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Entrepreneurship in the region: Breeding ground for nascent enterpreneurs?

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Entrepreneurship in the Region: Breeding Ground for Nascent Entrepreneurs?

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Abstract

This paper employs data from the German Socioeconomic Panel (GSOEP) and data from the German Social Insurance Statistics to study nascent entrepreneurship. In particular, micro data from the GSOEP characterizing employees and nascent entrepreneurs is combined with regional characteristics. Firstly, considering only the micro data the estimates imply that the potential drivers of nascent entrepreneurs are entrepreneurial experience, entrepreneurial learning, and parental self-employment. Secondly, accounting for regional characteristics, which measure the regional level of young and small firms or start-up activity, strongly indicate that regions with strong tradition in entrepreneurship are a breeding ground for nascent entrepreneurs.

Zusammenfassung

Dieser Aufsatz untersucht Werdende Gründer und nutzt hierfür Daten des Sozio-ökonomischen Panels und der Beschäftigtenstatistik des Instituts für Arbeitsmarkt- und Berufsforschung. Insbesondere wird analysiert, inwiefern regionale Charakteristika Einfluss auf die individuelle Gründungsneigung nehmen können. Die Ergebnisse zeigen, dass die Gründungsneigung bei denjenigen Beschäftigten höher ist, die erstens Berufserfahrung in kleinen Unternehmen sammeln, zweitens Entrepreneurship Fähigkeiten durch eine Leitungsfunktion oder Führungsaufgaben aufbauen und drittens deren Eltern selbstständig waren. Zum anderen haben der Anteil der jungen und kleinen Unternehmen in einer Region und die regionale Gründungsrate einen positiven Einfluss auf individuelle Gründungsneigung. Regionen mit einer starken Tradition in Entrepreneurship scheinen eine Brutstätte für Werdende Gründer zu sein.

1 Introduction: The Need for Combining Individual and Regional Characteristics to Study Nascent Entrepreneurship[*]

New business formation is recognized to have an important stimulating effect on economic development (Scarpetta, 2003; Reynolds, Bygrave and Autio, 2004; Audretsch and Keilbach, 2004; Fritsch and Mueller, 2004; van Stel and Storey, 2004). Since nascent entrepreneurs are the founders of new ventures, it is crucial to understand why some people take the opportunity to become an entrepreneur while others neglect this opportunity. The decision to start a new venture may be influenced by experience and prior knowledge (Shane, 2000; Wagner, 2004; Shepherd and DeTienne, 2005), social networks and contact to other entrepreneurs (Singh et al., 1999; Parker 2004), availability of financial capital or individual wealth (Dunn and Hotz-Eakin, 2000), and expected profit and success (Schumpeter, 1934; Knight, 1921).

Under the assumption that a distinct regional variation of new business formation rates can be traced back to regional characteristics, i.e. share of small businesses or level of qualification of the population (Armington and Acs, 2002; Fritsch and Mueller, 2005), one can expect that regional characteristics promote the decision of an individual to step into self-employment, too. Particularly, regions characterized by a high population of young and small firms may stimulate nascent entrepreneurship, namely the individual decision to become self-employed. Parker (2004, p. 100) suggests that regions with strong entrepreneurial tradition have an advantage, if they are able to perpetuate it over time and across generations. This assumption is supported by empirical studies at the individual level. Two recent studies by Wagner (2004, 2005) show that direct contact to entrepreneurs, based, for example, on the existence of self-employed family members and work experience in young and small firms, increases the propensity to start a business (similar Dunn and Holtz-Eakin, 2000). Whereas the role of small firms as seedbeds for new business formation has been analyzed in several studies on the regional level (e.g. Fritsch and Mueller, 2005; Audretsch and Fritsch, 1994; Gerlach and Wagner, 1994; Beesley and Hamilton, 1984), the

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question whether a high population of young and small firms in a region increases the individual propensity to transit to self-employment, has not been raised so far. Not only role models within the family and work place are an important stimulus for nascent entrepreneurs, the owner of young firms can be seen as additional role models in the region.

Thus, the objective of this paper is to study possible factors influencing the decision to be a nascent entrepreneur. The particular contribution of this paper is to combine regional and individual characteristics and analyze if entrepreneurship in the region affects entry into self-employment. The paper is structured as follows. Hypotheses about the possible individual and regional characteristics influencing the propensity to start a business are presented in section two. The third section of the paper will introduce the data sets and provide descriptive statistics. Empirical results are presented and discussed in the fourth section, and the conclusions are in the final section.

2 Developing a Theoretical Framework: Does Entrepreneurship in the Region Affect Entry into Self-Employment?

Why do some people plan to become entrepreneurs and others do not? From an economic perspective, an individual will only choose to become self-employed if the expected life-time utility from self-employment is higher than the life-time utility from dependent employment. Certainly, the expected life-time utility is based upon monetary and non-monetary returns and depends on additional variables like the individual's age, qualification, work experience, or risk propensity. Since the different factors are interrelated, it is of particular interest to investigate the ceteris paribus impact of different variables affecting the decision to become self-employed as opposed to the decision to remain employed.

