

van Wissen, Leo J.G.

## Conference Paper

# The demography of entrepreneurs and enterprises

42nd Congress of the European Regional Science Association: "From Industry to Advanced Services - Perspectives of European Metropolitan Regions", August 27th - 31st, 2002, Dortmund, Germany

### Provided in Cooperation with:

European Regional Science Association (ERSA)

*Suggested Citation:* van Wissen, Leo J.G. (2002) : The demography of entrepreneurs and enterprises, 42nd Congress of the European Regional Science Association: "From Industry to Advanced Services - Perspectives of European Metropolitan Regions", August 27th - 31st, 2002, Dortmund, Germany, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

<https://hdl.handle.net/10419/115799>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# The demography of entrepreneurs and enterprises

Version, june 2, 2002

Leo van Wissen

Faculty of Spatial Sciences  
University of Groningen  
PO Box 800  
9700 AV Groningen, the Netherlands

and

Netherlands Interdisciplinary Demographic Institute NIDI  
PO Box 11650  
2502 AR The Hague, The Netherlands

email: [l.j.g.van.wissen@frw.rug.nl](mailto:l.j.g.van.wissen@frw.rug.nl), or [wissen@nidi.nl](mailto:wissen@nidi.nl)

## Abstract

The demography of entrepreneurs is a branch of labor market studies with linkages to the demography of enterprises. Whereas the former takes the entrepreneur as the key decision maker in the process, the latter focuses on the organization. In many cases there is a close one-to-one correspondence between both units. This paper explores the potentials of using the demography of entrepreneurs as a tool for the demography of enterprises. It is shown that there are a number of important advantages of the entrepreneurial perspective for firm births. It solves some definitional problems, opens up an array of sound demographic methods, as well as theories from different fields, and resolves the problem of parenthood. Nevertheless, some problems remain that have to be solved: not all newfoundings fit into this scheme, and the same is true for some types of entrepreneurial startups. More research into these areas is necessary.

## 1 Introduction

The literature on self-employment and entrepreneurship on the one hand, and enterprises on the other, has developed rather independently. The first strand is a branch of labor economics, whereas the second is rooted in industrial organization and organizational ecology. The demography of entrepreneurs can be defined as the study of changes in size and composition of the population of entrepreneurs. More generally, it includes the description, analysis and consequences of processes of entry and exit into and out of the population of entrepreneurs and self-employed, as well as description and analysis of developments within this population, such as aging, or change in composition in terms of entrepreneurial activities, and so on. It has links to a number of established fields of economic research, notably labor market economics, and entrepreneurial studies. In labor market analysis, the population is divided into non-active and active population, and the active population is divided into employed and unemployed persons. Changes in these *states* in the labor market as well as the duration into these states are key variables to be analyzed and explained. In a similar vein, the working population may be further classified into being employed and employer or entrepreneur, or being employed, self-employed and employer/entrepreneur. Changes into and out of the state of being not active, unemployed, employee, self-employed or employer can be studied in a labor economic framework. In addition, there is a somewhat separate tradition of entrepreneurial studies in economics (Van Praag, 1995), which focuses on the changes into and out of the state of being employer/self-employed. In entrepreneurial studies, not only economic, but also sociological and psychological arguments are taken into account.

The demographic framework is also applied in labor market studies. The demography of the labor force is a classical application of multistate demography (Willekens, 1980). Multistate demography is a multidimensional version of life table analysis. Here, a systematic analytic account is given of the changes in states between not active, active, unemployed and employed. Transition probabilities are age- and sex-specific, and are also dependent on the current state of the person (the Markovian assumption). The demographic approach to the labor force is also relevant for the systematic study of (changes in) labor force participation over time. In these studies, changes in participation are decomposed into the dimensions age,

time and cohort. This decomposition is a useful analytical device, and may help to formulate labor force forecasts.

This research framework is also relevant in a labor supply framework that is extended to also include the states of self-employed and employer. There are three main reasons for this, as will be shown in this paper. First, a demographic account of entrepreneurship is relevant in itself. Sex- and age-specific entrepreneurship rates are interesting statistics, for descriptive and analytical purposes. Secondly, the dynamics of these entrepreneurship rates, which are given by the sex- and age-specific transition rates between employed and employee, or between unemployed and self-employment are similarly relevant, and give insight into the dynamics of the process. Third, the demography of entrepreneurship may be instrumental in studying the demography of enterprises. This field of study has gained popularity in recent years (Caroll and Hannan, 2000; Van Wissen, 2002), but there are a number of methodological problems that cannot be solved easily within a demographic framework. These problems relate to the definition of the unit of analysis, and the definition and process description of the demographic component of birth. More specifically, the issue of parenthood is not easily resolved in the demography of enterprises. In this paper the demography of entrepreneurs is proposed as an alternative route towards the study of the demography of enterprises. Although it is not the panacea to all firm demography problems, it may offer a way out for at least some of them. At the same time, it introduces some new questions, such as the translation of results of the demography of entrepreneurs into the demography of enterprises.

