

Magnifying Firm Dynamics. Micro Level Dynamics in a Population of Dutch Firms, 1998-2003

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The demography of firms approach studies changes in the amount and composition of large populations of firms on a regional or national level. In this paper, a micro level approach is applied. For a group of 2,000 firm establishments in the Netherlands, changes in existence, names, locations and network participation for individual firm establishments are recorded and examined from year to year for a period of 5 years (1998-2003). The results show that after five years, 30% of the firms have closed down altogether and another 16% has moved to a new location. Also, 5% of the firms have adopted a complete new name. The micro level changes in the economic landscape are therefore impressive. This study confirms the 'liability of age' rule: older establishments have a lower risk of closing down; also, older firms relocate much less often than younger firms. The firm death rate is related to the urbanization level of the business environment, as larger cities experience higher firm death rates than rural areas. Firms on average reach the age of 18 years, but the deviation around this average is considerable. The majority of firm relocations is over short distances. Although the observable dynamism in the economic landscape is considerable, it can be assumed that the underlying organisational internal dynamics – in organisational structures, in production processes, in production factors and in management, to name a few – are even more impressive. The study of such more non-visible firm internal factors could help explain the visible changes in the economic landscape.

Key words: *demography of firms, firm dynamics, firm deaths, firm relocations, firm names, firm networks*

1. Introduction: Aims of this paper

Most empirical studies on business sector dynamics use aggregated data: data on the total number of firms in a spatial entity (e.g., a country or a regional subdivision such as a province), or data on the absolute number of firms characterized by a certain type of spatial-economic behaviour or event. By this token, it is known from

the databases of the Dutch Chamber of Commerce that the Netherlands contained 895,276 firm establishments at the beginning of 2001; in the course of that year, over 94,000 new firms started their business whereas almost 55,000 firms went out of business (Huisman & Van Wissen, 2005). Thus, for every 1,000 establishments existing at the beginning of the year, 61 firm deaths and 105 firm births were registered, resulting in a positive balance of

44 establishments and a net growth rate of 4.4% for the year 2001. All regions in the Netherlands experienced a positive net growth rate in the number of establishments, although strong regional variations could be noted (ranging from 1.7% in the region of Zeeuwsch-Vlaanderen to 6.8% in Flevoland) (Huisman & Van Wissen 2005).

The databases used to generate such macro indicators do not allow for more extended or detailed data mining. For example, how many of the firms started in the year 2001 show up in the firm death numbers over 2002 or 2003? Can regularities be found in the group of firm deaths? Are younger or smaller firms more likely to go out of business than older or larger firms? Is the death rate amongst branch plants or subsidiaries higher or lower than that of other firms? Is a firm relocation an once in a lifetime event, or do certain firms relocate frequently?

This paper presents a micro perspective by analysing, on the level of individual units, the fortunes of a sample of 2,000 firm establishments in the Netherlands between 1998 and 2003. It is on this detailed level that changes, both in form and function, in the economic landscape can be observed. New buildings for shops, offices, distribution centres or production units are built; existing buildings for businesses are expanded, renovated, replaced or abandoned. Other structures lose their business function to other functions, or experience a change in ownership or type of business. New firm name signs appear on facades as well as in the official firm registers. Once independent establishments become part of a multi-location organisation by either establishing a branch or subsidiary, or by being taken over by

another organisation with the result that the once independent status of the establishment changes into a subsidiary status. More often than not, the name and appearance of the branch establishment change as part of the process.

The net result of the visible changes in the economic landscape are captured in photographs of commercial or retail streets taken from the same perspective on two different moments in time. Although such snapshots are presented primarily for reasons of nostalgia, they do reveal that in only a few decades the composition, structure and appearance of streets can change completely. Should those two photographs be accompanied by more pictures taken at regular time intervals, the dynamic nature of especially commercial streets would become even more evident.

This paper aims to develop an understanding of the micro-level changes in the Dutch economic landscape by, first, examining a number of key events in a sample of 2,000 firm establishments:

1. firm deaths and firm survivors: how many establishments went out of business? how many establishments managed to survive?
2. firm relocations: how many establishments have moved to a new location? how often? where to?
3. change of network status: how many establishments experienced a change in their network status – distinguishing between single establishments, headquarters of multi-location organisations and branch locations of multi-location organisations.
4. changes in firm names: how many firm establishments have changed their names completely or partially?

Secondly, it is the aim of this paper to relate the abovementioned forms of firm dynamics to one another and to a few available firm characteristics, notably age of the establishment and type of location (urban versus rural).