Various variables should be considered when trying to explain why individuals choose self-employment. In regards to gender, many studies have shown that men rather become self-employment than women (see Wagner, 2004 or Delmar and Davidsson, 2000 for an overview). Pertaining to the impact of age on the decision to become an entrepreneur, various arguments support either a negative or a positive relationship (Parker, 2004, pp. 70-72 gives an overview). For example, elderly employees should possess relatively more human and physical capital needed for entrepreneurship, as they had time to accumulate

respective knowledge and wealth. Furthermore, older people had time to establish networks and enlarge their ability to identify opportunities. Thus, a positive relationship between entrepreneurship and age can be assumed (Evans and Jovanovich, 1989; Parker, 2004; Wagner, 2004). Yet, starting a new business bears the risk of failure and bankruptcy. Therefore, it can be expected that persons will not start a business if they are too close to retirement age. Their opportunity costs become too high while the payback period shortens, hence, indicating a negative sign. Van Praag and van Ophem (1995) found that even if the opportunity to start a business increases for older workers, they are less willing to become self-employed. Depending on which influence dominates the other, a positive or negative impact of age can be expected.

The relationship between education and the probability to step into self-employment has been found to be either positive or negative, as well as insignificant (Parker, 2004, p. 73 gives an overview). On the one hand, well-educated individuals are probably better informed about opportunities, are secondly more likely to possess the necessary skills, and thirdly have a higher income presenting greater financial resources. On the other hand, formal qualifications are not necessarily sufficient for entrepreneurship (Parker, 2004, p. 73 and Casson 2003, p. 208). Experience may be a more valuable variable of human capital and determinant for nascent entrepreneurs. Employees with highly qualified duties or managerial functions gain experience in fields necessary for running their own business.[1] Additionally, entrepreneurial learning can be promoted by working in young and small firms as employees are able to gather first hand information about the start-up process, emerging possible constraints and problems during the start-up process and their solutions (Boden, 1996; Wagner, 2004). Another advantage of working in a young and small firm, besides gaining experience, is the possibility of direct contact to the owner of that firm. The entrepreneurs, namely the owners, of these young firms act as role models, and, therefore, may increase the probability of an employee to transit from wage-and-salary to self-employment. Wagner (2004) found that employees who have worked in young and small firms are more likely to choose self-employment as a

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[1] Employees with highly qualified duties or managerial function are, for instance, scientists, attorneys, head of department, or managers.

career. He concludes that young and small firms are a natural breeding ground for nascent entrepreneurship. Furthermore, one may assume that combining both experiences gained from managerial functions and employment in small firms will particularly increase the propensity to become self-employed. An additional factor influencing the transition to self-employment could be that employees in small firms hardly have an opportunity for advancement once they are in managerial positions. Therefore, maximizing their expected life-time utility will most likely result in changing of a job or starting their own venture.

Since the entrepreneurial attitude seems to be stronger developed in families with self-employed parents, parents can be seen as role models. Individuals might have a higher probability to start a business on their own because their parents may have offered informal induction in business methods, transferred business experience, and provided access to capital and equipment, business networks, consultancy and reputation (for an overview see Parker, 2004, p. 85; Blanchflower and Oswald, 1998).[2] Additionally, by growing up in a self-employed family may promote a pro-business attitude, a positive attitude towards acting independently, and reduce the age at which they enter self-employment and, therefore, increase the duration of the time spent in self-employment (Parker 2004, p. 85; Dunn and Holtz-Eakin, 2000).

Supposing the fact that employees are more likely to switch to self-employment, if they are less satisfied with their job is supported by studies, which found that the self-employed are more satisfied with their jobs than the employees (i.e. Blanchflower and Oswald, 1998; Blanchflower, 2004 or Parker, 2004, p. 80). A possible reason for dissatisfaction could be the lack of independence in paid-employment, which is expected to be gained through self-employment.[3]

Assuming that some regions are more entrepreneurial than others, the question may be raised if a strong entrepreneurial tradition in a region affects the likelihood of employees to become nascent entrepreneurs. Regions with a high population of young and small firms could stimulate nascent entrepreneurship due

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[2] Casson (2003, p. 234) also calls the family a potentially valuable source of information.
[3] Parker (2004, pp. 80-81) discusses that the bottleneck of gaining independence as self-employed is to receive long work hours and conflicts in regard to family live. Therefore, some individuals may also hesitate to switch over to self-employment.

to the existence of a large number of entrepreneurs. The owners of these firms act as role models and are important in creating and sustaining an entrepreneurial climate. Individuals are embedded in their environment and consequently affected by friends, neighbors, and colleagues. A high share of entrepreneurs in the population increases the probability that they know or are in contact with an entrepreneur, hence, that they are exposed to possible role models. The impact of small firms within a region on start-up rates has been analyzed in several studies on an aggregated level (e.g. Fritsch and Mueller, 2005; Audretsch and Fritsch, 1994; Beesley and Hamilton, 1984). It has not been tested yet if a high number of role models in a region increase entry into self-employment. Fritsch and Mueller (2005) show that new business formation rates are highly path-dependent on the regional level. Their results confirm that some regions are able to perpetuate their entrepreneurial tradition over time.

3   Data and Descriptive Statistics

The empirical analysis tests to what extend the individual and regional characteristics stimulate the probability of an employee to be a nascent entrepreneur. Data on nascent entrepreneurs are taken from the German Socio-Economic Panel Study (GSOEP) conducted by the German Institute for Economic Research (DIW). The GSOEP is a wide-ranging representative longitudinal study of private households in Germany, in which the same private households, persons, and families have been surveyed annually since 1984. East Germany was included into the survey in 1990. For this analysis, only the survey of the year 2003 is used. In 2003, data was collected on 22,611 persons throughout Germany, from which 18,118 persons are between the ages of 18 and 64. The survey contains, amongst others demographic characteristics like gender, age, education, data on the interviewee's employment status and work experience. Some data is on entrepreneurial activities, namely the interviewees are asked if they are currently self-employed, or if they plan to become self-employed.[4] Particularly, the interviewees were asked *how likely it is that they will change their career and*

