

# Geographical scale and the role of firm migration in spatial economic dynamics

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## Abstract

Spatial economic change can be decomposed in its demographic constituents firm formation, closure, relocation and growth. This paper focuses on the role of relocation in the balancing equation of spatial economic dynamics:  $\text{Total Change}(\text{zone } i) = \text{New firms}(i) - \text{Closures}(i) + \text{Growth}(i) - \text{Decline}(i) + \text{Inmoves}(i) - \text{Outmoves}(i)$ . Whereas the other components are scale invariant (i.e. a firm birth is a birth whether measured at the local or the regional level) for firm relocation the geographical scale is very important. The larger the size of the region, the smaller the number of border crossing relocations. The question about the role of firm migration in regional economic change can therefore only be answered taking into account the geographical scale. In this paper we will answer this question for various geographical scales. The data that we use are from the longitudinal business register of the province of Gelderland, in the east of the Netherlands, covering the period 1999-2002.

**keywords:** firm migration, regional economic growth, regional policy

## Introduction

Regional economic change is constituted by processes of firm formation, closure, growth and relocation, the so called 'components of economic change' (Birch 1979). The number of studies on the relationship between regional economic growth and firm formation and closure are numerous (see Pellenbarg et al. 2004). Also the growth and decline of firms, expressed in number of employees has received ample attention, as both regional science and especially policy makers need insight in the direct and indirect employment effects on the region. Compared to these aspects of firm dynamics mentioned above, in empirical studies the component of firm relocation is underrepresented, mainly because of four reasons. First, despite many academic efforts, especially in the 1960s and 1970s, there is no widely accepted theory of firm relocation (De Bok 2004). A recent literature overview of Pellenbarg et al. (2004) shows that many perspectives and theoretical approaches can be used to understand firm relocation, but an overall grand theory is lacking. Second, empirical studies on which future theory eventually could be built, often face serious data problems. Until now, in most countries a reliable observation system on origin and destination of relocated firms is lacking, as this needs punctual and consistent registration at both the origin and destination region. Moreover, tracking down relocated firms is time consuming and costly. A complicating factor is that there are problems of definition of the firm move, since it is not always clear what exactly a move constitutes. Third, compared to new firm formation and exit rates, firm relocation rates are low and rather stable (Pellenbarg et al. 2004, Van Steen 2005, Huisman & Van Wissen 2005a, p. 27). And fourth, strongly related to the former aspect; it is often assumed that the contribution of firm relocation to total spatial economic change is much smaller than other components of firm dynamics, as many relocations are within a short distance which strongly limits the contribution of firm relocation to the regional economy. This paper focuses on this fourth aspect. We argue that as firm relocation is about firms crossing spatial distances, the economic impact of firm relocation actually depends on the scale of the region under study. In other words, the regional economic effect of firm relocation varies with geographical scale. Our central research question is: to what extent does the effect of firm relocation on the regional economy vary between different geographical scales?

The effect of firm relocation on regional economic change is due to two factors: first, the probability of firms to move over short, medium or long distance; second, the size of the moving firm. The total number of jobs involved in relocations is the product of the probability in the population of moving, and the average size of the relocating firms. Therefore, in order to link firm relocations to their regional economic impact, we have to study both the relocation process and the role of firm size in this process. A distinction will be made between firm internal and external factors. Key internal factors are firm sector and size, and the key external factor is the present firm location (i.e. the distinction between economic core –urban- and periphery. A second research question is therefore: what is the impact of industry type and spatial location on the decision to relocate and on the relocation distance?

Not only the technical aspects of differences in spatial detail make it worthwhile to study the effect of firm relocation on regional economies of different geographical size. In the searching process of firm relocation the relevance of spatial scales for different location factors has to be assessed. On the regional level, accessibility by road or labour market characteristics can be crucial (Louw, 1996, p. 240, Pellenbarg et al. 2004). On the local level, specific characteristics of the site and the building

often are decisive location factors; the importance of these qualitative and localized aspects is increasing over time (Van Steen 1998, p. 143). Also in the small area of the Netherlands with only limited regional economic variation the locational tolerance area is large which means that firms can perform profitably almost everywhere. Therefore, in firm relocation processes qualitative information about alternative locations is important and decision makers within the firms may include personal preferences and use subjective criteria in their relocation strategies. This implies that many entrepreneurs only choose from 'known' location alternatives within the region, which reinforces the bias to short distance firm migrations. Entrepreneurs considering firm relocation tend to choose from a limited number of feasible location alternatives (De Bok 2004).

In order to assess the effect of firm relocation on the regional economy, the relevance of spatial levels has to be determined. We are interested in both the effect on total firm population and on regional employment. With respect to the former, empirical studies about firm migration in the Netherlands show the small proportion of relocated firms over longer distances and especially a steep drop of registered firm migrations with increasing spatial scales. This is most clearly shown in empirical work of Van Steen (1998a; 2005). From his survey among Dutch firms in 1994 he concluded that of all firms that moved at least once, almost 70% stayed within the same municipality, 20% stayed within the province, and only 12% of all firms did cross province boundaries at least once. Only 8% ever relocated to another part of the country (Van Steen 1998a, p. 35-36, p. 43). In another study, in which he followed a sample of 2000 firms that existed in 1998 he that 20 % of all firms had moved at least once during the 5-year period: an average annual moving rate of 3.7%. Of these relocated firms, 66% moved within the municipality, 79% within the NUTS-3 area, and 86% within the province. And three-quarter of all firms that actually left their former province, moved to the adjacent province. In addition, based on the most recently published registration data of the Chambers of Commerce, Kemper and Pellenbarg (1997) found that in 1993 only 24% of all moved firms crossed boundaries of another Chamber of Commerce district (in between municipalities and province levels). This share however was clearly increasing between 1987 and 1993.

