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Employment Dynamics on Business Estates

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ABSTRACT *The central question of this paper is: "What is the magnitude of different forms of employment dynamics on business estates in the Netherlands between 2000 and 2005 and to what extent are the employment dynamics on business estates different from employment dynamics in general?" In order to answer this question, we examine three kinds of local employment dynamics: (1) entries and exits, (2) inter-municipal relocation and (3) the growth/decline of existing firms. We find that new firm formation and inter-municipal relocation do not lead to employment growth on business estates. However, the in situ employment growth on business estates is higher than the general employment growth in the Netherlands. Therefore, it can be concluded that business estates play an important role in local employment dynamics by facilitating the growth of incumbent firms.*

1. Introduction

For decades, local governments in numerous countries have been trying to stimulate the growth of employment within their boundaries by establishing business estates (Siegel *et al.*, 2003). Although this policy has been especially in vogue in Western European countries, such as Germany (Bonny & Kahnert, 2005), Belgium (VOKA, 2006), the UK (Scott, 2001), and the Netherlands (Louw *et al.*, 2004), it has also been adopted by countries on other continents, such as Mexico (Aguilarbarajas, 1990) and Singapore (Yuen, 1991).

Until about a decade ago, the planning of business estates was primarily a subject in debates about regional and local economic policies. It was assumed that local governments could improve the conditions for economic growth by supplying industrial land. Nowadays,

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business estates have become subject to a much wider debate in several Western European countries and the Netherlands, in particular (Ganser & Williams, 2007). Increasingly, local community groups and environmental pressure groups are campaigning against business estates (Louw & Bontekoning, 2007). According to these groups, these locations harm the environment and landscape. In their opinion, local governments exaggerate the effect of business estates on (local) employment growth.

Proponents argue that business estates are necessary to facilitate employment growth. Especially, municipalities often argue that a lack of business estates would result in firms leaving the municipality and that, reversely, the presence of business estates attracts firms from other regions. Opponents, however, question the validity of this argument. They put forward that supplying business estates only leads to the relocation of firms that are already located in that municipality, resulting in a reshuffling of firms within the municipality without any net employment effects. In this regard, they point also at the negative effects of inter-municipal competition in the form of supplying business estates, which results in low land prices and a fragmented landscape without any employment gains to compensate for these negative effects. However, the existing research on the economic impact of business estates is too scarce and fragmented to yield reliable insights on the relevance of business estates for regional employment growth (Louw *et al.*, 2004; De Vor & de Groot, forthcoming). Consequently, it is unclear what the empirical validity of the arguments used by both opponents and proponents of business estates is.

The aim of this study is to evaluate the validity of these arguments used in the policy debate regarding business estates. Therefore, the central question of this paper is: *“What is the magnitude of different forms of employment dynamics on business estates in the Netherlands between 2000 and 2005 and to what extent are the employment dynamics on business estates different from employment dynamics in general?”* Following this question, the central topic of this paper is not to analyse the policy debate on business estates but to analyse the employment dynamics at these locations and, in this way, provide insights in the validity of the arguments that are used in the policy debate.

In this paper, we distinguish three different sources of employment dynamics and examine to what extent these underpin the employment growth on business estates. First, new employment on business estates may be generated as the result of start-up or spin-off firms that locate at those sites. Second, business estates can lead to regional employment growth by attracting employment from other regions through relocations. Even though this is a distributive effect from a national perspective, it can lead to employment growth from a local point of view. Moreover, from a national point of view, inter-municipal competition for firms could lead to a more efficient distribution of employment over the municipalities and, thereby, to net employment and welfare gains (Owens & Sarte, 2002). Third, business estates could play a role in regional employment growth if firms at these locations are able to grow faster than they otherwise would (Siegel *et al.*, 2003). We will assess the magnitude of each source of employment growth and compare the total employment dynamics with the dynamics on business estates. Hereby, we add to the literature by providing a solid empirical foundation for a (policy) discussion that is often dominated by arguments with little empirical underpinning. In a broader perspective, we add to the literature by assessing the role of a particular type of location (i.e. business estates) in the demography of firms.

In order to answer the central question, we utilize a longitudinal data set (2000–2005) which contains data regarding employment, location, and type of economic activity for

all business establishments in the Netherlands. This data set is linked to a database which contains information regarding the geometry of all business estates in the Netherlands. In this way, the origin of establishments that locate on business estates can be tracked, allowing for a distinction between new and existing establishments, relocating establishments from within and outside the municipality, and relocating establishments from business estates *vs.* establishments originating from other locations. Since for each establishment the number of employees per year is known, it is possible to link the data on firm location and firm dynamics to employment growth. Therefore, these data enable us to examine the relevance of the three sources of employment growth for business estates and compare them with the employment dynamics of employment as a whole.