The goal of this paper is therefore threefold. First, it proposes to define the demography of entrepreneurs in a labor demographic framework. Second, it gives an overview of the most important factors affecting entrepreneurship. Third, it shown to what extent the demography of entrepreneurs may be instrumental in the analysis of the demography of enterprises.

The paper is organized as follows. In section 2 we define the demography of entrepreneurs from a labor demographic point of view. Next, we explore the theoretical background of the transition into entrepreneurship; first, from a macro point of view (section 3) and next from a micro-perspective (section 4). At both levels we distinguish between economic, demographic, cultural and institutional reasons. In section 5 the demography of entrepreneurs is compared

to that of enterprises, and the potentials and problems of using the first as an instrument for the second are discussed. Section 6 concludes.

## **2 The demography of entrepreneurs defined**

The demography of labor supply aims at describing and analyzing the dynamics of labor supply. In a multistate framework labor supply is viewed as a system, which is defined as a set of mutually exclusive *states* (Willekens, 1980). Typically two states are defined: being active or not, but a more detailed composition is also often used, including for instance part-time employed, or unemployed. In the demography of entrepreneurship the state of entrepreneur is included. This state may be further decomposed into self-employment and employer.

Each unit in the system belongs to one state. In addition, each unit may change between states. Changes between states are *events*, and the likelihood of events is described by transition rates and probabilities. Transition rates (and probabilities) are age- and sex-specific. The decomposition of differences in transition rates into age, time and cohort effects gives a structural account of demographic change of labor force participation. In the demography of entrepreneurship the events to and from the state of entrepreneurs (or in a more detailed framework to and from self-employment, and employer) are the central focus of research. These may be decomposed into age, period and time effects. Other determining factors may be taken into account as well, for instance the level of education, or household status. An additional dimension, such as education, may be treated as fixed throughout working life, which leads to the segmentation of the working population into a number of subpopulations, on the basis of level of schooling. For each subpopulation, a separate multistate model should be estimated. Alternatively, an additional dimension, for instance household status, may be viewed as a dynamic variable that may change during working life. In that case it should be added as a primary determining variable of the system states. Table 1 gives an overview of all events that may occur in a system of working life that includes two entrepreneurship states. For simplicity migration into and out of the population is not taken into account.

**Table 1 Events in working life including entrepreneurship**

state before event	state after event					
	not active	unemployed	employee	self- employed	employer	dead
not active	na,na	na, un	na,eme	na,se	na,emr	na, d
unemployed	un, na	un, un	un,eme	un,se	un,emr	un, d
employee	eme,na	eme, un	eme, eme	eme, se	eme, emr	eme, d
self-employed	se, na	se, un	se, eme	se, se	se, emr	se, d
employer	emr,na	emr, un	emr, eme	emr, se	emr, emr	emr, d

At any moment in time a person belongs to one of the states denoted in the table. An event is a jump from one state to another. A multistate life table is constructed for a cohort, segmented by sex and for instance educational level, by taking, for each exact age  $x$ , and  $x+1$ , the bivariate distribution over the states (Van Imhoff & Keilman, 1991). From these tables the relevant statistics can be calculated, for instance the state-specific transition probabilities and rates, or the age-specific distribution over the states for each cohort. However, tables of working life for a cohort are generally not available. This would require the observation of a cohort over the whole span of working life. Currently labor supply data are not sufficiently available over such a long time period. Instead, it is often assumed that data collected for one or a few years are a good approximation for cohort data. This assumption implies that age-specific rates do not change over cohorts and time. Figure 1 shows the distribution of men over the states of employee and self-employed/employer in the Netherlands observed in 1992.

Figure 1 here

The assumption of stability over time of transition rates is not very realistic. Labor force participation, being employed or not and entrepreneurship are the result of many processes that change over time. Therefore a purely age-period- and cohort based demographic approach is too limited. In fact, the variation over age, time and cohort that may be observed is the outcome of many processes that should be taken into account in explaining variations in labor market behavior. In labor market studies the transitions between non-participation, unemployed and employed are sufficiently dealt with. The next two sections give an overview

of the most relevant theories of the transition into entrepreneurship, from a macro and a micro perspective. These theories make no explicit distinction between self-employment and other forms of entrepreneurship, and they will be used interchangeably.

### **3 Macro-explanations of entrepreneurship**

There are many different ways to categorize the factors that are relevant for the level of entrepreneurship. The distinction between macro- and micro factors is a common one, and will be used here as well. In addition, a distinction may be made between economic, cultural, institutional and demographic factors. Nevertheless, other classifications are possible as well. Verheul et al. (2001) present a theory of entrepreneurship where the distinction between supply (push) and demand (pull) factors is relevant. However, since our focus is on the demographic dimensions of entrepreneurship, it is necessary to distinguish the demographic factors explicitly *vis-à-vis* other types of factors. Nevertheless, the choice is to some extent arbitrary.