Studies on the impact of firm relocation on regional employment levels are more limited in number. 20% of the net job growth in the province of Noord-Brabant in the period 1994-1998 took place in firms that had moved within the province in this period, which indicates that moving jobs have a higher than average job growth (Wever and van de Velden, 1998). Another 12% was due to external relocations. Empirical evidence of the importance of firm relocation on regional employment levels at a high level of spatial detail has recently been given by Hoogstra (2005). 20% of employment change in small zones (of 2,6 square km) can be attributed to external firm relocation.

### **Theoretical background**

The spatial dimension is implicit or explicit in theoretical approaches to firm relocation. Firm relocation is studied from many different perspectives. Pellenbarg et al. (2002) distinguish neo-classical, behavioural, institutional and evolutionary approaches. In the neoclassical approach, the concept of the *spatial margins to profitability* is important (Hayter, 1999). It defines the space within which a firm is able to operate profitably. Outside these contours production costs are too high or

revenues are too small to guarantee firm survival. These spatial margins to profitability are caused by objective characteristics of the region (transportation infrastructure) but also by agglomeration economies: the availability of a specialized labour force, networks, the size of the consumer market, etc. From the spatial margins to profitability thesis, it is unlikely that firms will need to move because the spatial margins have changed. Usually, these margins are very wide, and moreover they do not change that fast, so that location *per se* is seldom a decisive factor for relocation. On the other hand, if a relocation is necessary (mostly for other reasons), relocating firms have a fairly large area within the spatial margins to profitability, which enables a large search area if they have to move. Moving costs are also larger with increasing distance, so that if a move is necessary, *ceteris paribus*, it will be over shorter distances.

The behavioural approach is not so much concerned with objective criteria as production costs, revenues, prices and profitability, but with the decision process of the entrepreneur. The decision-making process is usually driven by incomplete information, subjective interpretations, and other distortions of the 'rational optimizing man' assumption of the neo-classical school. In the behavioural approach the motivations of entrepreneurs to relocate are central to the analysis, and the main relocation motives turn out to be lack of expansion space, higher status locations, and more accessibility. Moreover, the role of information channels and the spatial bias in these channels is important. The key moving factors highlighted in this theory do not necessitate a move over larger distances. If the firm needs to expand, it will look for a new location in the close vicinity of the old location, but with more floor space, and higher status. This short distance perspective is reinforced through the spatial bias in the available information about alternative premises.

The institutional school focuses on the role of formal and informal networks on behaviour. Firm linkages are not only forward and backward linkages of goods and commodities, but also the informal networks of entrepreneurs, customers, public agencies, and so on. The role of information and learning is stressed in this approach, which has a high spatial gradient. The local embeddedness of the firm, and the steep slope of the density curve of the relevant networks with increasing distance from the original location, leads to short distance moves, if necessary.

In the evolutionary approach economic change is of key importance, as well as its opposite: resistance to change or inertia. Actors are not able to choose the optimal alternative defined in the neo-classical sense, because they have a history of behaviour, which limits their future options (lock-in). This may be because of sunk costs, but also other causes, such as information bias and perceptions. Path dependency and spatial lock-in are especially important when studying firm relocation, since the previous location(s) of the firm exert a strong influence on the decision to relocate, and where to relocate. An initial location of the firm will limit the options for relocation choices, and the new location is usually within the neighbourhood of the initial location.

In conclusion, all theoretical approaches favour short over longer distances as part of the entrepreneurial decision process. The factors behind this spatial gradient are different however. For our purposes, it is not important to choose one over the other approach, since the outcome of these theories point in the same direction in terms of the spatial distances of firm moves.

Firm migrations have a two-layered effect on the regional economy: changes in the total regional firm dynamics (where dynamics is defined in terms of startups, closures,

incumbent growth, and spatial relocations) and job dynamics. Whereas in 2001/2002 firm relocation accounted for 26% of total firm dynamics, its impact on job dynamics was much higher: 48% (based on data of the Chambers of Commerce, Pellenbarg 2005). This means that on average relocating firms are relatively large. Firms migrating over larger distance were only slightly larger than firms that relocated within the region of origin.

Against the background of these theoretical contributions, we will now focus on two firm internal and one external factor that influence the relocation process: firm size, economic sector, and the spatial environment.

