

## **Characteristics of nascent entrepreneurs in Germany**

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### **Abstract**

Currently, the rate of creation of new enterprises -or start-ups- is considered as one of the maximum exponents of competitiveness within the different economies. The interest regarding the appearance of new enterprises has made numerous governments in the continent implement a series of support measures in that direction. It is expected that the European productive fabric can be revitalized in this way, and therefore to be able to compete with the present superiority of the United States, especially in the field of the so-called “new economy”. However, very little is still known with respect to the specific characteristics of the individuals who create those enterprises. The knowledge about the figure of the entrepreneur could allow a greater effectiveness of the measures already in operation, as well as of others that may be implemented.

In this work we seek to contribute to a better knowledge of the European entrepreneur through an analysis of the characteristics of nascent entrepreneurs in Germany, a major Central European country. Given that Germany is the most important economy in the continent, and taking into account the narrow cultural interrelations with the neighbouring countries, we understand that this study can be representative of that area in Europe.

For this study we will be using data from the Panel Comparability (PACO) Project, which includes a longitudinal panel of German households. The Panel data provide information on economic variables and both personal and family characteristics that may influence the decision of creating a new enterprise. It allows us to analyze the features presented by the prospective entrepreneurs before the creation of their enterprises. Thus, we can approach to the ideal situation of studying which are the factors that cause the decision of settling down as an entrepreneur.

# Characteristics of nascent entrepreneurs in Germany

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## 1. Introduction

The role of the entrepreneur in the process of economic development is nowadays broadly acknowledged. From the crisis of the seventies, a resurgence of the importance of small and medium enterprises in the economy took place, with these enterprises growing more and generating more employment. Besides these enterprises play an essential role in the R&D processes (Storey, 1994; Schwallbach, 1994; Cohen and Klepper, 1996). At the same time, as a logical consequence, research on those small enterprises and on the entrepreneur's figure has acquired a greater relevance through time. Thus, the study of the process that leads from an inclination towards the entrepreneurial activity to the creation and development of one or several small enterprises has been called "entrepreneurship" (Gartner, 1990; Bygrave and Hofer, 1991; Woo et to the., 1991).

Although it is still a relatively new field of study, where the agreements are still insufficient (Fiet, 2000), there is an important level of coincidence about the division of what we could denominate the "Entrepreneurial Process" (Krueger, 1993; Harvey and Evans, 1995) into a series of phases. So, those people who have not still taken any step towards the creation of an enterprise, but who are somehow prone to that activity, are considered Potential Entrepreneurs (Krueger and Brazeal, 1993). The individuals that are in the phase of effective creation of an enterprise are called Nascent Entrepreneurs (Carter et al., 1996; Reynolds, 2000), and their study is frequently known as Entrepreneurial Emergency (Cáceres, 1999). The study of the development and growth of the enterprise is termed Entrepreneurial Dynamism (Santos, 1998). Some authors stress that process view when they speak of the Theory of the Entrepreneurial Career (Dyer, 1994).

Meanwhile, decision-makers have being paying an increasing attention to entrepreneurship and new small enterprises for their capacity to generate employment and to stimulate the economy. For this reason, current strategies of development (as Endogenous Development or Local Economic Policy) clearly consider, as one of their main instruments, the promotion of the endogenous entrepreneurial initiative (Vázquez Barquero, 1993, 1999; Garofoli, 1992; Maillat, 1988). Nevertheless, many of those

initiatives have had very limited results (Liñán, 2001). This circumstance has established the need to know more about the characteristics of those individuals who decide to start a new enterprise, and the factors that influence that decision. Therefore, the analysis of nascent entrepreneurs has acquired great recognition, because they are individuals that have already overcome the phase of potential entrepreneurs (where their entrepreneurial inclination had not still been developed, remaining latent), but have not completely established their enterprise yet (they are not still active entrepreneurs). It is, then, a very delicate phase of the entrepreneurial process that corresponds to the realization of the first concrete activities that will lead to the creation of a new enterprise. The study of the aspects that make a greater number of people involved in the process of creation of new enterprises is, therefore, an essential element for the effective promotion of entrepreneurship.

Accordingly, our objective in this work will be to analyse the factors that affect the decision to become an entrepreneur through the study of the characteristics of nascent entrepreneurs. We will focus specifically on the situation of the most important economy in the European Union, Germany. Reynolds (2000) offers data indicating that the situation and characteristics of nascent entrepreneurs in the countries of the centre and the north of Europe is quite similar, so we understand that the German case can be sufficiently representative. Besides, although the data we have used are available for other countries, it is in Germany where the time period embraced by the database is wider.

## **2. Conditioning factors of the decision to become an entrepreneur**

Numerous studies have been carried out to try to identify which factors influence more decisively the decision to become an entrepreneur. However, the results have not been sufficiently conclusive up to now for different reasons. Firstly, many of those studies suffer from a series of quite serious methodological problems. Secondly, the lack of a sufficiently developed agreement on the concept of the entrepreneur and on the entrepreneurial process has made the approaches differ, providing sometimes contradictory results.