2. Demography of firms

The topic of this paper can be positioned in a relatively new methodological approach to regional economic dynamics, known as "demography of firms" (Van Dijk et al. 1999; Pellenbarg & Van Steen 2003a, 2003b). The demography of firms approach studies the structure and development of populations of firms in the same way demographers analyse what happens in populations of people by focusing on trends in fertility, mobility and mortality. Basically, the demography of firms approach seeks to utilise and translate concepts and research methods from the field of population demography in order to understand past, present and future changes in the number, composition and other relevant spatial-economic features of a localised group or 'population' of firms.

In the demography of firms approach, firms are seen as living organisms, subject to processes like birth, growth, selection, ageing, illness and death. This view is not completely new. Already in the 1970s, Hannan and Freeman discussed the field of 'organisational ecology' as a way to analyse sociological aspects of organisational change using particular models drawn from population ecology (Hannan & Freeman 1977; Hannan & Freeman 1989). The biological analogy of firms with people has semantical and conceptual

problems as well as limitations. Ekamper and Van Wissen (1994) hold the view that the resemblance between the demography of people and the demography of firms allows useful application of various techniques from the former; at the same time, they comment, the differences between the two fields are numerous. Nevertheless, the use of biological metaphors to refer to certain features of business has already a long record in many languages and has been incorporated in daily speech. The English term 'parent company', for example, exists as *moederbedrijf* ('mother firm') in Dutch and *Firmenmutter* ('firm mother') in German. (Note that the English term is sex-neutral, as opposed to its Dutch and German counterparts).

The use of metaphors, biological or otherwise, as an instrument in the study of economically and spatially relevant aspects of firm behaviour or firm dynamics need not be belittled. Economic geographers and others have used metaphors at many occasions. Birch (1987), for example, applied the analogy of an economic thundercloud to describe the growth, shrink, and entry and exit processes in the total population of firms in the United States. In general, the use of metaphors can be helpful in both research and policy implementations. Blankert (1984) labels metaphors as 'indispensable links between old and new knowledge'. Krugman refers to metaphors as "a kind of heuristic modelling technique" (1995: 79).

3. Unravelling the metaphor: key events in the Dutch demography of firms

Population demography considers birth and death as the most important events in a human life. These events are also important in the demography of firms approach, where the event of firm migration (relocation) is traditionally added as a third key event because of its important spatial dimension.

Firm birth

The interest in firm births owes much to a number of studies published in the 1980s, triggered by "The job generation process" by David Birch in 1979. In this landmark work, Birch unravelled the components of economic change in the United States during the 1970s and found that, quite contrary to the common view at the time, middle-sized and large firms contributed relatively little to the overall growth of employment. Two thirds of all new jobs generated in the USA were created by small firms with less than 20 employees. Subsequent studies revealed more or less similar findings. For The Netherlands, Wever (1984) was the pioneer in empirical research on new firms.

The birth rate figure in the Netherlands in recent years is more or less constant at the 10% level (VVK 2002). This figure includes both 'real' start-ups (firms started by persons not yet active as entrepreneurs) as well as new branches and subsidiaries of existing firms. A cross-national study by Reynolds et al. (1994) shows that most firm birth rates in the European Union are to be found in the 7 to 16% range, but regional birth rates demonstrate a somewhat larger variation between 5 and 20%. The pattern of regional birth rates in the Netherlands shows high figures for the most urbanised regions around Amster-

dam (including the fast growing city of Almere), Rotterdam and The Hague. These regions are characterized by a heavy concentration of business services. New firm formation is also high in the urbanized region around Groningen in the Northern part of the country (Pellenbarg and Van Steen 2003b). This situation confirms the conclusion of Reynolds et al. (1994), who find that in most countries high firm birth rates are to be explained by growth in demand, a large amount of small firms, and a high degree of urbanization.

Firm death

In population growth figures, birth figures are balanced by death figures (and, in a spatial context, also by emigration and immigration figures). The firm death rate for the Netherlands is approximately 6%, which is low by international comparison (Ekamper 1996, Pellenbarg & Van Steen 2003b). Not always do firm deaths result in an abrupt stop of economic activities or in job loss for the involved employed persons. If a branch plant is closed down but all of its productive capacity including employment is relocated to one or more other establishments, the 'loss' is purely administrative and limited to just one establishment in the statistics. Bankruptcy of a firm is in many occasions followed by the start-up of a new firm taking over the (altered) name and all or many production tools and workers. These re-starts are, of course, unknown to the world of population demography. Also, the life span of people has an important time-dimension, determined by biological processes. Firms, however, can become quite old. One of the oldest firms in the world is Sweden based Stora; in 1998, Stora merged with Finnish Enso Oyj

to form StoraEnso, one of the worlds largest producers of forest products (www.storaenso.com). The roots of Stora go back to late 13th century (Heij 1997). Despite such almost endless time-horizons, firms in the developed world on average reach the age of 12 years (De Geus 1997).