#### *3.1 Economic factors*

Macro-economic factors underlying variations in self-employment can generally be found in the industrial organization literature. These economic factors run parallel to those found for variations in entry (and exit) rates of firms. Eight macro-economic factors are relevant in explaining variations in entrepreneurship rates:

- *The level of economic development of a country.* First, in an underdeveloped country, returns to scale are small. Production is organized in small units, and it does not pay off to enlarge the scale of production. Hence, there are many small entrepreneurs. As the economy develops, scale economies start to become profitable, and the number of entrepreneurs declines. Second, in a developing economy there are small returns to management, whereas in a developed economy it pays off to manage larger units. Moreover, the agricultural sector, which is the dominant sector in developing countries, has a high rate of self-employment (although they are not always recognized as such in official statistics). At the same time, there is an almost universal trend towards a reduction in the share of agricultural workers in the economy. The transition from an agricultural to

an industrial society will therefore lead to lower rates of self-employment. If the agricultural sector is included in the statistics, even the trends in self-employment in western societies are affected by this phenomenon (Blanchflower, 2000)

- *The nature of technological change.* Technological is driven by either a few large firms investing in R&D, or many small firms entering the market with new products. Schumpeter made the distinction between innovation driven by trust capitalism (large firms) and competitive capitalism (small firms). Some sectors are driven by one form, other sectors are driven by the other form of innovative activity. Therefore, if the economy is dominated by technological change of the first type, the level of entrepreneurship will be low, whereas when it is driven by competitive capitalism, there will be many new entrepreneurs.
- *Economic structure.* The industry sector is generally dominated by larger firms than the service sector. The economic structure of most developed countries has changed from an industrial economy to a service economy. The service economy is in general dominated by smaller firms, because economies of scale are less relevant here. Therefore, the development of western society towards a service oriented economy leads to more entrepreneurs.
- *The industry life cycle effect.* Economies of scale has been mentioned several times already as an explanation for changes in entrepreneurship. In the development of a new industry, economies of scale become important in later phases of the life cycle of the industry. Initially, the development of the industry is dominated by many small firms who enter the market with the new product. In the saturation phase many small firms compete in the market and profits drop to zero. After standardization of the product economies of scale are possible and necessary in order to keep profitable. Many small firms leave the market, or are taken over by a few large firms. The economies of scale lead to concentration in the market and hence a small number of entrepreneurs. Thus, the stage in the life cycle of the industry has an impact on the number of entrepreneurs.
- *Market concentration.* A factor behind a number of other factors already mentioned, such as the economic development and the industry life cycle, is market concentration. In a highly concentrated market it is very difficult to enter, due to the high investments required. This is a central concept in theories of industrial organization.
- *Resource partitioning* is a concept from the ecology of organizations (Carroll and Hannan, 2000) and is related to the industry life cycle and concentration. According to the resource



partitioning hypothesis in an industry dominated by a few very large firms will leave small specialist niches in the market that cannot be filled by the largest suppliers.

Therefore, after the phase of maximum concentration in the industry, new entrepreneurs may step in the market and produce specialized product for small market segments.

- *Push theory of unemployment.* According to the so-called push theory a rising level of unemployment leads to a larger number of entrepreneurs. Employees, faced with the prospect of unemployment may prefer to choose for self-employment in order to escape unemployment benefits. Thus, in times of rising unemployment, self-employment rates may go up.
- *The pull hypothesis of economic growth* poses the opposite development. In times of economic growth, consumers spend more money and markets expand. In this situation it is relatively easy to start a firm. Thus, in times of economic growth the number of entrepreneurs tends to increase. Empirical analysis does not give clear evidence of one hypothesis over the other (Blanchflower, 2000).

### 3.2 *Institutional factors*

We distinguish between institutions, as the observable self-imposed constraints on behavior, and culture, to be discussed in section 3.3, as unobservable norms and values that pertain to a group of people. Although there is a difference, we also view policies as part of institutions. The following macro-institutional factors play a role in explaining variations in entrepreneurship:

- *High marginal income taxes* lead to higher self-employment rates. Being self-employed offers more opportunities for tax-deductions than being employee.
- *Higher payroll taxes for employers* may result in substitution of internal workers for externally hired free-lancers, consultants etc. As a result, former employees become self-employed and are hired by their former employer.
- *Higher minimum wage levels* will have a positive effect on self-employment as well, due to the same mechanism of substitution of expensive internal to cheaper external labor.
- *Pension rights* are usually better for employees than for the self-employed. The self-employed have to cover the costs of insurance and pension premiums themselves. This may lead to underinsurance and small pension rights. As a result, the self-employed tend

to work longer in life than employees. Figure 1 is evidence of this fact in the Netherlands. Whereas most employees stop working around the age of 60, there is only a small reduction in the number of self-employed until the age of 65.