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[4] The GSOEP data base has been used several times to analyze the issue of self-employment. For instance, the recent study by Constant and Zimmermann (2004) identified the characteristics of the self-employed immigrant and native men in Germany; Pfeiffer and Reize (2000) analyzed the transition from unemployment to self-employment; and Lohmann and Luber (2004) analyzed trends in self-employment in Germany.

have become self-employed and/or freelance, and/or have become a self-employed professional within the next two years. They were asked to estimate the probability of such a change according to a scale from zero to 100 percent in increments of ten; whereas zero means that such a change will definitely not take place and 100 means that such a change will definitely take place. The analysis is restricted to those persons who are currently employed in the private sector and are between 18 and 64 years old. Interviewees who are in the public sector, are already self-employed, and are out of the labor force (i.e. unemployed, retired or full-time student) have been excluded from the data; leaving 7,059 persons, 1,612 in East and 5,447 in West Germany.

It is neither easy to define entrepreneurship nor nascent entrepreneurship. The Global Entrepreneurship Monitor GEM project classifies individuals as nascent entrepreneurs if they are alone or with others actively involved in starting a new business that will at least partly belong to them; and they should not have paid full time wages or salaries for more than three months to anybody (Reynolds, Bygrave and Autio, 2004; see also Reynolds, Carter, Gartner and Greene, 2004). Particularly, these individuals are at a phase where they start looking for a location, organizing a start-up team, developing a business strategy, or searching for financial capital. The individuals are not yet at a stage where they pay salaries or exchange products or services with customers. Furthermore, it is not definite if these nascent entrepreneurs will ever actually start their own firm.

The distribution of the interviewed employees regarding their likelihood to change their career and become self-employed within the next two years is given in Figure 1. While three-quarter of the interviewees do not consider becoming self-employed at all, only 1.15 percent appraise a definite transition to self-employment. It is definitely implausible to assume that all interviewees who are likely to change their career and become self-employed within the next two years should be considered nascent entrepreneurs. Someone estimating her/his probability to ten or twenty percent is probably not yet actively involved in starting a new business, but she/he might have taken it into consideration or might not be averse to it. These individuals may be rather defined as latent entrepreneurs (Blanchflower, Oswald and Stutzer, 2001). Figure 1 demonstrates a relatively high share of individuals (17.6 percent) who rate their probability up to

20 percent. Interviewees who rated their likelihood of becoming self-employed at a minimum of 50 percent are probably more likely to be already actively involved in starting a business. This classification brings forth 476 nascent entrepreneurs and leads to a nascent entrepreneurship rate of 6.7 percent. This nascent entrepreneurship rate is higher than the ones found by the Global Entrepreneurship Monitor for Germany reporting a rate of about 3.5 percent for the years 2003 and 2004 (Sternberg and Lueckgen, 2005).[5]
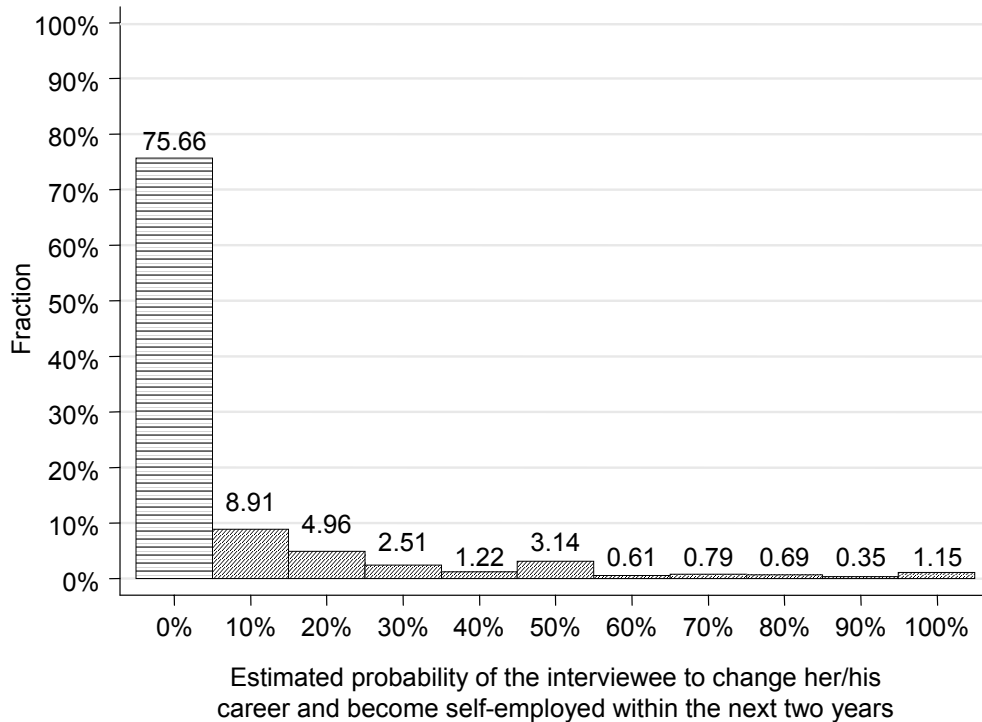
Figure 1: Distribution of the probability to become self-employed

Since it is possible to think of many objections to the cut-off boundary of 50 percent, other classifications have also been tested in the econometric study. The distribution reveals a break between 20 and 30 percent; by reason that the share reduces in half from 4.96 percent to 2.51 percent. If all individuals who rate their likelihood of becoming self-employed at a minimum of 30 percent are classified, the nascent entrepreneurship rate increases up to 10.47 percent. Another boundary could be set at 60 percent, since the share heavily decreases after the subjective estimation to become self-employed of 50 percent.