Firm migration

A third important facet of regional economic dynamics is firm relocation. This is a phenomenon well studied amongst economic geographers. A complex set of factors originating in firms themselves, attributes of their absolute or relative location and aspects of the supply of other (alternative) business sites determine firm relocation. These three categories of variables are referred to as internal push factors, external push factors and pull factors, respectively (Lloyd & Dicken 1977).

For the Netherlands, the Chambers of Commerce reported an annual firm migration of 6 to 7% in the 1980s and 7 to 8% in the 1990s (Pellenbarg & Kemper 1999), which puts firm relocation numberwise inbetween the birth death rate of 6% and the firm birth rate of 10%. Most of the relocated firms are growing firms; most of the firm relocations take place over relatively short distances (Pellenbarg & Van Steen 2003b).

The total population of firms in the Netherlands changes very gradually from year to year (cf. figure 1). Between 1998 and 2003, the number of firm establishments increased from 760,000 in 1998 to 773,000 in 2003, which equals an increase of 1.7% (Note that figure 1 presents data on numbers of firms which slightly differ from the abovementioned Chamber of Commerce figures).

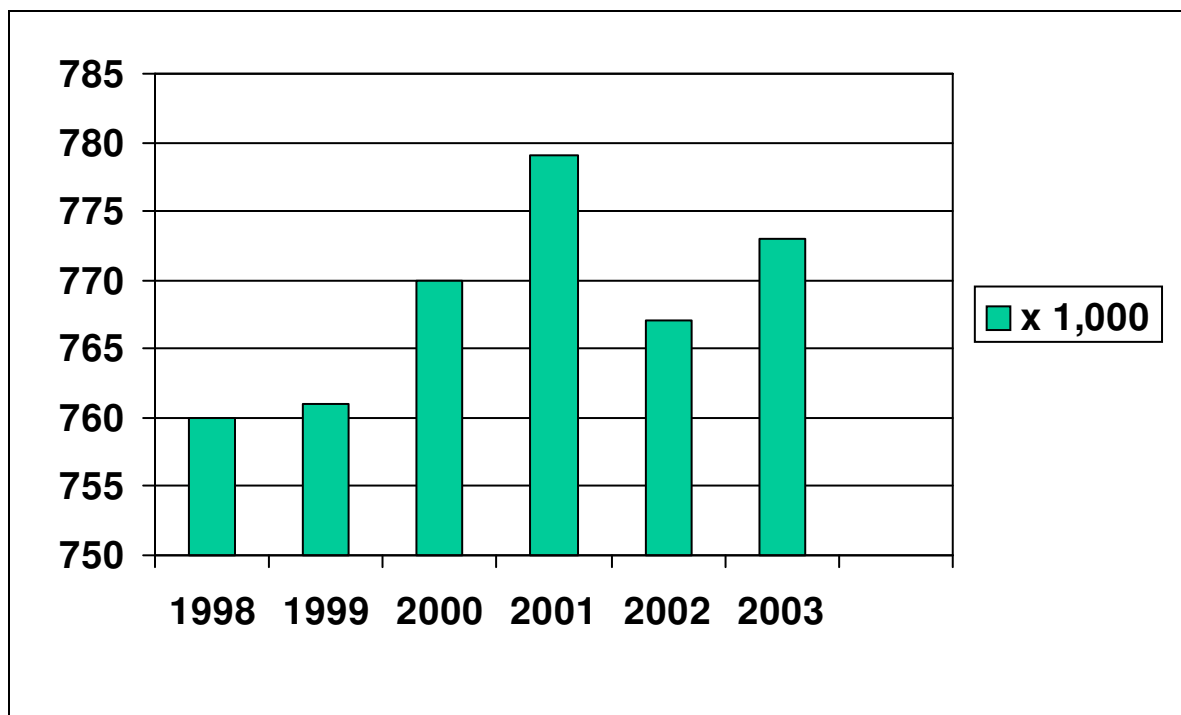


Figure 1: Number of firm establishments in the Netherlands, 1998-2003. Source: CBS, Statline, various years.

4. Unravelling macro data by using micro data

As was noted in the introduction, the macro data presented in the previous section do not allow for the examination of possible relations between firm demographic key events in one year with those in the next year. Also, relations with other features internal and external to the firm are not possible. In order to come to a deeper understanding of firm dynamics, a sample of 2,000 firm establishments was drawn from the register of the Chamber of Commerce in 1998. Only 'economic active' establishments were included in the sampling frame. For each of these establishments, a number of variables were exported from the database, or compiled on the basis of these primary variables:

- official name of the firm establishment in the Chamber of Commerce register;
- the unique registration code, consisting of an eight digit main number and a four digit subnumber. This registration code can be used to determine the network status of the firm establishment:
 1. a single, independent establishment (unique main number – the main number does not appear elsewhere in the register of the Chamber of Commerce),
 2. the headquarter location of a multi-location organisation (main number shared with subsidiaries, but unique subnumber '0000'),
 3. the subsidiary establishment of a multi-location organisation (unique subnumber with common main number);
- year in which the firm was established, in order to determine firm age;

- location of the establishment (address, zipcode, name of town or city; official code for municipality, used to determine degree of urbanization – see below);

- type of business sector.