### ***Firm size***

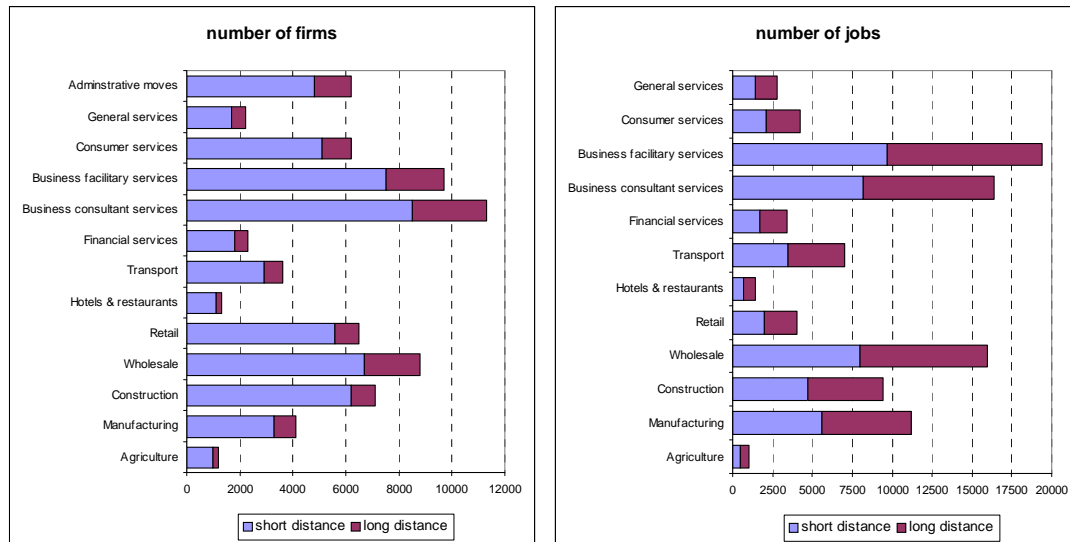
Firm size has a complex relationship to firm mobility. Small firms usually have low sunk costs, which in theory would make them more mobile, but many of these micro firms are low profile self-employment businesses that want to stay small. Large firms have relatively high sunk costs (premises, employees, business relations and networks), which keeps them from moving. And if they move, these firms try to keep moving distances short. It can be assumed that both micro firms and large firms have lower relocation rates than small and medium sized firms. When focusing on inter-municipal moves (firm migration) a slightly different picture emerges. Large firms need larger business premises. Large business sites however are less densely distributed among regions, which means that large firms often can only find suitable location alternatives at relatively large distances. In addition, the search costs are higher for small firms, whereas larger firms with larger networks have more information about feasible location alternatives. As the behavioural environments of small firms are geographically limited, they tend to relocate at shorter distance, often close to the former location or even to the owners' home place (Hayter 1997, p.149).

### ***Sectoral differences***

Firm migration also differs between economic sectors (Pellenbarg 2005, p. 107; see figure 1) Firms active in agriculture, retail and general services, and hotels and restaurants tend to stick to their location, whereas firms in business services, construction, transport and whole-sale activities move relatively often (Van Steen 2005 p. 55). This sector effect can have at least two explanations. The first is a firm size effect, as the average firm size differs by sector: manufacturing and wholesale businesses are relatively large, in contrast to relatively small (business) service firms. As stated above, high sunk costs in larger firms will limit relocation while small business firms are relatively mobile. This difference in firm size however is not reflected in the need for expansion space, which does not differ between industries, according to Van Steen (1998, p. 143). He found that 77% of all relocated firms mentioned the need to expand as most important reason, regardless of industry type. However, there is some empirical evidence that compared to other sectors especially firms in the service sector find it hard to accommodate growth in the number of employees within the current business location (Van Steen & Van der Velde 1993). A possible explanation for this sectoral difference is the difficulty to expand in office buildings in the early 1990s.

A second explanation for varying relocation rates among sectors can be found in the distinction between producing and final demand sectors (Armstrong & Taylor 2000, p. 47) and the relative importance of the market location for firm relocation. Firms serving local or regional customers, especially consumer services or final demand, tend to stick to their region. Exporting firms with a large customer market are more

mobile (Keeble 1978; empirical evidence by Brouwer et al. 2004, p. 343). It follows that compared to firms serving wider markets, the relocation rate of these population based firms will be lower, and if these firms move, they will tend to stay within reach of their customer markets. Typical production sectors are manufacturing, wholesale and construction, and to some extent business services serving producing sector firms. Typical sectors that serve final demand and as a consequence are relatively locally bound, are retail, wholesale and hotels/restaurants.



**Figure 1: Firm relocation by sector and distance in 2001-2002. Source: Pellenburg (2005)**

### **Regional differences**

With respect to spatial variations, two opposite hypotheses about firm migration in urban or economic core regions versus peripheral areas can be formulated. First, linked to the initial incubator hypothesis (Hoover and Vernon 1962) it can be argued that an urban production milieu may be beneficial to new or young firms as small scale production in city centres is less costly than in the periphery. According to Leone & Struyk (1974) this urban or economic core advantage turns into a disadvantage when production activities are expanded (complex incubator hypothesis). These expansion needs will eventually drive firms outside the city. Van Steen & Van der Velde (1993) showed that one out of three firms is unable to accommodate a 10% increase of the number of employees within the current building. While half of these firms expect to be unable to expand their building in order to accommodate growth, this percentage is much larger for firms located in inner cities and neighbourhoods (p. 21). In these (urban) areas one quarter of all growing firms would face serious expansion problems and will eventually consider relocation. Lack of space in the urban or economic core regions is the driving force behind firm migration, perhaps also towards the city fringe or even beyond.

An opposite hypothesis however is that the large urban business premises market offers many location alternatives. Firms have abundant feasible location alternatives within their own region, which lowers search costs and –if an intra-regional location has been found- ultimately also decreases sunk costs (networks, employees). This implies that for relocating firms outside the economic core it will be easier to find a suitable (and large) site or building, but more often at a larger distance.