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[5] Considering all interviewees between 18 and 64 years (18,118 person) regardless of their employment status (paid-employees, unemployed, civil servants, students) as basis would lead to a nascent entrepreneurship rate of 2.6 percent

Considering all individuals with a subjective estimation of at least 60 percent leads to 254 nascent entrepreneurs and cuts the nascent entrepreneurship rate down to 3.59 percent. Another probability is to consider all individuals and use their probability as dependent variable.[6] However, in this case even those interviewees that rate their probability at 10 percent are defined as nascent entrepreneurs, which is rather implausible.

The descriptive statistics give a detailed overview of the used data set (c.f. Table 1).[7] The results show that self-employment is a male dominated career choice; 64 percent of the nascent entrepreneurs are men compared to 56 percent male employees. Employees are, on average, four years older than nascent entrepreneurs. The educational background could be measured by whether or not the interviewee holds a secondary education diploma or a university degree. A large proportion of nascent entrepreneurs (39 percent) hold a secondary education diploma, compared to every fourth employee. The difference regarding the university degree is also distinctive, 30 percent of the nascent entrepreneurs hold a university degree compared to 19 percent of the employees. Qualification measured by years of education shows that nascent entrepreneurs were educated for an average of 13 years, one year more than the average employee.[8] As discussed earlier, formal qualifications are not the best representative for skills needed to start a business, in fact gaining entrepreneurial experience is probably more valuable and important. Highly qualified duties and a managerial position are important factors in gaining entrepreneurial experience. Every third nascent entrepreneur is an employee with highly qualified duties or managerial function compared to every fifth employee. Furthermore, the data reveal that about 62 percent of those interviewees, that hold a university degree, are with highly qualified duties or managerial function. As the variables measuring formal

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[6] A one-step approach modeling individual probability to become nascent entrepreneur is to apply the quasi-likelihood estimation method developed by Papke and Wooldridge (1996) to deal with fractional response variables bounded between zero and one.

[7] Results of a mean comparison test can be found in the appendix, Table A1.

[8] The years of education comprise i.e. years of apprenticeship, years of study at university, school for master craftsman.

qualifications and entrepreneurial experience are strongly correlated, the econometric study will focus on entrepreneurial experience.[9]

The advantage of working in a small firm, besides gaining entrepreneurial experience, is to have direct contact to the owner of that firm. The interviewees are asked to classify the size of that firm at which they are currently employed. Firm size is measured by the number of employees working in a firm. Possible categories are less than five employees, five to 19 employees, 20 to 99 employees, 100 to 199 employees, 200 to 199 employees, and 200 employees or more. Unfortunately, the respondents do not specify the age of the firm, which would have allowed for analyzing the impact of young and small firms; consequently only small firms can be identified.[10]. Nascent entrepreneurs are more often employed in small firms than employees. Almost 40 percent are working in firms with less than 20 employees (firm size class I and II). Combining the two characteristics highly qualified duties or managerial function and working in a small firm reveals that ten percent of nascent entrepreneurs meet both criteria. On the contrary, only three percent of employees carry out managerial functions while working in a small firm.

Moreover, entrepreneurship seems to run in the family; every seventh nascent entrepreneur had parents that were self-employed compared to every tenth employee. Being less satisfied with the job could also be a factor for nascent entrepreneurship. The interviewees were asked to rate their contentment with their job according to a scale between zero and ten; zero representing total dissatisfaction and ten meaning total satisfaction. The descriptive statistics show that employees are somewhat more satisfied with their job than nascent entrepreneurs, on average 7.10 and 6.59 respectively. Mean comparison tests of the two groups, nascent entrepreneurs and employees, reveal that there are statistically significant differences between almost all individual variables (c.f. Table 1).

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[9] For instance, the correlation between secondary education degree and university degree constitutes 0.54, and the correlation between university degree and managerial functions / highly qualified duties constitutes 0.53. Both values are highly significant at an error level of one percent.
[10] Wagner (2004) is able to analyze the impact of being currently employed in a young and small firm on the probability of becoming an entrepreneur and finds out that it is very important if an employee has worked in a young firm.

Table 1: Descriptive statistics of nascent entrepreneurs and mean comparison test

	Nascent entrepreneurs		Employees		Mean comp. test
	Mean	Std. Dev.	Mean	St. Dev.	Prob-Value
Individual characteristics:					
Gender (dummy, 1 = male)	0.64	0.48	0.56	0.50	0.0010
Age (years)	36.68	9.93	40.45	11.04	0.0000
High school diploma/university entrance diploma (dummy, 1 = yes)	0.39	0.49	0.24	0.42	0.0000
University degree (dummy, 1 = yes)	0.30	0.46	0.19	0.39	0.0000
Years of education (years)	13.00	2.70	12.08	2.50	0.0000
Highly qualified duties and/or managerial position (dummy, 1 = yes)	0.33	0.47	0.19	0.39	0.0000
Firm size class I (dummy; 1-5 employees)	0.13	0.34	0.10	0.30	0.0164
Firm size class II (dummy; 5-19 employees)	0.25	0.43	0.19	0.40	0.0036
Firm size class III (dummy; 20-99 employees)	0.23	0.42	0.21	0.41	0.2518
Firm size class IV (dummy; 100-199 employees)	0.09	0.28	0.10	0.29	0.5188
Firm size class V (dummy; 200 employees or more)	0.30	0.46	0.41	0.49	0.0000
Small firm (less than 20 employees) and highly qualified duties or managerial functions (dummy, 1 = yes)	0.11	0.31	0.03	0.17	0.0000
Role model (dummy; 1 = father or mother self-employed when interviewee age 15)	0.14	0.35	0.09	0.29	0.0005
Satisfaction with job (0 = completely dissatisfied, 10 = completely satisfied)	6.59	2.22	7.10	1.94	0.0000
Regional characteristics:					
Population density	579.34	798.47	515.04	693.46	0.0533
Population of young and small firms:					
Young and small firms per 100 firms	29.52	2.91	29.28	2.78	0.0741
Young and small firms per 100 inhabitants	6.68	1.04	6.55	1.00	0.0081
Start-up activity in region:					
Start-ups per 1,000 inhabitants (age 20-59)	4.20	0.60	4.14	0.57	0.0160
Start-ups per 100 existing firms	10.32	1.39	10.23	1.28	0.1317
Share employees in young and small firms in all employees (%)	10.38	2.65	10.30	2.60	0.4790
Observations	476		6583		

