's more concerned with individual entrepreneurs' needs and pursuits. As their needs and pursuits differ, the ideas of entrepreneurs to start up their business also could be varied. It's expectable that entrepreneurs are likely to try as many ways to innovate their business - so as to gain their firm-specific advantages - as possible. Most of these varieties will found unsuccessful, in other words, even less efficient comparing to existing firms; while some of them will lead the upgrading of current business. It's actually the economic manner of "survival of the fittest": personal motivates impel entrepreneurs to develop varieties, and market selection chooses the more efficient ones, on the whole this process promotes macro-economy upgrading, while at micro level it also determines the survival and exist of firms.

2.3 An Overview of New Firm Formation

As mentioned above, new firms are never formed for perfecting the overall economy, which means their formations are nor deliberately aimed at improving productivity - though higher productivity is vital for their survival and growth. In fact, new firm formation could be led by all kinds of motives and attempts, of which most are

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[14] Enrico Santarelli and Marco Vivarelli, "Entrepreneurship and the process of firms' entry, survival and growth", Industrial and Corporate Change, Volume 16, Number 3(2007): pp. 457

proven to be "entry mistakes". To gain an explicit understanding of the entry process and the succeeding market selection, it's necessary to investigate the motives of new firm founders.

Although entrepreneur is frequently described as profit speculator who knows how to organize business in an optimized/innovated way and keeps waiting outside the market till the expected level of profit exists in the market, in actual life the new firm founders are often less rational in the decision-making process. For instance, a large portion of new firm founders are motivated by the "escape from unemployment"[15]. Empirical evidence demonstrates the important role of job loss in fostering new firm formation, as Evans, L. B. and L. S. Leighton noted, "unemployed workers are about twice as likely to start businesses as employed workers."[16] At the regional level, it's also found that job loss is an important "push factor" in new firm formation, in addition to other factors like local industrial environment and externalities[17]. In this case the firm founders are more motivated by their desire to escape from unemployment, rather than rational expectations that their firms would have higher efficiency and better performance. Therefore the entry of those firmed can be hardly related to technological upgrading or productivity growth. As summarized by Enrico Santarelli and Marco Vivarelli, "entry may be determined ... 'progressive' determinants such as favorable economic perspectives and promising technological opportunities, but also 'regressive' determinants such as low wages and the actual condition of being (or the fear of becoming) unemployed.[18]" Besides economic factors such as profit expectations, employment situation, etc., studies indicate that non-economic factors are also, if not more, important concerning new firm formation. In fact, prevalent motivations for start up new firms are "the desire to be independent, the search for autonomy in the

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[15] ibid, p461
[16] Evans, L. B. and L. S. Leighton, "Small business formation by unemployed and employed workers", Small Business Economics, Vol. 2 Issue 4 (1990): 326
[17] Audretsch, D. B. and M. Vivarelli, "New firm formation in Italy", Economics Letters (1995): 48, 77–81
[18] Enrico Santarelli and Marco Vivarelli, (2007): pp. 461

workplace, aspiration to full exploitation of previous job experience and acquired ability, to desire to be socially useful, and to acquire improved social status"[19].

Product and process innovation, which are essential for technological upgrading etc. and supposed to be prevalent in the entry process, actually account for only a minority part (15-20%)[20] of new firms' formation. It's reasonable to argue that even though new firm's entry could be a vehicle for technological upgrading etc., it doesn't necessarily aim at it. Put another way, most of those entries could be just "entry mistakes", being related with "overconfidence", irrational motivations, unrealistic over-optimism, psychological attitudes (desire to be independent, etc., as mentioned above) etc. These turbulence and entry mistakes are inevitable and even dominant in the economy. On the other hand, the Schumpeterian "creative destruction" process, which assumes potential entrants behavior rationally on the basis of profit expectations, can be found in limited cases only.

In short, new firm formation is actually driven by heterogeneous reasons or motivations, rather than by only rational expectations as in conventional hypothesis. Consequently, the entry process is a mix of market turbulence, entry mistake, as well as classic creative destruction, which is the key way to realize technological upgrading, productivity growth and employment generation.

2.4 Firm's Survival and Growth

The market selection process generally determines the survival and growth of firms. However, considering how the market selection processes, the factors involved in firm's survival and growth would largely vary. There are literatures from different disciplines that try to explain the process of firm's survival and growth, such as strategic management, organizational studies, etc. The different focuses therefore lead to emphases on different sets of factors. For instance, strategic studies stress the role of managerial behaviors, while the organizational studies concentrate on the

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[19] ibid, p462
[20] ibid 463

role of organizational characteristics. It's reasonable to expect all the attributes of firms, accessibility of resources, characteristics of entrepreneurs, technological advancement of products, and contextual aspects, etc. would have their influences on the process.

This study deals with various factors involved in the process, with a focus on more universal characteristics. For instance, to identify the role of accessibility to rare resource - such as owning a monopolized technology - in the survival and growth process of a firm would not provide helpful implication for other firms. Instead, other factors, such as firm size, entrepreneur profile, etc., are more concerned in most firms. Although managerial variables are indubitably important in all firms' performance, it's hard to quantify or measure them. Thus they are neither included in this study.

2.5 The Need of Rethinking the Process

By the literature review in this chapter, it's shown that the process has been variously interpreted in previous studies due to the different research interests and disciplines. Unsurprisingly, the role of specific factor varies among different studies where different models and theories are applied to understand the process. In fact, even the selection of factors, i.e. which factors should be relevant in the process, and the division of the process, i.e. how the process should be divided into stages, remain controversial.

In order to figure out the details of the process including stage division and related factors, and further to help newly formed firms survive and grow, the next chapter of this paper explains the process by using market structure evolution models. It also discusses the role of factors on the basis of previous findings.

3. Decompose the Process: Mechanisms and Factors

3.1 Related Models

Previous efforts made to explain the evolution of market structure have also shed some light on understanding the process of firm's entry, survival and growth - in fact the market structure evolution (always denoted by firm size distribution) and the process are generally the same thing but perceived from different perspectives. Hence, two models which are frequently used in market structure studies are presented here as introduction to further discussion on the mechanisms of the process.

3.1.1 The Passive Learning Model

The passive learning model proposed by Boyan Jovanovic is basically a Bayesian model of "noisy" selection. The mechanism of his model is that the market selection of firms is accompanied by the discovery of certain characteristics, as he states: "efficient firms grow and survive; inefficient firms decline and fail. Firms differ in size not because of the fixity of capital, but because some discover that they are more efficient than others."[21]

This model suggests that the further development of a newly formed firm is largely determined by its initial characteristics (efficiency parameters), which the firm itself doesn't know. Those characteristics are time-invariant, and manifest as firm enters the market. In other words, firms know "the distribution of abilities, and therefore the likelihood of success (Audretsch and Mahmood, 1995)"[22], but they can only passively learn whether they possess the right abilities through their practices in the market. Through the learning process, some entrepreneurs find they are more (or less) efficient than others due to their initially endowed characteristics. With these

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[21] Boyan Jovanovic, "Selection and the Evolution of Industry", Econometrica, Vol. 50, No. 3 (May, 1982): pp. 649

[22] David B. Audretsch and Talat Mahmood, "New Firm Survival: New Results Using a Hazard Function", The Review of Economics and Statistics, Vol. 77, No. 1 (Feb., 1995): pp. 102

findings, each firm decides its strategy in every period: whether to exit, continue with the same size, grow in size, or reduce its productive capacity.

In Jovanovic's mode, entrepreneurs, as Bayesian learners, behave rationally on the basis of feedbacks from the market. Entry is motivated by entrepreneur's optimistic expectation on his ability (characteristics); therefore entry mistakes take place when entrepreneur rationally but mistakenly rates his ability. On the other hand, exit mistake may happen if entrepreneur unluckily decides to exit in response to unrepresentative feedbacks from the market.

3.1.2 The Active Learning Model

In Richard Ericson and Ariel Pakes's mode of active learning, a firm/an entrepreneur is motivated by "exploring a speculative idea or a perceived profit opportunity in some industry"[23]: the firm enters the market in order to learn to value of the expected opportunity. Unlike in Jovanovic's mode, firms here are supposed to know its own characteristics as well as its competitor's ones, along with the future distribution of industry structure, conditional on the current structure. Decisions of firms in every period are aimed at maximizing the "expected discounted value of future net cash flow, conditional on the current information set." As Ericson and Pakes describes:

"The firm invests to enhance its capability to earn profits in an environment characterized by substantial competitive pressure from both within and outside the industry. The stochastic outcome of a firm's investment, the success of other firms in the industry, and competitive pressure from outside the industry (both in the market and through entry) determine the "success" of the firm, i.e. its profitability and value..."[24]

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[23] Richard Ericson and Ariel Pakes, "Markov-Perfect Industry Dynamics: A Framework for Empirical Work",
The Review of Economic Studies, Vol. 62, No. 1 (Jan., 1995): pp. 55
[24] ibid, p54

In the active learning model, entrepreneurs behave rationally in response to the current information set concerning both their own characteristics and the market. Entry is also motivated by profit expectation, while entry mistakes take place due to "lags in observation of rivals' entry decision or just because entry investments take time"[25].

3.1.3 Summary

The difference between the active learning model and above mentioned passive learning model lies in the interpretation of firm characteristics: known and changeable in the active model, while unknown and time-invariant in the passive model. Similarly, the characteristics of traditional industries are almost all-known, i.e. new firms know the determinant factors in the market and the characteristics of themselves as well as their competitors, therefore they can deliberately aim at achieving such characteristics e.g. scale advantage (comparing with their rivals); on the contrary, the characteristics of high-tech industries are temporarily unknown, i.e. new firms don't know which characteristics really matter in the market and thus can't intentionally improve them, instead, they can only passively "learn" the characteristics after/through market selection. Given the similarities between the two models and industry types, it's unsurprising that empirical data shows "the evolution of the FSD in the Food and the Footwear & Clothing industries is consistent with the active learning model, while in the Electrical &Electronic Engineering and the Instruments industries it turns out to be consistent with the passive learning model."