- *Unemployment benefits.* A consequence of the push hypothesis is that high levels of unemployment benefits will lead to a lower incentive to take the step towards self-employment (Staber and Bogenholdt, 1993).
- *Institutional barriers to entry.* These may be legislative barriers, for instance in the case of legally endorsed monopolies, legal requirements for entry, e.g. in the form of diplomas or other requirements. Informal arrangements of incumbent firms to block entry of new entrants (cartels, other forms of barriers) are also possible.

### 3.3 Cultural factors

Cultures differ in the appreciation of entrepreneurs. Birch (1979) gave a strong account of the differences between the US and European countries of their attitude towards entrepreneurship. According to Hofstede (1991) culture is the collective programming of the mind, which distinguishes the members of one group from another. He analyzed different cultures with respect to the basic dimensions underlying entrepreneurship. Three basic cultural dimensions affect the levels of entrepreneurship in a country. They can be operationalized in terms of the following cultural indices:

- *The individualization index.* This index measures the relationship between the individual and the collectivity in society (Hofstede, 1991). Cultures differ in their appreciation of independence and individualism. It may be expected that high levels of this index will be associated with high levels of entrepreneurship, although the opposite relationship has also been found (as reported in Verheul et al., 2001).
- *The uncertainty avoidance index* measures the degree to which members of a culture feel threatened by uncertain situations (Hofstede, 1991). In some cultures, for instance Japan, failure has a very negative value, and therefore people tend to avoid risks and uncertainty. In other cultures, notably the US, risk-taking behavior has a positive connotation and the possibility of failure is viewed as one of life's normal hazards. These societal norms may also have consequences for institutional constraints. For instance, in many European countries it is very difficult for a failed entrepreneur to obtain a bank loan for a new

startup, whereas it is much easier in the US. Consequently, in countries that score high on the risk avoidance index entrepreneurship is low. Entrepreneurs must make choices under uncertainty. Knight (1921) made a distinction between risk and uncertainty. Where risk is involved, the probability of success is known. Uncertainty however, pertains to situations where even the probability of success is unknown. The likelihood of success of an innovation can therefore not be judged using the tools of decision analysis. Entrepreneurs are good in judging situations of uncertainty. In countries with a high uncertainty avoidance index people tend to follow rules and regulations. In such situations the level of entrepreneurship tends to be low.

- *The dissatisfaction index* (Noorderhaven et al., 2002) The move to self-employment may be viewed as a means to personal development. The need for such a step is larger in societies with a high degree of dissatisfaction (Noorderhaven et al., 2002).

### 3.4 Demographic factors

Four factors are often mentioned at the macro level. Two factors, age and ethnicity, are essentially compositional effects of the labor force. The explanation runs parallel to the micro level demographic factors, to be discussed below:

- *Population growth* has a positive effect on entrepreneurship rates (Verheul et al., 2001). This is caused by a number of factors. First, population growth leads to growing demand for products. As put forward in section 3.1, market entry is easier in growing markets. Second, immigration may also be the cause of population growth, and, as will be made clear below, this may also lead to a compositional ethnic effect.
- *Female labor market participation*. In countries with a high level of female labor force participation entrepreneurship tends to be low, since women show much lower self-employment rates than men.
- *The age structure of society*. The move to self-employment is most likely in the middle age range. Therefore, societies with a very high share of the working population in the age range 35-45 will tend to show high rates of startups. Moreover, as can be seen from figure 1, the share of self-employed in the labor force is higher among older working ages. Aging of the labor force implies therefore a larger share of self-employed.

- *Ethnicity*. In some ethnic populations self-employment and entrepreneurship are more common than in native populations (Rath 1997); Clark & Drinkwater, 2000). Immigration policies will have an effect on the size of migrant populations and hence on the number of self-employed immigrants.
- *Population density*. In low population density areas economies of scale are more difficult to realize than in high density urban areas. Low population areas are characterized by relatively smaller shops and service firms. Thus, in low density areas the level of entrepreneurship is higher (Brüderl and Preisendorfer, 1998).

#### 4. Micro-explanations of entrepreneurship

A host of literature has been written on the explanations for moving into entrepreneurship. A number of factors at the micro level are similar to the macro factors discussed in the previous section. However, there is not always a one-to-one translation from the macro to the micro level, since other processes are at work at both levels. We will summarize the main factors below, and follow a categorization in three groups, viz. micro-economic factors, cultural–psychological factors and micro-demographic factors.