As the need for space to expand the business is one of the most important reasons to relocate, we assume that firms within the economic (and urban) core move more often than firms in rural areas, but will still remain within their urban region because of the larger urban supply of feasible location alternatives. An empirical basis for both assumptions are the recent findings of Van Steen (2005) from a study of 2000 firms followed over the period 1998-2003. Furthermore, we expect that the impact of firm migration on the total number of firms within the region is higher in urban areas than in other regions. The employment effect of firm migration may be even larger, as we assume that mainly larger firms will move from the urban areas to the periphery.

## **Data and regional setting**

### ***Data***

The data used in this paper were obtained from the PWE (provincial employment inquiry) register of business establishments in the province of Gelderland (the Netherlands), which was kindly provided to us by the province of Gelderland. The PWE is a regional subdivision of one of the national business registers, the LISA (National Information System Labour Markets). LISA was originally set up as an administrative register for the implementation of social security laws. Currently it is a main source for socio-economic and spatial-economic analysis in the Netherlands. The PWE register holds information on all business establishments in Gelderland, where paid work is being performed. Besides firm establishments the PWE register also holds information on governmental establishments, educational establishments, public health services and establishments for free professions.

The basic unit in the PWE register is an establishment, which is defined as “a location of a firm, institute, or free profession (i.e. any factory, workplace, shop or other working accommodation, or a complex of these) in which or from where an economic activity or independent profession is performed by one or more employed persons (at least one person for 12 hours per week)”. For our research we mainly used data from the period 1999 to 2002. For the current analysis establishments were grouped into 4 main economic sectors: manufacturing, construction, wholesale, retail, and business services.

### ***Regional economic setting***

Within the Dutch economy the large province of Gelderland is of increasing importance. As part of the large intermediate area, between the central Randstad region and more peripheral provinces, Gelderland serves as interesting alternative to economic activities from within and outside the Netherlands. However, the regional differences are quite large. The four NUTS-3 regions in Gelderland are the Veluwe, Arnhem-Nijmegen, South-West Gelderland and The Achterhoek.

The Veluwe is a major tourist area with its natural quality as woodlands and moorland. Arnhem-Nijmegen is the most urbanised area and the economic provincial core. South-West Gelderland can be characterised by a large natural variety, strongly dominated by water and agriculture, mainly fruit production. However, because of its central position close to the Randstad and main national highways transport and distribution activities are booming. In the Achterhoek, economic development falls back, with a slight specialisation in large agribusiness firms ([www.gelderlandfacts.com](http://www.gelderlandfacts.com), Provincie Gelderland 2005).

Within Gelderland also a distinction can be made between regions within and outside the National Spatial Economic Main Structure (Huisman & Van Wissen 2004, GS

2005, p.15). The economic main structure (EMS) in the province of Gelderland consists of

- an (inter-) national urban network: the junction Arnhem-Nijmegen, as multimodal centre between the Randstad and the Ruhrgebiet and with a concentration of labour intensive service sector
- urban networks (with interprovincial aspects): urban triangle (Apeldoorn, Deventer, Zutphen), on the axis to Eastern Europe and WERV (Wageningen, Ede, Rhenen, Veenendaal) mainly with a regional function
- regional centres/formation of networks: Doetinchem and environs, Tiel and environs, Harderwijk and environs. GS Gelderland 2005, p. 25.

In the province of Gelderland, the share of all establishments located in the EMS was constant in the period 1986-1996 (37 percent), and slightly increased afterwards to 39 percent in 2002.

### ***Business zone policy***

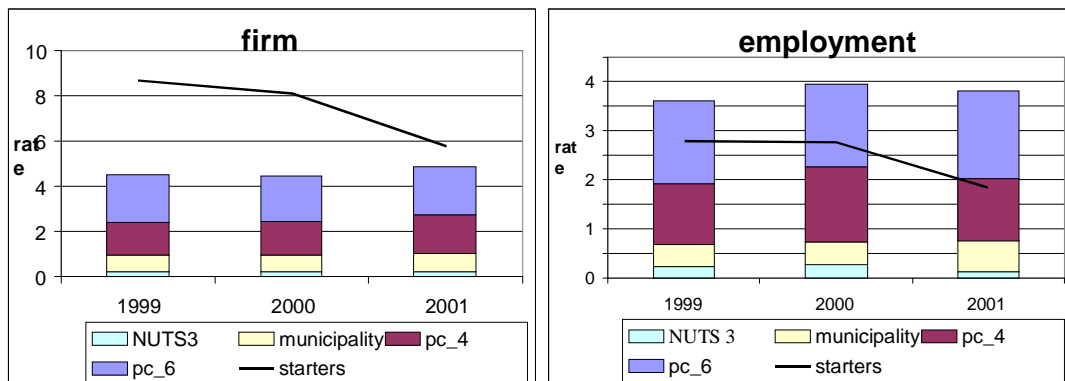
Firm migration patterns in a small and densely populated country as the Netherlands are of course strongly influenced by the supply of business premises and sites, which in turn largely depends on the spatial planning on the national and regional level. National business zone plans strictly followed the reigning spatial planning concepts of the 1970s, 1980s and early 1990s, in which a shift could be discerned (especially in urban planning) from ‘grouped dispersion’ and ‘growth pole’ policy to ‘compact city’ policy (Priemus 2004, Pen 2002). With respect to spatial-economic policy in the 1990s, in order to reduce car use, mobility needs of firms were to be matched with mobility profiles of business locations: ABC Location Policy (VROM 2001). The most recent national Spatial Memorandum (VROM 2004) presented a new business location approach, encompassing both retail planning and business zone policy. Its main viewpoint is that business zone planning is needed, but turns out to be extremely difficult, especially when the need for business or office space cannot be assessed accurately (Louw et al. 2004). As a result, in this approach the key word is decentralization, which means that the detailed spatial plans actually have to be made on the provincial and regional level. The only remaining national criteria are that economic development should be stimulated by the sufficient supply of business zones in both quantitative and qualitative ways, that accessibility is optimal and that liveability and a mix of spatial functions is guaranteed. Furthermore, national spatial investment will increasingly concentrate in the National Spatial Economic Main Structure, which covers urban regions, mainports and main infrastructure. On the provincial level the main policy instrument is the infrastructure plan (De Jong & Leijten 2004). In the end, the retreat of the national level in spatial planning leaves room for municipalities to experiment with new local and regional cooperation structures to offer enough business zones.