Although the two models provide possible ways to understand firm's entry and growth, those interpretations are still rather vague for practical use: the mechanism of firm's decision making in each period - entry, develop, exit, etc.- is roughly explained as entrepreneur's expectation; the theoretical learning model is only

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[25] Francesca Lotti and Enrico Santarelli, "Industry Dynamics and the Distribution of Firm Sizes: A Nonparametric Approach", Southern Economic Journal, Vol. 70, No. 3 (Jan., 2004), pp. 445

indirectly examined by the ex-post statistical data of firm size distribution; the role of specific characteristic or efficiency parameter (these are referred to below as the "factor") is not clear. In sum, these models are more concerned with the evolution of market structure, rather than firm behaviors. It's thus necessary to further clarify the mechanisms of the process. For this purpose, we first investigate the determinants of the process, and then reconstruct the mechanisms that take the role of those determinates into account.

3.2 Factors

An important purpose of this study is to figure out what are the determinant factors in the process of firm's entry, survival and growth. The role of factors involved in the process is discussed below, respectively. Previous research findings are first presented, from which tentative rationales for explaining those factors' impacts are drawn. For easy reading, those factors are discussed in three groups: entrepreneur-associated factors, characteristics of the firm, and contextual aspects.

3.2.1 Entrepreneur-Associated Factors

Naturally enough, entrepreneurs' characteristics largely determine the entry, survival and growth of their firm(s), since they make all the decisions of entry, exit, daily operation, etc. One can even claim that every piece in the entrepreneur's life, internal or external, mental or physical, could accordingly have influence on his decision-making, and further on the performance of his firm. However, rather than exhaustively list the impacts of each characteristic, this study picks up only some aspects of entrepreneur profile to give a general view of its role in the process.

Gender has been frequently studies in this field. Empirical findings suggest that female entrepreneurs are less likely to success comparing with their male counterparts. As Arribas and Vila found in the Spain case, "the failure risk of businesses owned by women is significantly higher (184%) than the risk for male-

owned businesses."[26] And they argue that the disadvantage of female entrepreneurs could be caused by their worse financial situation and prior managerial experience. In general, it's accepted that gender has a strong impact on firm's entry, survival and growth, both due to financial and human capital reasons.

Ethnic origin and nationality also influence the process. It's expected that migrants and natives should differ in their risk attitudes due to their cultural backgrounds as well as the selection effect of migration, though these differences remain unclear. Conventional views assume that migrants are lower skilled than their cohort who stay in their home country, which means they are less risk averse. Provided that risk-preferences distributions are the same in the out- and in-migration countries, the migrants are then also less risk averse than the natives. Zimmermann et al.'s study in the Germany case provides empirical evidence for this view, according to their finding, "foreign nationals who have actually immigrated into the country are in general more risk averse than natives."[27]However, the two basic assumptions of this argument- migrants are drawn from the lower part of the skill distribution in their home country, and risk attitudes distribution are generally the same between the source and destination countries - are being challenged by empirical findings. Another interpretation of the selection effect of migration: regardless of the skill levels, migrants must be more risk like, mobile, and entrepreneurial than their cohort in the home country, and probably also the natives in the destination country. Besides its influences on risk attitude that is likely to influence entrepreneur's decision of new firm formation, ethnic origin and nationality also have impacts on firm's survival and growth. As Nahikari Irastorz found in his study on firms operating in the Basque Country between 1993 and 2003, "firms created by natives survive longer than those created by foreigners due to the liability of foreignness, i.e.,

[26] Iván Arribas and José E. Vila, "Human capital determinants of the survival of entrepreneurial service firms in Spain", International Entrepreneurship And Management Journal, Volume 3, Number 3 (2007): pp. 319

[27] Holger Bonin, Amelie Constant, Konstantinos Tatsiramos, Klaus F. Zimmermann, "Native-migrant differences in risk attitudes", Applied Economics Letters, Volume 16, Issue 15, (2009): p1585

the initial human and financial capital constraints faced by foreign entrepreneurs in a foreign country."[28]

Social capital is another vague concept in entrepreneur studies. Literally, social capital could refer to social network, embeddedness, financial resource, etc. In his analysis of UK firm performance, Cooke shows the crucial role of social capital in small and medium firms' operation, as he concludes: "without social networks most firms cannot function in market.[29]" He also points out that more knowledge-intensive or innovative firms are accordingly more engaged in social capital relations, which reveals the important role of social capital in promoting knowledge creation and innovation. Actually there is an extensive body of literature exploring the role of social networking/embeddedness in innovation, which generally agrees that social capital in this sense is a basic element of innovation. As argued by Doloreux, the communication of tacit knowledge, which plays important in innovation activities, requires high trust and understanding; in other words, the lack of social networking "can impede relations between close actors"[30]. By and large, social capital influences firm functioning by providing both financial resources and other benefits from social networks.

To conclude, different aspects of entrepreneur profile, for instance gender, leader form, etc. as discussed above, actually are related to several more fundamental factors. In particular, the role of gender and leader form can be fully attributed to financial and social capital issues, while the role of ethnic origin can be partly to. Those factors exert their influence on firm's performance by shaping its access to resources, rather than directly determine firm's performance by themselves.

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[28] Nahikari Irastorza, "The Liability of Foreignness: Survival Differences Between Foreign- and Native-owned Firms in the Basque Country", Working Paper Series, 2006

[29] ibid

[30] D. Doloreux, "What we should know about regional systems of innovation", Technology in Society 24 (2002): pp. 250

3.2.2 Characteristics of the Firm

Leadership here refers to the number of entrepreneurs involved in a firm. It's believed to play an important role in firm's survival. According to Arribas and Vila, "businesses owned by two or more partners have a significantly lower risk of failing than individually owned businesses (47% lower).[31]" They explain their argument as "human capital is accumulative, in the sense that the larger the number of entrepreneurs founding the company, the longer its survival time." It's apparent that human capital in this context should refer to both intellectual and other (financial and social etc.) resources. However, it's worth noticing that despite the extra resource and human capital provided by the participation of partners, it also brings conflicts, which sometimes tend to offset or even overwhelm its contribution.

The role of star-up size in firm's survival and growth has long been controversial. Empirically, many studies claim they have found a positive relationship between size and survival, as Audrestch and Mahmood found out, "establishments can reduce their exposure to risk, at least to some extent, by increasing the start-up size, as indicated by the negative and statistically significant coefficient of the establishment size."[32] Others, on the contrary, confirmed a negative relationship, for instance, according to Hart and Oulton, "a preliminary investigation of the births and deaths of companies in this database shows that the net birth rate was positive for small companies and negative for larger companies (above 64 employees). If we included births and deaths, we should still find that small companies grow more quickly."[33] There are also findings that indicate the role of start-up size is insignificant in the chance of survival, as what Santarelli and Vivarelli found in their study, "start-up

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[31] Iván Arribas and José E. Vila, "Human capital determinants of the survival of entrepreneurial service firms in Spain", Int Entrep Manag J 3(2007): pp. 319

[32] Audretsch, D. B., and Mahmood, T., "New firm survival: New results using a hazard function", Reviewof Economics and Statistics, 77 (1995): pp. 101

[33] Peter E. Hart and Nicholas Oulton, "Growth and Size of Firms", The Economic Journal, Vol. 106, No. 438 (Sep., 1996): pp. 1250

size was positively correlated with survival in 9 industrial sectors out of 13 and barely significant (90% of confidence) only in three sectors."[34]

The contradictory findings could be caused by different reasons. First, the measures of firm size vary from the number of employees, assets, and sales to market value, and value added, etc. In practice it's actually the data availability that determines the choice of measure, for instance, in Hart and Oulton's study they used employment, sales and assets as the measures of firm size. It's thus plausibly the difference in choice of measure would lead to different conclusions. Second, the role of firm size might vary among different industries. In traditional sector where production scale is vital for firm's competitiveness, it's reasonable to expect that smaller entrants with a suboptimal size would be more likely to fail. While in high-tech or emerging sectors firm size could be much less important than innovation or other factors.

To sum up, the role of start-up size varies among industries. A large entry size would be important for new firm's survival in traditional industries where scale economy is the major competitiveness for firms, but in high-tech industries and emerging markets where innovativeness and fast adaption ability to new technologies are highly rated instead of scale economy, it would be insignificant or even burdensome.

Credit constraints, or lack of financial capital, are generally understood as limitations on the likelihood of survival and also on the rate of growth. Empirical findings have provided evidence that smaller firms are always more financially constrained comparing to their larger counterparts, as Fagiolo and Luzzi conclude, "...analyses show that (i) liquidity constraints engender a negative effect on growth once one controls for size; (ii) smaller firms grow more after controlling for liquidity constraints; and (iii) the stronger liquidity constraints, the more size negatively affects firm growth. "[35]

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[34] Enrico Santarelli and Marco Vivarelli, 2007, p468

[35] Giorgio Fagiolo and Alessandra Luzzi, "Do liquidity constraints matter in explaining firm size and growth?