Exactly one half of the 2,000 establishments were drawn from municipalities classified as 'strongly urbanized', whereas the other 1,000 establishments were drawn from 'rural' municipalities. These two classes form the two ends of a five class division of Dutch municipalities according to the so-called address density. The 'strongly urbanized' municipalities are characterized by 2,500 or more addresses per square kilometre; the 'rural' municipalities have on average less than 500 addresses per square kilometre. For the former group, we selected the 10 municipalities with the largest population size; for the latter group, the 20 municipalities with the smallest population size. The ten largest cities of The Netherlands, all in the 'strongly urbanized' group of municipalities, are Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven, Tilburg, Groningen, Breda, Apeldoorn and Nijmegen. For each of these cities, we drew a random sample of 100 establishments; for each of the twenty 'non urban' (rural) municipalities, we drew a random sample of 50 establishments.

The 'urban' versus 'rural' distinction was inspired by the intention to test for the existence of differences between urban and rural business environments. Davelaar & Nijkamp (1984), for instance, have suggested that urban areas operate as incubators for the establishment of new firms, suggesting that urban areas will be charac-

terized by higher firm birth rates compared to rural areas. Ekamper (1996) adds that urban areas with high firm birth rates are also characterized by high firm death rates. High entry rates are thus related to high exit rates (Brouwer & Van Wissen 2005). Studies of firm relocations and location factors for firms have revealed that larger cities are characterized by firm relocation processes from the inner city area and older residential neighbourhoods adjacent to the inner city to the outskirts of the town, to new industrial parks and highway locations (Van Steen 1998). Agglomeration diseconomies in urban areas will set in motion higher number of firm relocations compared to non-urbanized or modestly urbanized areas (Richardson 1995).

Our sample of 2,000 firm establishments is, despite a small underrepresentation of wholesale companies (12% in our sample, 15% in the population), a good reflection of the sectoral breakdown in the population of the 829,000 establishments in 1998. Also, the share of independent establishments (89%), branch locations (8%) and headquarters (3%) is a perfect reflection of the composition in the population. Over half (53%) of the establishments in our sample is younger than 10 years old. On average, the 2,000 establishments are 18.2 years old. Firms located in rural municipalities are on average 5 years older than firms in urban areas (21 versus 16 years).

5. 2000 Firms, 5 year later

Five years after our sample of firm establishments was constructed, precisely 600 or 30% of the 2,000 establishments have disappeared from the economic land-

scape. Another group of 326 firms occupied a different location in 2003. This is 16% of the 1998 sample, or 23% of the 1,400 surviving firm establishments in 2003. Another visible aspect of changes in the economic landscape are the names that firms use to present themselves. Of the 1,400 establishments still in existence after the five year period of our examination, 82% are registered using exactly the same name as in 1998. Three categories of name changes can be distinguished:

1. minor name changes: corrected misspellings, or small additions in the name of the firm (e.g., "Leo van der Kroft Paintworks" in stead of "Leo van der Kroft", or "Jansen & De Vries Inc." in stead of "Jansen & De Vries").

2. major name changes: the name of the firm has changed considerably, but part of the changed name is still recognizable from the previous name (e.g., "Henny Kramer Fashion Clothing" in stead of "Fashion Kramer").

3. complete name changes: the firm has adopted a complete new name (e.g., "Dream Lounge International Gallery" in stead of "Dr. Who?", or "Barn's Harleyshop" in stead of "J.A.M. Pieper").

From this overview we can conclude that the amount of dynamics in our sample in the five year period 1998-2003 is impressive: 30% of the 2,000 establishments have disappeared completely; 16% of the firms relocated to another location; and 7% of the firms adopted a complete new or strongly changed firm name. After five years, only 46% of the original 2,000 establishments are still in operation on the same address as in 1998 and with more or less the same firm name and the same

network status (independent, subsidiary or headquarter).

In the next three sections, the events of firm deaths, firm relocations and changes in network status will be examined more closely. Special attention will be given to the existence of relationships between the spatial-economic dynamics in our sample group and firm age and type of business environment.