### **Methodological problems in the measurement of entrepreneurship**

In the first place, it seems sufficiently established today that a lengthy time period exists from the moment the individual decides to be a entrepreneur until the enterprise is in operation. It is a process that may take from some months to several years (Wolters, 2000; Carter et al., 1996). Therefore, it is necessary to analyze the

individual's circumstances before their enterprise is already established. However, if it is difficult to access reliable data on the newly established enterprises, it is much more complex to obtain information about people that have not yet created their enterprise. So, it is not strange that, until very recently, empirical studies have used *ad hoc* cross-sectional samples. These studies obtain information, through surveys or other means, from active entrepreneurs. As a consequence, the entrepreneur's post-creation situation is being considered as the causal factor for establishing the enterprise. At the most, the respondent is asked retrospectively about their circumstances when the enterprise was created, with the corresponding risk of a significant bias (Reynolds, 1997; Santos, 1998; Cáceres, 1999). Thus, the consistency of results is doubtful. In this sense, studies based on panel data allow a much more correct approach from the methodological point of view.

Another question to keep in mind regards the method to obtain the sample. It is relatively frequent the use of postal (or phone) questionnaires sent to a sample of individuals out of some database. Besides the problem of working with cross sectional data, already pointed out, there is an additional problem regarding the low answer rate usually obtained by this method. Normally, the correctly completed questionnaires are a very reduced percentage: between 18 and 36% of those sent (Birley and Westhead, 1994; Carter et al., 1996; Westhead and Wright, 1998). There is the risk, again, of a significant bias in the sample. The individuals who do not answer may present certain characteristics that make them different, for what the sample would not be representative (Gartner, 1985).

Finally, when using questionnaires, it is necessary to be very careful with their elaboration and with the manipulation of the data obtained, especially when we try to measure features not directly observable like the interviewee's opinion, their personality traits, their perceptions, etc. (Davidsson, 1991). In particular, when the essential motivation that takes the individual to the creation of the enterprise is analysed, it is necessary to be extremely careful. In this sense, Birley and Westhead (1994) found that the reasons to create the enterprise are very varied. These authors included in their questionnaire twenty-three statements in relation to motivation, they were later orthonormalized to identify seven main reasons for creation. However, it is interesting to note that a high level of agreement with some of those twenty-three statements could correspond with different core reasons (depending on the answers to other statements). Thus, the statement regarding the desire to obtain high incomes, appears with a high value both in the motivation "Need for Approval" and in "Instrumentality of wealth". So, in the first case, individuals might desire wealth only as long as it can grant them

approval from the members of their community, while in the second case, it would correspond with the security it offers. Therefore, it is necessary to be extremely careful with the identification of the individuals' motivations, trying to go beyond the most trivial questions.

### **Conceptual problems**

In this section, it is necessary to highlight firstly, the problem with respect to personality traits. During a long time, researches have searched for a series of features of the personality that would allow to identify the future entrepreneur (McClelland, 1961). This conception -in their narrowest sense- has been severely questioned (Gartner, 1989). A more appropriate approach consists probably on pointing out that the individual's characteristics are one of the conditioning elements, although always in combination with the environment and the specific circumstances surrounding the individual (Gartner, 1985).

Presently, due to the poor results offered by this "traits approach", psychological studies focus on variables as the individual's perceptions and attitudes towards the entrepreneurial activity. These psychological variables would be the basic conditions of what we have called entrepreneurial potential (Krueger and Casrud, 1993; Krueger, 1993). However, a perception more or less favourable towards the entrepreneurial activity will be the result of individual's experiences and circumstances, and how he/she has interpreted and assimilated them. This explains why some authors have found, for example that being the first-born child, having parents entrepreneurs, or being a member of ethnic minorities influence positively the decision of becoming entrepreneur (Cáceres, 1999). It would not really be the circumstances themselves (being first-born) which promotes entrepreneurship, but rather the way in which the individual assimilates that circumstance. In certain subgroups of the population may arise a situation that helps that relationship (between, for example, primogeniture and entrepreneurial propensity). Again, sample selection can have a decisive influence on analysis results.

Besides those subjective variables, we could consider what Krueger and Casrud (1993) call "precipitating events", i.e., those environmental variables (economic opportunities, institutional framework...) that -in addition to their indirect effect through perceptions and attitudes- exercise a direct effect on the decision of starting an enterprise in a certain moment of time and not in another. In the same way, the concept of "strategic windows" (Harvey and Evans, 1995) tries to show the need of a coincidence between personal characteristics and environmental circumstances for individuals to effectively start their entrepreneurial project. In this way, Birley and

Westhead (1994) found an important relationship among reasons for creation and age in which entrepreneurs start their venture. This is consistent with professional career theory in the sense that the reasons to start-up change along the different phases of the individual's life.

Along the same line, it is important to point out the great diversity existing among active entrepreneurs. As Gartner stresses (1985), the existing differences among entrepreneurs are probably higher than those between entrepreneurs on one side, and non-entrepreneurs on the other. Thus, studies that try to classify active entrepreneurs in only two or three categories may be clearly inadequate. Woo et al. (1991) showed that the traditional division between "craftsmen" (traditional and imitators, preferring manual work and dedicating less time to strategic management tasks) and "opportunists" (innovative and dynamic, restless, attentive to the continuous exploitation of new opportunities) lacks enough rigor. According to these authors, several studies have derived that typology using different variables and approaches, so they would be inconsistent, and would refer to different realities -although using the same label to name them-.