In the following section, we discuss the three sources of employment dynamics and their relevance for business estates in more detail. Section 3 describes the construction of the longitudinal data set. In Sections 4–6, we describe the empirical results of the assessment of each of the possible sources of employment dynamics. In the first empirical section (Section 4), we examine the magnitude of new firm formation on business estates. In the subsequent section (Section 5), the impact of relocations to business estates is explored. Finally (Section 6), the growth differences between firms on business estates and those at other locations are examined. In Section 7, these empirical results are integrated into a fan diagram in which the magnitude of the different sources of employment dynamics for business estates are compared and evaluated. In this final section, implications from the findings for policy and research are derived as well.

2. Three Sources of Employment Dynamics

Before we turn to empirically examining the employment dynamics on business estates, it is first necessary to disentangle the different forms of employment dynamics. Taking a firm demography perspective, we distinguish three possible sources of employment dynamics. Employment dynamics can follow from (1) new firm formation; (2) relocations; and (3) the growth of incumbent firms (Neumark *et al.*, 2006). In this section, we discuss the potential relevance of each of these sources of employment dynamics within the context of business estates.

2.1. New Firm Formation

First, the employment on business estates could grow because start-up or spin-off firms locate at business estates. Despite their high subsequent failure rates, new firms are often assumed to be an important factor in stimulating new employment (Birch, 1979). Several studies have found significant relations between rates of new firm formation and regional economic growth (Audretsch *et al.*, 2004; Van Stel & Suddle, 2008). Based on these insights, regional governments in various countries are trying to stimulate new firm formation in order to promote economic growth (Gustavsen *et al.*, 2007). Some argue that, despite their low spatial scale, business estates could yield positive agglomeration effects for the firms located at these sites (De Vor & de Groot, forthcoming; Hommen *et al.*, 2006), which may have a positive effect on new firm formation.

However, one could also argue that it is unlikely that newly established firms lead to employment growth on new business estates. The number of start-ups is the lowest in

the manufacturing and logistics sectors (Huisman & Van Wissen, 2005), while these are the two sectors which are mainly located at business estates. In most of the other economic sectors, many entrepreneurs start their new firm at home (Stam, 2007). Most firms only relocate to a business estate in a later phase of the firm development, when the location at home is no longer suitable due to employment growth or the necessity to receive customers at a representative location (Knoben & Oerlemans, 2008). Therefore, most firms that are located at business estates have quite a substantial size in number of employees. Based on these arguments, one would expect business estates to be characterized by low levels of new firm formation.

Until now, hardly any empirical study has examined to what extent new business estates may attract start-ups. The little available research indicates that these sites primarily attract existing employment and harbour relatively few new firms (Louw & Bontekoning, 2007). However, the research done so far focuses at high levels of aggregation and does not correct for sectoral differences between the composition of employment on business estates and other locations. Therefore, the findings are far from conclusive.

2.2. Relocating Firms

The relocation of firms is a second source of potential employment dynamics on business estates. From a national perspective, the relocation of firms does not lead to any change in employment.¹ From a local perspective (i.e. a municipality or a business estate), however, firms moving in from outside the locality lead to local employment growth, whereas firms leaving the locality result in an employment loss. The potential size of this source of employment dynamics is substantial, because the yearly magnitude of employment that relocates is comparable to the magnitude of employment from new firm formation (i.e. about 4% of total employment, see Van Oort *et al.* (2008)). In an attempt to attract this employment, local governments in many countries spend large amounts of money on the acquisition of relocating firms (Neumark *et al.*, 2006). On the other hand, municipalities also try to keep relocating firms within their own boundaries by making sure that they have an adequate supply of industrial land.

It should be taken into account, however, that the amount of employment local governments can actually attract is likely to be much lower than the total amount of relocating employment, because the majority of firm relocations takes place over very short distances (Pellenbarg *et al.*, 2002). Moving over short distances has several advantages to firms. In particular, they are not forced to change their main client and supplier networks and do not have to make adjustments to their labour force as a result of the relocation (Knoben & Oerlemans, 2008). The few empirical studies on this topic show that, within the Netherlands, most firms (75%) even relocate within the same municipality (Van Oort *et al.*, 2008). Therefore, the employment growth from relocations to business estates could be quite low. Instead, the inter-municipal competition for relocating firms could, as is often put forward by critics of business estates, lead to a reshuffling of firms within the municipality without any employment benefits even from a local perspective.

However, firm relocations have never been researched in the context of business estates in particular. As a result, it is still an open question whether, as proponents of such estates tend to argue, business estates are able to attract disproportional shares of the inter-regional relocating employment.

2.3 Growth of Incumbents

Finally, the employment on business estates can grow if firms at these locations are able to grow faster than they otherwise would, for example because the sites at business estates suit their requirements better (Siegel *et al.*, 2003). The few studies that have examined how satisfied firms are with their business site do suggest that firms located at business sites are more satisfied than firms located elsewhere (Van Steen, 1995). Moreover, there is often more room for expansion available at business estates than at other locations, which might facilitate the growth of firms. However, the little research that is available on the employment growth rate of firms at business estates compared with their counterparts at other locations is inconclusive (Van Steen, 1995; Siegel *et al.*, 2003).