The specific Gelderland spatial economic policy is stated as follows: “The province intends to focus its efforts on economic growth that does not damage but enhances the ecology and quality of life” (Policy Plan 2004). One of the key components of this policy is to provide enough business sites and aiming for concentration both within the Economic Main Structure and outside. Still, the share of total employment in firms located at specific business zones is between 30% (Provincie Gelderland 2004, p. 153) and 40% (SOPAG 2002, p. 11) and rather stable over the years.



## Results

The rationale behind using startup rates as a reference is that we can visualize the relative magnitude of firm and employment dynamics. Startup rates in the economic heydays of the nineties were between 6 and 8 percent, which is in accordance with the results by Pellenbarg (2005) but recently have come down to about 5 percent, most likely as a result of the economic recession. Figure 2 shows moving rates and startup rates, as well as the relative number of jobs involved in these dynamics, by type of move in Gelderland in the period 1999-2001.



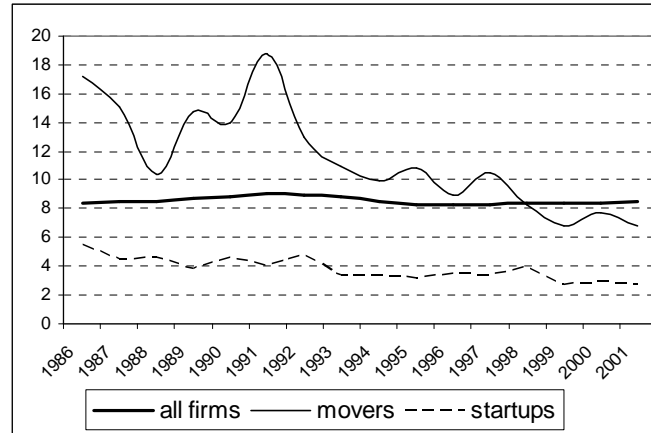
**Figure 2** *Relocations by type of move and startup rates, in terms of firms (left) and employment (right) 1999-2001.*

The total relocation rate is only slightly lower than the startup rate. It is clear that most of the moves are within a very small spatial range as about 75 percent of all firms have stayed in the original municipality. This implies that on average the firm migration rate is extraordinary low: recently only about 10 firms per 1000 yearly relocate beyond municipal boundaries. As expected, the number of relocating firms increased with higher spatial detail. When looking at interregional moves, which are the most interesting from a regional economic point of view, the share of inter-regional moves (across NUTS 3 regions) is very small: 1 to 2 per 1000 firms.

When we take into account the employment related to moving firms, the relative weight of moves increases. Four percent of all jobs in the province of Gelderland was related to a moving firm in 2001, which is higher than the relative number of jobs related to startups: only 2 percent. In the nineties the relative number of jobs involved in moving and in startups was of the same order, and only recently the jobs associated with moves has increased sharply. The employment share of migrating firms (intermunicipal moves) to total employment is less than one worker per 100. At the interregional (NUTS 3) level this is as small as 1 to 2 per 1000 workers. About 80% of all jobs in moving firms remained in the former municipality. Linked to the share of moving firms that stayed within the municipality (75%) we can conclude that firms crossing municipal borders are relatively small. This is reflected in the large share of firms (75%) with relocation plans that look for new business area within the municipality (GS 2003, p. 10).

Figure 3 shows the trend in firm size for all firms, movers and startups, in the period 1986-2001. The average size of moving firms (7-18 workers in the period 1986-2001) is much higher than of startups (3-5 workers), and in the nineties also substantial

higher than average firm size (8 workers). Interestingly, the average size of moving firms has decreased substantially over time, and as a result of this decrease recently on average a mover is smaller than a non-mover. There are three possible explanations for this. First, it can be partly due to better registration of firm relocations in the Netherlands, which recently also includes relocating small firms. Second, there is an indication that with increasing ICT possibilities and ample feasible local and regional business site opportunities many small firms have become increasingly mobile. Third, as Stam (2003) has showed, especially fast growing firms increasingly do not consider relocation, but find other locational strategies, i.e. opening a branch plant or forming temporary coalitions with other businesses.