There is also an additional question to be addressed from the regional development policy. It regards the probabilities of success that different nascent entrepreneurs have. Its importance resides in the scarcity of public funds, so decision-makers would like to identify and support only those entrepreneurial projects with higher possibilities of survival, and with a greater impact on the regional economy. In the first place, it would be necessary to define what to understand as entrepreneurial success (Santos and Liñán, 2001). In this sense, the variables used in the literature range from the mere enterprise survival to its growth and employment creation (Liñán, 2001). However, attempts to predict entrepreneurial success have not obtained satisfactory results up to now (Cooper, 1993). Anyhow, most promising results use models with a higher level of abstraction, combining economic variables with psychological ones (Davidsson, 1991) or with those relative to the entrepreneur's previous experience (Chandler, 1996).

One can say therefore, that the entrepreneurial activity is not one-dimensional at all, but rather it is essentially complex and dynamic. So, as we have pointed out, the reasons that take the individual to the decision of creating an enterprise are expected to be different in each case. As a consequence, the variables that influence that decision can also be different for each nascent entrepreneur. Nevertheless, it does not imply that any attempt to look for a causal relationship is useless, although the results will be

necessarily modest until sufficiently wide theoretical models are developed, as well as databases specifically designed to contrast this type of models.

### **Revision of some empirical analyses**

There are several studies that try to examine the factors explaining the decision to become a entrepreneur. However, many of those studies suffer from some of the methodological and conceptual problems identified above. Those problems would reflect on no significant coefficients, low predictive capacity, or spurious correlations. In spite of this, certain relevant regularities still exist.

However, all this literature studies the transition to self-employment in a wide sense, and not the establishment as an entrepreneur specifically. Thus, in that literature, independent professionals, self-employed persons or farmers are considered equal to individuals that create a new venture. In our study, we will focus exclusively on those people that decide to become entrepreneurs by creating a new enterprise, because they may have a greater effect on the productive fabric and, through it, on the regional or local economic development (Santos, 1998).

In the first place, the positive influence of the income level on the decision to be self-employed is the most broadly documented. Van Praag and Van Ophem (1995), for example, found that variable to be the most important determinant of what they call the “opportunities” to be entrepreneur. It is obvious that the creation of an entrepreneurial initiative requires the investment of resources; therefore the availability of them facilitates the decision. This relationship can be reinforced because a higher income level is usually related to higher qualifications and social status (contact networks). Thus, the individual’s perceptions of capacity and self-confidence may be greater.

Another influence frequently found refers to age. That relationship usually has a bell shape (Reynolds, 1997). The probability of becoming an entrepreneur initially rises with age (up to thirty or thirty five years), to descend gradually and continually later. Specifically, Reynolds’ study found that people in the 25-34 age group had a probability of being a nascent entrepreneur three times that of the other groups.

Considering now the educational level, it seems to have a positive effect on the decision to create an enterprise. Wolters (2000) found that the entrepreneurial propensity is higher among those individuals with university education. Other studies (Evans and Leighton, 1989; Blanchflower and Meyer, 1994) also find this relationship

statistically significant, with the effect increasing as the level of studies rises, reaching their maximum for university graduates.

Other positive relationships have been repeatedly found in the empirical literature about enterprise creation (Storey, 1994): unemployment situation, availability of wealth, and previous experience. Regarding unemployment, it is usually considered that the loss of a previous employment (or not finding a satisfying one) acts as a “precipitating event” of the decision to become an entrepreneur. Availability of wealth (either the family’s or an inheritance) would act similarly as the income level, allowing the exploitation of a business opportunity that has been discovered. Previous experience, finally, allows the individual knowledge of the activity to be developed, making his/her self-efficacy perception rise (feeling of being able to successfully carry out that task). Besides, experience will probable help develop contact networks, very useful for business success.

Among the analyzed studies about the characteristics of nascent entrepreneurs, the one by Reynolds (1997) is especially relevant, although his definition of nascent entrepreneur -as the other studies pointed out- refers only to becoming self-employed. That analysis is based on panel data and uses a model of logistic regression, getting very interesting results that seem to confirm the existence of different “types” of nascent entrepreneurs. Therefore, Reynolds divides the sample into subgroups. Thus, between 25 and 34 years old the presence of nascent entrepreneurs more than triples that of the remaining age groups. Besides, within this subpopulation, self-employed, unemployed and students are those showing the highest nascent rate. In this group, employees only present a high entrepreneurial inclination if they have an educational level above secondary school. In the other age groups the rate of nascent entrepreneurs is more reduced. Anyhow, self-employment stands out within the 35-54 year group; and belonging to a household of three or more adults stands out within the 18-24 year group.

With respect to its predictive capacity, the percentage of correctly classified cases in that study is about 75%. Nevertheless, it is necessary to keep in mind that it uses samples where half the cases correspond to nascent entrepreneurs, so that the null model (that predicts that nobody is nascent entrepreneur) would offer 50% of correct cases. On the other hand, the number of nascents is very small, so the results should be taken with caution.

In the following section we describe the empirical part of our study. Working with a panel of households we are able to minimize some of the problems found in other

analyses. In the first place, panel data, as we have pointed out, allows studying future entrepreneurs before they have created their enterprise. In the second place, the range of variables included in this panel is very wide, both personal and family and professional ones. In the third place, the sample has very considerable size, so that we may have a better representation of the real German population characteristics. In the negative side, nevertheless, it is necessary to emphasize that the questionnaire was not designed specifically to study entrepreneurial emergency, so there are potentially important variables that were not included. In particular, we lack information about traits of the interviewed individuals, about their perceptions on feasibility and desirability of the entrepreneurial activity, and on their motivations for enterprise creation.