##### 4.1 Micro-economic factors

- *Employment status*. According to the push theory discussed earlier, becoming unemployed is an incentive to become self-employed instead. Indirectly, this hypothesis is also driven by the earning differential hypothesis.
- *Earning differentials* between employees and self-employed are the classical economic motivation for entrepreneurship. This argument was already present in the work of Knight (1921) on entrepreneurship. If expected income of employees is high, the incentive to become entrepreneur is low.
- *Previous occupations*. The experience of the new entrepreneur is also important. First, having worked in the economic sector before is relevant. It increases knowledge about the production process, the market, as well as helps to establish networks. Second, having had management or entrepreneurial experience before helps as well. Failed entrepreneurs are more likely to start a firm than others. Third, having worked in a small firm is also an important factor having a positive effect on the likelihood of becoming self-employment. Workers in small firms are less specialized, have more contact with the manager, and have

a better overview of the organization of the firm. This knowledge is helpful when starting a new firm.

- *Liquidity constraints* may be a barrier to entry. Although theoretically an entrepreneur may borrow the necessary capital on the market, in practice it is often difficult to obtain loans from a bank for starters. Having private or family capital therefore removes one barrier to entry (Blanchflower and Oswald, 1998). Moreover, being a homeowner may increase the chance of obtaining a capital, because the house may be given in pledge.

#### 4.2 Cultural / psychological factors

Cultural and psychological factors are not identical. Cultural factors relate to the collective norms, values and beliefs of a group, whereas psychological factors pertain to the individual. At the same time, it is difficult to disentangle culture from personality for one person (Church, 2000). To circumvent these problems, both types of factors will be discussed in this subsection. Societal norms and values, discussed in section 3.2 above, play an important role at the individual level as well. In addition, personal values and beliefs, character and mentality also shape individual behavior. These are summarized as follows:

- *Risk and uncertainty aversion* is also important at the individual level. Even in a society with a high value on risk-taking individuals can be divided into risk-seeking and risk-averting types. Risk seeking individuals are more likely to become self-employed.
- *Span of control* is the degree to which a person wants control over his environment. Entrepreneurs have a large span of control. They don't want anyone else taking control over their own environment.
- *Self-satisfaction*. Not being satisfied with yourself as an employee may lead to the move into self-employment. Many studies show that the self-employed are more satisfied with their work and life than others.
- *Self-esteem* and *confidence* is necessary in order to become entrepreneur. Without confidence in your own choices you may not be willing to take the risks involved in becoming self-employed

#### 4.3 Micro socio-demographic factors

There are strong correlations between a number of basic demographic dimensions and the entrepreneurial rate. The macro level relationships discussed in the previous section reflect these micro relationships. In addition what has been said in section 3.4 the following can be added at the micro-level:

- *Sex.* Women have a significant lower level of entrepreneurship, although the level is rising. This may be a reflection of the still subordinated position of women in the labor market, as well of the effect of women's emancipation.
- *Age.* The move into entrepreneurship typically takes place in the early middle age category (30-40 years), although there are signs that the average age is decreasing. The overall level of entrepreneurship is rising with age, since moves back from entrepreneurship to employee are less common.
- *Ethnicity.* As already indicated in section 3.4 there are differences in self-employment levels between ethnic groups. These differences can partly be explained by the push hypothesis of avoiding unemployment. Moreover, many migrant groups come from less developed countries, where, for economic reasons explained in section 3.1 self-employment is much more common. In addition, there are also personal and cultural motivations involved. Migrants, especially labor migrants are a selective group within the sending society. They take more initiative, are willing to accept uncertainty and probably have a higher degree of self-confidence. These are essentially the same individual characteristics that are needed for entrepreneurship.
- *Household structure.* There is some evidence that the larger the household size, the larger the probability of being self-employed. However, Blanchflower (2000) reports mixed evidence of this hypothesis, using micro data for various countries. The theoretical rationale for this relationship is not clear either. There is more evidence for the effect of spouses upon each other. Especially for women, the probability of being self-employed is higher if her spouse is self-employed.
- *Education* According to Say (1776-1832), the first economist who thought about the subject, those who had the right mixture of theoretical and practical skills could become entrepreneurs. Indeed, the level of entrepreneurship varies with educational level. However, there is no linear trend, but a U-shaped pattern, where the highest levels of self-

employment are found among the lower and higher educated people (Blanchflower, 2000). Moreover, the highest educated group (those with an academic degree) have a somewhat lower entrepreneurship rate than those with a higher vocational training. This may be explained by the relative high wage level as employee for these groups.

## **5. The demography of entrepreneurs and enterprises compared**

The demography of the firm is a field of study of increasing importance, in both industrial organization (Caves, 1998), sociology (Carroll and Hannan, 2000) as well as in economic geography (Van Dijk & Pellenbarg, 2000) and demography (Van Wissen, 2002). It deals with the demographic study of the components of new-founding, disbanding, growth and migration of firms (Van Wissen, 2002). This demographic viewpoint is by definition a dynamic perspective, in which change and flows are the subject of study, rather than structure and stock. Structure is the result of selective change and in- and outflows. The demographic method is especially rich in providing insights into these processes and their consequences for the size and composition of the population. Therefore, in principle the demographic method may give added value to the study of firms (Van Wissen, 2002).

