

Brixy, Udo; Sternberg, Rolf; Stüber, Heiko

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## From potential to real entrepreneurship

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Institut für Arbeitsmarkt-  
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Die Forschungseinrichtung der  
Bundesagentur für Arbeit

IAB

# IAB-Discussion Paper

32/2008

Beiträge zum wissenschaftlichen Dialog aus dem Institut für Arbeitsmarkt- und Berufsforschung

## From Potential to Real Entrepreneurship

Udo Brix  
Rolf Sternberg  
Heiko Stüber

# From Potential to Real Entrepreneurship

Udo Brixy\*

Rolf Sternberg\*\*

Heiko Stüber\*\*

\* Institute for Employment Research (IAB)  
Regensburger Str. 104  
90478 Nuremberg (Germany)  
Udo.Brixy@IAB.de  
Phone: +49 (0)911 179-3254

\*\* Institute of Economic and Cultural Geography  
University of Hanover  
Schneiderberg 50  
30167 Hanover (Germany)  
sternberg@wigeo.uni-hannover.de  
stueber@wigeo.uni-hannover.de  
Phone: +49 (0)511 762-4496

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## **Abstract**

Not everyone who plans to set up a firm succeeds in doing so. This paper focuses on the phase before a firm is founded, the pre-nascent stage of the entrepreneurship process. Based upon cross-sectional data from the German section of the Global Entrepreneurship Monitor (GEM), the specific aim of this paper is to shed some light on the selection that takes place during the entrepreneurial process and to explain empirically demographic and cognitive characteristics and differences between latent nascent entrepreneurs, nascent entrepreneurs and young entrepreneurs. The results clearly reveal that there are both significant differences between and common determinants of the three phases of the entrepreneurial process. Education, the readiness to take risks, and role models are very important determinants during all phases. However, the regional environment and the age of the entrepreneur have quite a differentiating impact during the entrepreneurial process.

### **JEL classification:**

L26

### **Keywords:**

Entrepreneurship, Nascent Entrepreneurs, Potential Entrepreneurs

## 1. Introduction

Many people think about becoming self-employed at some time during in their life (Welter 2003/04). But few of them really do it. Since fostering entrepreneurship is a major goal of the European Union, the question why so many potential entrepreneurs do not found a business is of great relevance (Commission of the European Union 2003). It is evident that becoming an entrepreneur is not done within a moment, but is a lengthy process.

While later phases of this entrepreneurship process, especially from nascent entrepreneurship onwards, have received increasing attention from empirical researchers in the recent past (e.g., Gartner et al. 2004; Davidsson 2006), the pre-nascent phase is still under-researched. This is astonishing given the policy relevance of knowledge about determinants indicating the transition from latent nascent entrepreneurship to actual entrepreneurship. This paper intends to shed some empirical light on some of these determinants. The specific aim of this paper is to describe and explain demographic and cognitive characteristics of and differences between entrepreneurs during three different phases of the entrepreneurial process: latent nascent entrepreneurship, nascent entrepreneurship and young entrepreneurship. Multinomial logit models with and without interaction effects are tested. The data are based upon more than 25,000 cases from the German data set of the Global Entrepreneurship Monitor (GEM) for the years 2002-2006.

The paper is structured as follows. In the next section we give an overview of concepts and theoretical or empirical work dealing with factors that have an impact on real or potential entrepreneurs in various phases of the entrepreneurial process. The data is described in section 3, which is followed by a section describing the definitions of latent nascent, nascent and young entrepreneurship. Section 5 explains the dependent and the independent variables of our multinomial logistic model, while in the final section we conclude and develop some policy implications.

## 2. Stages of the entrepreneurial process

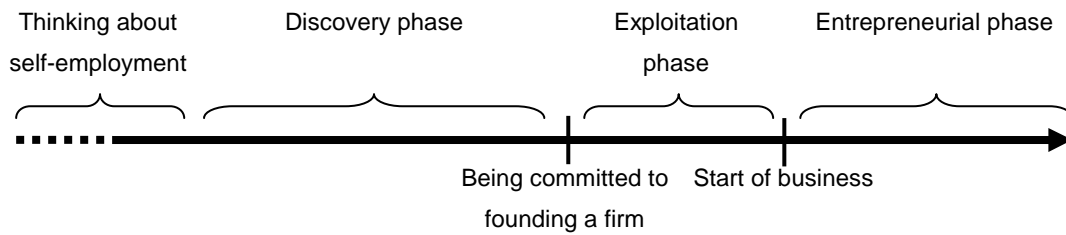
Becoming an entrepreneur is not done within a moment. It is usually a rather long process from the first thoughts of the possibility of becoming self-employed until eventually starting the new business. Figure 1 shows the sequence of this process. The idea becomes more and more concrete from left to right and is accompanied by a shrinking number of people who are involved. As is often the case with social processes, it is difficult to give even a rough estimate of its duration. The axis shows the concepts that have already been used in the literature to measure the number of people involved in the particular state of the process.

Our paper tries to cover the entrepreneurial process using a retrospective approach. While we accept Davidsson's (2006) argument that panel studies like the PSED attempt are in general more appropriate to cover the dynamic process of entrepreneurship, we think that, for lack of panel data for Germany so far, our concept is at least a promising alternative. By considering entrepreneurs in three different phases of the entrepreneurial process (and despite not considering the same entrepreneurs) we are able to obtain valuable empirical insights into the dynamic aspects of the entrepreneurial process, at least implicitly.