In spite of those limitations, we hope our results will confirm the relationships found elsewhere. Equally, according to the quality and width of the database, we hope some other potentially significant relationships will emerge. Finally, we expect a reasonably satisfactory predictive capacity.

### **3. Characterization of the German entrepreneur in the period 1984-1996**

For the analysis of the German entrepreneur we will use a model of binary logistic regression. The information comes from a broad survey of households comprising a wide time period (from 1984 up to 1996), as described below.

#### **Description of the Database and the model**

To carry out the empirical analysis the PACO (Panel Comparability) database has been used. This is a cross sectional and longitudinal database that contains comparable variables for several countries, which were created from the original panel data of each country (PSELL / Luxemburg, BHSP / United Kingdom, ESML / France, SOEP / Germany, and PSID / United States) using a common working plan, as well as international standardized classifications in those cases where it was possible. Consequently, this database allows to carry out comparisons among the previously mentioned countries, from a cross sectional, a longitudinal or a panel viewpoint. Nevertheless, our interest has been to focus firstly on Germany since the panel embraced a wider time period of observations. This SOEP (German Socio-Economic Panel) is a panel elaborated in the Federal Republic of Germany from 1984. In the year of reunification, an additional sub-sample was added for the old German Democratic Republic.

In the PACO database the professional category “entrepreneur” does not appear, but rather it is integrated within the wider category “self-employed”. Consequently, we had firstly to differentiate between entrepreneurs and non entrepreneurs. To do so, we used information relating incomes, as total income from self-employment splits according to its origin: from farmers, from independent professionals, and from enterprises. Therefore, an individual will be classified as entrepreneur, if he/she is “self-employed” and obtains income from enterprises.

Once the individuals have been classified, we have built the dependent variable  $Y$ , from years 1984-1996. The dependent variable, that we will call “transition to entrepreneurship” takes the value 1 in the year  $t$ , if the individual that is not an entrepreneur in that year  $t$ , becomes an entrepreneur in the year  $t+1$ . It would take the value 0 for those individuals that not being entrepreneurs in  $t$ , continue in the same situation in year  $t+1$ . Our objective will be to see what factors (measured in year  $t$ ), as age, educational level, professional status, and so on, explain the transition to entrepreneurship (in  $t+1$ ). To do so, a binary model of logistic regression will be used.

The logit model used is as follows:

$$P(Y = 1) = F(\mathbf{x}'\beta),$$

$$P(Y = 0) = 1 - F(\mathbf{x}'\beta).$$

where  $\mathbf{x}$  is a vector picking up, for each individual, the observations of each explanatory variable that affect the probability of experiencing a transition to entrepreneurship.  $\beta$  is a vector of parameters that reflect the effect that the corresponding explanatory variable has on the probability of experiencing a transition. And  $F$  is the distribution function of the logit model, therefore:

$$P(Y = 1) = \frac{e^{\mathbf{x}'\beta}}{1 + e^{\mathbf{x}'\beta}}$$

### **Specification of the explanatory variables**

The individuals' age (in years) and their income level (in thousands of marks a month) have been introduced as continuous variables (AGE and INGINDIV, respectively). The remaining explanatory characteristics have been introduced through dichotomic variables, taking the value 1 if the individual presents the indicated modality of that characteristic, and 0 otherwise. The categories and modalities considered have been:

1. **Sex:** SXV (=1 for a man) and SXF (=1 for a woman).
2. **Nationality:** National (=1 for a German ) and Extranj (=1 otherwise).

3. **Degree of handicap.** This variable has been introduced through 2 dichotomic variables: Nominusv (=1 if the interviewee is not handicapped) and Minusgra: (=1 if the interviewee presents some degree of handicap).
4. **Educational level.** For the educational level the following dichotomic variables have been included: EDUC1 (=1 if the individual attended primary education), EDUC2: (=1 if the individual attended the first level secondary education), EDUC3: (=1 if the individual has attended the second level secondary education, corresponding to preparation for university or vocational training) and EDUC4: (=1 if the individual has university studies).
5. **Relationship with the reference person.** This variable has been included through four dichotomic variables: RELAC1 (=1 if the interviewee is the reference person), RELAC2 (= if the interviewee is the spouse, or the reference person's cohabitant), RELAC3 (=1, if the interviewee is natural or legal son/daughter, or adopted child, of the reference person) and RELAC4 (=1, if the interviewee has another relationship with the reference person).
6. **Labour category.** This variable has been introduced through the following dichotomic variables: ES2 (=1 if the individual is a student), ES3 (=1 if the individual is working), ES4 (=1 if the individual is unemployed) and ES567 (=1, if the individual is housewife, pensioner or another category).
7. **Professional situation.** The introduction of this variable has been carried out through seven dichotomic variables: WORK1 (=1 if the individual is farmer), WORK2: (=1 if the individual is self-employed), WORK3 (=1 if the individual is a contributing family worker), WORK4 (=1 if the individual is blue collar), WORK5 (=1 if the individual is white collar), WORK6 (=1 if the individual is apprentice) and WORK7 (=1 if the individual is a civil servant).
8. **Activity Sector.** The inclusion of this variable is carried out through the following dichotomic variables: SECTOR1 (=1 if the individual works in agriculture, hunting, fishing or forestry), SECTOR240 (=1 if the individual works in mining, quarries, electricity, gas, water, or non appropriately defined activities), SECTOR3 (=1 if the individual works in manufacturing), SECTOR5 (=1 if the individual works in construction/building), SECTOR6 (=1 if the individual works in hotels and retail trade), SECTOR7 (=1 if the individual works in transport, storage and communications), SECTOR8 (=1 if the individual works in finance, insurance and services to enterprises) and SECTOR9 (=1 if the individual works in community, social and personal services).
9. **Size of the enterprise.** It has been introduced through the following dichotomic variables: SIZE1 (=1 for those working in a small enterprise: 0-20 workers),