However, concerning firm's entry, the role of financial capital is still under debate. Some studies have found a positive relationship between initial wealth and the likelihood to start-up a business. However, problems remain in the causal link between them, which is to say: whether it's because the rich people are better prepared for starting up firms, or it's just because poor people have no chance to start their businesses, i.e. given the same initial wealth, people either previously rich or poor would perform the same in entrepreneurial activities. The latter mechanism is supported by empirical evidence. As Evans and Jovanovic states: "In principle, this could be so because the wealthy tend to make better entrepreneurs, but the data reject this explanation. Instead, the data point to liquidity constraints: capital is essential for starting a business, and liquidity constraints tend to exclude those with insufficient funds at their disposal." [36] Further, according to their finding, entrepreneurs' capital stock is limited to no more than one and one-half times their wealth. In short, Evans and Jovanovic's study suggests that entrepreneur's maximum capital stock is connected to his wealth due to credit constraints, and therefore both initial wealth and credit constraints are further related with the formation of new firms. On the other hand, there are also studies that show a nonlinear relationship between wealth and entrepreneurship, which indicates that wealth has little to do with firm's entry. For instance, Hurst and Lusardi found that, regardless of their recent financial condition in terms of positive or negative changes in wealth, households had generally the same level probability to start up their businesses. In particular, according to their calculation, "the probability of starting a business is identical between those households that had a $10,000 decline in wealth (thirtieth percentile of the change in wealth distribution) and those households that

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Some evidence from the Italian manufacturing industry", Industrial and Corporate Change, Volume 15, Number 1 (2006): pp. 1–39

[36] David S. Evans and Boyan Jovanovic, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints", The Journal of Political Economy, Vol. 97, No. 4 (Aug., 1989): pp. 808

had an $80,000 increase in wealth (ninetieth percentile of the change in wealth distribution)."[37]

The overestimate of the role of financial constraints could be resulted by the misleading conclusion by questionnaire analyses as Enrico Santarelli and Marco Vivarelli suggest: when "nascent or newborn entrepreneurs are asked to list the main difficulties in starting a new firm...they have the self-indulgent tendency to indicate the lack of external financial support as the main cause of their problems, while in most cases this is just a symptom of more fundamental deficiencies internal to the firm." [38] The role of financial constraints could also have been misled by the omittance of the fact that private savings might offset the difficulties in external financing. Another way to explain the overestimate is the possible difference in financial markets: in Evans and Jovanovic's study the financial market limits entrepreneur's maximum capital stock to no more than one and one-half times their wealth, but this could be raised up to two or three times in other financial markets, or even higher. Actually in Schumpeter's view, the capital market should allow a separation of the entrepreneurial and capitalist functions, where entrepreneurs seek only opportunities, and the financial market takes care of financial capital issues. In other words, in an ideal Schumpeterian market, entrepreneur doesn't take financial issues into consideration in his decision-making concerning entry.

Human capital has unsurprisingly been proven to play an important role in firm's survival and growth. The importance of human capital is shown throughout the process from different perspectives, as empirical data confirms. In particular, human capital of entrepreneur's impacts may differ from that of employees - besides its general impacts on entrepreneur and employees' technology adaption ability etc., it may influence entrepreneur's decision making of exit, as later discussed in this chapter; while the form of human capital - general education and specific experience

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[37] Erik Hurst and Annamaria Lusardi, "Liquidity Constraints, Household Wealth, and Entrepreneurship", The Journal of Political Economy, Vol. 112, No. 2 (April 2004), pp. 319-347
[38] Enrico Santarelli and Marco Vivarelli, 2007, 468

- could also affect its impacts, as Gimeno et al. found in the U.S. case, "entrepreneurs with more general human capital perform better but do not necessarily survive more frequently...specific human capital influences survival by increasing the gap between performance and threshold (i.e., increasing performance without raising the threshold)"[39].

We can plausibly conclude that, for new firm's growth (especially for those so called "new technology-based firms"), specific experience (may be also specific education in economic/managerial and technical/scientific fields as Enrico Santarelli and Marco Vivarelli suggest) is more important than general education. According to Colombo and Grilli, "while the years of education of founders are not related to growth, the years of undergraduate and graduate education in economic and managerial fields and to a lesser extent in technical and scientific fields do positively affect growth.[40]" They have also demonstrated that previous work experience in entrepreneurial ventures or in technical functions in the same industry has positive effects on new firm's growth, while work experience in other industries or in the same industry's commercial functions plays an insignificant role, though previous managerial experience could affect firm's growth by obtaining external financing resource and other social network benefits.

Concerning new firm's survival, the difference between the impacts of general education and specific experience is related to entrepreneur's decision making of exit. As Gimeno et al. expected, "entrepreneurs endowed with general human capital would have higher performance requirements for their businesses and might quit if these requirements were not met.[41]" As their findings suggest, an entrepreneur's threshold of performance is only related with the prior experience in general

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[39] Javier Gimeno, Timothy B. Folta, Arnold C. Cooper, Carolyn Y. Woo, "Survival of the Fittest? Entrepreneurial Human Capital and the Persistence of Underperforming Firms", Administrative Science Quarterly, Vol. 42, No. 4 (Dec., 1997): pp. 750-783

[40] Massimo G. Colombo, Luca Grilli, "Founders' human capital and the growth of new technology-based firms: A competence-based view", Research Policy 34 (2005): pp. 812

[41] Javier Gimeno, Timothy B. Folta, Arnold C. Cooper, Carolyn Y. Woo, 1997, p774

management, while education and other supervisory experience have no influence on it. In brief, previous managerial experience affects new firm's survival as it influences entrepreneur's exit decision making by lifting up his threshold of performance, while general education and other experience have less to do with firm's survival in this sense.

3.2.3 Contextual Aspects

Economic geography studies have been stressing the role of spatial characteristics. Concepts like clusters, agglomerations, technological districts, learning regions, which have been frequently used since the 1980s, are aimed at explaining the influences of being in certain geographical location. In particular, location is directly related to firm's external environment, which could be decisive for firm's performance. For instance, externalities like cost reduction and economies of scale are greatly beneficial to small and medium firms, while the concentration of rivals also leads to more intensive competition, which means higher exit rate. Physical proximity also benefits firms in terms of facilitating knowledge transfer and creation, for which high-tech and innovative industries are suggested to localize them within regional systems. While the importance of location is indubitable, the exact role of it is still under debate.

Due to the inclusive and complex nature of location, rather than focusing on location as a direct determinant, empirical studies have concentrated on the role of some second-order factors that are embedded in regional context. For instance, the role of leading enterprises and universities within the region as incubators for new firms reveals the role of location indirectly. Similar region-specific variables as income level, employment rate, tax, governmental policies, industrial context, and infrastructure are also often used in entrepreneurial studies, which of course indicate the influences of being located in different regions. Therefore, it's necessary to break it down into more specific factors to clarify the impacts of location on firm's entry, survival and growth.

Even taking location as a holistic factor, its impacts on the process differ among stages. In Tamasy's study on the regional entrepreneurship dynamics in Germany, regional effects are found to be implicated in entrepreneurial attitudes, and thus further in new firm formation. On the other hand, he found that "entrepreneurial climate" doesn't exert significant effects on firm's survival - "the regional dummies as catch-all variables for the objective environment were included in the estimations, but were not statistically significant"[42], said Tamasy. Firm's post-entry growth is neither influenced by location, according to his empirical finding. Regional location of a firm doesn't show significant influence on firm's survival or growth, "using the entrepreneurial climate indices instead of the regional dummy variables made no difference… neither the objective geo- graphical environments (regional level) nor their subjective perceptions by entrepreneurs (individual level) directly influenced productivity growth."[43]

It's worth mentioning that Tamasy's findings represent only part of the nature of location. An explicit understanding of location's role in entrepreneurial activities should include all social, economical, political, and demographical aspects. This study also focuses on empirical analysis that views location as a holistic factor, regardless of its internal mechanisms or related more specific determinants.

The structural characteristics of industries are primary determinants of firm's performance, according to Porter[44]. For instance, entry barrier into manufacturing would be much bigger than that of retail. On the other hand, the current stage of an industry in its life cycle determines the competitiveness of firms. In particular, product innovation is vital in the fluid phase since there exist potential better product model to be developed; process innovation is more important in the fluid phase since the best product model is all known but potential better production process can still

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[42] Christine Tamasy, "Determinants of Regional Entrepreneurship Dynamics in Contemporary Germany: A Conceptual and Empirical Analysis", Regional Studies, Vol. 40.4 (April 2006): pp. 378
[43] ibid, p379
[44] Michael E. Porter, "Competitive strategy: techniques for analyzing industries and competitors", Free Press (1980): New York

be exploited; in the specific phase the importance of innovation is largely reduced, instead, other factors such as capital, managerial skills, etc. play more decisive role in firm's performance. In other words, innovative firms are expected to be more competitive in industries that are still in their early stages, rather than mature industries. It's also frequently observed that the general performance of firms in a certain industry could be much better or worse than other industries due to systematical shocks like technological upgrading, resource limitation, etc. For instance, in Norway the oil industry has soared and overwhelmed other industries since 1970s, due to the Ekofisk discovery. In sum, it's reasonable to conclude that firm's performance is largely influenced by the industry in which it conducts business. Put another way, industry is an important factor in the process.

3.3 Summary of the Theoretical Part

Based on the reviews and discussions on models and factors of the process of firm's entry, survival and growth in this chapter, we arrive at some preliminary findings here.

First, there are generally three channels through which factors can affect the process: decision making, resource support and productivity growth. Entrepreneurs' decision making can be largely influenced by their risk attitudes, expectation, etc., which are further determined by more specific factors such as gender, skill level, prior experience as discussed above. On the other hand, those specific factors also determine entrepreneurs' abilities to obtain financial and social resources. Gender, leader form, and ethnic origin are obviously related to the social networking of entrepreneurs and thus to their firms' performances by limiting the resource supports. Productivity growth is actually the basis of new firm's competitiveness. As elaborated in chapter 2, successful entry of new firms is mostly linked with productivity growth, which means factors can influence the process by promoting productivity growth of new firms. Relevant factors, though not much discussed above, include innovation, human capital and network, while the latter two exert

their influences on productivity growth by promoting innovation (knowledge transfer and creation).

