

REGIONAL DEVELOPMENT PATTERNS IN THE NETHERLANDS. A DEMOGRAPHY OF FIRMS APPROACH

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INTRODUCTION

In the course of time, regional economies grow, decline or stabilize. However, in either of such states the real level of regional economic *dynamism* may differ widely if we look at the *components* of growth or decline such as the birth and growth of new firms, firm migrations, and the decline and closure of firms. A thorough explanation of the dynamics of a regional economy requires the description and analysis of the components of change in populations of firms, much in the same way as demographers are looking for demographic trends in fertility, mobility and mortality in order to understand the real structure and causes of population change. To the analogy of population demography such an approach in empirical research may be labeled as '*demography of firms*'.

The demography of firms approach developed within economic geography since the late 1970s. But we see comparable developments in other disciplines. What is labeled as firm demography by geographers is known as organization ecology and industrial organization analysis in sociology and economics (Pellenbarg and van Steen 2003a). Depending of the aim and scope of firm demographic analyses, it may apply to countries, regions, or local units. The aim of this article is to describe and comment the key characteristics of the spatial economic dynamism in the country of *the Netherlands* in terms of the demography of firms approach, and concentrates on the regional variations, as they are observable within the national context. Subsequently, we will treat the firm demographic categories of *newly created firms*, *firm closures*, *firm migrations*, *growth and decline of firms*, and *old firms*. The paper is a rewritten version of an article published recently in the Journal of Economic and Social Geography (TESG) 2003, nr. 5 (Pellenbarg & van Steen 2003b).

NEW FIRMS

Internationally, new firm formation is by far the most intensively studied component of regional economic change. Since the initial work by Birch (1979) in the United States many empirical studies concerning new firms have become available for many different countries and from the resulting comparative analysis a lot of general knowledge and even theories (i.e. Garnsey 1998) concerning the birth and early growth of firms developed. For the Netherlands Wever (1984) was the pioneer in empirical research on new firms. In a survey by Bruins *et al.* (2000) more recent figures on new firms in the Nether-

lands can be found. The national annual firm birth figure is now 10.2% (VVK 2002a). In this figure, firms started by persons not yet active as entrepreneurs and new branches and subsidiaries of existing firms are taken together. The difference between these two categories (in the Netherlands they correspond roughly to two thirds versus one third of all new firms; see Pellenbarg and van Steen 2003a and table 1) is unjustly neglected in many studies (Van Wissen 1999). The new firm registration by the Chambers of Commerce in the Netherlands nowadays enables a distinction between the two, but this is not possible for many other sources in most other countries.

Table 1. Firm dynamics 2001

| | |
|--------------------|----------|
| Startups* | 58.900 |
| Other new firms** | 35.200 |
| Total new firms | 94.100 |
| Closures | 54.900 |
| Gross growth | 39.200 |
| Admin. Corrections | - 10.700 |
| Net growth | 28.500 |
| Total (31-12) | 923.500 |

*firms started by persons not yet active as entrepreneurs

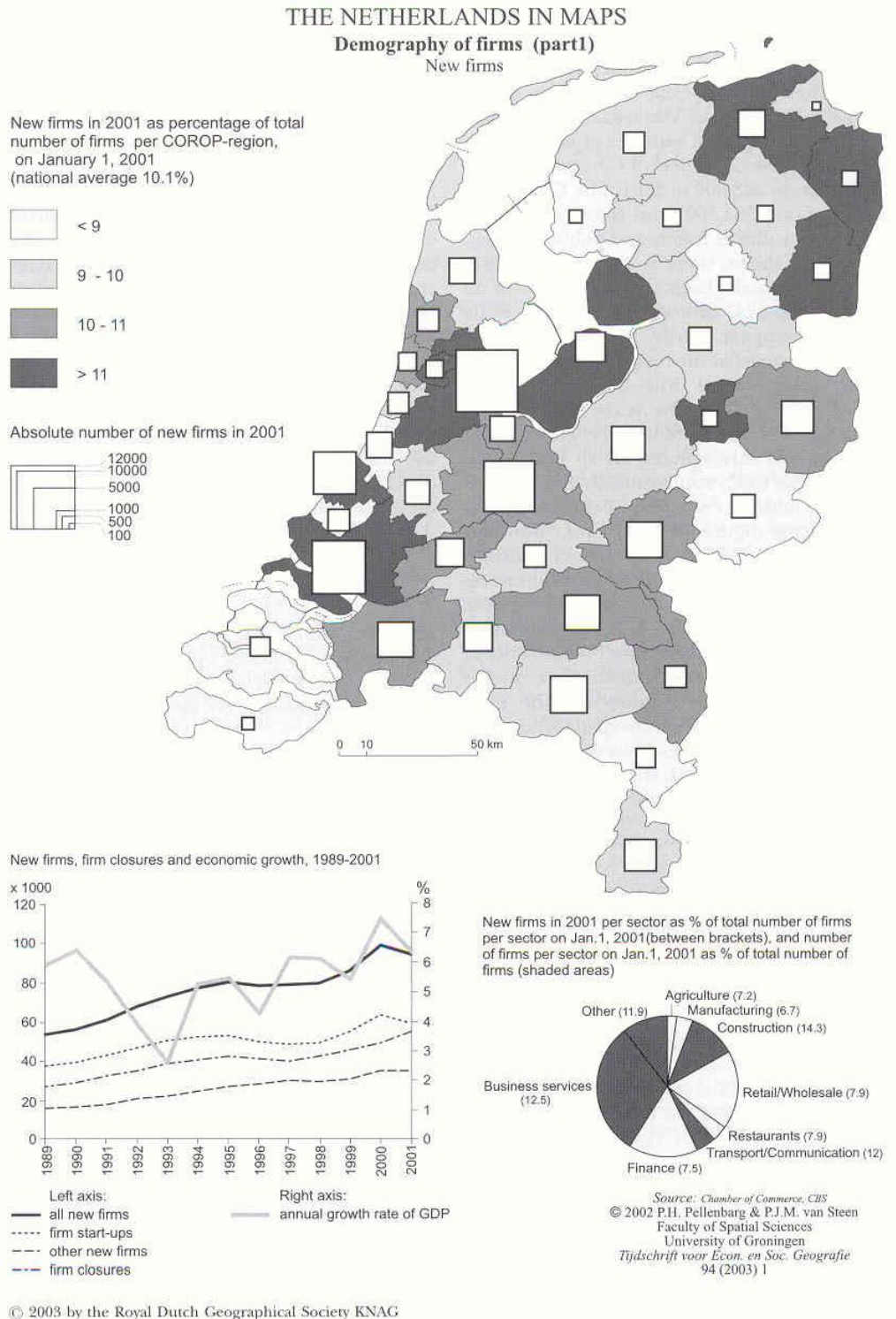
**new branches and subsidiaries of existing firms

Source: VVK 2002

A cross-national study by Reynolds *et al.* (1994) shows that average new firm birth rates (new entrepreneurs *and* firm spin-offs) are not too different for most EC countries but they do vary: national averages range from 7 to 16. Regional birth rates within countries vary even more, from 5 to 20%. The variation in firm birth rates is of course reflected in varying proportions of entrepreneurs in the working population. For the Netherlands the latter is exactly the same as the yearly birth rate: 10.2% (Bruins *et al.* 2000) which is not too far from the European average of 11.6% reported by Verhoeven and Becht (1999) and also rather close to the US figure of 11.2%. But some countries have a much lower or higher share of entrepreneurs in the working population (i.e. Denmark 7.1% and Germany 7.5% versus 14-18% in the South European countries). Clearly, the propensity to independent entrepreneurship varies in space, and indeed not only between countries but even more so between regions.