Note: A prob-value of less than 0.05 means that the null-hypothesis of equal means for both groups can be rejected at an error level of less than 5 percent [H_0: Differences in means = 0].

The lower part of Table 1 reports descriptive statistics of the regional characteristics. The fact that micro-data specify the region, namely the planning regions, the interviewee lives in; it therefore allows a link between the micro-data and the regional characteristics.[11] Information on small, young and new businesses and employment are from the establishment file of the German Social Insurance Statistics (as documented by Fritsch and Brixy, 2004). Since the data base reports only businesses with at least one employee, start-ups consisting of only owners are not included. For this analysis, firms are defined as young and small firms if they are at most five years old and had no more than 20 employees at the time the new venture was founded. It may be assumed that young and small firms still deal with problems and constraints, as well as their solutions emerging during the start-up process, therefore, these firms are probably a good indicator for the population of entrepreneurs or hothouses in a region.[12] The population of young and small firms is on average higher for the group of nascent entrepreneurs compared to employees. The difference of the mean values regarding young and small firms per inhabitants is statistically significant for the two groups (c.f. Table A1).

Start-up activity in a region is measured by the regional start-up rate, either start-ups per inhabitants (age 20-59, labor market approach) or start-ups per existing firms (ecological start-up rate).[13] Both variables report higher values for the group of nascent entrepreneurs, however, only a statistically significant mean difference for the variable new firms per inhabitants was found (c.f. Table A1). The self-employment rate in a region could be considered as an indicator of entrepreneurial activity as well. However, many self-employed are the owner of an older firm and they are not confronted with problems arising during the start-up phase. Therefore, they may not be seen as role model for potential starters.[14]

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[11] Planning regions are functional units that consist of at least one core city and the surrounding area and are somewhat larger than what is frequently defined as labor market area. The planning regions have been designed by the Federal Office for Building and Regional Planning (Bundesamt für Bauwesen und Raumordnung, 2003).

[12] Wagner (2004) calls young and small firms hothouses for nascent entrepreneurship.

[13] See Audretsch and Fritsch (1994) for different approaches of calculating start-up rates. Start-ups per inhabitants are restricted to those inhabitants age 20-59 because those inhabitants can be seen as a proxy for the economically active population.

[14] The mean values for self-employment rate hardly differ for both groups (10.52 and 10.51 percent respectively); a mean comparison test revealed no statistical significance.

The share of employees in young and small firms out of all employees indicates the share of employees with entrepreneurial experience. Although the mean value is higher for the group of nascent entrepreneurs, a significant mean difference could not be detected.

4 Results of the Econometric Study: The Impact of Young and Small Firms in the Region on Nascent Entrepreneurship

Becoming an entrepreneur or being a nascent entrepreneur is a rare event. Less than seven percent of the employees in the data set can be considered nascent entrepreneurs. The National Report Germany of the Global Entrepreneurship Monitor reported a nascent entrepreneurship rate of 3.4 percent for the year 2004; therewith Germany's rate was below the rate of the United States (about 7.5 percent) but above the rate of Great Britain and the Netherlands (Sternberg and Lueckgen 2005).[15] According to the Panel Study of Entrepreneurial Dynamics (PSED), Reynolds, Carter, Gartner and Greene (2004) identified about 6.2 per 100 U.S. adults engaged in trying to start new firms. Wagner (2004) found 3.6 percent of all employees as nascent entrepreneurs for eleven German regions. Therefore, the regressions are carried out using rare events logistic regression model, which has been developed by King and Zeng (2001). The goal of the empirical investigation is to analyze the ceteris paribus effect of different variables determining the propensity of becoming a nascent entrepreneur; especially working in a small firm, gaining entrepreneurial experience and having direct contact to entrepreneurs, living in a region with a high population of young and small firms, as well as living in a region with a high level of start-up activity.

The empirical results support the hypotheses that it does matter if a person gained entrepreneurial experience by highly qualified duties and managerial positions, and if she/he works in a small firm having direct contact to the owner of that firm (Table 2). Model I and II report the results if only individual characteristics are taken into the regression. Model II uses an interaction term indicating that the person has gained entrepreneurial experience through highly

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[15] The advantage of this model is that it uses an estimator that gives lower mean square error in the presence of a rare events data for coefficients, probabilities, and other quantities of interest. Since individuals may be dependent within the planning region they live in, the variances of the estimated coefficients were estimated with the region as a cluster.

qualified duties and a managerial position while working in a small firm. Individuals qualifying for both criteria have a higher probability to be a nascent entrepreneur. Furthermore, the results reveal that those individuals with (former) self-employed parents and those that are rather dissatisfied with their current job have a higher propensity to be a nascent entrepreneur, as well. A dummy variable differentiating between East and West Germany was first taken into the regression, but it was ultimately dropped because it did not prove to be significant and did not affect the results of other variables. However, the variances of the estimated coefficients were estimated with the planning region as a cluster since it can be assumed that individuals may be dependent within the planning region they live in.