Second, the factors discussed in this section somehow overlap each other, partly because they are defined through different dimensions. According to the objects of study, factors can be categorized into three groups, i.e. the categorization employed in section 3.2: the entrepreneur-associated factors, which in this study are discussed under "entrepreneur profile"; the characteristics of the firm, like start-up size and human capital; contextual aspects, e.g. location and industry context. On the other hand, according to the channels through which factors exert their impacts on the process, as discussed above, factors can be categorized into three groups: the attitude-related factors, resource-related factors, and productivity-related factors. It's also feasible to categorize factors according to the different stages of firm. For instance, Mel Scott and Richard Bruce divided the evolution process of a firm into five stages: inception, survival, growth, expansion and maturity, and factors can then be grouped and analyzed in accordance with their role in these stages. Another important categorization of factor is related to the controllability attribution of factors: gender, environmental factors, etc. are generally constant and unchangeable to an individual firm, however, an entrepreneur can to a certain extent choose the leader form, location, employee profile of his firm. However, some factors could be ambiguous in this sense, for instance the risk attitude and performance expectation of an entrepreneur. There are also special cases like strategic and managerial variables, which could be deemed as controllable factors, play decisive role in firm's performance in all stages.

The variously defined factors and stages reveal the complex nature of entrepreneurial activity. According to the literature review on previous studies, it's commonly assumed that not only different factors would have different influences on the process, but also the influence of the same factor could vary over time in different stages of the process. Therefore in order to gain a complete understanding

of the process, rather than simply examining the relationship between factors and firm's performance, it's necessary to divide the process into stages and then investigate the role of each factor in each stage.

Table 1. Factors in the process[45]

Entrepreneurial process:	Pre-entry phase	Post-entry phase
Determinants of entrepreneurship	Start-up activities (nascent entrepreneurs)	Firm 'success' (survival and growth of firms, achievement of objectives of firm founders)
Entrepreneur-associated factors	✓	✓
Characteristics of the firm	✗	✓
Contextual aspects (geographical and industrial environment)	✓	✓

Notes: √, These determinants should be included in the theoretical and empirical analyses; X, not possible to analyze because the firm does not yet exist.

Many researchers have made this kind of efforts for facilitating their studies. Those divisions of the process were either based on relevant theories or for specific research purposes. One popular division is to distinguish the pre-entry phase and post-entry phase. For instance, Christine Tamasy in his German case study summarized the relevant factors for both phases, and examined their role by empirical evidence. Table 1 made by Tamasy set up the framework for his study, which aims at identifying the role of relevant factors in different stages.

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[45] Data Source: Tamásy C., 2006, p367

4. Firms' Performance: Facts and Figures

This chapter gives an overview of firms and regions, etc., that are concerned in this study. In the first part, the statistics of start-ups in Sweden is presented by factors. The second part looks into more fundamental sub-factors that account for regional difference in firm's performance. Statistics of start-ups are provided by Growth Analysis [46] (The Swedish Agency for Growth Policy Analysis), while complementary data for identifying the role of factors in the process are mainly drawn from Statistics Sweden (a.k.a. Statistiska centralbyrån, SCB). In principle, this chapter applies an ex post facto research method, i.e. to figure out possible cause-and-effect relationships by observing the existing condition or state of affairs (firm's performance in this case) and looking back in time for valid causal factors.

4.1 Statistics of Start-ups

Growth Analysis had conducted similar study in this field, which was named "Follow up of the newly established enterprises in 2005 – three years after the start". The study analyzed the status of companies started in 2005 by breaking down into industry groups, entrepreneur gender, education level etc. Although their study was focused on aggregate data rather than firm level analysis, it sheds some light on the broad picture of the 2005 cohort of start-ups.

4.1.1 Entrepreneur Profile

4.1.1.1 Gender

The difference in firm's post-entry performance, according to the statistics provided by Growth Analysis, suggests the gender of firm founders could play a role in the process. Notably, entrepreneur's gender could also exert influences on firms' entry decision, as the varied establishment rates indicate.

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[46] The Swedish Agency for Growth Policy Analysis (Growth Analysis, a.k.a. Tillväxtanalys) is charged by the Government to shed light on the areas most significant to growth.

Empirical data shows 35630 single-led firms were established in 2005, but women entrepreneurs were involved in only 12750 (36%) out of them. For the multi-led firms, the participation of women entrepreneurs was even less, below 10%. Instead, men entrepreneur groups set up 51% multi-led firms, and groups with both men and women accounted for the else 39%. To sum up, people would be much less likely to start their business when they are women only, either individual or grouped. It's thus reasonable to conclude that gender had significant influences on the pre-entry phase of firms. In particular, female (gender) has negative effect on the establishment of firms.

Concerning the post-entry phase, the survival rate of firms also varied in accordance with the difference in leadership. The average survival rate of single-led firms was 66%: 61% for women-led firms and 69% for men. The average rate of multi-led firms was 76%: 67% for women only entrepreneur groups, 74% for men only groups and 80% for mixed groups. The different survival rates suggest: first, firms with several leaders generally perform better than firms with single leader; second, firms with men leaders perform better than firms with women leaders. It's worth mentioning that firms with multiple leaders of both genders had the highest survival rate, which suggests the relationship between entrepreneur's gender and firm's performance should be more complex rather than linear.

For firm's growth, the situation was similar to the survival stage. Firms with several leaders performed better than firms with single leader: 56.3% multi-led firms were found grown well, while the rate of single-led firms was 39.9%. Concerning gender, men entrepreneurs outperformed women as they did in firm's survival stage, either in single-led firms (46.6% vs. 26.2%) or multi-led firms (63.1% vs. 57.0%). Firms with both men and women entrepreneurs had the lowest growth (47.9%) in the multi-led firms.

4.1.1.2 Human Capital

Human capital in this case is distinguished into different types, which had shown different influences on firms' performance.

Experience and education is an important part of human capital. For the post-entry phase, as can be seen from Figure 1, specific experience had been important in firm's formation. Most firms were founded by entrepreneurs with experience in the same industry or in another industry. Only 10 percent firms in 2005 were established by unemployed people. General education accounted for a minor part, and schooling years in this case didn't show a significant impact on firm's formation: the number of firms founded by entrepreneurs with more than three years post-secondary education was the same as entrepreneurs with secondary education.
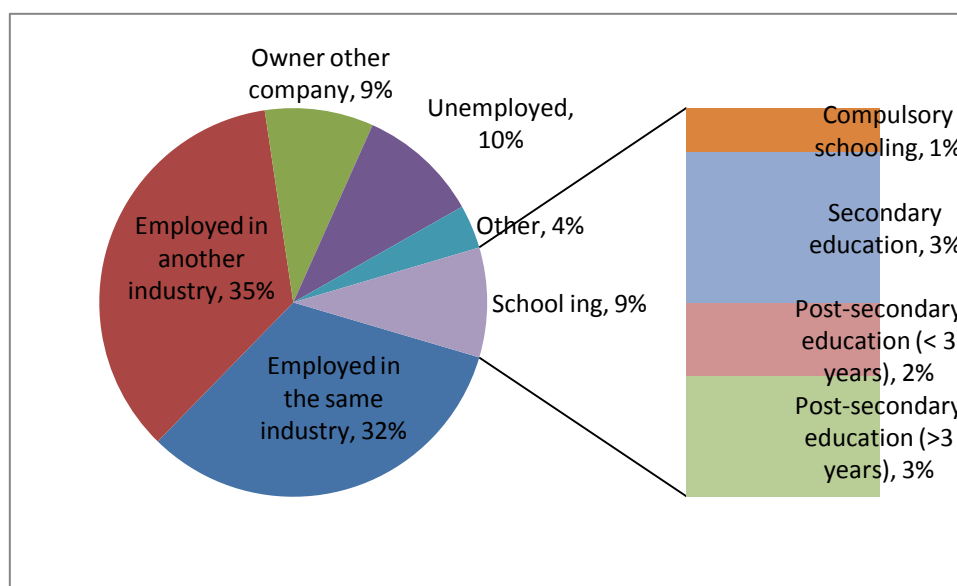

Figure 1. Firm formation in 2005 by Entrepreneurs' Educational Background[47]

However, the different shares don't necessarily mean people with certain education background would be more motivated to start a business. It could also be related to the distribution of education in the society: for instance, provided that 67% people in the society had been previously employed and 10% had been long unemployed

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[47] Data Source:
http://www.tillvaxtanalys.se/tua/export/sv/filer/statistik/nyforetagande/Tabell_Uppfoeljning_2005.xls

(others might be students etc.), the fact that 67% firms were founded by people with specific experience and 10% by unemployed people only suggests they are the same likely to establish new firms.

Table 2. Experience and Firm's post-entry Performance 2005-2008[48]

Previous Employment	Survival rate	Growth rate
Employed in the same industry	76%	55%
Employed in another industry	65%	30%
Owner of other companies	75%	60%
Unemployed	57%	41%
Student	55%	32%
Other	66%	30%
All	68%	43%

Table 2 reveals the role of experience in firm's post-entry performance. It's obvious that general education had contributed less to firms' survival comparing to specific experience. While the average survival rate was 68%, the rate of firms with entrepreneurs who had only general education (in other words, those entrepreneurs were students previously) was 55% only, and the rate for entrepreneurs with previous work experience was 69%. The related survival rate also varies with the relevance of experience. The survival rate of firms with entrepreneurs who had been previously employed in other industries (irrelevant experience) was 65%, higher than that of general education, but still below the average level. On the other hand, previous experience in the same industry had been proven to be vital for new firm's performance. The survival rate of firms with entrepreneurs who had been previously employed in the same industry was 76%, the highest in most cases. The second highest survival rate came from the firms with entrepreneurs who owned other

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[48] Data Source:
http://www.tillvaxtanalys.se/tua/export/sv/filer/statistik/nyforetagande/Tabell_Uppfoeljning_2005.xls

companies at the same time. In particular in the service sector (average survival rate 67%), the participation in other companies (survival rate 76%) turns out to be even more important than the previous work experience (75%) in the same industry. Nevertheless, they both demonstrate the importance of specific experience, comparing to general education.

For firm's growth, entrepreneurs who owned another firm performed best (growth rate[49] 60%), seconded by entrepreneurs who were previously employed in the same industry 55%. Work experience in other industries was found to be no better, actually even worse, than general education in this case (30% vs. 32%).