An important notion regarding business estates is that, as has been mentioned earlier, they are often argued to attract predominantly existing firms. However, it is known from the literature that, in general, relocating firms tend to grow faster than non-relocating firms (Gregory *et al.*, 2005; Knoben *et al.*, 2008). This may also be a mechanism through which employment on business estates can grow. Therefore, it is important to distinguish relocating firms from non-moving firms when comparing the growth rate of firms on business estates with the growth of firms at other locations.

3. Data Description

In order to analyse the phenomena described above, information from two databases has been utilized. First, the LISA-database which contains information regarding the location, amount of jobs, and type of economic activities (NACE-codes) for all establishments in the Netherlands. The LISA database is constructed yearly but is not provided in a longitudinal format. However, each establishment is assigned a unique identification number which does not change over time. With this identification number, a longitudinal version of the LISA-database could be constructed for the period of 1999–2006. In this longitudinal data set, the appearance of a new establishment is coded as “entry”. However, the data does not allow us to distinguish between true start-ups, spin-offs and new establishments of already existing firms. Similarly, the disappearance of an establishment from the data set is coded as “exit”. In this case, the data set does not allow a distinction between bankruptcies, mergers and other forms of exit. In order to be able to identify entries and exits in every year in the data set, the years 1999 and 2006 had to be dropped from the analyses. The reason being that in 1999 entries cannot be identified, because it is unknown whether firms already existed in 1998 or not, whereas exits cannot be distinguished in 2006, because it is unknown whether firms still existed in 2007.

The six-digit postal code is used as the spatial level of analysis. A relocation of firms is therefore only distinguished if its six-digit postal code changes as a result of the move. This approach does not allow for the identification of very short distance relocations, such as a firm moving to a different floor in the same building. At this very low spatial level, however, the database is less accurate. Moreover, for the purpose of this research, such short distance relocations are not interesting.

On the basis of their NACE-codes, firms have been categorized into four broad economic sectors. The four economic sectors that have been distinguished are (1) manufacturing; (2) logistics; (3) consumer services; and (4) business services. The LISA-database also contains information regarding establishments from the governmental sector.

However, these types of establishments have not been consistently registered throughout the LISA-volumes. Therefore, many establishments that are coded as entries in the data set are in fact establishments that have existed for a long time but have never been registered before. Moreover, these establishments are very scarcely found on business estates and their (re)location behaviour as well as their growth pattern is shaped by rather different forces as compared with firms in the other economic sectors (i.e. more by political choice and less by market forces). Therefore, the governmental sector has been dropped from the analysis.

The longitudinal LISA-database does not provide information regarding the type of location of a firm (i.e. on a business estate or not). To incorporate this information, the IBIS-database has been utilized. The IBIS-database contains information about all business estates in the Netherlands larger than 1 acre and with more than one establishment (1987-now).² In this research, only business estates (including seaport-estates)³ and non-business estates are distinguished.

The information provided by the IBIS-database includes the exact position of the business estates (i.e. their geometry). Using ArcGIS, it has first been determined which six-digit postal codes fall in the category of business estates. Postal codes that only partly belonged to a business estate have been categorized as a business estate if more than 50% of the employment in that postal code was located on the business estate. This procedure resulted in a list of all six-digit postal codes that fall in the category of business estates. Ultimately, this list contained over 13,500 postal codes that were categorized as business estates (i.e. 5.2% of the six-digit postal codes in the data set). Subsequently, this list has been merged with the longitudinal LISA-database described above. The resulting data set allows us to analyse, in a longitudinal fashion, the regional employment dynamics to, from, and between business estates in comparison with the general dynamics.⁴

Before discussing how the data was analysed, a brief description of some general trends in the data will be given. The 1999–2006 period is characterized by a downward sloping business cycle. In the period of 2002–2005, employment growth was even negative (Figure 1). Over the period of 2000–2005, total employment has decreased with 0.11% on average per year, whereas the employment on business estates has grown with 0.17%. Figure 2 illustrates that for business estates, the decline in employment in the period of 2002–2005 has been caused by a large decline in employment in the

Figure 1. Total employment and employment on business estates in the Netherlands

Figure 2. Change in employment on business estates by sector

manufacturing sector. All other sectors have experienced a decline in growth but hardly lose any employment.

Given the fact that we focus, for reasons described above, on the period of 2000–2005, it is important to keep in mind that this is a period of relatively low economic performance in the Netherlands. To illustrate, over this particular period, total employment in the Netherlands decreased with about 35,000 jobs. However, due to relatively fast growth until 2002 and a more modest decline afterwards, the employment on business estates grew with about 22,000 jobs. As a result, the share of employment that is located on a business estate grew from 39.6% to 40.2%.⁵ To facilitate this modest growth, the amount of acres of issued business estate also grew (Figure 3). The results that are presented in the subsequent sections will be interpreted with this background information in mind. Furthermore, to iron out business cycle effects and other time-dependent disturbances, all data presented and discussed in the following sections have been averaged for the years 2000–2005.