Nevertheless, there are a number of problems when applying the demographic method in this field. Here we will mention three important problems that are relevant for the present argument. First, firms are not biological species, and their behavior is governed by other processes than fertility, physical aging and deterioration. Therefore, the metaphor cannot be extended too far, and in this respect, the demography of the firm is on similar grounds as evolutionary economics (Nelson & Winter, 1982). The demographic method is useful since it provides an excellent apparatus for describing and analyzing change in populations that are driven by selective inflow and selected age-related outflow. The underlying theories for these processes are mostly based in other disciplines. A second problem in the demography of the firm is the problematic nature of the definition of the firm. There is no uniform definition of the firm, across countries, or across data registers. Therefore, a demographic accounting framework of the stocks and flows of firms is hard to derive (although some statistical offices attempt to achieve this goal, e.g. Statistics Netherlands: see Willeboordse, 1986). Third, the problem of parenthood of the firm is unresolved, and the concept of fertility is not defined in the demography of the firm. In the demography of the firm the founding rate is used to

measure the intensity of the birth process. This is commonly defined as the number of new firm within the unit time interval, divided by the number of firms in the beginning of the period, or, alternatively, the average number of firms in the unit time interval. Although straightforward to calculate, it shares the same ambiguities as an immigration rate: the denominator is not really a measure of the exposure to the risk of giving birth, unless one is willing to accept that all decisions to start a new firm are made by incumbent firms. In reality this is not the case. On the contrary, most firms are the result of decisions of potential entrepreneurs and self-employed. However, this would require the perspective of the demography of entrepreneurs instead of enterprises. In other words, both approaches should be combined.

In a recent study in the Netherlands, it was found that about 5 to 8 percent of all SME's are spin-offs from parent SME firms (Bernardt et al., 2002). Here, a spin-off was defined as a start of a firm with some kind of support from the parent company. Moreover, 71 percent of all spin-offs are the initiative of the employee-entrepreneur. Only in 16 percent of the cases it was a joint decision, and in only four percent of the cases it was an initiative of the parent firm. Although for large spin-offs these numbers may be different, they show that only a very small part of new firms start as the result of a company decision. Business startups can therefore best be studied at the level of the entrepreneur.

Using the demography of entrepreneurs for the study of firm startups, has a number of advantages over existing practice in the demography of the firm. First, as shown in section 2, the demography of entrepreneurs is a straightforward extension of the demography of the labor market, by introducing one or more additional *states* in the labor market system. Secondly, as can be observed from sections 3 and 4, the theory behind the move into entrepreneurship is reasonably well developed. Nevertheless, a rigorous demographic treatment, taking into account, age, period and cohort dimensions of entrepreneurship rates, is still lacking. Such a treatment would shed a sharper light on some of the explanatory factors discussed. For instance, life cycle effects would be captured by the age dimension, cultural and educational factors would be most visible in the cohort dimension, and economic and institutional factors would predominantly show up in the time dimension. This rigorous treatment is possible in the framework of the demography of entrepreneurs. Thirdly, a number of definitional problems are more easily resolved. The unit of analysis in the demography of entrepreneurs is a person in the working age category, or the labor force. The only remaining



problem is to define the state of entrepreneur and self-employed. Although this is also not an easy task, it is much less complicated than defining a firm or enterprise: in any case it is a state attached to a person, instead of an organizational unit, whereby both the unit and the state of the unit have to be defined. Fourth, the problem of parenthood is resolved. Here, the population at risk is clearly defined: the working age population, or alternatively, the labor force. Moreover, people in different states (inactive, unemployed, employee) have different risks of starting a firm. There is ample theory and evidence of these differences, as was shown in the previous sections on explanatory factors. The startup decisions of individuals can be measured and explained with reference to their personal background, the product market and other economic variables, as well as cultural and institutional influences.

The entrepreneurial decision process may be decomposed into different phases, for instance: nascent entrepreneur – startup – firm. Once the firm is started, a transition from the level of the entrepreneur to the enterprise may be made. Here, a distinction between startup (infant) firm and a true (young) firm becomes crucial. This may be to some extent similar to self-employment versus entrepreneurship, but these are important differences. Many people remain self-employed without ever making the transition towards true entrepreneurship. On the other hand, there are also many startups other than self-employment. Crucial in the distinction between these two states is that the startup firm is the result of individual decision making by nascent entrepreneurs, while the young firm has a life of its own: it is a formal organization, whose organizational dynamics (growth, survival, diversification, splitting up, mergers) cannot be completely understood with reference to the entrepreneur. In other words, we shift from the individual level to the organizational level. Thus, we enter the field of the demography of enterprises. The exact terms and conditions of this transition from the individual level to the organizational level is crucial in this framework, and more research is necessary here. Until now, most attention in the demography of the firm is focussed on the birth process as such. For the long term evolution of the population of firms the first period after the startup is just as crucial. About 50 percent of the firms do not survive after 5 years (Brüderl and Schussler, 1990; Ekamper, 1996), and in the first period after startup firms follow different growth ‘regimes’: either consolidation as self-employed/small firm, or growth towards a ‘true’ firm/enterprise (Birch, 1979). This conceptualization is depicted in figure 2.