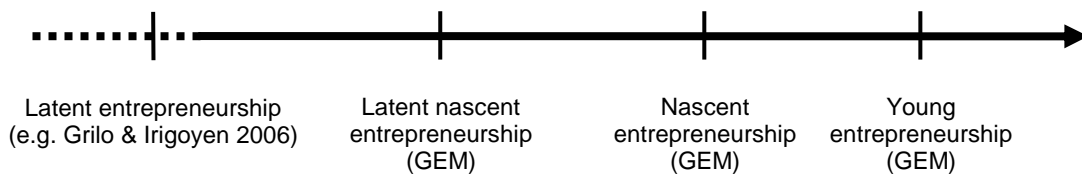
The broadest concept of latent entrepreneurship was recently used by Grilo and Irigoyen (2006). It comprises everyone who in principle would prefer to be self-employed. In this paper we use three measures that follow the GEM concepts (Reynolds et al. 2005). With these concepts it is possible to obtain a fairly good insight into the transition from the start-up intention to the actual start-up (from potential entrepreneurs to real entrepreneurs) empirically and with regional differentiation. In comparison with latent entrepreneurship one would expect a greater variance over time, since the number of people actually planning to set up a firm of their own should be far more closely associated with changes in the economic and political situation than with sheer wishes without any real foundation.

**Figure 1: Phases of the entrepreneurial process**

**The entrepreneurial process**



**The empirical measures**



Latent nascent entrepreneurs are adults (up to 65 years) who are planning to start up a business within the next three years. This is more specific than the concept of latent entrepreneurship, but nevertheless still an intention without any evidence of how concrete this intention really is. The concept of nascent entrepreneurship is much more distinct.<sup>1</sup> Nascent entrepreneurs are people (between 18 and 64 years of age) who are actively involved with the idea of a business start-up, but who have not yet completed the formal launch of the start-up at the time of the telephone survey. The definition of a nascent entrepreneur upon which this paper is based corresponds to that in GEM: an individual may be considered a “nascent entrepreneur” on the basis of three conditions: first, if he or she has done something – taken some action – in the past year to create a new business; second, if he or she expects to share ownership of the new firm; and, third, if the firm has not yet paid salaries and wages for more than three months.

Young entrepreneurs, on the other hand, were once nascent entrepreneurs and have put their start-up idea into action in the recent past. They are defined in GEM

<sup>1</sup> This concept is already well established in the literature (e.g., Davidsson 2006; Reynolds et al. 2004; Lückgen et al. 2006).



as follows: in cases where the firm already exists and the interviewee is the (shared) owner and he or she has paid salaries and wages for more than three months but fewer than three and a half years, it is classified as a “new business” and the individual is classified as a “young entrepreneur”.

Ideally, this process is analysed using panel data. In this case it would be easy to analyse the reasons for attrition between the different stages. We make use of cross-sectional data that is based on different people for each state. We therefore have to assume that there are no or at least only minor cohort or calendar-time effects.

### **3. Factors determining differences during the phases of the entrepreneurship process**

Both empirical and theoretical literature on differences in the demographic and non-demographic characteristics of entrepreneurs in different phases of the entrepreneurial process is scarce. Most of the empirical evidence is based upon nascent entrepreneurs (e.g., Gartner et al. 2004) although they are not defined in the same way in all studies.

It is reasonable to distinguish between the discovery phase and the exploitation phase during the entrepreneurship process (Shane/Venkataraman 2000; Davidsson 2006). While the first has to do with the very early phases including the origins of the start-up idea, the latter refers to the tangible actions associated with putting this idea into action (e.g. acquiring resources). A literature review clearly reveals that the majority of the empirical studies only refer to the status of the entrepreneur (yes or no) but do not consider different phases during the entrepreneurial process.

### 3.1 Factors leading to (nascent) entrepreneur status

Traditionally, entrepreneurship literature was dominated by approaches based upon the entrepreneur him/herself. In recent years this literature has experienced a fundamental shift away from person-oriented empirical work to context-related work<sup>2</sup>. Even within the person-oriented entrepreneurship research a trend away from pure demographic characteristics like gender and age to more contextual characteristics like cognitive and attitude-related aspects can not be overlooked. In our methodological approach we intend to consider several kinds of variables including demographic variables characterising the (potential) entrepreneur him/herself, cognitive characteristics and characteristics of the entrepreneur's environment.

Age and sex are two of the most popular variables in empirical studies on the determinants of the individual decision as to whether or not to become an entrepreneur (e.g., Carter/ Brush 2004; Reynolds et al. 2004). It is widely acknowledged that females are less likely to be entrepreneurs than males. According to a recent study by Wagner (2007), this difference in the behaviour of men and women is mainly caused by their attitudes towards the willingness to take risks. Females tend to be older than males when becoming self-employed and are over-represented in the service industries, a fact that cannot be attributed to the secular growth of this industry, since this pre-dates the growth in female self-employment. For females the family background has a serious influence on the decision between self-employment or dependent employment, unlike for males. Whereas having children or being married usually has no effects for males, females are more likely to be self-employed if they are married and / or have children of school age. The burden of caring for the family and in particular for children still traditionally lies with women,

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<sup>2</sup>Considering for example the founder's networks or the regional environment in which he/she lives, see e.g. the comments on the relevance of social proximity for entrepreneurial activities by Boschma (2005) and Sternberg (2007).

so they try to make use of the greater independence and flexibility of self-employed work.