**Figure 3** *Firm size of movers, startups, and all firms in 1986-2001*

The previous results pertain to all firms. Results for five major industries are shown in figure 4. The moving rate varies across industries and is relatively high for construction, wholesale and business services (about 8 %). Explanations for this also vary by industry. On the one hand it can be argued that the high relocation rate in business services stems from small firm size, which increases mobility. On the other hand, high relocation rate in construction and wholesale can perhaps be explained by rigid location policies in the late 1990s. The trend of a decreasing impact of firm relocation on the regional economy with larger spatial scales applies for all industries analyzed. Intra-municipal moves dominate, which is most clearly visible among retail and construction firms. This is in line with our assumptions about firms serving local and regional customer markets (final demand sectors as opposite to production sectors).

In the retail sector on the one hand the employment consequences of moving are somewhat smaller than in other sectors (average 2,6%), while on the other hand the vast majority of jobs (88 percent) stays within municipal boundaries. For the other sectors the employment consequences of moving are in the same order of magnitude as startups, or higher. The number of jobs involved in moving business service firms is exceptionally high.

Another dimension behind these figures is the distinction between the core economic area and the periphery (Figure 5). Some interesting differences emerge between the core economic zone and the periphery. Both moving rates and startup rates are higher in the core area. Moving rates are about 1.5 times as high in the core area, and startup rates are about 1.25 times as high in the core. The share of firms migrating within

municipal boundaries however, is only slightly larger in the core than in the periphery (80% versus 77%).

In terms of employment inter-municipal relocations account for a larger share of total job dynamics in the core region than in the periphery (20% versus 15%). However, the share of jobs in relocating firms that moved within pc\_6 level is relatively high in the urban core, which may point at a larger supply of business sites and premises at close distance than in the periphery.

When we focus on the periphery, it seems that the firms relocating within municipal boundaries are relatively large. We did not expect this but it may be due to the oversupply of business sites throughout Gelderland and especially in the peripheral regions in the late 1990s (SOPAG 2002)

Finally, we have found that the trend from core to periphery is only limited (table 1). Thus, the observed difference in migration intensity occurs primarily within the core and periphery zones, not across. This is in line with past and current spatial policy in Gelderland (SOPAG 2002) which on the one hand aims at further concentration of economic activity in the urban core (GS 2005, p. 28) and even an active office location strategy in line with the ABC location policy plans (GS 2005, p.31) On the other hand, in the periphery regional business zones should accommodate regional demand (Provincie Gelderland 2000, p. 14).

	2001 core	2001 periphery
1999 core	4,7%	0,8%
1999periphery	0,4%	3,6%

Table 1            Origin and destination in interregional moves, percentage of all firms