The pattern of *regional* birth rates in the Netherlands is visualized in figure 1. It shows high figures for the most urbanized regions around Amsterdam, Rotterdam and The Hague. In these regions we find a heavy concentration of business services, which is the sector with the highest firm birth rate: 12.5% (for comparison: the birth rate of the manufacturing sector is only 6.7%). New firm formation is also high in the polderland province of Flevoland. As the figures here are dominated very much by fast growing Almere city in the southwest of the province, this can be regarded as belonging to the greater Amsterdam area. Outside the Randstad the urban region around Groningen in the North stands out with high new firm formation rates. So far, the pattern matches the

Figure 1. New firms as a percentage of total number of firms, per COROP region, 2001



conclusion of Reynolds *et al.* who found that in most countries high firm birth figures could be explained by three factors: growth in demand, many small firms, and a high degree of urbanization (Reynolds *et al.* 1994). But other characteristics of the firm birth rate map of the Netherlands cannot be explained from such factors, i.e. the high rates in the rural regions of East Groningen and Southeast Drenthe and around the medium sized town of Deventer, and the low rates in urban-industrial Southeast Brabant and South Limburg. Such unexpected regional highs and lows produce doubt about the true influence of local and regional milieu characteristics and, consequently, produce doubt about the chances of successful government influence to stimulate entrepreneurship by creating favourable ‘incubation milieu conditions’. In this context Keeble and Wever (1986) issued an early warning concerning the poor chances of government influence on new firm formation. Later Schutjens and Wever (1999) and also Van Praag (1996) demonstrated for the Netherlands that regional characteristics indeed have hardly any explanatory value for the regional differences in the level of entrepreneurship. Bruins *et al.* (2000) argue that the characteristics of the starter and his company are much more important than the characteristics of the region. Following this argument, for an explanation of regional firm birth differences we should maybe look for regional differences in life styles rather than for differences in location qualities. Of course, this applies especially for the category of new firms that are actually started by individuals and not for those firms that are newly formed branches and subsidiaries of existing firms.

Table 2. *New entrepreneurs from foreign countries in the Netherlands in 2000 and 2001, by country of birth*

| Country | 2000 | 2001 | growth | Country | 2000 | 2001 | growth |
|----------------|------|------|--------|---------------|------|------|--------|
| United Kingdom | 706 | 586 | -120 | United States | 255 | 217 | - 38 |
| Germany | 752 | 781 | 29 | Canada | 81 | 68 | - 13 |
| Belgium | 336 | 336 | 0 | Brazil | 51 | 60 | 9 |
| Italy | 145 | 112 | - 33 | | | | |
| France | 134 | 110 | - 24 | Pakistan | 208 | 261 | 53 |
| Greece | 88 | 76 | - 12 | India | 136 | 150 | 14 |
| Spain | 72 | 69 | - 3 | China | 201 | 194 | - 7 |
| | | | | | | | |
| Yugoslavia | 228 | 257 | 29 | Afghanistan | 85 | 171 | 86 |
| Poland | 161 | 246 | 85 | Iran | 188 | 224 | 36 |
| Bulgaria | 27 | 85 | 58 | Iraq | 147 | 139 | - 8 |
| Soviet Union | 143 | 152 | 9 | Syria | 25 | 63 | 38 |
| | | | | | | | |
| Egypt | 184 | 193 | 9 | Thailand | 48 | 34 | - 14 |
| Nigeria | 91 | 96 | 5 | Vietnam | 70 | 72 | 2 |
| Ghana | 90 | 126 | 36 | Hong Kong | 64 | 61 | - 3 |
| South Africa | 99 | 72 | - 27 | Australia | 103 | 85 | - 18 |

Source: VVK 2002b

Looking at the characteristics of the individuals that start new firms in the Netherlands, one interesting phenomenon is the growing percentage of new entrepreneurs that were born in other countries (table 2). In 2001 they represent 18% of all new entrepreneurs.

The general tendency observable from table 2 is that the number of entrepreneurs originating from developed countries falls, whilst that from less developed countries is rising. Next to the entrepreneurs born outside the Netherlands there is (not included in the table) a considerable group of new 'ethnic entrepreneurs' whose families originate from Turkey, Morocco, Surinam or the Dutch Antilles (VVK 2002b). Their numbers still increase (4000 starters in 2000, 4500 in 2001) while the overall number of new entrepreneurs started to fall after 2000.

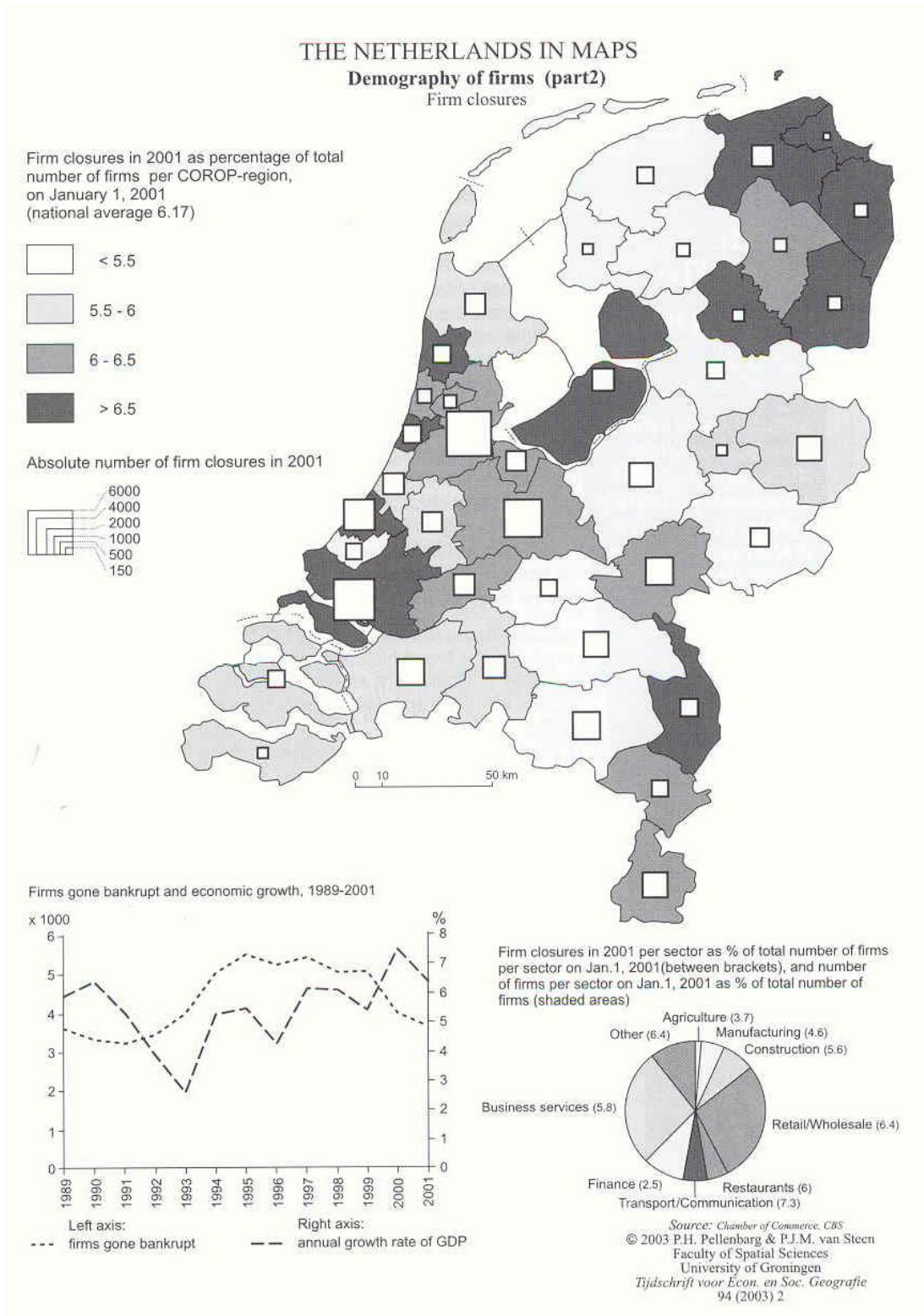
Surprisingly, also quite middle-aged or even elderly people start considerable numbers of new firms. A good ten percent of all newly started entrepreneurs are now over fifty years of age and this percentage is rising (Stigter 2003). This is not just a matter of early pensioners relaxedly filling their 'golden years' with old ambitions. Compared to the starters under 50 the oldsters report more frequently that unemployment (25%) or even undeniable need (20%) were a major reason for starting the new firm. Most of these old starters are highly educated persons who set up a business service firm (often consultancy or IT firms). Interesting again is the fact that they are much more successful as starters than their younger counterparts.