As for the age effect, empirical studies show a clear result: there is a negative or curvilinear effect of age on the probability of becoming a nascent entrepreneur, with a clear peak in the group aged between 25 and 34 (Reynolds 1997; Delmar/Davidsson 2000). This is also a robust result for the countries involved in the GEM project for all survey years since 1998 (e.g., Bosma/Stel/Suddle 2008, for the most recent GEM Global Report). Concerning the age of nascent entrepreneurs it is a stylised fact that the 35 to 44 year-olds are most likely to set up their own firm (Lévesque/Minniti 2006). Age is often used as a proxy for experience, which is arguably not synonymous but a common practice since real measures of experience are scarce. Besides the advantage of experience, older people (or in the case of the 35 to 44 year-olds: less young) often have more money at their disposal and therefore fewer difficulties in raising capital. On the other hand, older people tend to be more risk-averse than younger people, a fact that offsets the influence of age and experience (Parker 2004: 70).

The effect of education on the chances of becoming self-employed is less clear. Highly educated people may have higher opportunity costs when setting up their own business if their skills are in demand, whereas the less highly educated might earn a higher income from working on their own account. On the other hand, the results from the “Regional Entrepreneurship Monitor” (REM) project on entrepreneurship in ten German regions show that nascent entrepreneurs are better educated on average than the adult population as a whole (see Wagner/Sternberg 2004; Lückgen et al. 2006). Parker (2004) points out that the outcome of variables concerning the formal qualification level (measured in years of education or as a set of dummies registering whether survey respondents hold particular qualifications) tends to be positive in cross-section analysis. However, he criticises the fact that the

skills which make a successful entrepreneur are not necessarily associated with formal qualifications.<sup>3</sup> Nevertheless, although this is certainly true, highly qualified people often have other opportunities on the labour market and are less likely to be “necessity entrepreneurs”, a group that is especially large in Germany (Sternberg/Brixy/Hundt 2007).

Examining motivations and perceptions is a popular method for distinguishing nascent entrepreneurs from other individuals by means of their cognitive characteristics (e.g., Shaver 2004). According to Reynolds et al. (2004), there are five categories of reasons or motivations that individuals give for starting a business: innovation (doing something new, also learning), independence, financial success, external validation (recognition and need for approval, searching for status) and roles (e.g. following family traditions). Surprisingly, early results from the US “Panel Study of Entrepreneurial Dynamics” (PSED I) did not reveal any statistically significant differences between the first three of the variable groups mentioned earlier (Reynolds et al. 2004). However, nascent entrepreneurs rated recognition and roles *lower* than non-entrepreneurs. Arenius and Minniti’s (2005) work based upon GEM cross-sectional data shows that perceptual variables such as alertness to opportunities, fear of failure, and confidence in one’s own skills are important for distinguishing nascent entrepreneurs from non-entrepreneurs.

A further especially important motivation for founding a firm in Germany is unemployment: one in three nascent entrepreneurs plans to become self-employed at least partly because he/she does not expect to find a job otherwise (Sternberg et al. 2007). Parker (2004: 95) calls this the “recession-push” effect, as opposed to the “prosperity-pull effect”. Whereas the former describes the reaction of people who cannot find a job and as a consequence set up a firm of their own, the latter de-

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<sup>3</sup> The variety of knowledge is also of importance. As Lazear (2005: 676) points out, entrepreneurs are more often the “jack of all trades” type. This means that they need not “necessarily [be] superb at anything, entrepreneurs have to be sufficiently skilled in a variety of areas”.

scribes the effect that high unemployment reduces demand and hence self-employed incomes. This should discourage founders and reduce the number of new businesses.

### **3.2 Factors during the discovery process**

Empirical literature on the factors determining the entrepreneurs during the discovery process was quite scarce until recently, when first empirical studies based upon the PSED programmes were published. The previous literature dealt in particular with the question of whether the discovery process was led more by internal or external stimuli based upon Bhavé's (1994) distinction. Empirical evidence from the US "PSED I" seems to show that internal stimuli are more important than external ones (Hills/Singh 2004). Sternberg et al. (2007) found, however, that in Germany fear of unemployment, as an external stimulus, is an important motivation for planning to become self-employed.

According to Kirzner (1997) and other exponents of the "Austrian Approach", the entrepreneurial discovery process is the very process that drives the economy. As Kirzner emphasises, this process produces no knowledge in any deliberate sense. It is not a process of intentionally looking for an idea, it is more the case that it involves a "surprise which accompanies the realization that one had overlooked something in fact readily available. [...] This feature of discovery characterizes the entrepreneurial process ..." (Kirzner 1997: 72). As Smith (2005) hypothesizes, the discovery process is influenced more by codified opportunities (or ideas) than by tacit ones and he was able to show that different types of discovery process create different types of venture ideas.

For the early phase of the entrepreneurial process, i.e. the discovery phase, there is only very limited empirical information on the relationship between process characteristics and outcome variables such as the self-reported status of the venture, financial performance or the degree of formality (Davidsson 2006; for exceptions see Davidsson/Honig 2003; Chandler/Dahlqvist/Davidsson 2002; or Carter/Gart-

ner/Reynolds 1996). To sum up, there is still both a need and an opportunity for further empirical research on the relationship between process characteristics and outcomes of the entrepreneurship process during the discovery phase, the latter being (at least partially) overlapped by the latent entrepreneurship phase.