4. Comparing Three Sources of Employment Dynamics

As mentioned earlier, total employment declined with 0.11%, whereas employment on business estates grew with 0.17% on average each year between 2000 and 2005. In this

Figure 3. Change in employment and the net amount of business estates issued by year

section, we empirically examine to what extent the employment growth both on business estates and in general follows from the three sources of employment dynamics that we distinguish: entry and exits; growth and decline of existing firms; relocation.

To empirically examine the relevance of new firms for the employment growth on business estates, we have calculated the share of employment due to entries and exits for both all firms and those firms located on business estates. First, we calculated the amount of jobs captured by entries and exits for 2000–2001, 2001–2002, and so on until 2004–2005, both for all firms and for a selection of firms located at business estates. Second, we have divided those numbers by the total employment in the base year to calculate the share of entries and exits in the employment.⁶ For the entries and exits on business estates, the total employment on business estates has been used to calculate this share. Finally, we have taken the average share over the period of 2000–2005. These calculations have been performed for each of the four sectors.

To measure the relevance of the growth or decline of existing firms, we have determined which firms were not categorized as entries⁷ in any of the years 2000–2005 and which of those firms had more employees in the second year compared with the previous year (growth) and which firms had fewer employees (decline). In a similar way, as the share of entries and exits, we have calculated the average share of growth and decline of existing firms, again for both all firms and those firms located at the business estates distinguishing between four sectors.

Finally, we have calculated the employment dynamics at business estates following from the relocation of firms. In order to do so, all firms that relocated in a particular year (i.e. change of six-digit postal code) and whose location of origin and/or destination has been labelled as a business estate have been identified. Firms for which only the destination was a business estate have been coded as “relocations to”, firms for which only the origin was a business estate have been coded as “relocations from”, and firms for which both hold have been coded as “relocations between”. With respect to the latter category, we calculate the growth in employment between the year before and after the relocation because these firms are already located at business estates and only contribute to the employment growth on business estates by their growth or decline in employment. Similar to that for the dynamics for entries and exits and the growth of existing firms, we have calculated the average share of employment dynamics following from relocations. Table 1 shows the results of these analyses.

As explained in Section 2, employment on business estates may grow when start-up or spin-off firms locate at these sites. To get a good indication of the relevance of new entries for employment growth, it is necessary to relate the number of new entries to the number of exits. A high number of start-ups will not contribute to the employment growth when a similar or even higher number of firms goes bankrupt or leaves the business estate for other reasons. The first two rows in Table 1 show the resulting averages. With these averages it is possible to compare the relevance of employment growth following from entries and exits on business estates with the general effect of this type of employment dynamics, both in total and per sector. The bottom row gives the total employment mutation. From this row it can be deduced that, as mentioned earlier, total employment declined with 0.11%, whereas employment on business estates increased with 0.17%. Moreover, it illustrates the large differences in employment development between the sectors.

As shown by Table 1, the average share of entries in employment is somewhat lower on business estates (3.08%) than in general (4.21%). Moreover, the table illustrates that there

Table 1. Employment dynamics in general and on business estates, in total and by sector, 2000–2005

	Total		Manufacturing		Logistics		Consumer services		Business services	
	Total	Business estate	Total	Business estate	Total	Business estate	Total	Business estate	Total	Business estate
Entry	4.21	3.08	2.85	2.03	4.01	3.04	4.45	4.45	5.73	5.11
Exit	−4.79	−4.09	−3.93	−3.31	−4.84	−4.02	−4.42	−4.11	−6.28	−6.24
Growth existing firms	6.34	5.83	5.15	4.74	6.60	6.40	6.65	6.89	7.52	7.59
Decline existing firms	−5.87	−5.77	−5.94	−5.85	−5.82	−5.58	−5.61	−5.62	−6.37	−6.23
Relocation from	–	1.82	–	1.15	–	1.46	–	2.39	–	3.75
Relocation to	–	0.10	–	0.04	–	0.11	–	0.16	–	0.19
Relocation between ^a	–	−0.80	–	−0.46	–	−0.73	–	−1.02	–	−1.64
Total	−0.11	0.17	−1.87	−1.65	−0.05	0.69	1.07	3.14	0.60	2.53

^aHere, only the growth of the employment of firms that relocate between business estates is given. When not the growth of the employment, but the magnitude of the employment itself is considered, this group represents about 2.40% of the total employment on business estates.

are large sectoral differences in entry-rates. As expected, the share of entries is the lowest in the manufacturing (2.85%) and the highest in business services (5.73%). Given the fact that business estates house large amounts of manufacturing firms, this partly explains the lower entry-rate at business estates. Interestingly, however, the lower entry-rate for business estates holds for all sectors. Clearly, differences in sectoral composition are not able to completely explain the lower entry-rate at business estates. Even after correcting for sectoral differences, business estates show lower entry rates than exhibited by employment in general.