Table 2: Probability to be a nascent entrepreneur

	Nascent entrepreneur						
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Gender (1 = male)	0.286*	0.286*	0.289*	0.291*	0.292*	0.289*	0.286*
	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.012)	(0.013)
Age (years)	-0.040**	-0.040**	-0.040**	-0.040**	-0.040**	-0.040**	-0.040**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highly qualified duties and/or managerial functions (1 = yes)	0.997**	0.845**	0.837**	0.826**	0.825**	0.837**	0.846**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small firm (1 = less than 20 employees)	0.497**	0.366**	0.362**	0.334*	0.365**	0.367**	0.362**
	(0.000)	(0.002)	(0.002)	(0.029)	(0.002)	(0.002)	(0.002)
Small firm * highly qualified duties or managerial function (1 = yes)	—	0.496*	0.501*	0.508*	0.506*	0.498*	0.498*
		(0.016)	(0.015)	(0.014)	(0.014)	(0.015)	(0.016)
Role model (1 = father or mother self-employed)	0.327*	0.325*	0.339*	0.334*	0.329*	0.331*	0.333*
	(0.027)	(0.031)	(0.026)	(0.029)	(0.031)	(0.029)	(0.027)
Satisfaction with job (0 = completely dissatisfied, 10 = completely satisfied)	-0.154**	-0.155**	-0.152**	-0.152**	-0.153**	-0.153**	-0.154**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Young and small firms per 100 firms	—	—	0.022	—	—	—	—
			(0.125)				
Young and small firms per 100 inhabitants	—	—	—	0.096**	—	—	—
				(0.004)			
Start-ups per 1,000 inhabitants (age 20-59)	—	—	—	—	0.149**	—	—
					(0.010)		
Start-ups per 100 existing firms	—	—	—	—	—	0.037	—
						(0.103)	
Share employees in young and small firms	—	—	—	—	—	—	0.012
							(0.518)
Constant	-0.643**	-0.591**	-1.242*	-1.240**	-1.228**	-0.978**	-0.724*
	(0.000)	(0.005)	(0.014)	(0.000)	(0.001)	(0.007)	(0.016)
Observations	7059	7059	7059	7059	7059	7059	7059

* significant at 1%-level, ** significant at 5%-level; Prob-values in parentheses, rare events logistic regression model.

To point out the importance of entrepreneurial experience and learning, person A is considered, who is male and 40 years old, his parents have never been self-employed, he neither has a managerial position nor works in a small firm and

is rather satisfied with his job (rank 7 out of 10).[16] Based on the results of model II, the estimated probability for this person to be a nascent entrepreneur is 4.7 percent. However, if he would work in a small firm and gained entrepreneurial experience due to a managerial position, his probability would increase to 21.7 percent (person B). According to model II, his probability to be a nascent entrepreneur would be either 6.8 percent if he works in a small firm but does not have a managerial position or 10.5 percent if the antipode is applied. From the data it is unclear whether the individual lacks promotion prospects at her/his job, but if she/he is with managerial function and lacks job advancement she/he is probably most likely to be a nascent entrepreneur.

The results of model III through VII also include regional characteristics. Model III and IV each include a variable measuring the population of young and small firms in the region, model V and VI test for the impact of regional new business formation activity, and the last model tests the relationship between the share of employees working in young and small firms and nascent entrepreneurship. As all five variables are highly correlated, they are separately taken into the regression (c.f. Table A1 in appendix). Firms are classified young and small if they had less than 20 employees at the time of founding and are at the most five years old. Individuals living in a region with a high population of young and small firms per 100 inhabitants have a higher propensity to be a nascent entrepreneur. Knowing that many firms are founded by a team, the value of the variable young and new firms per inhabitants is probably underestimated and the effect might be even stronger. The coefficient of the variable young and small firms per 100 firms is only statistically significant at a level of statistical significance of 12.5 percent. If young and small firms are an indicator for young entrepreneurs, it may be concluded that it does matter if a person lives in a region with a high share of young entrepreneurs in the population.[17] Young entrepreneurs in a region can be understood as role models increasing the propensity of an individual to switch over to self-employment.

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[16] A way to interpret the results of the estimation is to compute the estimated values of the endogenous variable (here: the probability of being a nascent) for a person with certain characteristics and attitudes. Changes of the estimated probability can then be shown if the value of one exogenous variable is altered one at a time.

[17] In that case, the number of firms would indicate the number of firm-owners in a region. Young does not mean that the entrepreneur is young, but rather that she/he is the owner of a young firm.

Furthermore, persons living in a region with a high start-up rate also have a higher propensity to be a nascent entrepreneur (model V and VI). The coefficient of the variable start-ups per inhabitants (+0.149) is highly statistically significant; the coefficient of the start-up rate according to the ecological approach (+0.037) is statistically significant at an error level of 10.3 percent. The higher the entrepreneurial activity in a region is, the higher the probability to be a nascent entrepreneur is. Model VII reveals that it does not matter if a high share of employees works in young and small firms in a region. These employees might also be potential nascent entrepreneurs, but they do not stimulate nascent entrepreneurship. The positive impact seems to be restricted to individuals who have already started or just started a business.