### **3.3 Factors during the exploitation process**

During the exploitation process it is clear that only a limited number of nascent entrepreneurs will continue their efforts. The realization rates differ from country to country, between different methodological approaches and between the times when the (potential) entrepreneurs are interviewed. The results from the PSED studies for the USA show values between 12% in “PSED I” and 20% in “PSED II”<sup>4</sup> after four years (Reynolds/Curtin 2008).

Key factors leading to successful exploitation include human capital (specific or general), social capital, industry experience and access to financial capital, both from a theoretical perspective and from empirical evidence. Davidsson and Honig (2003) were able to show that both previous experience as a founder – as an example of specific human capital – and social capital indicators were helpful for successful exploitation. While this result is similar to that obtained by the majority of related studies there are also contradictory results showing that there is no clear relationship for the relevance of human capital and/or social capital for the likelihood to become an entrepreneur (e.g., Wagner 2003 vs. 2005). On the other hand the results are quite clear for other determinants like the formal education level (no positive impact on the exploitation process) or industry experience (positive impact) (e.g., Baltrusaityte/Acs/Hills 2005; Cooper/Gimeno-Gascon/Woo 1994). However, these results should not be misinterpreted. While a high educational level may indeed be (statistically) unimportant for a successful exploitation of venture ideas, this might be due to other more attractive employment opportunities – and it does not

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<sup>4</sup> The definitions of what is rated as a new business differ in the two studies.

necessarily mean that a good education is not of advantage for the entrepreneurial process per se (Davidsson 2006: 30 et sqq., and Gimeno et al. 1997).

A relatively large number of empirical studies on the exploitation process deal with the “gestation activities” (Davidsson, 2006: 21 et sqq.) such as securing financial resources, developing a business plan or finding an appropriate location. Empirical answers to the question of whether these activities have a positive impact on the exploitation process differ, unfortunately. This is especially evident for the debate about planned organization of the entrepreneurship process vs. flexibility. While the first strategy is confirmed as being successful by, Delmar and Shane (2004) among others, the latter argument in favour of more flexible actions is supported by the research of Carter et al. (1996), Honig and Karlsson (2004) and Samuelsson (2004).

As for perceptual variables, only a small number of studies allow for implications regarding the distinction between nascent entrepreneurs and young entrepreneurs, i.e. two different phases during the exploitation process. While Arenius and Minniti (2005) show in their work based upon GEM data that both nascent entrepreneurs and young entrepreneurs (with businesses older than three months but younger than three and a half years) as well as more established entrepreneurs (with businesses older than three and a half years) are much more likely to respond affirmatively to questions about perceptual variables than respondents who are not active in starting or managing a business, they also show significant differences between young entrepreneurs and nascent entrepreneurs in terms of opportunity perception (more positive for nascent entrepreneurs), but no differences for confidence in one's skills or fear of failure and knowing other entrepreneurs. Using 2001 GEM data for 18 countries, Koellinger, Minniti and Schade (2007) confirm this result and show that the confidence associated with one's own skills and ability declines as more experienced entrepreneurs are considered – thus differences occur between the phases of the entrepreneurial process.

Factors of the regional environment gained in importance more recently when scholars tried to explain an individual's propensity to start a firm or to explain a firm's growth.<sup>5</sup> Most of these research activities, however, do not explicitly cover the process character of entrepreneurship but are based upon cross-sectional entrepreneurship data and meso- or even macro-level data for the independent regional variables (see Falck 2007; Fritsch/Brixty/Falck 2006, for rare exceptions). The empirical evidence is clear for most of the regions and countries studied: irrespective of differences embodied in the individual him/herself there are strong *regional* impacts on an individual's propensity to start a firm. Feldman (2001) goes even further and argues that entrepreneurship is primarily a "regional event". This regional impact may among other things be due to (perceptions of) the entrepreneurial climate (Reynolds et al. 2004), entrepreneurial perceptions of the population in the given region, the regional labour pool and unemployment rate or the availability of venture capital, relevant infrastructure or entrepreneurship support policies. Also more general economic indicators like growth of value added are often used as a regional predictor of individual start-up activities (e.g., Bosma/Stel/Suddle 2008). The majority of these studies, however, do not explicitly consider entrepreneurs during different phases of the entrepreneurship process, for example no distinction is made between latent entrepreneurs and nascent entrepreneurs or young entrepreneurs. Thus, while most of the studies focus either on nascent entrepreneurs or on young entrepreneurs, they only cover the effect of regional variables on the status of being an entrepreneur but they say little about the distinction between the early discovery process and the later exploitation process.

There are only few empirical studies available that distinguish between entrepreneurs in different (early) phases of the venture's history (Wagner 2008). While empirical work on nascent entrepreneurs alone (see Davidsson 2006; Gartner et al.

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<sup>5</sup> See Brixty/Grotz 2007; Falck 2007; Sternberg/Rocha 2007; Fritsch/Schmude 2006; Fritsch/Mueller 2004; Audretsch/Fritsch 2002; Bade/Nerlinger 1999, on German regions; or Acs/Armington 2004; Braunerhjelm/Borgmann 2004, for regions in other countries.