FIRM CLOSURES

At first sight, the spatial pattern of firm closures in the Netherlands (pictured in figure 2) is rather similar to the spatial pattern of firm births, i.e. high death rates in the urbanized North and South wings of the Randstad, the province of Flevoland and the city region of Groningen, versus lower death rates in the less urbanized parts of the country. This impression would fit to the assumption that economic dynamism, reflected in high birth *and* death rates is generally higher in urban regions than in rural ones (i.e. Ekamper 1996). But this assumption must be regarded with caution. Because of the absence of researchable objects, firm closures have been studied much less intensively than firm foundations. Consequently much less is known about the processes underlying firm closures, let alone the influence of spatial conditions on such processes, and certainly where this concerns small and medium sized enterprises. In fact, the whole concept of market exit is not well developed in economic geography, as Bertram and Schamp rightly argue in their study of exit strategies of firms in two industrial districts of Germany (Bertram and Schamp 1999).

Doubt about the applicability of the assumed relationship between urban conditions and high birth and death rates is fed by the occurrence, like in the birth rate map, of 'deviant regions'. Among these are some of the same regions that also deviated in the birth rate map, i.e. East Groningen and Southeast Drenthe (high death rates in rural/peripheral regions) and Southeast Brabant (low death rates in an urban-industrial region). Another exception, but only in the death rate map is North Limburg, also a rural/peripheral region with an exceptional high death rate. What possible explanations can be offered for the overall picture? If we take the occurrence of high death rate regions in the Northeast (Groningen, Drenthe) and Southeast (Limburg) together with the other characteristics of the birth rate map we have in fact a rather simple spatial picture: first an economic core area in the West (the Randstad, except for its Green Heart) with relatively many closures, second an encompassing broad intermediate zone with few closures, and finally a Northeast and Southeast periphery with high closure rates. As we know that many of the

Figure 2. Firm closures as a percentage of total number of firms, per COROPRegion, 2001



disappearing firms are in fact the newborn firms of the preceding years one is tempted to hypothesize that the high closures in the West represent the unsuccessful part of the many new firms that are born there. The low closure rates in the Intermediate Zone could then maybe correspond to the successful part of the Randstad's new firms that have moved to adjoining areas. This would be in line with Atzema and Lambooy (1999) who reported a relationship between firm growth, innovation and migration. For the periphery, the high closure rates can be interpreted as a reflection of poor location characteristics, but this is not very convincing because peripheral regions in the East and Southwest have no high death rates and moreover the small size of the Netherlands makes it unlikely. Being away only a two or three hours drive from the Randstad may be inconvenient in some circumstances, but is hardly acceptable as a lethal location factor, especially if we realize that many of the newborn firms that are so numerous among the exit cases will only have served local or regional markets.

The average death rate for the Netherlands as a whole is around 6%. The exact figure depends of the data source that is used. The Chamber of Commerce data that were used for the Netherlands in Maps 2003 series indicate 5,9% for 2001, which corresponds to 54,900 firm closures. The LISA files, which are the most reliable alternative for firm demographic analyses, indicate 5%. An alternative source of information is the records of firms that became bankrupt. In 2001 5800 bankruptcies were counted (CBS 2003) which is much less than the figure of 54,900 closures for the same year. We may conclude that only a minority of the firms that close end in bankruptcy. The number of bankruptcies is rising sharply, from a low 4000 in 1999 to 6800 in 2002. Surprisingly, this rise is distributed quite unevenly among the Dutch provinces. Utrecht had 43% more bankruptcies in 2002 compared to 2001 while Drenthe and Limburg saw the number of bankruptcies decline. This is in surprising contrast to the relatively high closure rates for these two provinces in map 2003/2 and may lead to the conclusion that the number of bankruptcies is a poor proxy for the general survival level of firms in a region. .

The average death rate of 6% for Dutch firms is low by international comparison. As Ekamper argues, such a comparison is difficult because data from national surveys are related to very different cohorts and periods. For recession periods firm closure figures will of course will be more negative than for periods of economic growth. Figures that apply to long time periods such as from the research projects by Birch (1987) for the USA and Brüderl and Schüssler (1990) for Germany are more reliable because period effects of economic cycles are neutralized (Ekamper 1996). If we add the results of such studies to OECD figures for various European countries, the international differences in firm death rates are remarkable. In the USA and Germany, the conditions for survival, especially for recently started firms, are much less favourable than in the Netherlands. And between European countries, only Denmark has a general death rate lower than the Netherlands (OECD 1994, Ekamper 1996). Such differences however should be regarded as the result of national differences in economic climate and general conditions for setting up a new firm, rather than as the result of differences in location qualities.