6. Firm exits

Between 1998 and 2003, 600 or 30% of our 2,000 establishments in the study group disappeared from the economic landscape. For the first four years of our analysis, every year more or less the same amount of firms went out of business: 7.5% of the amount of firms in the previous year. This is somewhat higher than the 6% firm death rate for the whole population of Dutch firms, as reported by Ekamper (1996).

Higher than average death rates occur in the sectors of business services (35%) and wholesale (33%), in urban areas (35%), amongst young firms (40% in the age group of younger than 5 years in 1998), amongst branches (42%), in multi-location organisations with only one headquarter and one branch (62%), amongst branches with the headquarters in the same city or town (60%) and amongst firms that have not relocated in the 1998-2003 time-frame (33%). Lower than average death rates occur in the agricultural and industrial sectors (17%), in rural areas (26%), amongst middle-aged firms (age 11 to 40 years in 1998, 21%), in large multi-plant organisations with more than 50 branches

(12%) and amongst firms that relocated between 1998 and 2003 (18%).

Subsidiaries demonstrate a higher chance of being closed down than headquarters or independent firms. The death rate for subsidiaries is 42%, compared to 27% for non-subsidiaries. These findings are in line with those of Caves (1998) for industrial firms. Of the 1,400 surviving firms, 3% has a different network status in 2003 compared to 1998:

- 23 originally independent firms became part of a multi-location organisation (6 of these became a subsidiary; 17 of these became a headquarter because a subsidiary was established elsewhere);
- 19 establishments that were part of a multi-location organisation in 1998, transformed into an independent establishment in 2003

The average age of firms leaving the economic landscape is 18 years, whereas the median age is 8 years. The comparison of these two figures indicates that the majority of the disappeared firms shuts down at a young age. Indeed, close to 60% of the firms was younger than 10 years of age at the time of their exit; 20% of the firms reached an age between 10 and 20; 13% of reached an age between 20 and 50. Only 10% of the firm establishments was older than 50 years at the time of their dissolution. All in all, young firms have a higher risk of losing the battle for survival. Of the firms established ('born' in the terminology of the demography of firms approach) in 1998, a slight majority (54%) was closed down in or before 2003. Of the firms in the age group 0 to 5 years in 1998, a total of 40% has disappeared from the economic landscape in 2003.

Figure 2 presents the age specific death risk of the firm establishments in our sample. The curve clearly demonstrates that how older an establishment gets, how lower the risk of firm death is. In the first year of existence, the death risk is about

12%; in the tenth year of existence, the death risk has halved to about 6%. This 'liability of age' is one of the well known death risks in the demography of firms (cf. Baldwin 1995).

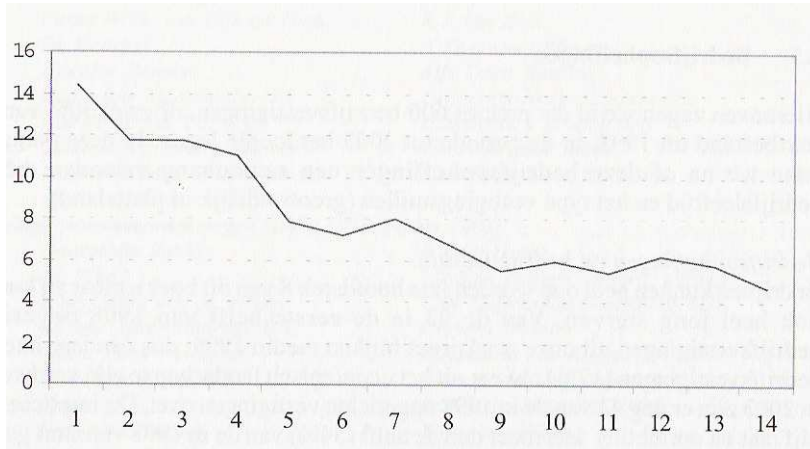


Figure 2: Survival curve of firm establishments, 1998-2003

The death rate amongst firms located in rural municipalities (25.6%) is significantly lower than amongst firms located in the group of ten largest strongly urbanized areas (34.4%). At the same time, the average age at dissolution is 23 years for firms located in rural areas against 14 years in urban areas. These differences can be explained by the fact that rural areas are characterized by low, and urban areas by high firm birth rates. Because of the much higher birth rates amongst younger firms, firm death rates in the largest cities are higher than those in rural areas.

7. Firm relocations

The annual firm relocation rate in our sample varies from 5.3% to 6.3% (table 1). These findings are in line with firm relocation rates found in other studies for the Netherlands for the mid and late 1990s (cf. Pellenbarg 2005). All in all, 20% of the 2,000 establishments in our study relocated – 16% relocated once, 4% relocated more than once. The relocation rate is lower than average in the hotel, bar and restaurant sector (8%) and amongst agricultural firms (9%). The business service sector demonstrates an above average share of firms that have relocated (28%). Firm relocation rates are low amongst subsidiaries (7.5%) but high amongst headquarters (27%).