2004 for an overview) and young firms alone (Falck 2007) has increased enormously in recent years, only two studies have so far considered latent nascent entrepreneurs explicitly. Grilo and Irigoyen (2006) measure the extent of latent entrepreneurship by using data from the Flash Eurobarometer survey on entrepreneurship from 2000 at the country level of 15 European Union member states and the US. Latent entrepreneurship is detected by a single hypothetical question about whether the interviewee would prefer to be an employee or to be self-employed. Clearly this is a very hypothetical question for most people, as the authors themselves state. It is therefore not surprising that up to over 70% (the case of Portugal) of the population express a preference for self-employment. Real entrepreneurship is measured by the percentage of self-employment as given by official statistics – and thus differs from what is usually considered to be young entrepreneurship. Second, Freytag and Thurik (2007) give a comprehensive overview of approaches that try to investigate the relationship between latent and actual entrepreneurship. Furthermore they contribute to recent research by estimating a model for 25 European countries and the US in which they pay special attention to country-specific cultural and macroeconomic aspects. Both studies find demographic effects and effects of the attitudes at personal level together with highly significant country effects for the estimation of both latent and actual entrepreneurship.

To sum up: a great deal of empirical research has been conducted on the explanation of the status of a nascent entrepreneur (yes-no) but less on the distinction between latent nascent entrepreneurs, nascent entrepreneurs and young entrepreneurs or – in other words – on the distinction between the early discovery phase and the later exploitation phase during the entrepreneurship process. This is true of the demographic characteristics of the (potential or real) entrepreneur as well as of cognitive characteristics and environmental factors of the region in which the individual lives.

#### 4. Data and main variables

In entrepreneurship research there are currently only a few data sources that facilitate empirical research on the differences between latent nascent entrepreneurs, nascent entrepreneurs and young entrepreneurs. The cross-sectional data of the Global Entrepreneurship Monitor (GEM), which have been gathered annually since 1999, allow such analyses for Germany. Since important variables were defined differently in the early years, we can only make use of the data collected from 2002 onwards. Every year a random household telephone sample is drawn and using the “last birthday” method, anyone between 18 and 65 is interviewed. The computer-aided telephone interviews are conducted by a professional survey vendor. Although the data have been assembled to facilitate cross-national comparisons of the level of national entrepreneurial activity, with the pooling of the data for five successive years, we are able to generate a large enough micro-dataset on German entrepreneurship for our purpose.

**Table 1: Overview of the number of interviews of the German GEM (2002-2006)**

	<b>Total inter-views used</b>	<b>Latent nas-cent</b>	<b>Nascent</b>	<b>Young</b>	<b>Non-entre-preneurs</b>
2002	8,681	522	300	280	7,579
2003	4,305	346	198	191	3,570
2004	3,959	233	139	167	3,420
2005	5,185	328	215	217	4,425
2006	3,290	191	108	94	2,897
Total	25,420	1,620	960	949	21,891

Source: German Survey of the Global Entrepreneurship Monitor 2002-2006

As table 1 shows, it was possible to use more than 25,000 interviews. The three different types of entrepreneurial activity that are surveyed were already defined in section 3. Obviously these states are non-exclusive, which means that a person can be in more than one stage. This is by definition the case with latent nascent and nascent entrepreneurs. Someone who wants to found a firm within the next six

months also belongs in principle to the group of latent nascent entrepreneurs. The same applies for young entrepreneurs who are already planning their next business. Because the estimated model cannot deal with one person being in different states, we decided that young entrepreneurship should be considered over nascent entrepreneurship and nascent entrepreneurship over latent nascent entrepreneurship. This ranking follows the idea of the growing certainty of the three states.

Besides the questions that are necessary to classify the interviewees into the four groups, many relevant variables are surveyed for each person who is identified as being any kind of entrepreneur. But the 21,891 individuals who are not involved in any kind of entrepreneurship are asked only a few questions<sup>6</sup>. Besides basic demography the questions include one about the household income, one about whether the interviewees know someone who has started a business in the last two years, one about how they perceive the economic situation for setting up a business and one about the willingness to take risks<sup>7</sup>.

More methodological details on the GEM attempt are described in Reynolds et al. (2005). Davidsson (2006) provides a valuable assessment of GEM data for the purpose of research into nascent entrepreneurship.

## **5. Modelling latent nascent, nascent and young entrepreneurship**

### **5.1 The independent variables**

In section 2 we presented an overview of the theoretical and empirical literature on the factors determining the status of an entrepreneur (latent nascent vs. nascent vs. young entrepreneur) and/or the discovery process and/or the exploitation process.

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<sup>6</sup> In fact there are others that are asked in more detail as well, mainly self-employed. Besides the three groups of entrepreneurs analysed we dropped all those who are involved in any kind of entrepreneurship or self-employment in order to distinguish clearly between non-entrepreneurs and those who plan to become an entrepreneur.

<sup>7</sup> The distribution of age, gender and household income can be found in the appendix. Note that these data are not weighted.

While it is not possible to cover all relevant factors with the GEM data, we have empirical information for several of the most important ones. We assign them to three groups of indicators: demographic characteristics of the (potential) entrepreneur, cognitive characteristics of the (potential) entrepreneur, and characteristics of the region where the (potential) entrepreneur lives.

#### Demographic characteristics of the (potential) entrepreneur:

Sex (male/female): we expect more entrepreneurship activities by men than by women, and we do not know if there is any selection during the entrepreneurship process (i.e. higher female rates among latent than among young entrepreneurship).

Age (age between 18 and 64, five age groups): we expect an increase in entrepreneurial activities until the mid-thirties followed by a steady decrease from the mid-forties onwards.

Education (four levels of formal education attainment): as explained before, no clear hypothesis can be posed. Usually, more highly educated people tend to be more likely to start up a business, but because of an attractive labour market they face higher opportunity costs than the less highly educated. Especially in Germany many low-skilled people are (or feel that they are) forced into self-employment because they lack employment opportunities.