SIZE2 (=1 for those in a medium enterprise: 20-200 workers), SIZE3 (=1 for those in a large enterprise: 200-2000 workers) and Size4 (=1 for those in very large enterprises: more than 2000 workers).

10. **Number of times that the interviewee has been entrepreneur.** We have used two dichotomic variables: NUM0 (=1 if the individual does not have any experience as entrepreneur during the period 1984-1996) and NUM12 (=1 if the individual has been an entrepreneur before the considered transition at least once in the period 1984-1996).
11. **German reunification.** The dichotomic variables considered are: PERIODO1 (=1 for the period 1984-1990, before the German reunification) and PERIODO2: (=1 for the period 1991-1995).
12. **Economic cycle.** The dichotomic variables considered are: C1 (=1 if the economy is in a descending cycle) and C2 (=1 if the economy is in an expansion).

To avoid collinearity problems among the explanatory dichotomic variables, we will introduce in the model all the categories of each variable but one. The categories not to be introduced are: SXF (woman), NATIONAL (to be German), NOMINUSV (not handicapped), EDUC1 (first level primary education), RELAC4 (another relationship with the reference person), ES2 (student), WORK7 (civil servant), SECTOR240 (mining, quarries, electricity, gas, water and non appropriately defined activities), SIZE4 (more than 2000 employees), NUM0 (without experience as an entrepreneur), PERIODO1 (before the German unification), C1 (recession).

### **Estimation of the model**

For the estimation of the model a sample of 4217 individuals, distributed in the period 1984-1995, was initially selected. Besides including all the entrepreneurs, we have also selected a random sample to serve as control group among those older than 16 and below 70 years old who were not entrepreneurs in the period of study. As there were missing observations for certain variables, the final sample was reduced to 3285 individuals. The yearly distribution can be seen in the appendix, as well as sample mean for each variable.

Since we seek to identify the most outstanding factors, some procedure for the selection of variables was used. Concretely, we have used the forward stepwise and backward stepwise methods included in the SPSS package, obtaining very similar results. The selected variables and the estimation of the corresponding parameters obtained with the backward stepwise method are shown in Table 1.

As it can be observed, most coefficients are significant at the 5% level. The exceptions are those of the variables ES567, PERIODO2 and EXTRANJ (significant at the 10% level) and the parameter relative to previous experience as an entrepreneur in the period. The signs are as expected. In particular, the negative effect of German reunification would be derived from the lower level of initiative of East German individuals incorporated to the sample (Frese et al., 1996).

**Table 1: Estimate of the parameters**

	$\beta$	S.E.	Wald	Sig.
<b>INGINDV</b>	0,1167	0,0291	16,0710	0,0001
<b>EDAD</b>	-0,0338	0,0060	32,2372	0,0000
<b>ES4</b>	1,7527	0,2456	50,9452	0,0000
<b>ES567</b>	0,4660	0,2482	3,5242	0,0605
<b>WORK1</b>	1,7624	0,5872	9,0078	0,0027
<b>WORK2</b>	2,6615	0,2234	141,8927	0,0000
<b>WORK3</b>	1,6405	0,5052	10,5461	0,0012
<b>WORK6</b>	-1,5334	0,6327	5,8732	0,0154
<b>NUM12</b>	9,2571	6,8968	1,8016	0,1795
<b>SIZE1</b>	1,6027	0,1889	72,0252	0,0000
<b>SIZE2</b>	0,4896	0,2197	4,9688	0,0258
<b>PERIODO2</b>	-0,2393	0,1320	3,2867	0,0698
<b>EXTRANJ</b>	-0,3102	0,1829	2,8746	0,0900
<b>SECTOR6</b>	0,7240	0,1877	14,8839	0,0001
<b>SECTOR9</b>	-0,8884	0,2254	15,5337	0,0001
<b>EDUC3</b>	0,4154	0,1916	4,7029	0,0301
<b>EDUC4</b>	0,5929	0,2541	5,4453	0,0196
<b>RELAC3</b>	-0,6911	0,2430	8,0887	0,0045
<b>Constant</b>	-1,9403	0,3297	34,6367	0,0000

**Tests on the coefficients of the model**

	Chi-squared	d. of f.	Sig.
<b>Model</b>	1321,381	18	,0000

**Classification according to the model**

		Predicted		Correct (%)
		Non Entrepreneur	Entrepreneur	
Observed	Non Entrepreneur	2369	61	97,5
	Entrepreneur	259	336	56,5
Cutting point 0,5				89,4

Considering unemployment (ES4), it seems to be a factor that pushes significantly towards the entrepreneurial activity in Germany. Thus, an important share of the interviewees that were in unemployment created an enterprise in the twelve following months (they experienced a transition to entrepreneurship). On the other hand, the situation of being working (ES3) should have a positive effect on the

transition to entrepreneurship (Reynolds, 1997). However, this variable does not appear in the final model because its effect is already comprised in those of WORK\_, SIZE\_ and SECTOR\_, which we comment below.