The share of exits shows a similar pattern as the entries; it is lower for the employment on business estates than for employment in general. Moreover, the results in Table 1 show that not only the effect of entries on the employment growth on business estates is lower than in general, but also that, during the period of 2000–2005, the average share of entries on business estates was lower than the share of exits. Consequently, the combined effect of entries and exits actually lead to a decline in employment at these locations. However, this is a general trend of this period, since the shares for the total employment show a similar effect. Only the consumer services sector forms an exception. But again this is a general trend, because both in general and on business estates, the share of entries in this sector was slightly higher than the share of exits.

Besides comparing the average share of entries and exits on business estates with those for total employment, it is also interesting to compare the relative shares of employment dynamics resulting from the growth and decline of existing firms. Is the effect of entries and exits on the employment rate higher than that of the growth of existing firms? The comparison shows that the share of employment growth due to the growth or decline of existing firms is larger than the share of entries and exits, both in general and for firms on business estates (Table 1). In fact, the combined effect of the average growth and decline of existing firms is also positive during the period of 2000–2005 (6.34% to –5.87%), although the difference for firms on business estates is very small (5.87 to –5.78). Only, the manufacturing shows a larger share of decline in employment than in growth but the share of the dynamics in the employment of existing firms is still higher than the share of entries and exits in the employment growth.

Finally, the results in Table 1 show that the average share of employment dynamics due to relocations is quite low compared with the entries and exits and the growth of existing firms. The largest share of employment dynamics due to relocations follows from the firms that move from another location to a business estate.⁸ Confirming the results of the few previous empirical studies on relocations to and from business estates (Van Steen, 1995), more employment relocates to business estates than the share of employment that disappears from these locations due to relocations. The sectoral differences on the shares of relocation largely confirm the pattern that firms active in manufacturing and logistics are less likely to move than services firms. These firms have to deal with much higher costs if they want to relocate due to investments in often production-specific buildings (Knoben & Oerlemans, 2008). Furthermore, due to policy restrictions with respect to environment and noise, these activities can choose from fewer other location types than services firms and therefore are more likely to remain located at business estates. Nevertheless, services do seem to be attracted towards business estates too, as the share of employment locating on the business estates is much higher than the share of employment leaving these locations.

In sum, employment dynamics on business estates between 2000 and 2005 mainly follow from the growth and decline of existing firms, followed by entries and exits and

finally relocations. However, the positive growth of employment on these locations mainly resulted from the fact that, except for the manufacturing sector, the growth of employment of existing firms was higher than the decline of existing firms and that more firms relocated towards business estates than left those locations. New firms have not contributed to the employment growth at these locations, since the share of exits was higher than the share of entries.

5. Relocations Within and Between Municipalities

The fact that relatively large amounts of employment relocate to and especially between business estates could be an important source of employment growth for a given municipality. Even though from a national perspective the relocation of employment is largely a redistributive effects, from a local perspective it can be seen as an increase in employment. However, merely the observation that large amounts of employment relocate to business estates is not sufficient to conclude that employment growth is realized. From the literature, it is known that most relocations take place over short distances (Pellenbarg *et al.*, 2002). Therefore, it is likely that a large part of the relocating employment originates from within the municipality itself. Moreover, a substantive amount of employment may also relocate from business estates to other location types. If this type of relocation does take place over longer distances (i.e. out of the municipality), maintaining business estates could even lead to a decrease in local employment.

In order to create insights into the issues described above, the geographical scope of relocations of employment to, between and from business estates has been analysed. The selection of firms for each of these categories has been done in a similar way as described in Section 4. Next, the municipalities in which the firm was located before and after the relocation have been identified. If these municipalities were the same, the relocation was coded as taken place within the municipality, if they were not it was coded as taken place between municipalities. Inter-municipal relocations are distinguished from intra-municipal relocations because the former can be seen as a mutation (either a gain or a loss) of employment from the point of view of the planner of business estates (i.e. the municipality). Municipalities often argue that they provide business estates to prevent firms from leaving their municipality on the one hand and to attract firms from other municipalities on the other hand. As such, it is interesting to see what share of relocation actually originates from outside the municipality. However, for the relocating firm as well as for its employees, inter-municipal relocation is often not a problem, because municipalities in the Netherlands are quite small. Therefore, drastic changes in its labour force are unlikely to occur when a firm relocates to a neighbouring municipality.

However, such drastic changes in the labour force are likely to occur when the firm relocates over such a distance that it leaves the former labour market region. Therefore, the share of employment that relocates between labour market regions may be a better indicator for the new employment that municipalities can actually attract through firm relocations. In the Netherlands, labour market regions are represented by NUTS-III regions, which is why we have adopted this geographical unit of analysis to indicate whether the relocation implies a change in labour market region.