FIRM MIGRATIONS

For most countries studies of firm migration are definitely much less numerous than studies into the birth, growth and possible survival of new firms. Partly, this is the result

of the absence of empirical data sources of good quality. For another part, the relative scarcity of publications about firm relocation rests on the assumption that firm migration for most regions tends to be of minor importance for the firm mutation balance (i.e. Wever 1984, Wever and Van der Velden 2000). Considering that the vast majority of firm relocations are short distance migrations within rather than between regions, the rationality of this assumption cannot be denied. Nevertheless, a number of arguments can be presented that contradict the unimportance of firm migration as a firm demographic event:

First, the frequency of firm relocations is much higher than generally assumed. For the Netherlands, the Chambers of Commerce reported an annual migration rate of 6-7% in the 1980s and 7-8% in the 1990s (Pellenbarg and Kemper 1999), which keeps the happy mean between average firm birth and death rates instead of being much lower. Certainly a considerable number of the recorded migrations are administrative mistakes. A sample enquiry by Ten Hoor (1998) indicates a possible one third of such mistakes. Of course, the birth and death case registrations by the Chambers of Commerce system will not be free of such mistakes either. In practice it is sometimes very difficult to differentiate between the three firm demographic events.

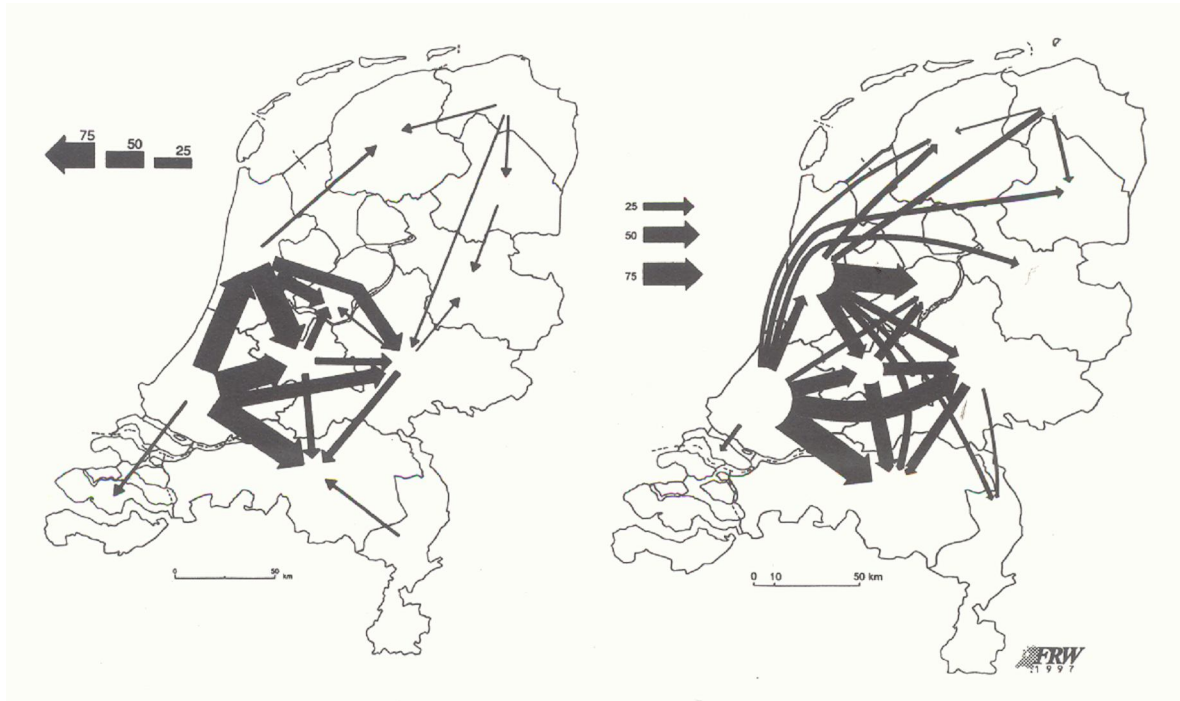
Second, relocated firms tend to be growing firms. Growth is the single most important push and pull factor for most firm relocations (i.e. BCI/Minez 1998) and correspondingly many firms show considerable employment growth in the first years after relocation. According to Kok *et al.* (1999) who interviewed a sample of 50 moved firms in the Netherlands the average growth of employment is 50% in the year following relocation. So even if the average size of migrating firms is small, they represent a growing part of the firm population and as such deserve and receive attention, certainly from city and regional governments that are keen on their future employment growth.

Finally, the small spatial scale of firm migration movements needs some reconsideration. It is a fact that the vast majority of movements are local or at most intra-regional. Only 10% of all firm migrations in the Netherlands cross provincial boundaries (Pellenbarg and Kemper 1999). From a regional economic development perspective, only these long distance migrations may be relevant. But from a spatial development point of view, all migration cases including the local ones are relevant because they all need new locations. As a matter of fact, the population of migrant firms as a whole corresponds rather closely to the effective demand for business space. The background of this is a marked difference in location choice behaviour by starters and movers. In many cases, if not most, the residence of the starting entrepreneur is the first location of his newly started firm, especially in the business service sector. But movers tend to choose for specially developed buildings and sites, either office buildings or industrial sites. In practice, 80-90% of all newly developed business sites are taken by already existing firms that move to the new site from elsewhere. Thus, the revealed location preference of migrating firms is of utmost importance as a predictor of the size and nature of the economy's future demand for space.

Unfortunately, it is not possible to show the *actual* spatial pattern of firm migrations in the Netherlands. The latest officially published figures date back to 1995 and are used to draw figure 3. It shows interprovincial migration flows for 1990/1991 and 1994/1995, as arrows with varying width representing the balance between in- and outgoing relocations.

As the maps show, migration flows concentrate in and between the three Randstad provinces and from there spread out into the adjoining provinces of Flevoland, Gelderland and North Brabant.