Household income (four categories for monthly household income): here, too, there is no clear hypothesis. A high income makes it easier to obtain the necessary funding for the new firm, but on the other hand, the opportunity costs are higher. Due to seniority wages, the income of those aged 40 and above is higher than that of younger employees. This might be a reason for a negative correlation.

#### Cognitive characteristics of the (potential) entrepreneur:

Social networks ("You know someone personally who has started a business in the past 2 years"): we expect a supporting impact on entrepreneurial activities that in-

creases during the entrepreneurship process (i.e. higher for young entrepreneurs than for latent entrepreneurs).

Opportunity recognition (“In the next six months there will be good opportunities for starting a business in the area where you live”): we expect a supporting impact on entrepreneurial activities that increases during the entrepreneurship process (i.e. higher for young entrepreneurs than for latent entrepreneurs).

Fear of failure (“Fear of failure would prevent you from starting a business“): we expect a negative impact on entrepreneurial activities that decreases during the entrepreneurship process (i.e. lower for young entrepreneurs than for latent entrepreneurs).

#### Characteristics of the region where the (potential) entrepreneur lives.

Development of regional GDP per person from 2002 to 2004 (ln): the development of regional GDP is a widely used measure of regional economic success. As with education there are two possibilities. First, a flourishing environment should foster entrepreneurship. Growth usually creates opportunities for entrepreneurs. Second, however, regional economies that fail to grow offer few opportunities for dependent employment too, so many people might be pushed into self-employment. It therefore remains unclear whether to expect a positive or a negative relationship.

Development of the regional unemployment rate from 2002 to 2006: we expect a positive impact on entrepreneurial activities (necessity entrepreneurship is quite common in Germany) which decreases during the entrepreneurship process (i.e. lower for young entrepreneurs than for latent entrepreneurs).

Western vs. eastern Germany (dummy): to control for differences between the two parts of Germany.

## **5.2 The statistical model**

First, GEM data are used to estimate a multinomial logit model for explaining the propensity to be a latent nascent entrepreneur, a nascent entrepreneur or a young

entrepreneur or not to be involved in any kind of entrepreneurship. We estimated robust standard errors and clustered by year and region<sup>8</sup>. Interactions are not considered in this first attempt. All interviewees are assigned to a single state: latent nascent entrepreneurship, nascent entrepreneurship, young entrepreneurship and – the large majority – no entrepreneurship at all.

By comparing the results of our estimates for the three entrepreneurial stages, we try to find evidence of whether selection differs at different stages during the entrepreneurial process. For example, education might have no influence on the probability of being interested in starting a firm – but could be important for those who really set up their own firm. The results (see table 2) show that entrepreneurs in all three stages have a great deal in common and overall there are great differences compared with non-entrepreneurs.

Across all three stages the influence of the level of formal education differs only slightly. For all kinds of entrepreneurs, the educational level raises the odds of wanting to become or already being an entrepreneur. The influence of the sex is also very similar for all stages, with females having a far lower propensity to be involved in entrepreneurship. Furthermore, there are no significant differences between eastern and western Germany<sup>9</sup>. We included three variables to provide information about cognitive characteristics and attitudes: “fear of failure”, “opportunity recognition” and “social networks”. Each of them has a substantial impact. The fear that a business might not be successful is much lower for all stages than it is for non-entrepreneurs. Interestingly, confidence grows considerably from stage to stage.

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<sup>8</sup> Because we included two regional variables (development of GDP and unemployment) it is necessary to relax the assumption of independence within groups. We used stata 9.2 command: “logit ..., robust cluster (time region)”.

<sup>9</sup> But the “year” variable, which is only included to control for effects of the pooling, does have an influence.

**Table 2: Estimates of the propensity to be a latent nascent, a nascent or a young entrepreneur** – (Relative risk ratios (RRR) of the entrepreneurial stages compared to non-entrepreneurs)

	Latent nascent entrepreneurs		Nascent entrepreneurs		Young entrepreneurs	
	RRR*	p	RRR*	p	RRR*	p
Age: (Reference: age 18-24)						
25-34	-1.03	0.770	1.35	0.030	2.18	0.000
35-44	-1.28	0.020	1.45	0.010	2.09	0.000
45-54	-1.69	0.000	1.20	0.210	1.64	0.010
55-64	-3.70	0.000	-2.33	0.000	-1.82	0.000
Education: (Reference: lower secondary school)						
Intermediate secondary school	1.02	0.860	1.14	0.250	-1.12	0.340
Upper secondary school	1.28	0.000	1.45	0.000	1.33	0.020
University degree	1.36	0.000	1.48	0.000	1.47	0.000
Monthly income in €: (Reference: < 1,000)						
1,000 - 2,000	-1.61	0.000	-1.30	0.100	1.07	0.690
2,000 - 3,000	-1.72	0.000	-1.33	0.080	1.16	0.400
> 3,000	-1.49	0.000	-1.19	0.280	1.80	0.000
Sex (reference male)	-1.45	0.000	-1.45	0.000	-1.61	0.000
Development GDP/pc (ln) 2002-2004	1.10	0.030	1.09	0.030	1.05	0.240
Development unemployment rate 2002-2006	1.00	0.980	1.00	0.910	1.01	0.610
Dummy eastern/western Germany	-1.01	0.970	1.06	0.810	-1.32	0.250
Fear of failure (high=1)	-2.78	0.000	-3.70	0.000	-5.00	0.000
Opportunity recognition (yes=1)	1.78	0.000	2.42	0.000	1.89	0.000
Social networks (yes=1)	2.99	0.000	4.07	0.000	3.65	0.000
Dummies for years	1.19	0.000	1.20	0.000	1.22	0.000
Constant	0.00	0.000	0.00	0.000	0.00	0.000