Table 1: Firm relocation dynamics, 1998-2003.

	1999	2000	2001	2002	2003
(A) number of surviving firms	1851	1714	1582	1463	1400
(B) number of firms moved since previous year	116	101	108	87	77
(C) relocation rate: (B) as % of number of surviving years previous year	5.8 %	5.5 %	6.3 %	5.5 %	5.3 %

The firms that moved between 1998 and 2003 (and still existed in 2003) on average moved 1.25 times – out of every four moved firms, on average one firm moved twice in the five year period considered. Also, the data show that the firm death rate amongst firms that never moved after 1998 is 33%, compared to only 18% of amongst firms that experienced a relocation after 1998. Firm relocation, then, can be seen as a sign of firm vitality.

The majority of firm relocations are over (very) short distance. Twothirds of all relocated firms move from one location to another location within the same municipality. Only one in every seven firms move to one of the other eleven provinces within the Netherlands. Only 14 establishments, or 3.5% of all relocated firms, have moved to another, non-adjacent province.

Most relocating firms are young: half of the business units that moved between 1998 and 2003 were younger than 5 years of age in 1998. Only 15% of the moved firms is older than 20 years. These findings correspond with other studies. Van Steen (1997), for example, found that firm establishments that have not moved in the first 20 years of their business life, are unlikely to move in subsequent years.

Table 2: Survival rates of subsidiaries and size of networks, 1998-2003

size of organisational network in 1998 (no. of estab-	no. of	no. of sur-	survival
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The relocation of a firm often goes hand in hand with a name change: of the firms with a major or complete name change, close to 40% have relocated to a new location in 2003 (compared to 21% of the firms with an identical name in 2003).

8. Organisational networks

As already noted, the firm death rate amongst subsidiaries is high (42%). In contrast, only 27% of the headquarters and 29% of the independent establishments dissolved between 1998 and 2003. Many closed subsidiaries are relatively young: close to 60% of the disappeared branch establishments were younger than 5 years old in 1998. The death rate amongst head offices located in the larger cities is much higher (33%) than the death rate amongst head offices in rural municipalities (16%).

The death rate of subsidiaries is related to the size of the organisational network (i.e., the total number of establishments in that network). Branches belonging to network with a high number of establishments have a lower chance of being closed down than branches in small networks (cf. table 2).

lishments, including head office)	branch locations in 1998	vivors in 2003	rate 1998-2003
very small: 2 establishments	65	25	38 %
small: 3, 4 or 5 establishments	39	19	49 %
medium: 6 to 50 establishments	35	26	74 %
large: 50 or more establishments	34	30	88 %
all subsidiaries	173	100	58 %

The high death rate of branches in very small networks (one head office, one branch) could be explained by the merging of activities that originally took place in two locations into one single location. In other cases, it could simply have been unprofitable to maintain a branch establishment. The low death rate of branches in large networks suggests that individual branches in such large networks are less vulnerable; it could well be that less profitable branches are kept "alive" by other, more profitable branches in the same network.

Small organisational networks, with only one or a few branches, have a strong

local or regional character. For the majority (67%) of the very small networks (one head office, one branch), both establishments can be found in the same province (The Netherlands consists of 12 provinces). This is in sharp contrast with the large networks (50 or more establishments), where only 9% of the branch locations included in our sample have their head office located in the same province. The high firm death rate in (very) small organisational networks, as captured in table 2, is related to high firm death rates in locally or regionally organized networks (table 3).

Table 3: Survival rates of subsidiaries and distance to head office, 1998-2003

location of head office of branch considered (in 1998)	no. of branch locations in 1998	no. of survivors in 2003	survival rate 1998-2003
in same municipality	47	19	40 %
elsewhere in same province	27	15	56 %
elsewhere in same region (*)	23	15	65 %
in other region (*)	67	45	67 %
unknown	9	6	67 %
all subsidiaries	173	100	58 %

* we distinguish 4 regions: North (provinces of Groningen, Friesland, Drenthe), East (Flevoland, Overijssel, Gelderland), West (North Holland, South Holland, Utrecht), South (Zeeland, Noord-Brabant, Limburg)

Between 1998 and 2003, 60% of the branch establishments with a head office in

the same province closed down, compared to 33% of the branches with a head office

in another region in the country. The chance of survival of subsidiaries with head offices located at greater distance is therefore larger. However, there is a strong correlation with the size of the network: 'head office at larger distance' is strongly correlated to 'large network' (table 2).