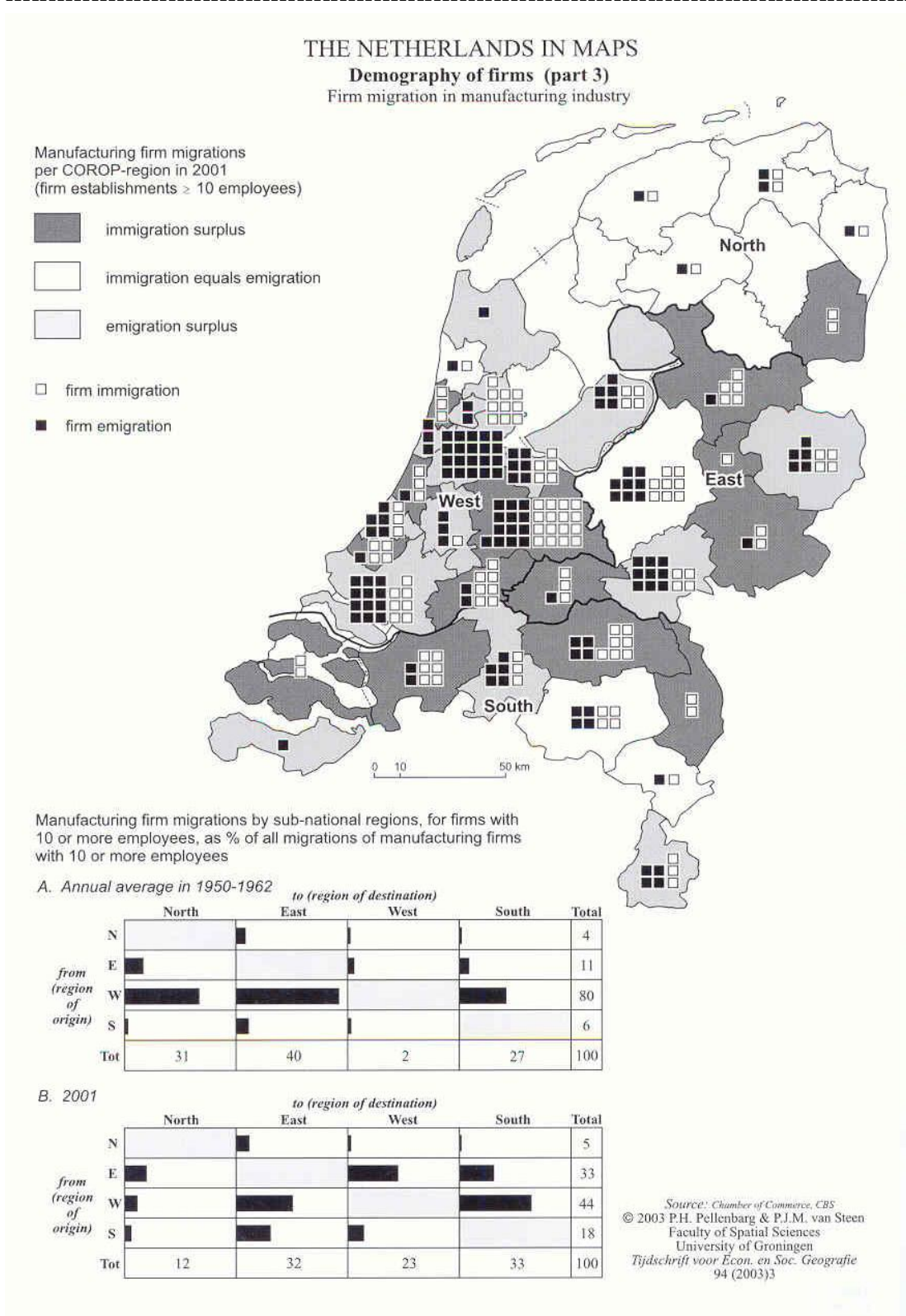
Figure 3. Interprovincial firm relocations (balance) in manufacturing industry, wholesale and business services. Yearly averages for 1990/1991 (left) and 1994/1995 (right)



Source: Kemper and Pellenbarg (1997)

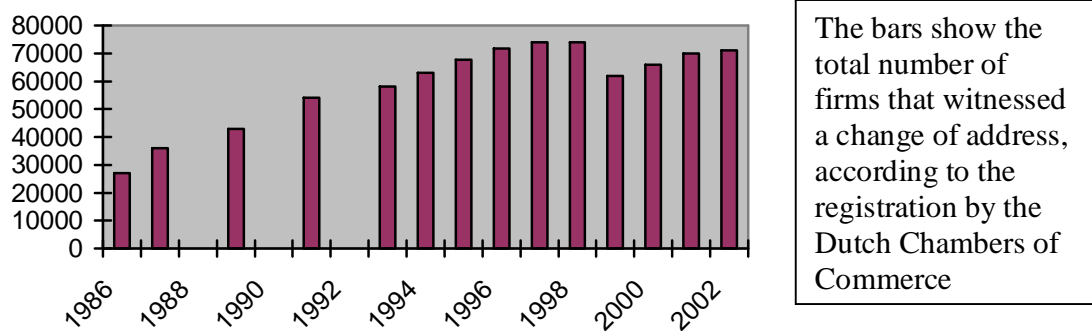
Since 1995 the Dutch Chambers of Commerce no longer publish firm relocation figures because they are not considered to be accurate enough. This leaves us in uncertainty as to the persistency of the spatial tendencies depicted in figure 3. By way of exception the Chambers of Commerce made data available about the migration of manufacturing industry firms (in 2001) with 10 employees or more. This is a part of the overall firm mobility that is considered to be less vulnerable for registration mistakes. These data were used to draw the map of figure 4. This map shows a general picture of migration deficits for the urban areas of Amsterdam, Rotterdam and The Hague and migration surpluses for many intermediate areas between Randstad and periphery. The picture is not very consistent however, and certainly much less clear than half a century before, a period (1950-1962) for which we happen to have a perfectly comparable data set from the AIS statistics (Algemene Industrie Statistiek) that was analyzed by Reinink (1970). In the 1950s and 1960s the dominant spatial tendency in industrial firm migration was a marked deconcentration of firms from West to North, East and South. Fifty years later the industrial deconcentration from West to North has stopped. The flows from West to East and South are still there but less dominant. Comparable flows are now running from South to East, from

Figure 4. Manufacturing firm migrations (> 10 employees) per COROP region in 2001



East to West, and from East to South. The once unilateral flow from core to periphery has been replaced by smaller flows running in more directions. The migration rate of manufacturing industry as a whole (7.4%) is now much lower than that of wholesale and commercial services (10.0%). The spatial pattern of industrial firms has more or less settled down, at least at the spatial scale that is considered in the time comparison that accompanies figure 4. For the other economic sectors, this may be quite different. On the whole, firm mobility within the Netherlands is still growing, as exemplified by figure 5.

Figure 5. Total number of firm migrations in the Netherlands 1987-2002*



* Figures for 1987-1999 have been less subject to screening than figures for 2000-2002
Source: Pellenburg (2004)

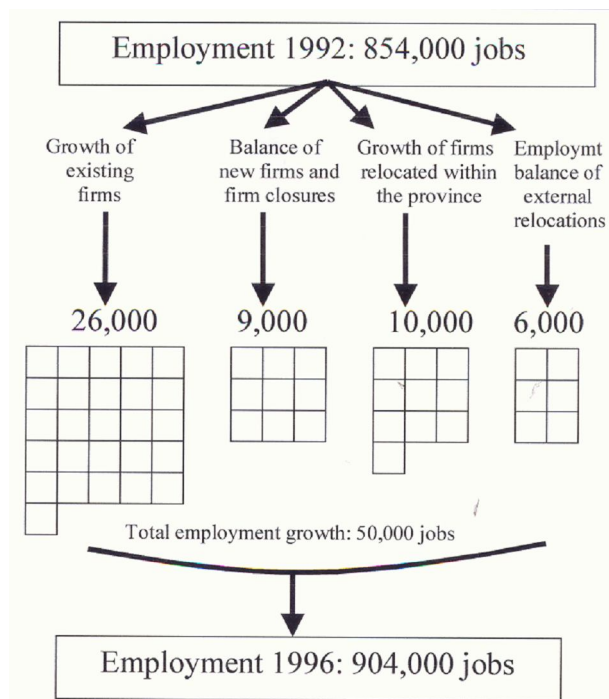
There are recent indications that a new era of mobility is dawning, especially for manufacturing industry on the *international* scale. An alarming 30% of the medium sized and large manufacturing firms (≥ 50 employees) expect to move abroad substantial parts of the production capacity within two years and recent experience of the same firms shows that such intentions are realized indeed (Deloitte&Touche 2003). This new tendency of industrial cross border migration was already noticed in the 1990s (Van Eenennaam 1995) and is remarkable, because it no longer concerns foreign direct investment by TNC's only, but independent medium sized firms as well. The movements are cost driven but production units are not the only activities concerned. R&D units and service firms are following the trend. Interestingly, the low cost countries in the Far East are no longer the dominant migration destinations. Other West and East European countries are mentioned quite frequently as well (Van Eenennaam 1995).