On the basis of this information, the average yearly relocating employment to, from and between business estates as well as the geographical scope of these relocations has been determined. In Table 2, the results of these calculations are presented. Identical to the

Table 2. Relocations to, between and from business estates

		Total	Manufacturing	Logistics	Consumer services	Business services
Relocating <i>to</i> a business estate (1.8% of employment) ^a	Yearly average of relocating employment	37,467 ^a	11,282	7574	5159	13,453
	Within the municipality	72.4%	72.0%	70.4%	76.9%	72.1%
	Within NUTS III	21.6%	21.6%	22.9%	18.8%	22.1%
	Between NUTS III	6.0%	6.4%	6.7%	4.3%	5.8%
Relocating <i>between</i> business estates (2.4% of employment) ^b	Yearly average of relocating employment	52,109 ^b	19,719	14,821	4607	12,961
	Within the municipality	74.1%	75.2%	72.0%	81.3%	72.1%
	Within NUTS III	19.5%	19.2%	20.0%	13.8%	21.4%
	Between NUTS III	6.5%	5.6%	8.0%	4.9%	6.5%
Relocating <i>from</i> a business estate (0.8% of employment)	Yearly average of relocating employment	17,715 ^c	4808	4056	2360	6491
	Within the municipality	65.0%	59.9%	62.1%	71.1%	68.4%
	Within NUTS III	28.6%	35.4%	30.1%	23.4%	24.5%
	Between NUTS III	6.4%	4.7%	7.9%	5.5%	7.1%

^a1.82% (37,467 jobs) of total employment on business estates is generated by firms moving to business estates from another type of location (see Table 1 as well).

^b2.40% (52,109 jobs) of total employment on business estates is generated by firms moving between business estates (see Table 1 as well).

^c0.80% (17,715 jobs) of total employment on business estates has disappeared from business estates by mobbing to another type of location (see Table 1 as well).

previous section, all results are presented for total employment as well as for the employment in the four broad economic sectors distinguished earlier.

From Table 2, it becomes clear that around 27% of all employment that relocates to or between business estates does so beyond municipal borders. These numbers are roughly equal for all sectors with the exception of the consumer services, in which case only about 20% of the relocating employment takes place between municipalities. When increasing the geographical scope of relocations to NUTS III regions, the share of employment relocating to or between business estates across regional boundaries drops to about 6%. Again, the share of inter-regional relocations in consumer services is somewhat lower.

These figures raise serious question marks regarding the possible employment growth as the result of relocations to and between business estates. The majority of employment (73%) that moves to a business estate originates from within the own municipality. In many cases (43%), the employment even originates from other business estates within the same municipality.⁹ Yearly, about 24,000 jobs that relocate to or between business estates cross the municipal border, whereas only 5600 jobs cross the boundary of a NUTS III region.

Furthermore, Table 2 shows that employment that relocates from business estates has a tendency to do so over slightly larger geographical distances. In this case, about 35% of the relocating employment crosses municipal boundaries, with a maximum of 42% for the manufacturing sector and a minimum of 29% for the consumer services. Even though the absolute amount of jobs that relocates from a business estate is relatively low (about 18,000 jobs), this tendency puts further pressure on the idea that business estates could generate regional employment growth by attracting employment from outside the region.

6. Growth of Incumbent Firms

As concluded in the previous sections, new firm formation on business estates as well as employment relocation to business estates does not result in large amounts of employment growth. However, there is a third source through which employment on business estates could grow, namely through growth differences between firms on business estates as compared with firms at other locations.¹⁰

To provide insights into the magnitude of this third possible source, we have assessed whether growth differences between firms on business estates and firms at other locations exist. In order to do so, we have calculated the rate of growth in terms of employment over a period of two years for all firms that existed in a given year and the two subsequent years.¹¹ As an example, for all firms that existed in 2000 and survived through 2001 and 2002, we calculated the average growth rate over these two years in terms of their employment. The same calculations were performed for the base years 2001, 2002 and 2003.¹²

We have constructed several groups of firms of which we have compared the growth rates. First, firms were categorized based on their type of location (i.e. on a business estate or not). Subsequently, non-movers, intra-municipality movers and inter-municipality movers were identified in the same way as described in Section 5. We distinguish between movers and non-movers because it is known from the literature that relocating firms often grow faster after their relocation as compared with non-relocating firms (Knoben *et al.*, 2008). Intra- and inter-municipality movers are distinguished to

separate relocations that have, from the municipal point of view, a positive effect on local employment by themselves (inter-municipal movers) from those that have a neutral effect on employment (the intra-municipal movers). The relocation of the latter type of firms leads to a pure distributive effect. However, when the intra-municipal movers that relocate to a business estate have a higher growth rate after their relocation than the other intra-municipal movers, this would also imply an (albeit indirect) positive effect on employment growth.

The results of these calculations are average yearly growth rates for six groups of firms. In line with the previous analyses, four different sectors are distinguished. The growth rates for all groups and sectors are presented in Table 3. To ease the interpretation of the results, the growth rates are presented as index-numbers with the overall average growth rate set at 100.¹³

From Table 3, it becomes clear that there are some slight growth differences between sectors. Firms in the business services sector and logistics grow faster than average, whereas firms in the manufacturing sector and the consumer services grow slower than average. Far bigger than the differences between sectors, however, are the differences between firms at business estates and those at other locations and the differences between movers and non-movers. Regarding the former, Table 3 shows that for movers and non-movers in all sectors, with inter-municipal movers in the logistics sector as the only exception, firms on business estates grow significantly faster than firms at other locations. These differences are especially profound in the business services sector. Regarding the latter, it is shown that, as expected, movers grow faster than non-movers. Within the group of movers there are no consistent differences between inter-municipal and intra-municipal movers.