Figure 2 about here

While this conceptualization has a number of advantages, there remain a few weak points of this approach. First, although as shown above, their number is very small, there remains a category of firms that has started as a result of a firm initiative, or at least a joint initiative between individual and firm (so-called intrapreneurs). These new firms may have different characteristics than other startups. In any case, the gestation and birth process of these firms is different and therefore they should be handled in another way than entrepreneurial startups.

Second, there are also entrepreneurial activities of individuals that do not fit neatly in the proposed framework. Some startups are the result of *multiple entrepreneurs*. In that case more than one entrepreneur produce one startup. This is not uncommon, but the representation of this process as a transition process in the labor market is not straightforward. One possibility could be to explicitly introduce the state of collective entrepreneurship in the labor market system as depicted in table 1. Another problematic case is the existence of *serial entrepreneurs*: entrepreneurs who serially generate startups, with the intention of selling it after a successful start. More research is also necessary into these processes in order to fit them into the proposed framework.

## **6. Conclusions**

The main goal of this paper was to show that the demography of entrepreneurs may be used as an alternative route towards the study of birth in the demography of enterprises. In order to arrive at this conclusion, we introduced the framework of the demography of entrepreneurship as an extension of the multistate demographic model of labor demand. We also gave an overview of the most important determinants, both demographic and non-demographic, of the transition into self-employment and entrepreneurship. Based on this knowledge, it was argued that there are sound demographic and other methodological reasons to study the process of firm formation within the framework of the demography of entrepreneurship. The main advantages are fourfold. First, all the methodological tools of multistate demography may be applied, and a more rigorous description and analysis is therefore possible. For instance, decomposing startup rates in terms of age, period and cohort dimensions may prove to be very fruitful. Second, as was shown in sections 3 and 4, the theory behind these transitions is well developed. Next, it solves the problem of the definition of what a firm is, and what the nature of the firm is. Instead, we deal with the question in what state an individual in the labor

market is in. In any case, we deal with a person instead of a (nascent) organizational unit which is much harder to define. Fourth, and very important, it solves the question of parenthood of the startup.

Despite these advantages, there remain a few problems to be solved. First, the transition from startup to true firm is a crucial step in this framework. It is the key point where the level of analysis moves from the individual to the organization. This transition occurs somewhere in the first phase after the startup. Firm demographic research shows that this is indeed the most crucial phase in the development of the firm. Much more research is necessary in order to know more about this transition process. Second, new firm foundings initiated by incumbent firms will not fit into this scheme. While these will be much smaller in number, they should be treated in a different way. Finally, not all entrepreneurial startups will fit into this scheme, e.g. the existence of multiple entrepreneurs for one startup, and the existence of serial entrepreneurs. More research here is also necessary in order to solve these problems.

This framework would imply that what we know from entrepreneurial studies and self-employment is merged with the literature on industrial organization and organizational ecology. It opens up new viewpoints from an individual perspective for the study of organizations, as well as organizational perspectives for the study of individuals. It may well be that much more may be gained from this combination than proposed in this paper.

## References

- Birch, D.L. (1979) *The Job Generation Process*. Cambridge University Press. Cambridge, MA
- Bernardt, Y., R. Keste & J. Meijaard (2002) *Spin-off startups in the Netherlands at first glance*. Strategic Study B200106, EIM, Zoetermeer, the Netherlands
- Blanchflower, D.G. & A.J. Oswald (1998) What makes an entrepreneur? In: *Journal of Labour Economics*, vol. 16, no, 1, pp. 26-60
- Blanchflower, D.G. (2000) Self-employment in OECD countries. In: *Labour Economics*, vol. 7., pp. 471-505
- Brüderl, J. & P. Preisendorfer (1998) Network support and the success of newly founded businesses. *Small Business Economics*, vol. 10, no.3, pp. 213-225
- Brüderl, J. & R. Schussler (1990) Organizational mortality: the liability of newness and adolescence. In: *Administrative Science Quarterly*, vol. 5, pp. 530-537