As for the professional situation, farmers (WORK1), self-employed (WORK2) and contributing family workers (WORK3) are inclined to become entrepreneurs. These are activities in which the worker has greater autonomy, and the possibility to know more deeply the different tasks implied by the management of a business. These situations would provide experience and elevate the individual's self-efficacy level (perception of being able to carry out the activity). So, it is not strange that these professional situations substantially increase the probability of transition. The opposite extreme would be that of apprentices (WORK6). In this case, it would be precisely their lack of experience what would prevent them to move to self-employment.

Regarding the working environment, as the size of the company in which the individual works in a certain moment decreases, the probability of becoming an entrepreneur in the following year increases. This is so especially in companies up to 20 workers (SIZE1) and to a lesser extent in those between 20 and 200 workers (SIZE2). In these organizations employees usually have a more complete understanding of the productive process, while in large organizations they may only have a partial knowledge (Aydalot, 1988). Therefore, it is reasonable that small enterprise employees have a higher entrepreneurial propensity.

As for the activity sectors, only those working within hotels and retail trade (SECTOR6) show a greater entrepreneurial propensity. The reason could be similar as for the company size. In this sector it is relatively easier to wholly know the activity because they are mainly simple activities and, therefore, it offers better conditions to move to entrepreneurship. On the contrary, working in the community, social and personal services (SECTOR9) has a negative influence on entrepreneurial initiative. It may possibly be due to these activities being mostly offered by the public sector, so entrepreneurial initiative would be much lower within it.

The educational level, as we expected, contributes positively to the decision of creating an enterprise as well. That influence is manifested significantly in all non compulsory levels (EDUC3 and EDUC4), but the effect is greater for university education. In this sense, both the higher knowledge and the greater self-efficacy provided by the educational system may help explain this relationship.

Lastly, the analysis shows that being the reference person's son (in a wide sense, including natural, adopted and cohabitant's children) diminishes the probability of becoming an entrepreneur. In this line, Reynolds' study did not find the number of children or adults living in the household to be significant (except in the age group from 18 to 24 years). However, our study shows that the position occupied by the individual in the household is significant for the transition to entrepreneurship. It may be that individuals, before their transition to entrepreneurship, prefer to settle down in their own household (so they would become the reference person) and to acquire certain work experience.

Regarding the continuous variables, in order to interpret more appropriately the coefficients of the model, the marginal effects have been calculated. In the logit model, and in the case of continuous variables, the expression to be used is:

$$\frac{\partial E[y|\mathbf{x}]}{\partial \mathbf{x}} = F(\mathbf{x}'\beta)[1 - F(\mathbf{x}'\beta)]\beta,$$

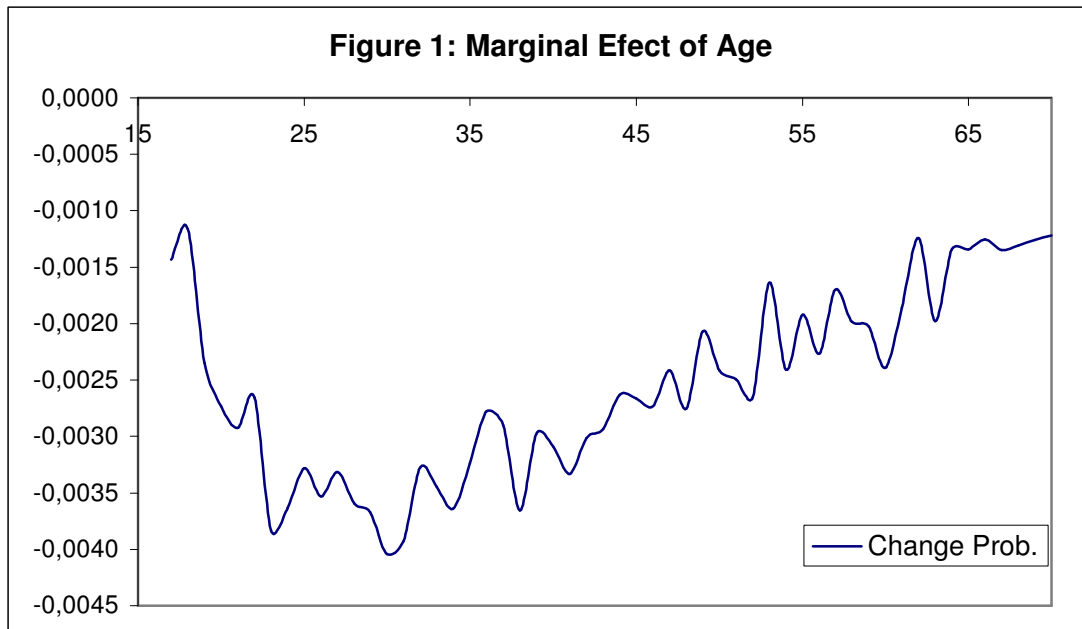
which will vary with the values of  $\mathbf{x}$ . Two alternatives exist for this analysis. Firstly, we could evaluate that expression taking the sample means as  $\mathbf{x}$ . Secondly, the marginal effects may be evaluated on each observation and the mean of all marginal singular effects calculated afterwards.