As another proxy of human capital, the age of entrepreneurs tends to have significant impacts on the process. For the pre-entry phase, it's found that the establishment rate (the number of start-ups per 1000 people) peaked in the age group 26-40 (see Figure 2), which fits the fact that youths are willing to take risks. The low rate of the age group under 26 could be partly explained as the lack of time and capital, since those people are mostly students.
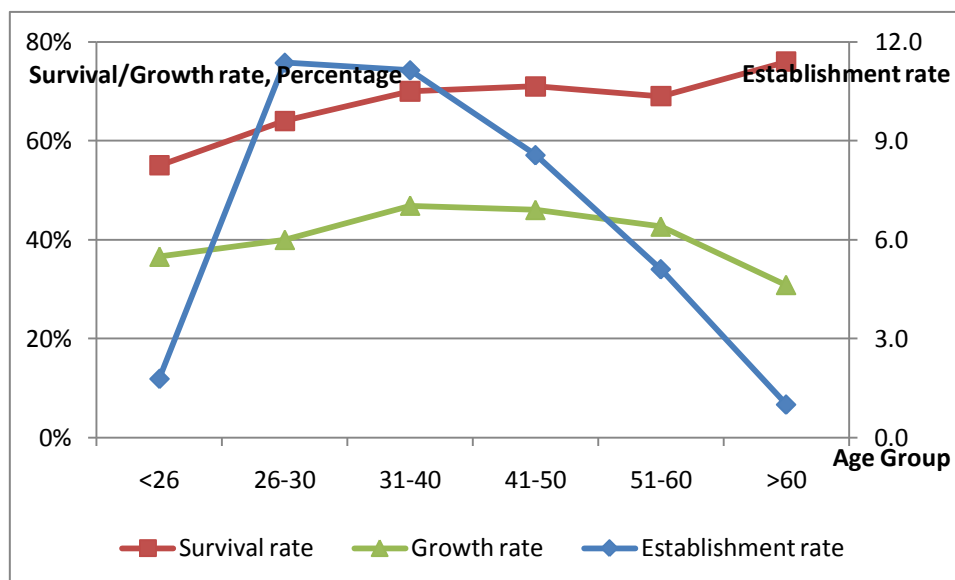

Figure 2. Establishment rate[50], survival rate and growth rate 2005-2008

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[49] Growth rate = the number of firms could be defined as growth in 2008 / the number of firms still active in 2008

[50] Establishment rate is calculated based on start-up number and population statistics of the year 2005.

For the post-entry phase, the role of entrepreneur's age is slightly different between the two stages. It's clear that firm's survival had been in general positively related with entrepreneur's age: firm founded by entrepreneur with a higher age would increase the likelihood to survival. However, in the growth stage, difference in entrepreneur's age didn't lead to much different firm performance: the age group 31-40 had the highest growth rate, and the rate would decrease as entrepreneur's age departs from this interval; but generally the growth rates of all age groups were at the same level, varying from 31% to 41%.

4.1.1.3 Ethnic Origin

The ethnic origin of entrepreneur turned out to significantly influence firm's pre-entry phase. As shown in Figure 3, though foreign born people accounted for only 11% of the Swedish population in 2005, they had commenced 18% start-ups of that year. It reveals the fact that migrants are generally more risk like people than their contemporaries who fail to migrate.
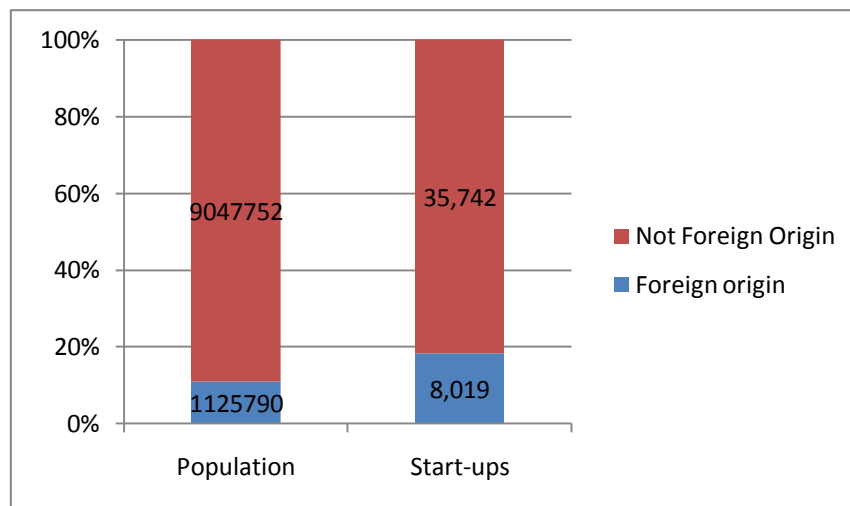

Figure 3. Population and the number of Start-ups in 2005 by ethnic origin[51]

For firm's post-entry performance, however, the influence of entrepreneur's ethnic origin was not that important. The survival rate of firms with foreign origin

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entrepreneurs was 64%, and the rate for native entrepreneurs was slightly higher, 69%. The worse performance of foreign origin entrepreneurs could be preliminarily related to their lack of human capital comparing to natives. Nevertheless, for the growth stage, the situation was the opposite. Firms with foreign origin entrepreneurs had a growth rate of 45%, slightly higher than the rate of natives (43%). The difference in growth rate could be interpreted in various ways, but at least one thing for certain is that ethnic origin didn't have much impact on firm's growth, as well as firm's survival.

4.1.2 Characteristics of the Firm

4.1.2.1 Partnership

In fact, most of the start-ups were registered as sole trader (69.48%), while only 10.28% for trading partnership and limited partnership and 20.25% for limited company.

The survival rates of firms vary significantly depending on whether it involves partnership. The rate of majority - sole trader firms - was 64%, below but close to the average level 68%. The rate of limited companies was much higher, 85%; while the rate of partnership was only 58%. By breaking down into specific industrial groups, the differences in survival rate between firms with different legal forms were even more striking. In particular, the survival rate of limited companies in industrial sector (SNI C-F) was 89%, and the rate of partnership in service sector (SNI G-O) was only 57%.

For firm's growth, whether a firm involves partnership tends to be unimportant: the growth rate of sole trader firms was 33%, and the rate of partnership firms was a bit higher, 34%. What's striking is that the growth rate of limited companies was 72%, more than double of other firms.

4.1.2.2 Financial Support

Financial support is found to be of little relevance in the process. As statistics data shows, only 15% firms in 2005 were founded with support, which suggests that

support was not that crucial as it was claimed to be in the decision-making of firm's entry.

The survival rates of firms further prove the irrelevance of financial support: start-ups with financial support had a survival rate of 68%, while the rate for non-supported firm was almost the same, 69%. Therefore, even if financial support has any influence in the survival stage, it should be negative.

For firm's growth, the role of financial support was more significant in the Swedish case: 52% firms with financial support were found to be well-grown, but the rate for non-supported firms was only 42%. This indicates the fact that though firms' survival is not dependent on financial support, their growth is somehow limited to financial constraints.

4.1.3 Contextual Aspects

4.1.3.1 Industry Group

In the whole Sweden 43932 firms were established in the year 2005. The number of firms that were still active till 2008, either in terms of new organizations (by merging or combining) or businesses that continue as before, is presented in Table 3. Although the initial number of start-ups largely varied among different industry groups, it's still hard to conclude that industry group had influenced entrepreneur's decision making concerning firm's entry. Similar to the dicussion on experience and education, the different establishment number among industry groups could probably be related to the skill distribution in the society. That is to say, the number of people had already been different among industries due to whatever reasons. Providing that they were identically motivated when making the entry decision, either influenced by industry group or other factors, the establishment rates (like number of start-ups per 1000 people in a certain industry group) would be the same among industry groups, but the number of start-ups would vary due to the difference in population of different job occupations.

On the other hand, for the post-entry phase, industry group turned out to be an important determinant. In the survival stage, while the average survival rate was 68%, the rate of the best-performed industry group - transport and communication (77%) - was 14 points higher than that of the worst industry group – trade in goods, hotels and restaurant (63%). The situation for the growth stage was even more impressive. While the average growth rate was 43%, the highest rate from construction was 64%, and the lowest rate from education, health care and other social and personal services was only 27%.

Table 3. Survival and Growth rate of start-ups 2005-2008[52]

Industry	All Still active companies2008	Survival rate, percent	Growth rate, percent
Industrial sector (SNI C-F)	5830	73	54
Manufacturing and the like. (SNI C-E)	2003	69	37
Construction (SNI F)	3827	75	64
Service industries (SNI G-O)	23965	67	41
Trade in Goods, hotels and restaurant. (SNI G-H)	6295	63	47
Transport and communication (SNI I)	1140	77	55
Financial and business services (SNI J-K)	9985	67	44
Education, health care and other social and personal services (SNI M-O)	6546	68	27
All industries (SNI C-O)	29795	68	43

It's interesting to point out the impacts of a certain industry group could be largely different on different stages of the process. For instance, manufacturing ranked the fourth in survival rates, but it was the last but one in growth rates.