These findings have several important implications for the employment dynamics on business estates. First, firms on these estates grow faster than firms at other locations, which leads to employment growth. Second, firms that are attracted from within the

Table 3. Growth-index of firms at business estates and at other locations

		Total	Manufacturing	Logistics	Consumer services	Business services
Non-movers	Business estates	132	89	111	117	183
	Other locations	86	61	76	86	69
	Statistical significance	***	**	***	***	***
Intra-municipality movers	Business estates	257	237	312	270	452
	Other locations	193	117	161	144	201
	Statistical significance	***	***	***	***	***
Inter-municipality movers	Business estates	301	317	176	462	340
	Other locations	206	196	180	169	242
	Statistical significance	***	***		***	**
Total		100	84	109	95	110
Observations		2,360,218	471,053	341,669	970,582	576,914

** $p < 0.05$.

*** $p < 0.01$.

municipality (no employment growth) grow faster after their relocation (employment growth). Third, firms that are attracted from outside the municipality (employment growth from the point of view of the municipality) grow faster after their relocation, which strengthens their employment-growth effect. These final two findings hold not only when comparing moving to non-moving firms, but even when comparing firms that moved to a business estate with firms that moved in general. So even though relocations as such were shown to have a very small direct local employment-growth effect, they do have large indirect consequences for employment growth.

Following these results, it can be concluded that the growth difference between firms on business estates and firms at other locations is an important source of employment dynamics on business estates. However, as shown in Section 5, the absolute number of movers is quite low compared with the number of non-movers. Therefore, the effect of the higher growth rates of movers at business estates is not that large in absolute numbers of employment. The growth difference between non-movers at business estates and at other locations is remarkable, however.

7. Discussion and Conclusions

The aim of this study was to evaluate the validity of several arguments about the employment effects of business estates used in the policy debate on these locations. In order to realize this aim, the analyses presented in the previous sections assessed the relevance of three sources of employment growth on business estates. In short, they answer the question: "Where do the jobs on business estates come from?". The fan diagram in Figure 4 summarizes and connects the results presented in the previous sections.

From Figure 4 it can be derived that total employment in the Netherlands declined with 0.11% in the period 2000–2005, whereas employment on business estates grew with 0.17% in the same period. These overall mutations can be split-up in three separate components. First, employment can change as a result of entries and exits. From Figure 4 (and Table 1), it can be concluded that both for total employment as well as for the employment

Figure 4. Fan diagram of three sources of employment growth in total and on business estates

on business estates, the balance of entries and exits is negative. Regarding the employment on business estates, both the entry and the exit-rate is lower as compared with total employment. These findings hold even when correcting for the sectoral composition of the employment on industrial estates. We can conclude that business estates do not serve as an important location for new firms.

A second potential source of employment growth on business estates is the attraction of firms from outside the municipality. However, regarding the relevance of relocations for employment growth on business estates, our results show that most relocating firms (about 73%) remain within the municipality and, therefore, do not constitute any local employment growth (Figure 4 and Table 2). These findings clearly show that business estates do not, as is often put forward by their proponents, attract firms from throughout the country. Moreover, the prior location of firms that relocate to a business estate was often another business estate, in 43% of the cases this concerns even business estates within the same municipality. There indeed seems to be, as opponents of business estates often argue, an intra-municipal reshuffle of firms on business estates. The employment gain of one business estate is often the employment loss of another. On the whole, relocations of firms are also not responsible for large amounts of (local) employment growth on business estates.

Based on these findings, one could argue that, contrary to the beliefs of many municipalities, there is very little reason for municipalities to compete with each other. Firms are not very likely to leave the region and, consequently, a region is not very likely to attract large amounts of employment from other regions. The inter-municipal relocation streams are simply too small to warrant any inter-municipal competition.

The final process through which business estates could result in employment growth is facilitating the growth of incumbent firms. In this regard, the results also show that firms at business estates do grow significantly faster than firms at other types of locations (Figure 4, growth index of 132 vs. 86). These findings also show that, as expected, movers grow faster than non-movers. Interestingly, however, firms that move to a business estate do grow significantly faster than firms moving to another type of location (growth index of 257 vs. 193 for intra-municipal movers, and 301 vs. 206 for inter-municipal movers). This finding suggests that business estates facilitate the faster growth of incumbent firms and, in this way, do lead to local employment growth.

Moreover, these results also show that firm relocations can have an indirect effect on employment growth on business estates. Through their subsequent growth, even firms that relocate within the boundaries of the municipality can have a sizeable effect on employment growth. This finding nuances the earlier conclusion that relocation does not lead to employment growth on business estates. The fact that firms grow after the relocation to a business estate also implies that these firms relocate with a clear purpose, namely to expand their activities. If business estates would not be available, or if these firms would be forced to stay at their old location, this may hamper the growth of these firms.