If we use the first of those alternatives for age, the marginal effect of an additional year diminishes the probability of becoming entrepreneur in 0.00472. Using the second alternative, Figure 1 shows the mean marginal effect for each observed value of age. In this way, the variation in the marginal effect when age changes may be observed.

Although the marginal effect is always negative, it increases in absolute value until approximately 30 years of age, and diminishes linearly in absolute value from that age. This means that for the youngest individuals, the probability of transition to entrepreneurship (if all other circumstances remain constant) decreases faster every year. However, above thirty years of age, the probability decreases more and more slowly (again, if all the other circumstances remain constant).

However, when we represent the observed probability (the relative frequency) of becoming entrepreneur for each age, the graph is bell-shaped, consistently with other studies. This does not imply any contradiction, because of the *ceteris paribus* hypothesis assumed. In this sense, during the first years of working life, "qualifications" and "opportunities" of the individual (education, higher level of income, experience,

and so on) are improving significantly, making the total probability of becoming entrepreneur rise. On the contrary, above thirty years of age, these other circumstances tend to stabilize. It is then when the negative effect of age begins to be apparent, thus making the overall observed probability decrease.



The marginal effect of income, on its part, is relatively small. A thousand additional marks on the average individual hardly increase his/her probability of becoming entrepreneur by 0.01630. The graph in the Appendix shows the marginal effect by income intervals. A slightly growing trend may be appreciated (as income increases, the probability of transition to entrepreneurship rises), but this relationship is very weak.

It may also be interesting to show the marginal effects for the dichotomic variables (that we have denoted by  $d$ ). In this case, the marginal effect would be:

$$P(Y = 1 | \mathbf{x}, d = 1) - P(Y = 1 | \mathbf{x}, d = 0),$$

which  $\mathbf{x}$  usually obtained using sample means of all other explanatory variables. Table 2 shows the marginal effects of the dichotomic variables that were significant.

The first thing to highlight is the huge effect that having previous experience as an entrepreneur has on transition. However, this information should be considered cautiously, as the corresponding coefficient was not significant (possibly due to the reduced number of observations). The situation of being self-employed but not entrepreneur also has a great marginal effect (0.55269). A third group of variables with a high effect would include: to be unemployed, to be a farmer, to be a contributing

family worker, or working in a small company (up to 20 employees). In all these cases, the probability of suffering a transition to entrepreneurship rises considerably (between 0.25 and 0.40). The remaining variables have marginal effects below 0.15. Among the situations unfavourable to entrepreneurship (negative marginal probability), there are that of being apprentice, being son of the reference person, and working in social services.

**Table 2. Marginal effect in categorical variables**

	$\beta$	Mean	Change Prob.
<b>ES4</b>	1,75268	0,06301	0,35727
<b>ES567</b>	0,46604	0,24536	0,07032
<b>WORK1</b>	1,76240	0,00487	0,37142
<b>WORK2</b>	2,66152	0,10807	0,55269
<b>WORK3</b>	1,64049	0,01126	0,33992
<b>WORK6</b>	-1,53335	0,02770	-0,13036
<b>NUM12</b>	9,25707	0,05449	0,89070
<b>SIZE1</b>	1,60274	0,24323	0,28394
<b>SIZE2</b>	0,48965	0,14155	0,07652
<b>PERIODO2</b>	-0,23929	0,49924	-0,03342
<b>EXTRANJ</b>	-0,31018	0,20244	-0,04072
<b>SECTOR6</b>	0,72400	0,10928	0,12054
<b>SECTOR9</b>	-0,88844	0,15038	-0,10070
<b>EDUC3</b>	0,41543	0,62618	0,05607
<b>EDUC4</b>	0,59293	0,12116	0,09545
<b>RELAC3</b>	-0,69114	0,12359	-0,08093

It can be said, then, that the highest marginal effects are concentrated on only a few variables. Thus, professional situation and activity sector are especially relevant, with all effects above 10%. Therefore, the kind of work experiences (and not only the duration of those experiences) would have a substantial effect on the probability of becoming an entrepreneur.

#### **4. Conclusions**

In this paper we have tried to analyze the characteristics of nascent entrepreneurs in Germany, which may be representative of Central Europe. To do so, we draw on previous work that point to a certain sociocultural homogeneity in the different countries of that area. Thus, Reynolds (2000) found that the proportion of nascent entrepreneurs in the centre and north of the continent is quite similar. On the other hand, Wolters' (2000) results for the Dutch case confirm ours in many aspects.

In the first place, a series of important methodological and also conceptual questions have been dealt with. Regarding the former, some practices that are common

in the empirical studies analyzed may cause an important bias in the results. In particular, on the one hand, it is essential that the explanatory variables are measured before the individual becomes an entrepreneur, and not afterwards, not even with retrospective questions. Therefore, it is usually necessary the use of panel data. On the other hand, in the elaboration and manipulation of the questionnaire a great care is needed, specially when measuring non tangible variables such us interviewee's motivations, perceptions or attitudes. Finally, the non response rate should be taken into account, because it may also cause biases in the sample composition.