GROWTH AND DECLINE

For a human population birth, death and migration figures basically suffice to describe its stand and course. For populations of firms this is also true as long as one is interested in the total number of firms only. But as the interest usually goes to regional employment structures, it is inevitable to involve growth and decline of employment in existing firms. In firm demographic analysis a large part of this interest is devoted to growth or decline (and possible death) of *new* firms, because the rate of their survival obviously is of great

importance for the pace of renewal of the firm population as a whole. Furthermore this category is of great interest for economic and spatial policies that seek to improve economic and spatial structures by supporting such firm population renewal, especially in certain sectors and regions. This explains the relative abundance of spatial-economic research that addresses new firm survival, new firm growth, and fast growing young firms ('gazelles'). For the Netherlands this subject has been explored most intensively by Schutjens, Wever and Stam (Schutjens and Wever 2000, Stam 2003). For a comprehensive firm demography however, growth and decline of *all* firms has to be considered and compared with the other components of regional economic change. Generally, both the balance between birth and death and the balance between expansion and contraction of existing firms are considered as important determinants of change, but the first has been researched much more than the second (Armstrong and Taylor 2000) and thus it is not easy to say which of the two is more important. Policy makers often assume a greater importance of existing firms for regional growth but there are not a great number of studies to prove this assumption. For the Netherlands, a study concerning the province of North Brabant in the mid 1990s indicates a marked preponderance of the existing firms in the balance of regional employment: their growth and decline represents half of the total employment shift and is three times the size of the birth and death balance (figure 6).

Figure 6. Components of employment change in North Brabant 1992-1996*

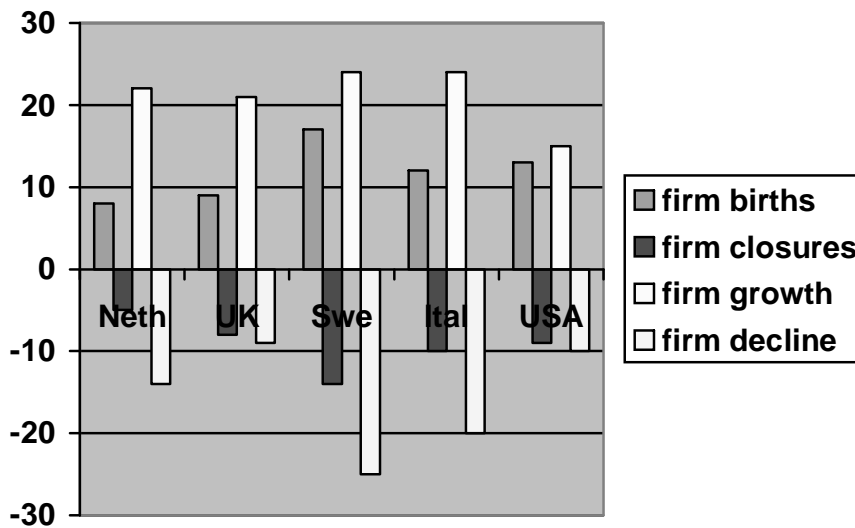


* figures rounded off in thousands

Source: Wever and Van der Velden 2000

Figure 7 supplements the information for the Dutch province of North Brabant with a survey of mutation rates for five selected countries, published by Ekamper (1996) on the basis of OECD figures and the Dutch LISA statistics. This survey concerns numbers of firms, not employment, and does not include information about firm migrations. The growth/decline balance outweighs the birth/death balance in all cases, but there are marked differences: in the Netherlands the balances are far apart (in fact representing a 1:3 proportion as in the Brabant case) while for the US they are rather close. Also the absolute size of growth and decline as a mutation component, and the balance between growth and decline, are quite different for the individual countries.

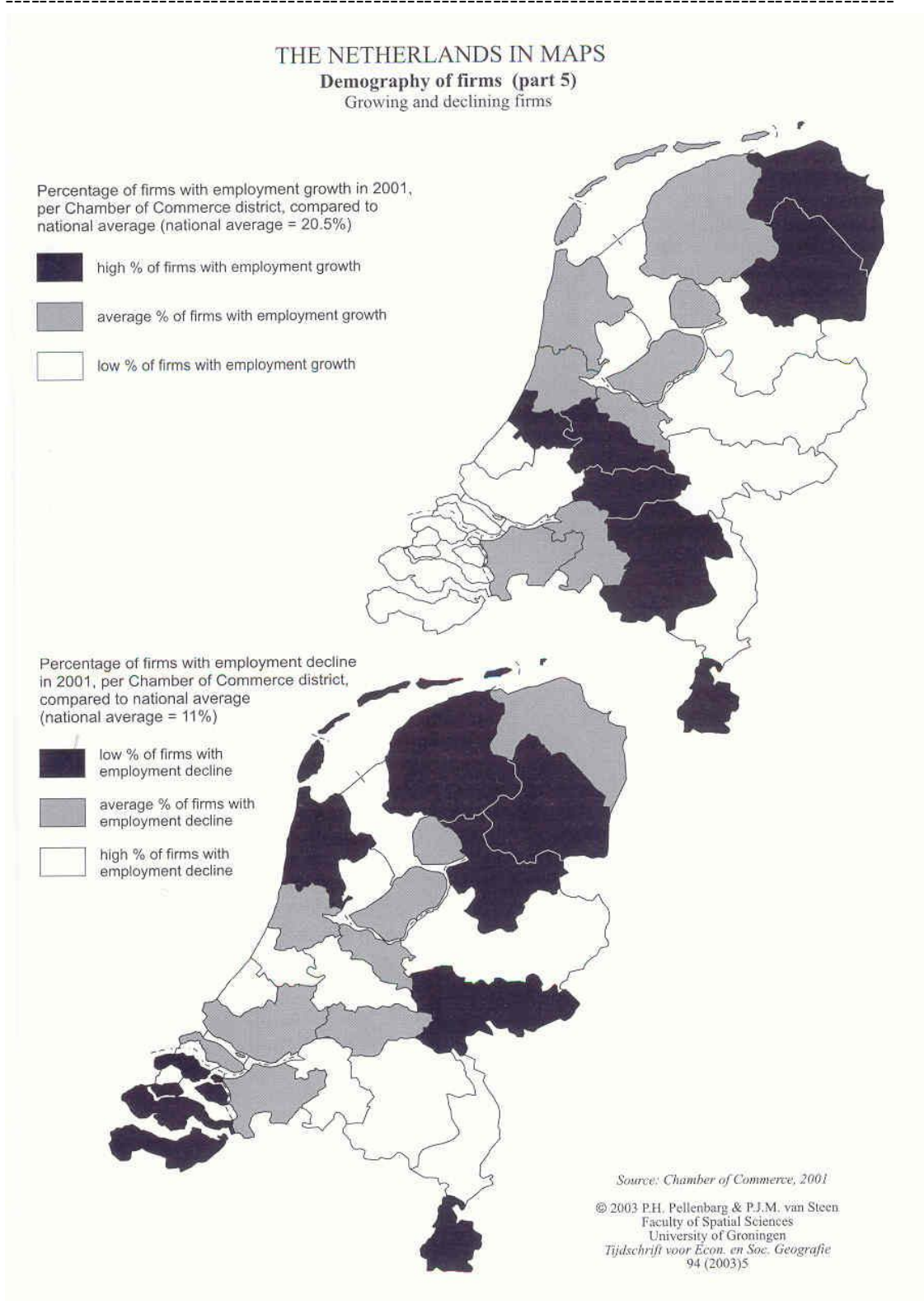
Figure 7. Average annual firm mutation rates (%), by type of firm demographic event, for selected countries