- Caves, R.E. (1998) Industrial organization and new findings on the turnover and mobility of firm. In: *Journal of Economic Literature*, vol. 36, pp. 1947-1982
- Carroll, G.R. & M.T. Hannan (2000) *The Demography of Corporations and Enterprises*, Princeton University Press, Princeton, NJ
- Church, A.T. (2000) Culture and personality: towards an integrated cultural trait psychology. In: *Journal of Personality*, vol. 68, no. 4, pp. 651-703.
- Clark, K., and S. Drinkwater (2000) Pushed out or pulled in? Self-employment among ethnic minorities in England and Wales. *Labour Economics*, vol. 7, pp. 603-628
- Ekamper, P. (1996) Opheffing van bedrijfsvestigingen: een sterftetafelbenadering. In: *Planning: Methodiek en Toepassing*, no. 48, pp. 12-21
- Evans, D.S. & L.S. Leighton (1989) The determinants of changes in US self-employment, 1968-1987. *Small Business Economics*, vol.1. pp. 111-119
- Hofstede, G. (1991) *Cultures and Organizations: Software of the Mind*. McGraw-Hill, London
- Knight, F. (1921) PM
- Nelson, R. & S. Winter (1982) *An Evolutionary Theory of Economic Change*. Cambridge University Press, Cambridge, MA
- Noorderhaven, N.G., A.R.M. Wennekers, G. Hofstede, A.R. Thurik & R.E. Wildeman (2002) Self-employment out of dissatisfaction: an international study. Tinbergen discussion papers 99.089, Tinbergen Institute, Amsterdam
- Rath, J. (1996) PM
- Staber, U. & D. Bogenholdt (1993) Self-employment: a study of seventeen OECD countries. In: *Industrial Relations Journal*, vol. 24, pp. 126-137
- Storey, D.J. (1991) The birth of new firms. Does unemployment matter? A review of the evidence. In: *Small Business Economics*, vol. 3, no. 3, pp. 167-178
- Van Imhoff, E. & N. Keilman (1991) *LIPRO 2.0 An Application of a Dynamic Demographic Projection Model to Household Structure in the Netherlands*. NIDI CBGS Publications, The Hague, Swets Zeitlinger
- Van Dijk & P. Pellenbarg (eds.) *Demography of Firms. Spatial Dynamics of Firm Behaviour*, Nederlandse Geografische Studies 262, KNAG, Utrecht/Groningen
- Van Praag, M. van (1996) *The Determinants of Successful Entrepreneurship*. Amsterdam, Thesis Publishers
- Van Wissen, L.J.G. (2002) *Demography of the Firm: A useful Metaphor?* In: *European Journal of Population* (forthcoming).

- Verheul, I., W.S.Wennekers, D. Audretsch & R. Thurik (2001) An eclectic theory of entrepreneurship: policies, institutions and culture. EIM Research Report 0012/E, EIM, Zoetermeer, the Netherlands
- Willeboordse, A.J. (1986) Towards a 'demography of firms'. In: *Netherlands Official Statistics*, vol. 1, pp. 1-5
- Willekens, F. (1980) Multistate analysis: Tables of working life. In: *Environment and Planning*, vol. 12A, pp. 563-588

Figure 1 Age-specific employee- and self-employment/entrepreneur rates in 1992 for men  
(source, Labour Force Survey, Statistics Netherlands)

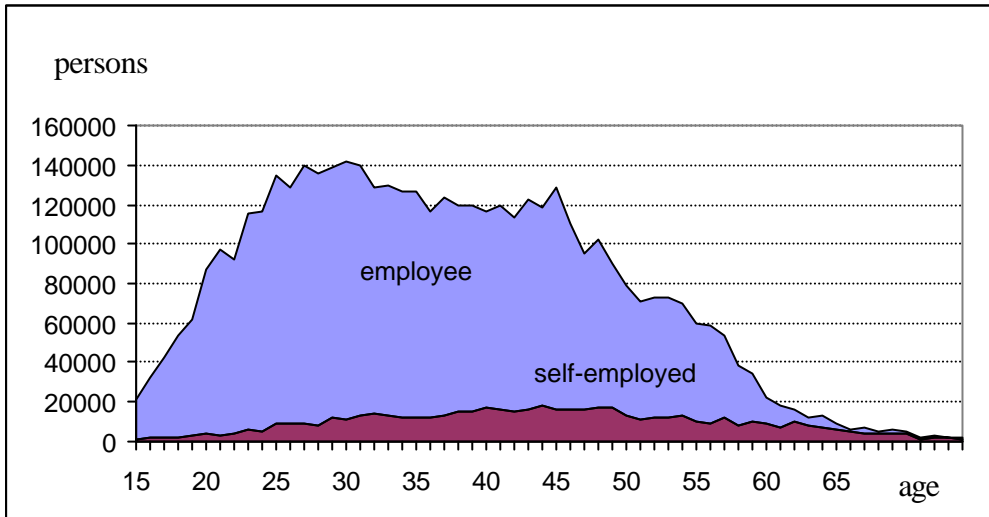


Figure 2

Integrated framework of demography of entrepreneurs and enterprises