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[52] Data source:
http://www.tillvaxtanalys.se/tua/export/sv/filer/statistik/nyforetagande/Tabell_Uppfoeljning_2005.xls

4.1.3.2 Region

The regional distribution of new firms and survival rates is related to the role of regional factors in firm's performance. According to the statistical data provided by SCB (Statistics Sweden, a.k.a. Statistiska centralbyrån), the average number of start-ups per 1000 inhabitants in Sweden in 2005 was 4.9 (Figure 4 x-axis). The establishment rate was largely determined by the entrepreneurship and overall economic condition. The rate of each region, then, to a certain extent reveals the region-associated characteristics. In particular, it's related to local people's willingness to build up their own businesses, risk attitude, local environment like entry barrier, and regional economic structure, etc.
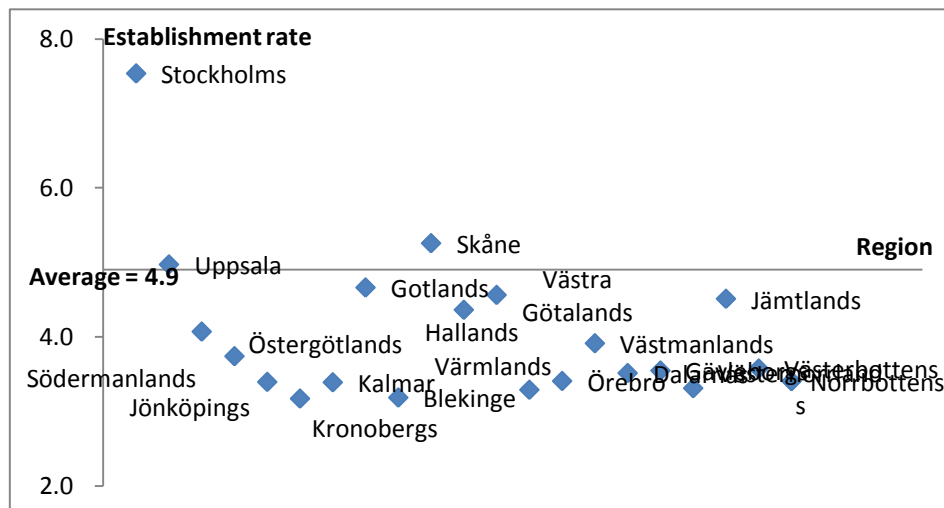

Figure 4. Number of start-ups in 2005 by country, per 1000 inhabitants[53]

As Figure 4 presents, the establishment rate varied significantly among regions. For instance, among the total 43932 firms in 2005, 14239 (account for 32.41%) were established in Stockholm, and 6147 (13.99%) in Skåne. This could be partly attributed to the two regions' advantage in population amount and density, and partly to the local entreprenuership. On the contrary, the number of Blekinge was only 480 (1.09%).

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[53] Data source: part of the table "Antal nystartade företag 1995 - 2009 efter län, per 1000 invånare (etableringsfrekvens)" provided by Tillväxtanalys
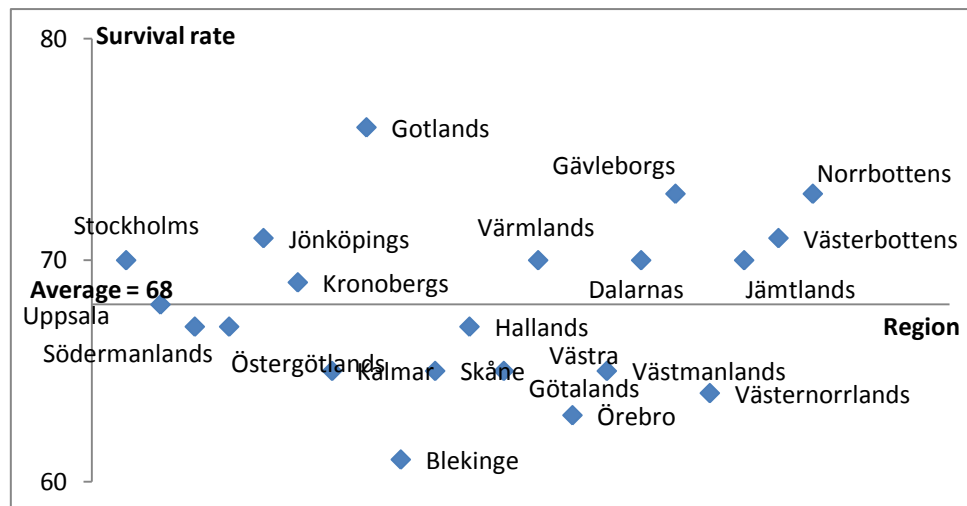
Figure 5. Survival rates of start-ups 2005-2008 by county

For firm's post-entry performance, firm's location also tends to be of great importance. In particular, firms in Gotland (76%) enjoyed a survival rate 15% higher than firms in Blekinge (61%).
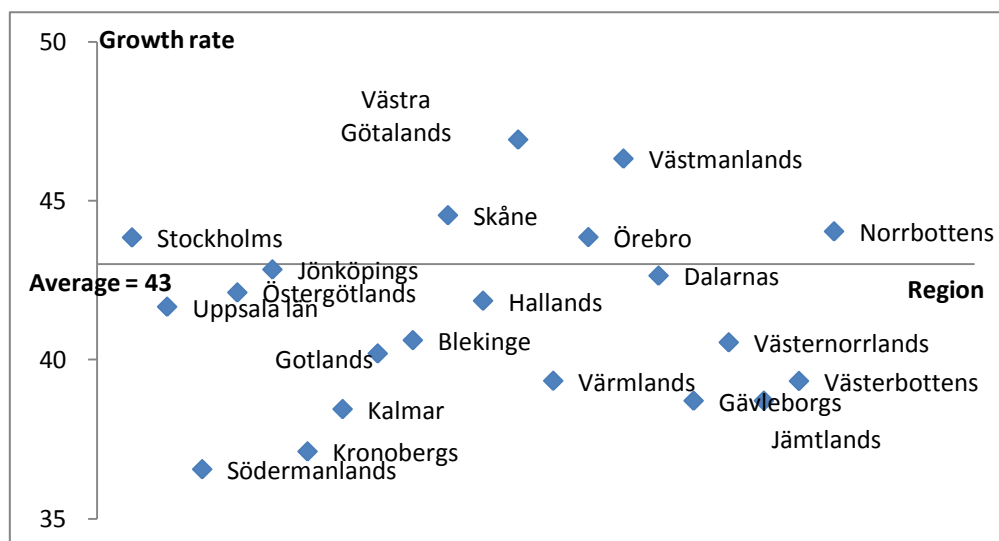

Figure 6. Growth rates of start-ups 2005-2008 by county

Similar situation was found in firm's growth stage. As shown in Figure 6, firm's location would have remarkable influences on its likelihood of growth.

Given that there are significant differences in entrepreneurial activities among different regions, it remains in question that where those differences came from. The next section conducts a comparison between regions to further explore the exact factors that account for those differences.

4.2 Regional Comparisons

Despite the common cultural root and the similar national level economic and political environments, differences between regions are more important for the research purpose, since they are exactly the regional contextual factors that account for entrepreneurial differences among regions.

4.2.1 Population

The population of each county in Sweden were generally the same during the investigated period, in terms of age structure, sex ratio and growth rate. But there were also important differences among regions in particular the population amounts and densities. For instance, Stockholm has only 1.59% land area of Sweden, but it had 20.89% of the all country's population in 2005. On the contrary, Norrbotten has 23.94% land area but had only 2.78% population.
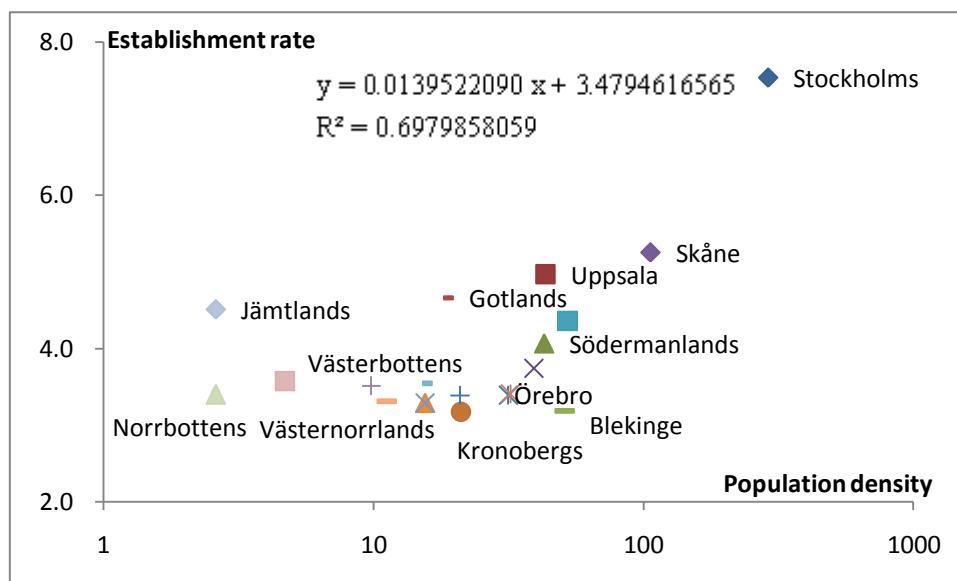

Figure 7. Population Denstiy and Establishment rate in 2005

Data source: Statistics Sweden (Statistiska centralbyrån, SCB)

Figure 7 presents the establishment rates of counties by their population densities (population per sq. km). In the graph x-axis is the logarithmic scale of population density, and y-axis is the establishment rate. It's quite clear that there is generally a positive relationship between the establishment rate and population density of a

county. A simple linear regression calculation shows that the establishment rate can be largely (around 69.8%, see Figure 7 R-square) explained by population density. In particular, a unit increase in population density would lead to 0.01395 unit increase in establishment rate.