Source: Ekamper 1996/OECD and LISA statistics

Just like in the case of firm birth and death rates, differences in firm growth and decline between countries can be expected to result, at least partly, from national differences in economic rather than spatial conditions. But there is also a great variety in firm growth and decline rates between *regions*, for which spatial conditions supposedly are the main background, as in the case of birth, death and migration of firms. However, the regional firm growth and decline maps, shown in figure 8, suggest that it is difficult to ascertain the influence of spatial conditions. From the two maps, the spatial picture simply is unclear. High and low percentages of firms that witnessed employment *growth* (in 2001) are found in all parts of the country, without a visible relation to core and periphery or to urban versus rural parts. Vaguely, a corridor of regions with high percentages is visible between Amsterdam and Eindhoven *casu quo* Maastricht, which reminds of a pattern in several growth maps of Louter's recent publication about the spatial distribution of 'economic heat' in the Netherlands (Bureau Louter 2002). The map showing high and low percentages of firms witnessing employment *decline* is slightly clearer, as the regions

Figure 8. Percentage of firms in the Netherlands with employment *growth* (upper map) and *decline* (lower map) per Chamber of Commerce district, in 2001



with higher contraction rates are absent in the periphery (the North and the extreme Southwest and Southeast) but the picture is certainly not very convincing and in fact the opposite of what one would expect. Also some details of the maps are confusing, i.e. the occurrence of regions that stand out with both high growth *and* high decline (North South Holland and Utrecht) or, vice versa, with low growth *and* low decline (North Overijssel, Central Gelderland, Zeeland). Of course we have to realize that statistically there are many more possibilities to visualize the growth and decline of existing firms. Maybe the percentage of firms that witness growth or decline (not considering the *amount* of this growth or decline) is not the best possible indicator. Maybe the spatial picture would become clearer if the figures applied to a longer period. However, there are no data sources available to allow such alternative explorations. The Dutch Central Bureau for Statistics does not supply any figures on firm growth or decline by region, and the Dutch Chambers of Commerce only provide the ones that we have used.

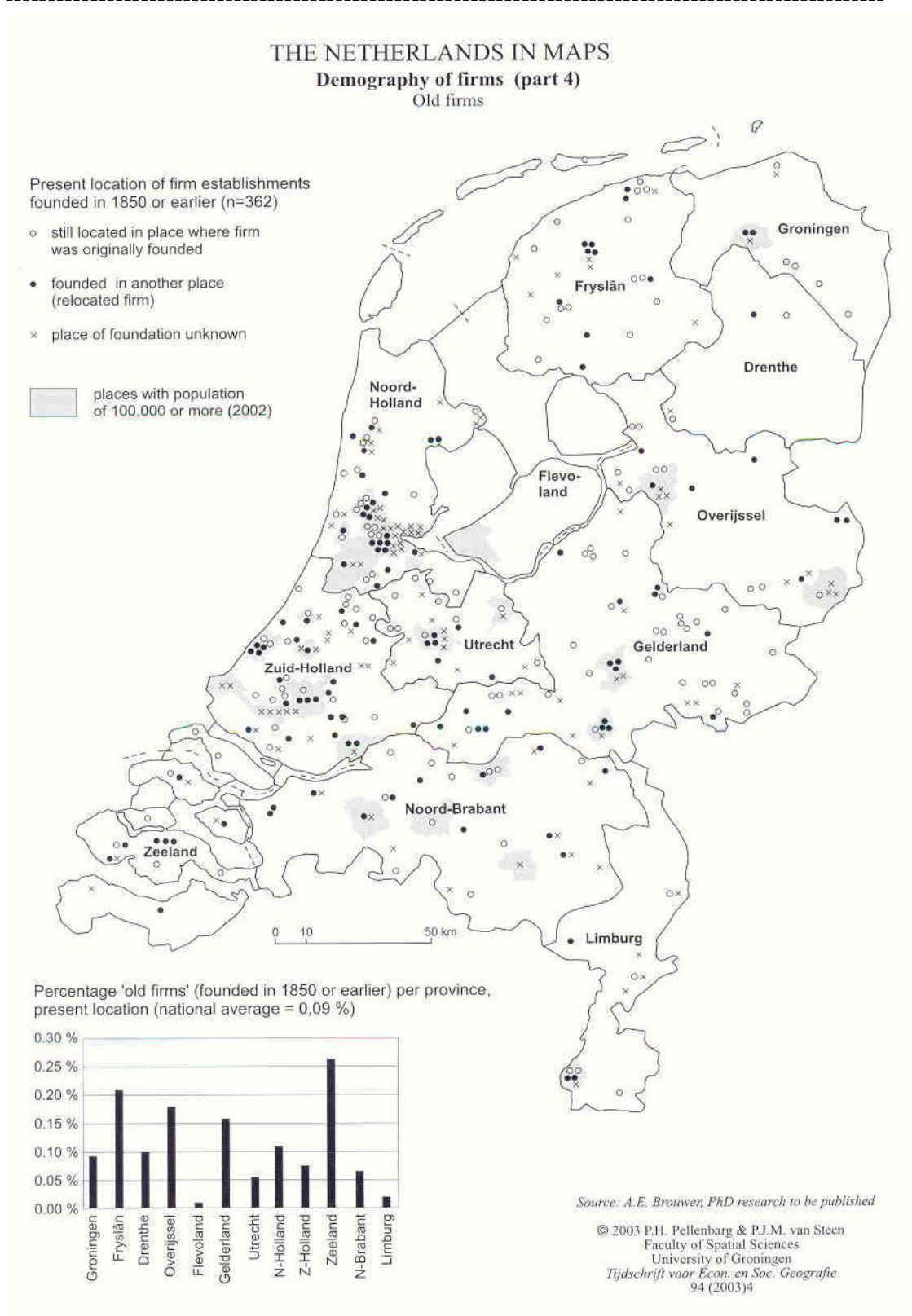
OLD FIRMS

The selection of firm demographic visualisations is completed with a map showing the location of the oldest firms in the Netherlands (figure 9). Of all contributions to the map series, which we present in this paper, this is certainly the most unusual one. Survival is of course an important issue in any demographic analysis, but usually firm demographic studies focus on the survival of *young* firms, as in the publications by Schutjens, Wever and Stam cited before. The more exceptional geographical studies that focus on *old* firms usually adopt a case study approach and may be labeled as ‘spatial firm histories’. Van Geenhuizen (1993) and Vaessen (1993) used this approach for the Netherlands. Thus far, studies concerning spatial aspects of the older part of the firm population as a whole are absent. Lack of data is an important reason for this. Especially for very old firms lack of relevant data sets prohibits a monitoring of the development of regional age cohorts and thus hampers a true answer to the question which regions offer the best conditions for long term firm survival. An additional problem hampering satisfactory explanation of long term spatial survival patterns is, that for very old firms the firm life cycle is intersected by two cycles of a totally different kind, viz. the product life cycle and the personal life cycles of entrepreneurs (Van Geenhuizen 1995). Nevertheless, the spatial pattern of long-term survivors in the Netherlands is intriguing enough and offers a source for hypotheses to be tested in future firm demographic research.