For illustrative purposes, person C is considered. Like person B, he is male and 40 years old, his parents have never been self-employed, he works in a small firm and has a managerial position and is somewhat satisfied with his job. However, if he now lived in Munich where the share of young entrepreneurs per 100 inhabitants is rather high (8.79), his probability to be a nascent entrepreneur would be 25.4 percent (to recall, person B had a propensity of 21.7 percent). If he lived in a region with a relatively low population of young and small firms per 100 inhabitants, for instance 5.48 in the Black Forest, his probability would decrease down to 19.8 percent.

A sensitivity analysis allowed for other demarcations of the subjective estimation to become self-employed was also conducted. Firstly, all individuals who rated their personal propensity to become self-employed at at least 30 percent were defined as nascent entrepreneurs (c.f. Table A2). The results support the already represented results, namely gaining entrepreneurial via working in a small firm, having a managerial position, having self-employed parents, as well as living in a region with a high level of young and small firms per inhabitants, and a high start-up rate may increases the propensity to be a nascent entrepreneur. Secondly, those individuals rating their probability with at least 60 percent were classified nascent entrepreneurs (c.f. Table A3). Interestingly, gender is less statistically significant (at approximately the six percent level) and the significance of the interaction term working in a small firm and highly qualified duties or managerial function decreases (but still below the six percent level). The

results indicate that the regional characteristics are less important, i.e. the coefficient of the variable young and small firms per inhabitants is significant at an error level of 10.7 percent. Thirdly, all interviewees rating their probability to become self-employed greater than zero were considered nascent entrepreneurs and their actual response regarding the probability was taken as dependent variable (cf. Table A4). The results using a fractional logistic regression model reveal less impact of the regional characteristics on the propensity to be a nascent entrepreneur. Nevertheless, the regional level of young and small firms per 100 inhabitants is statistically significant. Based on the sensitivity analysis, it can be concluded that a high share of entrepreneurs in the population does stimulate nascent entrepreneurship.

The results of the econometric analysis demonstrate that individuals are not insulated beings; rather, they are embedded in their environment and stamped by their family and work. It does matter if one gains and enlarges her/his entrepreneurial experience and entrepreneurial learning by working in a small firm and having managerial duties and functions. Besides the importance of individual characteristics, living in a region with a high population of young and small firm and with a high start-up activity might be just the dot on the i. Regions with strong tradition in entrepreneurial activity are able to perpetuate entrepreneurship over time and across individuals. Fritsch and Mueller (2005) show that the level of regional new business formation activity is characterized by pronounced path dependency and persistence over time. Regions with relatively high rates of new business formation in the past are very likely to experience a correspondingly high level of start-ups in the near future. Therefore, young and small firms in the region may affect the individual decision to start a firm and can be seen as breeding ground for nascent entrepreneurs.

5   Concluding Remarks

This paper tested the role of young and small firms and young entrepreneurs in a region as a stimulus for nascent entrepreneurship on the individual level. A high population of young and small firms and a high gear of entrepreneurial activity may increase the propensity of being a nascent entrepreneur. The GSOEP data base has been linked to regional characteristics for the first time to analyze nascent entrepreneurs. Since the regional characteristics of entrepreneurship are

highly correlated, it may be expedient to generate a regional index of breeding ground based upon all or the two significant ones (share of entrepreneurs in population and start-ups per inhabitants).

Further research will examine the magnitude of nascent entrepreneurs as hidden potential. Therefore, one promising research field is to investigate how many of the identified nascent entrepreneurs from the year 2003 actually became self-employed by 2006. A relatively low share may be expected, as other studies found that about one in two or one in three nascent entrepreneurs actually start a firm (Aldrich and Martinez, 2001; Reents, Bahß and Billich, 2004; Menzies et al., 2003). Most of the firms created by nascent entrepreneurs are quite small and fail shortly after their creation (Aldrich and Martinez, 2001). Knowing that regional characteristics have a pronounced effect on the survival and success of new businesses (i.e. Geroski, Mata and Portugal, 2003), the regional founding conditions as well as the conditions at the time of firm closure may be analyzed by linking regional characteristics with the micro data of the GSOEP.

Appendix

Table A1: Correlation between regional characteristics

	Young and small firms in 100 firms	Young and small firms per 100 inhabitants	Start-ups per 1,000 inhabitants (age 20-59)	Start-ups per 100 existing firms
Young and small firms in 100 firms	1.0000	—	—	—
Young and small firms per 100 inhabitants	0.7262	1.0000	—	—
Start-ups per 1,000 inhabitants (age 20-59)	0.6896	0.8780	1.0000	—
Start-ups per 100 existing firms	0.7987	0.4496	0.7045	1.0000
Share employees in young and small firms	0.8193	0.5965	0.4633	0.4923

Table A2: Probability to be a nascent entrepreneur

	Nascent entrepreneur						
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Gender (1 = male)	0.293**	0.292**	0.295**	0.299**	0.293**	0.298**	0.293**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (years)	-0.044**	-0.044**	-0.044**	-0.044**	-0.044**	-0.044**	-0.044**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highly qualified duties and/or managerial functions (1 = yes)	0.921**	0.759**	0.753**	0.739**	0.758**	0.743**	0.760**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small firm (1 = less than 20 employees)	0.371**	0.231*	0.228*	0.225*	0.231*	0.230*	0.226*
	(0.000)	(0.028)	(0.030)	(0.032)	(0.028)	(0.029)	(0.031)
Small firm * highly qualified duties or managerial function (1 = yes)	—	0.586**	0.589**	0.599**	0.586**	0.593**	0.588**
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Role model (1 = father or mother self-employed)	0.399**	0.397**	0.408**	0.406**	0.398**	0.400**	0.406**
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)
Satisfaction with job (0 = completely dissatisfied, 10 = completely satisfied)	-0.144**	-0.145**	-0.143**	-0.142**	-0.144**	-0.143**	-0.143**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Young and small firms per 100 firms	—	—	0.016	—	—	—	—
			(0.209)				
Young and small firms per 100 inhabitants	—	—	—	0.103**	—	—	—
				(0.002)			
Start-ups per 1,000 inhabitants (age 20-59)	—	—	—	—	0.120*	—	—
					(0.039)		
Start-ups per 100 firms	—	—	—	—	—	0.004	—
						(0.857)	
Share employees in young and small firms	—	—	—	—	—	—	0.013
							(0.422)
Constant	-0.026	0.026	-0.462	-0.675*	-0.017	-0.487	-0.119
	(0.892)	(0.896)	(0.306)	(0.035)	(0.960)	(0.136)	(0.667)
Observations	7059	7059	7059	7059	7059	7059	7059