Notes: The estimation method is multinomial-logit; reference group: individuals not engaged in any other kind of entrepreneurial activity, standard errors are robust

Pseudo R<sup>2</sup> 0.15  
chi<sup>2</sup> 3710.85  
e(chi<sup>2</sup>) 0.000  
Number of cases 16,938  
Number of clusters (regions\*years) 165

\* If the RRR is smaller than 0, the reciprocal value multiplied by -1 is shown in order to correct for the disproportionately scaled range of values around the neutral value of 1. (Urban 1993: 41)

“Opportunity recognition” reaches a maximum among the nascent entrepreneurs – having a clear view of the goal makes it easy to see good opportunities for new firms. The impact of knowing someone personally who has recently started his/her own business is also highest among nascent entrepreneurs and considerably higher than among latent nascent entrepreneurs. This could be an indication of selection

such that people who know somebody who is self-employed are more likely to go on with their plans than those who do not. On the other hand, however, it is not unreasonable to assume that if someone is planning to set up a firm, he is more likely to get to know someone who is already self-employed.

However, as table 2 illustrates, some results do indeed show marked differences between the three groups. In particular the age of latent entrepreneurs differs from that of individuals engaged in later phases of entrepreneurship. Latent entrepreneurs are remarkably young whereas the likelihood of being involved in nascent or young entrepreneurship is highest for the middle-aged. But for all kinds of entrepreneurship it is lowest for those aged 55 and above.

With regard to income it is noticeable that those who are planning to become self-employed earn less than comparable non-employees. This is significant with the latent nascent and at the 90% level for nascent entrepreneurs too, whereas those who are already (young) entrepreneurs have at least € 3,000 at their disposal per month significantly more often. To what extent this is an expression of a selection that favours those with really profitable concepts or whether it is really the effect of becoming self-employed cannot be ascertained without panel data. The relatively low income of latent entrepreneurs in particular is a strong indication that a low income drives people to plan their own business. Then the question as to the reasons for their relatively lower income remains unanswered. Obviously the market for dependent employment does not value their abilities and qualifications sufficiently. According to Lazear (2005) and Wagner (2003) employees benefit from being highly specialised whereas entrepreneurs have a balanced profile pattern and do especially well if their qualifications are broader, following a “jack of all trades” pattern. A further explanation could be that young people who are planning to set up a business are more often still in some form of education, for example writing a thesis or studying for other qualifications that are not covered by the qualification variable, which prevents them from earning much at the moment, but will pay off in the future.



In regions with an above average GDP per head, people more often plan to set up a firm, but this does not apply for young entrepreneurs. This, too, could be an indication of special selection such that entrepreneurs more often give up if they find attractive alternative employment in their vicinity. In a second step, we estimate a multinomial logit model with interactions which considers a young woman with low educational attainment (table 3).

Not many of the interaction coefficients are significant<sup>10</sup>. Only the combination of female and “opportunity recognition” yields significant levels on the usual scale of 99%. For both latent nascent and nascent entrepreneurship the combination of being female and having positive opportunity perception increases the probability of being a nascent entrepreneur by the factor of 1.4 or 1.8. An optimistic perception of the chances compensates for the negative gender effect. The disadvantage of a lower formal educational level, too, seems to be offset by the more optimistic opportunity perception related to a start-up, but since this effect diminishes in the later phases, this is evidence for the selection process that favours the more highly educated.

---

<sup>10</sup> Since interactions with multi-stage variables become hard to interpret, we re-defined age and education as dichotomus (dummy) variables.

**Table 3: Estimates of the propensity to be a latent nascent, a nascent or a young entrepreneur: multinomial model with interactions and a young woman with low educational attainment**

(Relative risk ratios (RRR) of the entrepreneurial stages compared to non-entrepreneurs)

	Latent nascent Entrepreneurs		Nascent Entrepreneurs		Young Entrepreneurs	
	RRR	p	RRR	p	RRR	p
Young (younger than 35 = 1)	1.80	0.000	1.18	0.330	-1.04	0.830
Low qualified (lower secondary school = 1)	-1.41	0.000	-1.83	0.000	-1.53	0.030
Monthly income in €:						
Reference: < 1,000						
1,000 - 2,000	-1.62	0.000	-1.29	0.100	1.10	0.550
2,000 - 3,000	-1.68	0.000	-1.30	0.110	1.24	0.220
> 3,000	-1.45	0.000	-1.16	0.340	1.91	0.000
Sex (reference male)	-1.53	0.000	-1.58	0.000	-1.70	0.000
Development GDP/pc (ln) 2002-2004	1.10	0.020	1.10	0.030	1.07	0.120
Development unemployment rate 2002-2006	1.00	0.920	1.00	0.990	1.01	0.690
Dummy eastern/western Germany	1.00	1.000	1.06	0.800	-1.29	0.280
Fear of failure (high=1)	-2.63	0.000	-3.80	0.000	-6.28	0.000
Opportunity recognition (yes=1)	1.36	0.010	1.71	0.000	1.37	0.020
Social networks (yes=1)	3.26	0.000	4.50	0.000	3.97	0.000
Dummies for years	1.19	0.000	1.21	0.000	1.22	0.000
Interaction with cognitive characteristics						
Female * Fear of failure	-1.22	0.190	-1.05	0.790	1.26	0.280
Female * Opportunity recognition	1.44	0.010	1.79	0.000	1.19	0.320
Female * Social networks	1.04	0.740	-1.11	0.570	1.01	0.960
Young * Social networks	-1.17	0.240	-1.12	0.570	-1.03	0.880
Young * Opportunity recognition	1.07	0.600	1.02	0.920	1.39	0.060
Young * Fear of failure	1.18	0.200	1.30	0.180	1.58	0.020
Low qual. * Social networks	1.03	0.850	1.22	0.340	1.01	0.970
Low qual. * Opportunity recognition	1.41	0.060	1.45	0.110	1.64	0.030
Low qual. * Fear of failure	1.04	0.810	-1.01	0.960	1.16	0.590
Constant	0.00	0.000	0.00	0.000	0.00	0.000