Despite its significant role in the pre-entry phase, population density had seldom influence on firm's post-entry performance. As shown in Figure 8 below, there is no correlation between population density and survival/growth rate.
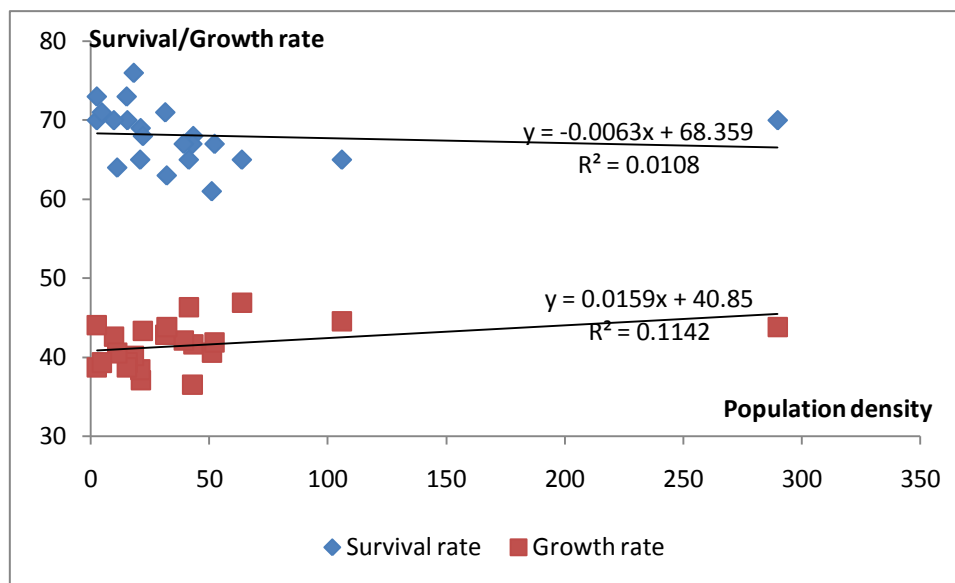

Figure 8. Population Denstiy (2005) and Survival/Growth rate 2005-2008

4.2.2 Labor Market

The labor markets of different regions had undergone similar changes through the investigated period, at least in terms of employment. Labor market information with a focus on the age group 20-64 is presented. Rather than explicitly listing the information of all counties, this section focuses on comparing three typical regions: Stockholm, Blekinge and Sk åne.
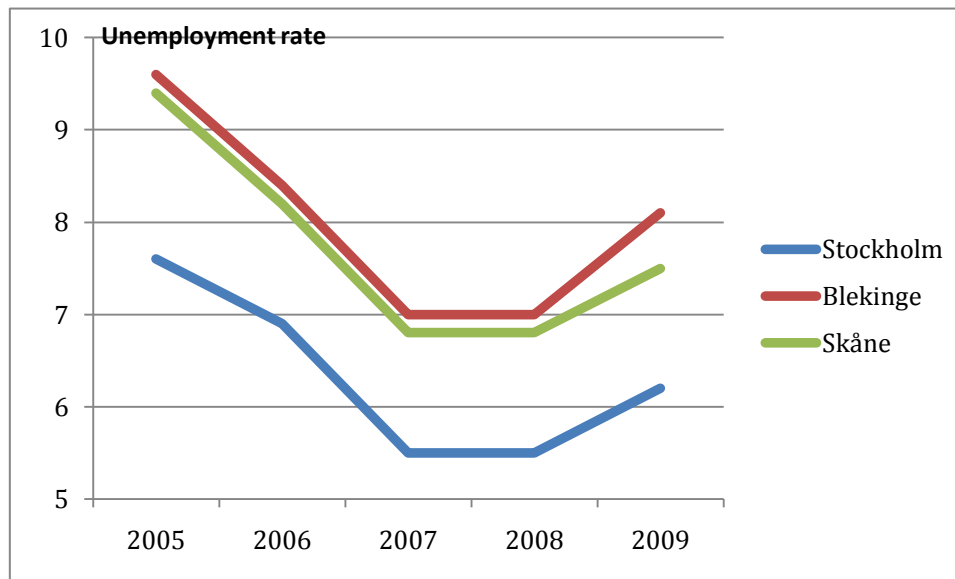
Figure 9. Registered unemployment rate in Sweden 2005-2009[54]

Figure 9 shows the share of people who were in the age group 20-64 and became unemployed in the year. It's clear that all three regions had experienced economic prosperity in the first three years when the unemployment rates drastically decreased and maintained at low level. From 2008 this trend was interrupted probably due to the global financial crisis, for which the unemployment rate started to rise.

It's not surprising to find that the most developed region – Stockholm – enjoyed the lowest employment rate throughout the whole period, while the least developed Blekinge had the highest rate all the time.

On the other hand, within the 20-64 age group, the share of entrepreneurs of the total working population changed in the similar manner. Troughs of entrepreneur rate were found in the year 2007, as shown in Figure 10.
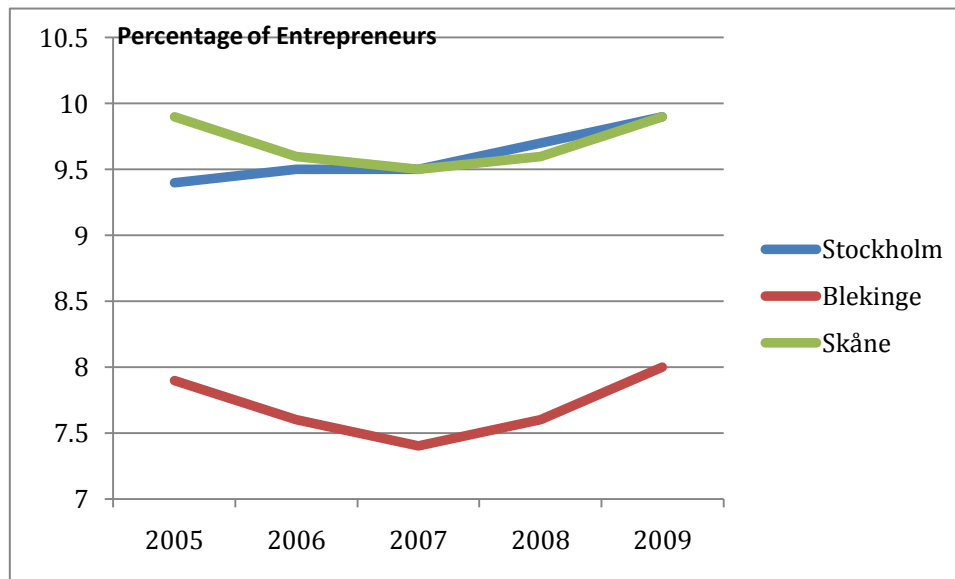
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[54] SCB, http://www.scb.se/Pages/SubjectArea____2441.aspx

Figure 10. Percentage of entrepreneurs[*] in Sweden 2005-2009

(*=the number of entrepreneurs / the number of all employed people)

The similarity between the trends of entrepreneurial activities and unemployment rate support the previous mentioned hypothesis that "job loss is an important "push factor" in spurring new firm formation at the regional level": during the time of low unemployment rate, say the year 2007 in this case, less people were jobless and thus forced to be self-employed. Therefore the entrepreneur rate were relatively lower in 2007.

Besides the possible "push effect" of job loss, the entrepreneurial activities were also suggested to be related to regional context. While the unemployment rates in Blekine and Skåne were generally the same as can been seen in Figure 10, their entrepreneur rates were significantly different. Actually the entrepreneur rate of Skåne was much more close to that of Stockholm, though the latter had a much lower unemployment rate. A plausible explanation is that entreprenurship is more dependent on economic enviroment and regional context rather than the push factors such as job loss.

4.2.3 Industrial Environment

Different regions have fostered different industrial environments on the basis of their endowments and previous developments. For instance, according to SCB statistics data , in 2005 the economy of Stockholm had been more focused on trade and service sector ("G+I Wholesale and retail trade; transport, storage and warehousing; post and telecommunications" – 21%; "J+Kexkl73 Financial institutions, real estate activities, business activities" – 22%[55]) in terms of sector employment share; while other counties might be more dependent on other industries, e.g. 28% employees in Jönköpings were devoted to mining, quarrying and manaufacturing (C+D), and 17% for health and social work establishments(H).

There is no convincing conclusion about what the best economic structure should be. It's neither this paper's interest to claim which region has the better economy. Instead, it proposes the assumpiton that the differences in regional industrial enviroment would be likely to affect new firms' performance, for instance, a new manufacutring firm should benefit from the local environment in a region which is specilized in manufacturing sector rather a finance-focused region.

Table 4. Multi-linear regression results

Industries	Establishment rate		Survival rate		Growth rate	
	Coef.	P>t	Coef.	P>t	Coef.	P>t
A+B	(dropped)		(dropped)		(dropped)	
C+D	4.7849	0.848	-24.57	0.896	-19.27	0.884
E+90	26.7892	0.637	-564.30	0.206	-1.32	0.996
F	0.2515	0.992	21.61	0.911	12.96	0.923
G+I	10.6073	0.673	-108.90	0.569	87.95	0.511
H+Oexkl90+P	61.9368	0.136	338.25	0.270	-10.11	0.961
J+Kexkl73	10.3439	0.608	-142.50	0.359	-35.57	0.738
L+Q	-5.3141	0.846	-135.86	0.517	79.00	0.588
M+73	16.9657	0.556	110.82	0.611	-74.15	0.626
N	-19.5221	0.491	-176.36	0.414	-23.83	0.872
00	-7.4297	0.899	-59.56	0.893	-605.34	0.072
_cons	-2.4101	0.921	116.77	0.533	50.04	0.700

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[55] Data source:

http://www.ssd.scb.se/databaser/makro/temp/tmp20115301183956AM0207F8.xls

In order to identify the relationship between industrial environment and firm performance, a simple multi-linear regression model is employed. The sector employment shares of different industries in each county are used as explanatory variables, while establishment rate (and survival rate, growth rate) is set as responsible variable(s). Result of the multi-linear regression, namely the relationship between regional industrial structure and firm performance, is presented in Table 4. The regression results, however, suggest that at least in terms of multi-linear there is no statistically significant (at 90 percent confidence level) relationship between regional industrial environment and firm performance, either pre-entry or post-entry.