In figure 9 all firms established in 1850 or earlier are indicated at their present locations. The year 1850 was chosen because it effectively separates a distinct group of very old firms from the larger group of surviving old firms that was established in the period of industrial revolution in the Netherlands. Agricultural firms, hotels and restaurants, and retail firms were omitted from the original data source (the REACH database) because their founding dates proved to be less reliable.

The 362 firms that result after a further screening of the data (for a description of this process see Brouwer 2003) concentrate in the sectors of manufacturing industry (40%), building (29%) and wholesale (18%). At first sight these 362 firms are scattered rather evenly about the country, but at a closer look and reminding the uneven distribution of the total population of firms, it appears that Friesland accommodates a rather high number of these very old firms while its neighbour provinces of Drenthe en Groningen

Figure 9. Old firms. Present location of firm establishments founded in 1850 or earlier



have relatively few. The share of very old firms in the total population is close to one in thousand, but for the individual provinces there is a significant difference from this average. The percentages range from 0.01 for the new polderland province of Flevoland (where firms established before 1850 could only have settled after recent relocation) to 0.26 percent for Zeeland. Next to Zeeland in the Southwest Friesland in the North and Overijssel and Gelderland in the East have the highest relative density of old firms. Limburg, Utrecht and South Holland have a low relative density of old firms. The absolute density is highest in the provinces of North and South Holland, which is hardly surprising: this was already the most urbanized part of the country during the 17th and 18th centuries when most of the oldest still surviving firms were established. The concentration of old firms in the biggest cities (indicated by shaded areas on the map) attracts attention. Of course this concerns Amsterdam in the first place, and its neighbour city Zaandam, center of the Zaanstreek region, which was a well-known early concentration of manufacturing firms processing raw materials such as coffee, tea, cocoa, pigments, wood etcetera that were brought from all over the world to Amsterdam's staple market before it collapsed in the Napoleonic era. But also Rotterdam, The Hague, Utrecht, and the cities of Leeuwarden, Groningen, Zwolle, Enschede, Arnhem and Nijmegen in the North and East stand out as old firm concentration places. As the map shows, many of the firms relocated to such cities in an earlier phase of their existence, but considerable numbers also reside in smaller towns ever since they were founded. For the population of old firms as a whole, the migration rate is relatively low indeed. Of the 362 old firms on the map, 45% relocated one or more times (Brouwer 2003) whereas for the total firm population of the Netherlands an average percentage of 60% is estimated to have ever relocated (Van Steen 1997). This is a surprising result because it gives ground for the hypothesis that long-term survival is served by sticking to the site, whereas one would expect that a strategy of timely adapting the firm to changing production circumstances by relocating to a place that has become more favourable in the light of new location factors would enhance its chance of survival. It is true that such locational adaptations are more normal for young and small firms than for old firms. Old firms are usually bigger and for their growth strategies they use other forms of locational adaptation than integral relocation, i.e. partial relocation, branch plant establishment, or take-over. But old firms have been young once, and if they show less migration activity over the whole period of their active existence their location behaviour has definitely been different from what we see nowadays from young and middle-aged firms. The question remains whether it is their locational inertia that kept them alive or that firm migration in the 17th and 18th century was just much more uncommon than it is nowadays. The first is hard to believe, while the second seems rather acceptable.

CONCLUSIONS

The spatial patterns that appear from the series of firm demographic maps presented in this paper are most clear for the three components of birth, death and migration. Here a familiar picture comes out showing dynamic urban areas (especially the Randstad) with relatively high rates of new firm formation and equally high rates of firm closures. The firm migration figures for the mid 1990s suggest that the growth of the Randstad urban

area is 'boiling over' to regions in the adjacent Intermediate Zone, where healthy and growing firms concentrate, as witnessed by low closure rates. But the picture is not perfect and we can mention at least four problems that need further exploration. First, the new firm map and the firm closures map show 'deviant regions'. Second, the flourishing position of the Intermediate Zone in the birth, death and migration maps is not reflected in equally good positions in the firm growth and decline map. Third, the relationship between firm growth, migration and survival is not reflected in the findings concerning the category of (very) old firms. Fourth, lack of data leaves us unsure about the present development of the firm migration processes between the Randstad and the Intermediate Zone. The migration map for manufacturing industry alone shows that long distance migration between core and periphery has dwindled, and industrial firm migration more or less flows in all directions now, one new direction being the European cross border migration of middle sized firms. Without figures concerning the most mobile sectors of wholesale and business services however it is not possible to draw definite conclusions.

The uncertainty about various aspects of the firm demography of the Netherlands is a stimulus for the continuation of research in this field. A further clarification of the relationship between the processes of birth, death and migration of firms is a focal point of interest in this research. This includes both their size ratio and the causal links between them. Concerning the first, we came across a most remarkable size ratio between the employment effects of birth, death and migration in the exceptional North Brabant study that embraced all firm demographic components in one scheme of analysis (figure 6). Here, the total regional employment shift was divided fifty-fifty between growth of existing firms on the one hand and the balance of birth, death and migration on the other. But surprisingly, two thirds of that balance was the combined effect of internal (intra-regional) and external (interregional) firm migration and only one third the result of new firm formation minus firm closure. This may well be another sign of the present underestimation of the importance of firm migration processes for regional economic growth and makes it all the more important to find new clues about the causal links between the processes incurred. From many empirical studies in the Netherlands we know that relocated firms are growing firms (i.e. Pellenbarg 1985, Kok *et al.* 1999, Pen 2002). But should growing firms always be migrants? Reasons to question this reverse relationship are rising. One of them is Brouwer's conclusion about the high percentage of very old firms that have stuck to their original location (Brouwer 2003). Another recent finding concerns the other extreme of the firm population: not the eldest firms, but the most successful young and growing firms, often referred to as 'gazelles'. Stam, who studied a population of 'gazelles' in the Netherlands found that although 55% of them had moved since their start, only very few (4%) had left their region of origin. His conclusion, reflected in the title of his study, is that 'butterflies don't leave', but stay embedded in the personal and inter-organisational network relationships of the entrepreneur and his firm in the region of origin.

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