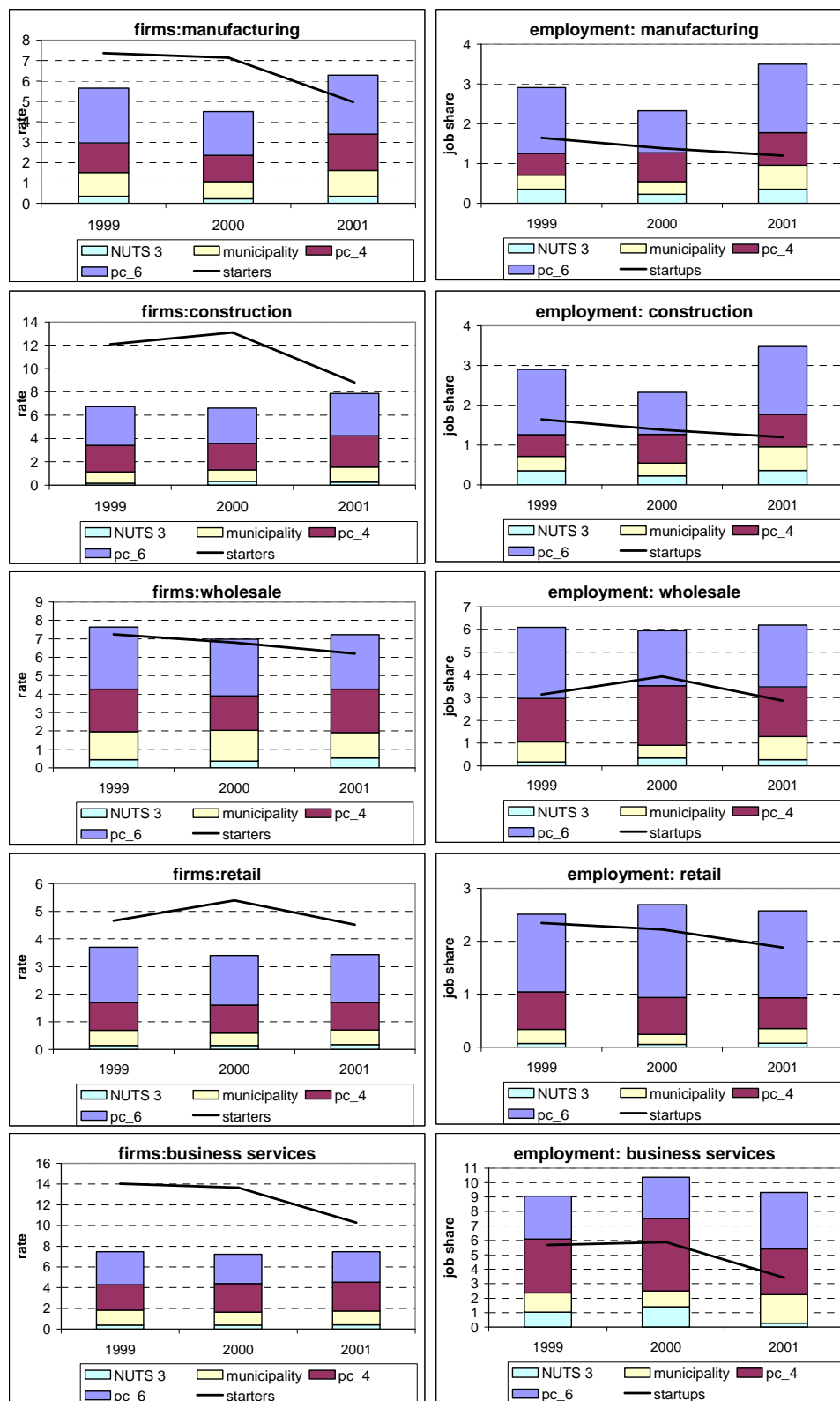


Figure 4 Moving rate and startup rate (left), and relative number of jobs in moving firms and startups (right) by type of move, for different industries in the province of Gelderland, 1999-2001

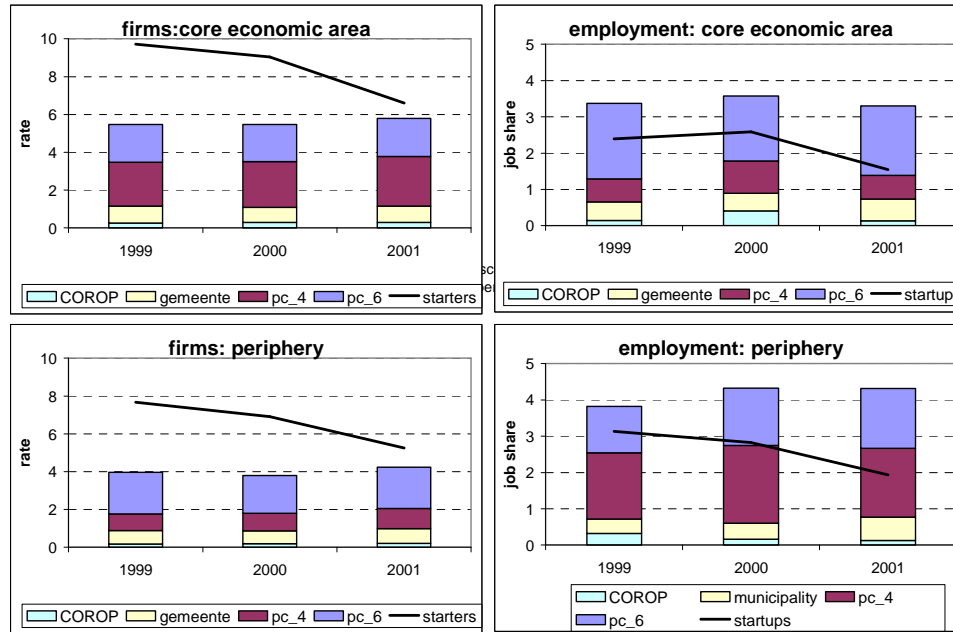


Figure 5 Moving rate and startup rate (left), and relative number of jobs in moving firms and startups (right) by type of move, for the core economic area and the periphery, in the province of Gelderland, 1999-2001

## Conclusions

As we expected, in the Netherlands firm migration rates are low and decrease sharply with larger geographical scales. We now have insight in the relative contribution of firm relocation patterns to the regional economy, with respect to firm population and employment levels.

We may conclude from these figures that firm moves are interesting for the real estate market, but because of the limited number of jobs involved with long distance migration, hardly interesting for municipal economic growth policies. Even less firms and jobs cross the boundaries of NUTS 3 regions, which limits the relevance of firm migration to regional economic policies in Gelderland. The large supply of business premises throughout Gelderland and even within the urban core, seems to be offering firms ample feasible location alternatives (Provincie Gelderland 2000, p. 20), but this may change in the future, as is expected for the main urban areas Arnhem/Nijmegen (SOPAG 2002, p. 15). It would be interesting to analyze whether firms in more tight real estate or business premises markets behave differently. With higher barriers to move, maybe other mechanisms will prevail and influence the decision whether to move or not, and the relocation distance.

Finally, we want to stress that the key process in studying the contribution of firm migration to the regional economy takes place at micro level of the individual firm and even the entrepreneur. This calls for a micro level approach in which relocation probabilities and the role of covariates on the firm level is analyzed (see Huisman & Van Wissen 2005b).