* significant at 1%-level, ** significant at 5%-level; Prob-values in parentheses, rare events logistic regression model., subjective estimation to become self-employed at least 30 percent.

Table A3: Probability to be a nascent entrepreneur

	Nascent entrepreneur						
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Gender (1 = male)	0.255	0.255	0.254	0.259	0.253	0.259	0.255
	(0.060)	(0.060)	(0.062)	(0.056)	(0.063)	(0.059)	(0.060)
Age (years)	-0.041**	-0.041**	-0.041**	-0.041**	-0.041**	-0.041**	-0.041**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highly qualified duties and/or managerial functions (1 = yes)	0.840**	0.657**	0.660**	0.643**	0.663**	0.644**	0.656**
	(0.000)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
Small firm (1 = less than 20 employees)	0.517**	0.373*	0.375*	0.368*	0.373*	0.372*	0.374*
	(0.000)	(0.027)	(0.026)	(0.028)	(0.027)	(0.027)	(0.027)
Small firm * highly qualified duties or managerial function (1 = yes)	—	0.558*	0.555*	0.568	0.556	0.565	0.557
		(0.056)	(0.057)	(0.052)	(0.057)	(0.054)	(0.056)
Role model (1 = father or mother self-employed)	0.479**	0.477**	0.471**	0.484**	0.472*	0.480**	0.474**
	(0.008)	(0.010)	(0.010)	(0.009)	(0.011)	(0.010)	(0.010)
Satisfaction with job (0 = completely dissatisfied, 10 = completely satisfied)	-0.160**	-0.161**	-0.162**	-0.159**	-0.162**	-0.160**	-0.161**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Young and small firms per 100 firms	—	—	-0.008	—	—	—	—
			(0.651)				
Young and small firms per 100 inhabitants	—	—	—	0.071	—	—	—
				(0.107)			
Start-ups per 1,000 inhabitants (age 20-59)	—	—	—	—	-0.027	—	—
					(0.473)		
Start-ups per 100 firms	—	—	—	—	—	0.093	—
						(0.194)	
Share employees in young and small firms	—	—	—	—	—	—	-0.003
							(0.887)
Constant	-1.203**	-1.146**	-0.901	-1.625**	-0.862	-1.540**	-1.113**
	(0.000)	(0.000)	(0.158)	(0.000)	(0.241)	(0.001)	(0.001)
Observations	7059	7059	7059	7059	7059	7059	7059

* significant at 1%-level, ** significant at 5%-level; Prob-values in parentheses, rare events logistic regression model., subjective estimation to become self-employed at least 60 percent.

Table A4: Probability to be a nascent entrepreneur

	Nascent entrepreneur						
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Gender (1 = male)	0.267**	0.267*	0.268**	0.271**	0.266**	0.270**	0.267**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (years)	-0.039**	-0.039**	-0.039**	-0.039**	-0.039**	-0.039**	-0.039**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highly qualified duties and/or managerial functions (1 = yes)	0.866**	0.761**	0.760**	0.748**	0.763**	0.751**	0.761**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small firm (1 = less than 20 employees)	0.303**	0.209**	0.209**	0.205**	0.209**	0.209**	0.208**
	(0.000)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Small firm * highly qualified duties or managerial function (1 = yes)	—	0.384*	0.385*	0.392**	0.384*	0.389**	0.385*
		(0.013)	(0.013)	(0.011)	(0.013)	(0.012)	(0.013)
Role model (1 = father or mother self-employed)	0.317**	0.315**	0.316**	0.320**	0.313**	0.317**	0.317**
	(0.001)	(0.001)	(0.013)	(0.001)	(0.001)	(0.001)	(0.001)
Satisfaction with job (0 = completely dissatisfied, 10 = completely satisfied)	-0.134**	-0.135**	-0.134**	-0.133**	-0.135**	-0.134**	-0.134**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Young and small firms per 100 firms	—	—	0.002	—	—	—	—
			(0.854)				
Young and small firms per 100 inhabitants	—	—	—	0.061*	—	—	—
				(0.048)			
Start-ups per 1,000 inhabitants (age 20-59)	—	—	—	—	0.074	—	—
					(0.176)		
Start-ups per 100 firms	—	—	—	—	—	-0.009	—
						(0.708)	
Share employees in young and small firms	—	—	—	—	—	—	0.003
							(0.797)
Constant	-0.567**	-0.534**	-0.597	-0.952**	-0.738**	-0.849**	-0.568**
	(0.001)	(0.001)	(0.116)	(0.000)	(0.151)	(0.003)	(0.007)
Observations	7059	7059	7059	7059	7059	7059	7059

* significant at 1%-level, ** significant at 5%-level; Prob-values in parentheses, fractional logistic regression model.

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