9. Conclusions

Firm dynamics is to be interpreted as a form of adaptation to changing circumstances (Pellenbarg et al. 2005). Two schools of thought can be distinguished here. The organisational ecology school (cf. Hannan and Freeman 1989), which focuses on the internal structure of organisations, holds the view that individual firms are not well equipped to adapt to circumstances. The population of firms adapts primarily through the process of natural selection (firm births and selective firm deaths). The evolutionary economy school of thought does not deny the importance of selection processes, but also states that firms can adapt to changing circumstances by means of innovations and organisational changes. Next to firm births and firm deaths, evolutionary economists therefore also focus on growth and shrink, mergers, spin-offs and firm relocations as forms and strategies of organisational change.

The analyses underlying the presentation in this paper demonstrate that at the micro level a considerable amount of dynamism and adaptation to changing circumstances can be observed in the Dutch economic landscape. After 5 years, almost half of the establishments can not be traced at their original location with their original name. Three out of every 10 estab-

lishments have dissolved; another 16% has moved to another location; and 5% of the firms have changed their name. The most important dimensions of this study of firm dynamics can be summarized as follows.

1. The death risk of establishments diminishes as firms grow older. This insight is not new, but the material used for this paper confirms this rule firmly. The death risk in larger cities is higher than in rural municipalities of the Netherlands.

2. On average, business establishments reach the age of 18 years. The distribution around this average is considerable.

3. Every year, 5 to 6% of the firm establishments move to another location. This relocation chance is related to age: older firms have a lower relocation chance.

4. Most firm relocations are moves over short distances: 60% of the firm moves is within the municipality, 20% is to another municipality in the same province. One out of every 14 firm relocations is to another – mostly: neighbouring – province.

5. Firm relocation is an indicator of firm vitality: relocated firms have a significant lower chance of closing down in the first few years following the relocation.

6. A considerable amount of firms change their name. Firm relocations are an important reason for a firm to change its name.

7. Almost 9 out of every 10 establishments in the Netherlands are independently operating single firms. Branch establishments almost never relocate, but do have a high risk of dissolution. Firm death rates amongst branches are very high in very small networks; young subsidiaries

also are characterized by high death rates. Young branch establishments are therefore a vulnerable group in the business landscape.

The analysis applied in this paper has one shortcoming. A reliable variable indicating the size of the establishment, and the change in this size, was not available. It can be assumed that growth and shrink processes, for example in numbers of employees, are strongly related to firm demographic events of exit and relocation. In more general terms, understanding and monitoring of firm internal variables can help predict – and, from a policy point of view, perhaps help prevent negative outcomes of – the more visible dynamics reported in this paper (cf. Hall 1987, Van Steen 1993, Pen 2002).

Nevertheless, the amount of firm dynamics observed above is without doubt magnified by an even larger amount of firm internal dynamics. Behind the walls that separate the firms from the outside world, complex interrelated systems of production factors are to be found – in essence: labour, capital and know-how. The level of visible dynamics in the economic landscape is even surpassed by large amounts of dynamics in terms of labour growth, labour shrink, capital investments and divestments and increase or decrease in the efficiency of utilizing human capital. In other words: when an even stronger magnifying glass is applied, the amount of dynamism observed increases.

References:

Baldwin, J.R. (1995), *The dynamics of industrial competition*. Cambridge, Mass.: Cambridge University Press.

Birch, D.L. (1979), *The job generation process*. Cambridge, Mass.: Cambridge University Press.

Blankert, J.W. (1984), Over metaforen en wetenschap. In: *Economisch Statistische Berichten* 69 (3468), p. 754-755.

Brouwer, A. & L. van Wissen (2005), De jaren tellen al vroeg mee: demografische aspecten van opheffingen. In: P. Pellenbarg, P. van Steen & L. van Wissen (eds.), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, p. 127-140.

Caves, R.E. (1998), Industrial organization and new findings on the turnover and mobility of firms. In: *Journal of Economic Literature* 36, p. 1947-1982.

CBS (various years), *Statline*. www.cbs.nl

Davelaar, E.J. & P. Nijkamp (1984), De stad als broedplaats van nieuwe activiteiten. In: *Stedebouw en Volkshuisvesting* 67 (2), p. 61-66.

Dijk, J. van, P.H. Pellenbarg & P.J.M. van Steen (1999), Determinants of firm migration in the Netherlands. An exercise in the demography of firms approach. In: J. van Dijk & P.H. Pellenbarg (eds.), *Demography of firms. Spatial dynamics of firm behaviour*. Utrecht/Groningen: Koninklijk Nederlands Aardrijkskundig Genootschap/Faculteit der Ruimtelijke Wetenschappen Rijksuniversiteit Groningen. *Nederlandse Geografische Studies* 262, p. 87-121.