Pseudo R<sup>2</sup>                    0.14  
chi2                                3710.85  
e(chi2)                            0.000  
Number of cases                16,938  
Number of clusters (regions\*years)    165

## 6. Conclusions

Our results show clear empirical evidence of the strong impact of the self-selection process during the three analysed entrepreneurship phases. Most of these selections were identified just at the beginning of the entrepreneurial process. We also found remarkable and statistically significant differences between entrepreneurs and non-entrepreneurs.

As for differences between the three phases of the entrepreneurship process, we may conclude that they are important and relevant for the final outcome of this

process. Obviously the selection during this process is especially influenced by the individual's age. Latent nascent entrepreneurs are very young while nascent entrepreneurs are slightly older on average. According to our definition, however, young entrepreneurs are significantly older than latent nascent entrepreneurs and nascent entrepreneurs. This may be interpreted in the light of the experience (including experience of life) needed to manage the transition from a nascent entrepreneur to a young entrepreneur. Income (and the expected alternative income as an entrepreneur) plays an important role as a motive for becoming a latent nascent and/or a nascent entrepreneur.

The economic performance of the regions (operationalised as the previous growth in GDP) plays a significant role only during the very early phase of the entrepreneurship process but not for the distinction between nascent entrepreneurs and young entrepreneurs. This result is obviously related to the hypothesis that the impact of the regional environment on entrepreneurship has a lot to do with the entrepreneurial climate in the regions and its consequences for the entrepreneurial mentalities of the individuals growing up there. Such mentalities already exist (if at all) when the entrepreneurship process starts and hardly change during the process.

Although our empirical analysis shows clear evidence of different impacts of the determinants in the three phases of the entrepreneurship process, the three phases also have many aspects in common. Educational background is an important determinant in all three phases. Women are discriminated against throughout the entrepreneurship process compared to men. Both the readiness to take risks and opportunity recognition (even after controlling for the personal income) differ significantly between nascent entrepreneurs and non-entrepreneurs. Furthermore, empirical research into entrepreneurship should not ignore the impact of role models: they are of considerable importance during all the phases of the entrepreneurship process.

Of course, neither our results nor the data used are free of limitations. Most of these limitations are due to the fact that we were not able to use panel data. GEM data are cross-sectional and cover many countries and years, but they do not include

information from the same entrepreneur in different years. Several of these still open questions surrounding the impact of the selection mechanism during the entrepreneurial process (e.g. the impact of decreasing or increasing personal income) require specific panel studies focusing on nascent entrepreneurs and/or latent nascent entrepreneurs. The authors have started to develop such a panel for German entrepreneurs.

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## Appendix

**Table A1: Distribution of sex and age according to the four entrepreneurial states in percentages (unweighted)**

	Sex		Age				
	Male	Female	< 24	25-34	35-44	45-54	55-64
<b>Latent nascent</b>	59.8	40.3	20.0	24.3	29.3	17.5	9.0
<b>Nascent</b>	62.4	37.6	11.4	22.5	34.2	22.3	9.7
<b>Young</b>	64.8	35.2	8.9	24.0	35.6	22.9	8.6
<b>Non-entrepreneurs</b>	42.4	57.6	12.1	15.7	26.8	23.0	22.4

Source: Adult Population Survey of the German data set of the Global Entrepreneurship Monitor 2002-2006

**Table A2: Distribution of household income according to the four entrepreneurial states in percentages (unweighted)**

	Monthly income in €			
	< 1,000	1,000 < 2,000	2,000-3,000	> 3,000
<b>Latent nascent</b>	13.0	26.1	26.8	34.1
<b>Nascent</b>	9.4	24.9	28.2	37.6
<b>Young</b>	5.9	20.5	26.0	47.6
<b>Non-entrepreneurs</b>	10.3	31.8	31.0	26.9

Source: Adult Population Survey of the German data set of the Global Entrepreneurship Monitor 2002-2006

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### Editorial address

Institute for Employment Research  
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### For further inquiries contact the authors:

Udo Brixy  
Phone +49.911.179 3254  
E-mail [udo.brixy@iab.de](mailto:udo.brixy@iab.de)

Rolf Sternberg  
Phone +49.511.762 4496  
E-mail [sternberg@wigeo.uni-hannover.de](mailto:sternberg@wigeo.uni-hannover.de)

Heiko Stüber  
Phone +49.511.762 4496  
E-mail [stueber@wigeo.uni-hannover.de](mailto:stueber@wigeo.uni-hannover.de)