As for the conceptual aspects, we have adopted a view of entrepreneurship as a process, in line with the most recent trends in this field. This approach considers the entrepreneurial activity as a result of the combination of personal (individual's perceptions and attitudes, which are in turn affected by the person's background) and environmental factors (not only economic, but also family and social environments). Therefore, it is probable that a great diversity of types of entrepreneurs exists, with different motivations and objectives. Factors that lead to enterprise creation may vary for each social group. Nevertheless, to the extent that environmental circumstances are similar, and that certain shared sociocultural features exist, it may be expected that certain variables influence the whole group of nascent entrepreneurs.

In this paper, we have worked with a very wide data panel including the whole German population, which has allowed to avoid many of the methodological problems indicated. Nevertheless, our database did not include questions about perceptions, attitudes and motivations of the entrepreneur, which has undoubtedly been an important limitation.

The results obtained are, considered as a whole, quite satisfactory. In the first place, they have confirmed a series of causal relationships that had been already found in previous studies, and have also identified other relationships. Secondly, we have obtained a reasonable predictive capacity, since our model correctly classifies 89.4% of the sample, and in particular, it classifies 56.5% of nascent entrepreneurs correctly. Based on these results, we can say that the following personal factors positively affect the decision to create an enterprise: a higher income level, higher educational level, lower age, not being the household reference person's son (those still living with their parents are less likely to become entrepreneurs), and not being a foreigner. Regarding professional features, the positive effect is derived from either being unemployed, or -if working- doing so in small companies, as self-employed or with a high degree of autonomy, and also doing it in the hostelry and trade sector.

In future, however, it is necessary to advance in the design of new research to allow a more precise identification of the factors causing the decision to create an enterprise within the different social groups. In the first place, it is our intention to divide this sample in more homogeneous subgroups, since its size allows it. Repeating the analysis we have carried out here to each one of those subgroups could allow identifying the specific factors that affect enterprise creation in different social groups. Secondly, another line of research we intend to continue would consist on the comparison of these results with those corresponding to other countries, both European and otherwise. To do so, we will use as far as possible the information available in the Panel Comparability Project.

Lastly, we stress again the need to have much more specific information relative to the personal and psychological features of individuals, to be able to validate the different theories about enterprise creation and entrepreneurship. It is more and more urgent to build a sufficiently wide database, both in sample size and in time period covered, and that it is specifically intended for the measurement of entrepreneurship.

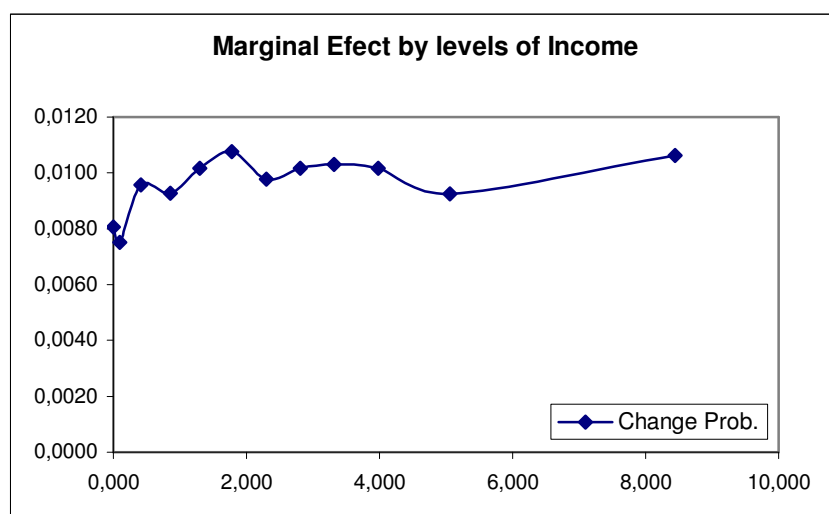
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## Appendix



**Sample distribution by year**

Year	No. Individuals	% of sample
1984	267	8,13
1985	226	6,88
1986	238	7,25
1987	204	6,21
1988	180	5,48
1989	217	6,61
1990	313	9,53
1991	272	8,28
1992	271	8,25
1993	340	10,35
1994	347	10,56
1995	410	12,48
<b>Total</b>	<b>3285</b>	<b>100,00</b>

**Simple means of the variables used in the empirical analysis**

<b>Variable</b>	<b>Mean</b>	<b>Variable</b>	<b>Mean</b>
EMPRESAR	0,1970	SXV	0,5209
INGMIL	2,2782	SXF	0,4791
EDAD	41,3598	NACIONAL	0,7976
ES2	0,0889	EXTRANJ	0,2024
ES3	0,6027	SECTOR1	0,0146
ES4	0,0630	SECTOR3	0,1963
ES567	0,2454	SECTOR5	0,0548
WORK1	0,0049	SECTOR6	0,1093
WORK2	0,1081	SECTOR7	0,0362
WORK3	0,0113	SECTOR8	0,0542
WORK4	0,2350	SECTOR9	0,1504
WORK5	0,2304	SECTO240	0,0338
WORK6	0,0277	NOMINUSV	0,9336
WORK7	0,0387	MINUSGRA	0,0664
NUM0	0,9455	EDUC1	0,0505
NUM12	0,0545	EDUC2	0,2021
SIZE1	0,2432	EDUC3	0,6262
SIZE2	0,1416	EDUC4	0,1212
SIZE3	0,1306	RELAC1	0,5111
SIZE4	0,1406	RELAC2	0,3546
PERIODO1	0,5008	RELAC3	0,1236
PERIODO2	0,4992	RELAC4	0,0107
C2	0,3817		
C1	0,6183		