## References

- Armstrong, H. & J. Taylor (2000), *Regional economics and policy*. Malden, USA, Blackwell.
- Birch, D.L. (1979), *The job generation process*. MIT press, Cambridge.
- Bok, M. de (2004), Explaining the location decision of moving firms using their mobility profile and the accessibility of locations. Paper presented at the 44<sup>th</sup> ERSA Congress, Porto.
- Brouwer, A.E., I. Mariotti & J. van Ommeren (2004), The firm relocation decision: an empirical investigation. *The Annals of Regional Science*, 38,2, pp. 335-347.
- Jong, M. de, & M. Leijten (2004), Het juiste bedrijf op de juiste plaats. Locatie- en vestigingsbeleid in twee Nederlandse en twee Vlaamse pionierende gemeenten. Den Haag: Kenniscentrum Grote Steden.
- GS Gedeputeerde Staten van Gelderland (2003), *Van trekkracht naar slagkracht.... Nota bedrijventerreinen 2002-2006*. GS van Gelderland, februari 2003.
- GS Gedeputeerde Staten Provincie Gelderland (2005), *Streekplan Gelderland 2005*. Kansen voor de regio's. Voorstel GS aan Provinciale Staten, 24 mei 2005.
- Hayter, R. (1997), *The dynamics of industrial location. The factory, the firm and the production system*. New York, Wiley.
- Hoover & Vernon 1962
- Huisman, C. & L. van Wissen (2004), A multistate demographic model for firms in the province of Gelderland. Paper presented at ERSA 2004 Huisman, C. & L. van Wissen (2005a), 'Facts and figures' van de demografie van bedrijven in Nederland. In: Pellenbarg, P.H., P.J.M. van Steen & L. van Wissen (eds.) (2005), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, pp. 11-36.
- Huisman, C. & L. van Wissen (2005b), paper ERSA2005
- Leone R.A. & R. Struyck (1974), The incubator hypothesis: evidence from five SMSAs. *Urban Studies* 3, pp. 325-331.
- Louter, P. (2003), *De economische hittekaart van Nederland. Waar de economie van Nederland groeit*. Den Haag, Ministerie van Economische Zaken.
- Louw, E. (1996), *Kantoorgebouw en vestigingsplaats. Een geografisch onderzoek naar de rol van huisvesting bij locatiebeslissingen van kantoorhoudende organisaties*. Delft; DUP.
- Louw, E. B. Needham, H. Olden & C.J. Pen (2004), *Planning van bedrijventerreinen*. Den Haag: SDU Uitgevers.
- Keeble, D. (1978), *Industrial location and planning in the United Kingdom*. London: Methuen & Co.
- Kemper, N.J. & P.H. Pellenbarg (1997), De Randstad een hogedruk-pan. *Economisch-Statistische Berichten* 25-6-1997, pp. 508-512
- Pellenbarg, P.H. (2005), *Bedrijfsverplaatsingen*. In: Pellenbarg, P.H., P.J.M. van Steen & L. van Wissen (eds.) (2005), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, pp. 101-121.
- Pellenbarg, P.H., L.J.G. van Wissen & J. van Dijk (2004), *Firm relocation: state of the art and research prospects*. SOM-paper D: Regional Science. Rijksuniversiteit Groningen.
- Pen, C.J. (2002), *Wat beweegt bedrijven? Besluitvormingsprocessen bij verplaatste bedrijven*. Groningen: Faculteit der Ruimtelijke Wetenschappen RUG. *Nederlandse Geografische Studies* 297.
- Priemus, H. (2004), *Spatial Memorandum 2004: a turning point in the Netherlands' spatial development policy*. TESS, 95, 5, pp. 578-583.
- Provincie Gelderland (2000), *Onderzoek Ruimte voor Bedrijven. Confrontatie Vraag- en aanbod 2020*. Afdeling Economische Zaken, Bureau Economisch Onderzoek.
- Provincie Gelderland (2004). [www.gelderlandfacts.nl](http://www.gelderlandfacts.nl)
- SOPAG, Sociale Partners Gelderland (2002), *Ruimte voor trekkracht*.
- Stam, E. (2003), *Why butterflies don't leave. Locational evolution of evolving enterprises*. Utrecht, Faculty of Spatial Sciences.
- Van Steen, P.J.M. (1998a), *Bedrijfs grootte en ruimtegebruik van ondernemingen in leeftijdsperspectief*. Onderzoek en Advies 83, Groningen; Faculteit der Ruimtelijke Wetenschappen, Rijksuniversiteit Groningen.
- Van Steen, P.J.M. (1998b), *Bedrijvenlandschap 2000+. Bedrijfsverplaatsingen en de vraag naar bedrijfslocaties in Nederland*. Onderzoek en Advies 85, Groningen; Faculteit der Ruimtelijke Wetenschappen, Rijksuniversiteit Groningen.
- Van Steen, P.J.M. (2005), *Bedrijvendynamiek onder het vergrootglas*. In: Pellenbarg, P.H., P.J.M. van Steen & L. van Wissen (eds.) (2005), *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland*. Assen: Van Gorcum, pp. 39-62.

Van Steen, P.J.M. & B.M.R. van der Velde (1993), Expansieruimte voor bedrijven. Mogelijkheden en onmogelijkheden voor uitbreiding van bedrijfspanden. Onderzoek en Advies 69, Groningen; Faculteit der Ruimtelijke Wetenschappen, Rijksuniversiteit Groningen.

VROM Ministry of Housing, Spatial Planning and the Environment (VROM) (1990), Vierde Nota over de Ruimtelijke Ordening Extra (VINEX) [Fourth Memorandum on Spatial Development Extra], The Hague: Sdu Uitgevers.

VROM Ministry of Housing, Spatial Planning and the Environment (VROM) (2001), Vijfde Nota over de Ruimtelijke Ordening 'Ruimte maken, ruimte delen' [Fifth Memorandum on Spatial Planning: 'Making Space, sharing space'], The Hague: Ministerie van VROM.

VROM Ministry of Housing, Spatial Planning and the Environment (VROM) (2004), Nota Ruimte. Ruimte voor Ontwikkeling [Spatial Memorandum, Space for Development], The Hague: Ministerie van VROM.