4.2.4 Economic Conditions

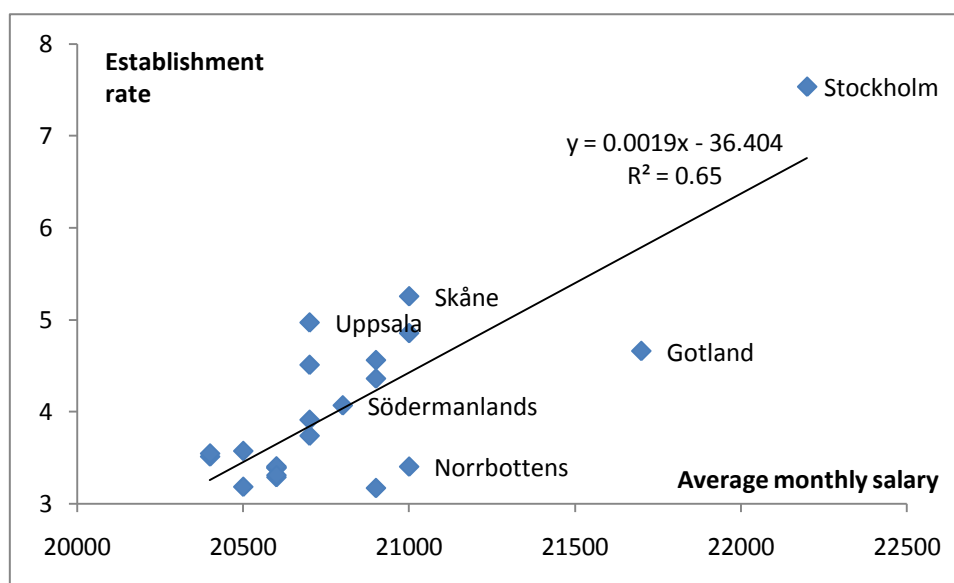The economic condition of a region is approximated by regional wage level, namely the average monthly salary.

Figure 11. Average monthly salary and Establishment rate in 2005[56]

It can been seen from Figure 11 that establishment rate was positively related with regional wage level. The regression result suggests that the establishment rate of a region could be largely (65%) explained by the regional average monthily salary. In

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[56] Data Source:
http://www.ssd.scb.se/databaser/makro/temp/tmp20115302544578AM0106B1.xls

particular, a unit increase in average monthly salary would lead to 0.0019 unit increase in establishment rate.
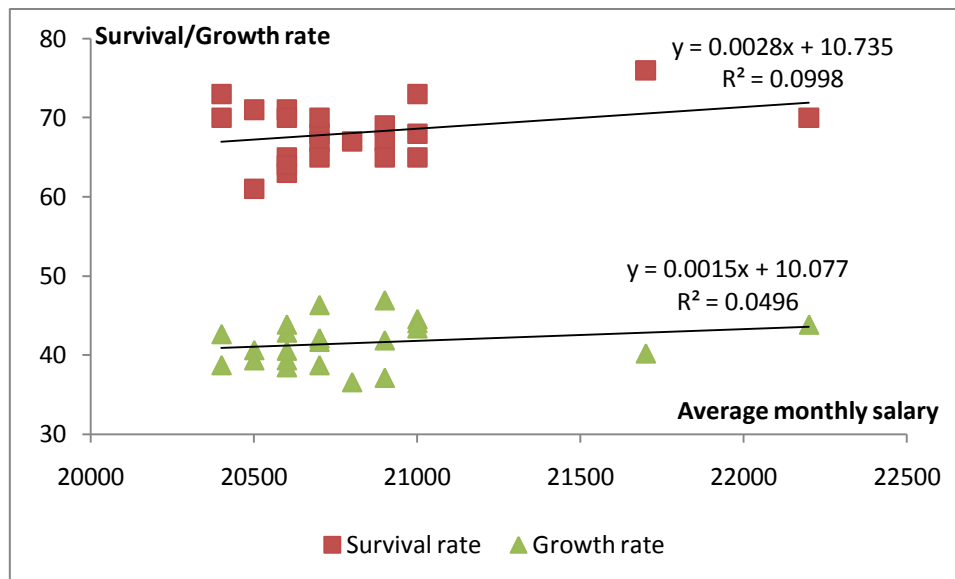

Figure 12. Average monthly salary (2005) and Survival/Growth rate 2005-2008

However, the impacts of regional economic condition on firm's post-entry performance were not that clear. As presented in Figure 12, the regression results indicate the correlation between average monthly salary and survival/growth rate was weak: regional salary only accounted for a small part (less than 10%, see R-square) of regional survival rate; and even less (less than 5%) for regional growth rate.

4.3 Summary of the Empirical Part

The discussion in this chapter has illustrated the influences of factors respectively. Some of those factors e.g. gender turn out to be in line with theoretical assumptions as mentioned in chapter 3, while others not. On the other hand, by decomposing region into sub-factors, this study proves the existence of more fundamental factors. Understanding of specific factors is largely limited by data availability. For instance, the worse performance of women entrepreneurs could possibly be related to their choice of industry: if most women entrepreneurs had chosen to start their businesses in service sector or trade in goods, hotels and restaurant, it's not surprising that they

would perform under average level (see Table 3); in this case, it's industry group that actually influences firm's performance, rather than gender. However, as the statistical data provided by Growth Analysis is one dimension only, it's hard to identify possible interrelation between factors.

The selection of factors is limited by both theoretical knowledge and empirical data. This study employs a framework that divides the process into stages and examines the role of specific factors accordingly. But it's still far from a convincing and exclusive model that explains everything about the process. In fact, the selection of factors could be controversial. For instance, one can argue that besides those factors discussed above, many other factors such as entrepreneurs' motivation, risk attitude, strategic variable, etc. could be also responsible for firm's performance. However, there are difficulties to include them in the paper. First, some factors like risk attitude are more fundamental than others. In fact the discussions about entrepreneur's age and ethnic origin are partly related to entrepreneur's risk attitude. It's thus inappropriate to include it as an independent factor under the framework. Second, it's also hard to measure those factors. Either age or ethnic origin of entrepreneurs can be measured and quantified, but the risk attitude of an entrepreneur can be hardly known by others.

5. Conclusions and Implications

The discussion so far allows it to draw some conclusive considerations and suggestions.

The research questions proposed in the introduction part can now be answered. First, the motivations for entrepreneurial activities are entrepreneurs' expectations on their characteristics and abilities. The influences of entrepreneur-associated factors, as discussed in section 4.1.1, provide empirical evidence for this argument. For instance, men and immigrants are found more motivated to start their business, comparing to women and natives respectively, which can be explained as they have higher expectations on their characteristics and abilities. It's worth mentioning that in this context expectation doesn't simply equal to one's ability: lower skilled people could also have higher expectations when they are highly risk-loving. Second, the process of entrepreneurial activities consists of different phases and stages. The determinants of the process are found to may vary in different stages. For instance, entrepreneurs being in the age group 26-40 would be most likely to start their own businesses, but they would generally perform worse than their older counterparts in terms of survival. In other words, youth-related characteristics such as risk-loving have positive impacts in the pre-entry phase, but in the post-entry phase they could exert negative influences on firm's performance. Similarly, regional population structure, as well as wage level, plays different role in firm's performance in different stages: positive for firm's entry, but irrelevant to firm's survival and growth. It's thus necessary to divide the process of entrepreneurial activities into different stages in entrepreneurial studies.

This study highlights the impacts of some factors on the firm's performance, which are found to be different from conventional views. For instance, financial support (or financial constraint) has been frequently reported as a decisive factor in all stages of entrepreneurial activities. However, as discussed in 4.1.2.2, according to official

statistics it has little to do the process. Entrepreneurs without financial support had founded most of the start-ups and performed even better in firms' survival. That is to say, at least in most cases in Sweden, entrepreneurs were not limited by financial constraints. Partnership is another example: though it's widely believed that the participation of other entrepreneurs would favor firm's performance by bringing more human capital, in fact partnership firms had performed worse than non-partnership ones. These findings entail empirical examinations on the role of factors. It also reveals the role of more fundamental factors in the process. The second-order factors of "region" discussed in section 4.2 provide empirical support for this. On the other hand, as mentioned in section 3.3, risk-attitude can be viewed as a second-order factor that can be related to gender, age and ethnic origin. Future researches on those second-order factors would benefit the understanding of the process.

The empirical findings of this study provide some support for entrepreneurs' decision making. First of all, it's time for entrepreneurs to discard their old beliefs in financial support. As this study suggests, financial support actually plays no significant role in firm's performance. In other words, entrepreneurs should not limit themselves due to their unnecessary fear of financial constraints. Instead, they should pay more attention to other factors that are proven to have impacts on firm's performance, for instance partnership. Although the participation of partners would contribute their human capital and other resources, it also brings conflicts, which could be fatal for a firm as empirical evidence demonstrates. It's also important for the entrepreneurs to locate their firms more wisely, since the role of region is found to be significant in the post-entry phase.

For policy-makers, this study exhibits the importance of regional environment. As presented in section 4.1.3.2, statistical data reveals the important role of region in firm's performance. Section 4.2 further provides detailed prescription for policy making. Rather than ambiguously stressing the importance of regional environment, this study shows the role of specific sub-factors. In particular, it proves the fact that

regional population density and wage level are positively related with regional establishment rate, but statistically irrelevant to firm's post-entry performance. It also identifies the impacts of regional labor market and industrial environment. In general, policy-makers are advised to pay more attention to promote the establishment of new firms, since regional aspects are more related to the pre-entry phase rather than post-entry phase, as the empirical findings in section 4.2 suggest.

The limitation that needs to be acknowledged regarding the present study concerns the empirical data used in this research. The one-dimension aggregate-level statistics can only give an overview of the broad picture, for instance how many firms formed and survived in a certain industry; but it fail to figure out the interrelation between factors, e.g. for those firms in this industry, what role have other factors such as gender played. This limits the understanding of the process: given that the survival rate of firms in a certain industry is much lower than others, it's hard to distinguish whether it's due to the competition within the industry, or it's because the characteristics shared by most entrepreneurs in this industry. For instance, firms in the industry "trade in goods, hotels and restaurant" are generally connected to lower skilled entrepreneurs, therefore the characteristics of entrepreneurs (lower skilled, etc.) must partly account for the low survival rate of this industry. To identify the interrelation between factors, it's necessary to build a firm-level longitudinal dataset that contains information of individual firms such as entrepreneur/firm/context-related characteristics and their performance.

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