Ekamper, P. (1996), Opheffing van bedrijfsvestigingen: een sterftetabel benadering. In: *Planning, Methodiek en Toepassing* 48, p. 12-21.

Ekamper, P. & L. van Wissen (1994), *SIMFIRMS: Firmografische mi-*

crosimulatie van bedrijfsvestigingen in Nederland. Deel 1: Theorie en beschrijving. Den Haag: Nederlands Interdisciplinair Demografisch Instituut.

Geus, A. de (1977), *The living company*. Cambridge, Mass.: Harvard Business School Press.

Hall, R.H. (1987), *Organizations. Structures, processes & outcomes*. Englewood Cliffs, N.J.: Prentice-Hall Inc. Fourth edition.

Hannan, M.T. & J. Freeman (1977), *The population ecology of organisations*. In: *American Journal of Sociology* 82, p. 929-964.

Hannan, M.T. & J. Freeman (1989), *Organizational Ecology*. Cambridge, Mass./London: Harvard University Press.

Heij, J.-J. (1997), *Bedrijven sterven te snel*. In: *Intermediair* 33 (15).

Huisman, C. & L. van Wissen (2005), 'Facts and figures' van de demografie van bedrijven in Nederland. In: P. Pellenbarg, P. van Steen & L. van Wissen (eds.), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, p. 11-38.

Krugman, P. (1995), *Development, geography and economic theory*. Cambridge, Mass./London: The MIT Press.

Lloyd, P.E. & P. Dicken (1977), *Location in space. A theoretical approach to economic geography*. London etc.: Harper & Row. Second edition.

Pellenbarg, P. (2005), *Bedrijfsverplaatsingen*. In: P. Pellenbarg, P. van Steen & L. van Wissen (eds.), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, p. 101-125.

Pellenbarg, P.H. & N.J. Kemper (1999), *Industrial mobility in the Netherlands: patterns, causes and impacts for spa-*

tial policy. Groningen: SOM, University of Groningen. SOM Research Report 99D34

Pellenbarg, P.H. & P.J.M. van Steen (2003a), *The demography of firms in the Netherlands: introduction to the 2003 maps*. In: *Tijdschrift voor economische en sociale geografie* 94 (1), p. 144-146.

Pellenbarg, P.H. & P.J.M. van Steen (2003b), *Spatial perspectives on firm dynamics in the Netherlands*. In: *Tijdschrift voor economische en sociale geografie* 94 (5), p. 420-430.

Pellenbarg, P., P. van Steen & L. van Wissen (eds.) (2005), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum.

Pen, C.J. (2002), *Wat beweegt bedrijven. Besluitvormingsprocessen bij verplaatste bedrijven*. Groningen: Faculteit der Ruimtelijke Wetenschappen RuG. *Nederlandse Geografische Studies* 297.

Reynolds, P.D., D.J. Storey & P. Westhead (1994), *Cross-national comparisons of the variation in new firm formation rates*. In: *Regional Studies* 28, p. 443-456.

Richardson, H. (1995), *Economies and diseconomies of agglomeration*. In: H. Giersch (ed.), *Urban agglomeration and economic growth*. Berlin etc.: Springer Verlag, p. 123-155.

Steen, P.J.M. van (1993), *Rendement en ruimte. Bedrijfsrendementen in een ruimtelijke context*. In: P.J.M. van Steen (ed.), *Geografie in beweging. Liber amicorum Pieter Lukkes*. Utrecht/Groningen: Koninklijk Nederlands Aardrijkskundig Genootschap/Faculteit der Ruimtelijke Wetenschappen Rijksuniversiteit Groningen. *Nederlandse Geografische Studies* 167, p. 123-145.

Steen, P.J.M. van (1997), Bedrijfs grootte en ruimtegebruik van ondernemingen in leeftijdsperspectief. Groningen: Faculteit der Ruimtelijke Wetenschappen Rijksuniversiteit Groningen. Onderzoek en Advies 83.

Steen, P.J.M. van (1998), Bedrijvenlandschap 2000+. Bedrijfsverplaatsingen en de vraag naar bedrijfslocaties in Nederland. Groningen: Faculteit der Ruimtelijke Wetenschappen Rijksuniversiteit Groningen. Onderzoek en Advies 85.

Steen, P.J.M. van (2005), Bedrijvendynamiek onder het vergrootglas. In: P. Pellenbarg, P. van Steen & L. van Wissen (eds.), Ruimtelijke aspecten van de bedrijvendynamiek in Nederland. Assen: Van Gorcum, p. 39-64.

VVK (2002), Bedrijvendynamiek 2002. Woerden: Vereniging van Kamers van Koophandel.

Wever, E. (1984), Nieuwe bedrijven in Nederland. Assen: Van Gorcum.