However, our data cannot provide conclusive evidence regarding the causality of the relocation-growth effect. It is unclear whether firms grow faster because they (re)located to a business estate or whether they (re)located to a business estate because they were growing rapidly. Earlier research has shown that there is a strong causal effect of relocation on firm growth and other measures of firm performance (Knoben *et al.*, 2008), which explains part of our findings. However, our research has also shown that firms that relocate to business estates grow after faster than relocating firms in general. For this particular

finding, the direction of causality remains unclear. Because business estates are often one of the few locations where room for expansion is readily available in the Netherlands, their might also be a self-selection effect of fast-growing firms on business estates.

Both from a policy perspective as from a scientific perspective it seems important to get a grip on the direction of the causal mechanisms in future research. From a scientific perspective, it provides further insights into the causality between firm development and locational changes, a subject that has been studied in the context of start-ups (Stam, 2007) but much less so in the context of mature firms. From a policy perspective, it can create insights into how regional governments can either stimulate firm growth through location planning or at least keep fast growing firms within their boundaries by facilitating their growth. Business estates seem to play an important role in the latter, but without more information about the underlying causal mechanism it cannot be excluded that this effect could also be partly achieved at other types of locations. Nevertheless, the present study shows that locations where ample land is available and conflicts with other users of land are unlikely (e.g. complaints by inhabitants of residential areas) seem to facilitate the growth of firms more than other types of locations.

By assessing the magnitude of the three different sources that may lead to employment growth on business estates, a thorough empirical foundation is created for a discussion that, so far, lacked empirical evidence. The results show that the question whether business estates generate regional employment growth cannot be answered with a simple “yes” or “no”. The local employment gains from inter-municipal relocations are rather small, which leads to the notion that inter-municipal competition over relocating firms is unwarranted. However, firms located at business estates do grow significantly faster as compared with firms at other locations, and these differences are even more pronounced for relocating firms. This finding implies that the intra-municipal reshuffling of firms on business estates, which is often referred to as evidence that business estates are redundant by critics, has a sizeable effect on local employment growth. The results indicate that municipalities should be less focused on attracting firms from other municipalities and pay more attention to catering to the needs of the incumbent firms within their own borders.

Even though similar debates about business estates are being waged in several other countries, we should be careful when generalizing the findings of this study to other countries. The Netherlands has a highly government-regulated market for industrial land. Therefore, institutional differences between countries are likely to impact on the employment dynamics on business estates as well. Nevertheless, the findings of this study could serve as an important starting point for similar studies in other countries.

Notes

1. The competition between municipalities for relocating firms is often referred to as a zero-sum game, because no net employment is created when a firm relocates from one municipality to the other (Mariotti, 2005). It is interesting to note that, even from a national perspective, a redistribution of employment through (subsidized) firm relocation can lead to welfare gains, because firms might be located at suboptimal locations they are not able to leave due to large relocation costs (Owens & Sarte, 2002). Therefore, any costs made by the municipalities in the forms of subsidies or supply of cheap land do not necessarily result in a negative-sum game.
2. The official definition of a business estate in the Netherlands is “an estate of at least 1 ha which is intended and suitable for use by manufacturing, logistics, and commercial and non-commercial service firms”.

3. Seaport estates are a special kind of business estates that are only found in a few regions, predominantly in the Rotterdam area, Moerdijk, IJmond and in the area around Delfzijl in the North of the Netherlands. For the sake of these analyses, they are categorized as business estates.
4. It should be noted that we performed all analyses for several sub-regions of the Netherlands as well. The results were strikingly similar for all different regions studied. Therefore, we decided to disaggregate the results by sector only. The results of the analyses for different regions can be obtained from the authors on request.
5. These numbers refer to the employment in the four sectors considered in this research only. When taking into account all employment (including the government sector), the share of business estates is smaller (around 32%) but on the increase as well.
6. For example, the employment growth from new firm formation in the period of 2000–2001 has been divided by the total employment in the year 2000.
7. Not as relocations in the case of business estates.
8. It should be noted that an even larger share of employment relocates between business estates (see note of Table 1). When taking this flow into account as well, the share of employment on business estates that is involved in a relocation in any given year is roughly comparable to the employment resulting from new firm formation. However, from the aggregated perspective business estates, relocation between business estates does not result in employment growth. It is, however, an interesting potential source of employment from a local perspective. Therefore, this stream of employment will be analysed in more detail in Section 5.
9. When taking inter-municipal relocations into account as well, 56.4% of the relocations to business estates originated from another business estate.
10. The main difference with the growth of existing firms discussed in Section 4 is that Section 4 only looked at the aggregated growth, whereas this section focuses on the growth rates of individual firms.
11. This implies that firms that were coded as an exit in either of these 2 years have been dropped from these calculations. Higher rates of exits in a certain group of firms might bias the results of these calculations. However, there is no evidence of significant differences in exit-rates between any of the groups (also see Section 4).
12. The years 2004 and 2005 have not been used as base years because the growth rate in the subsequent years could not be calculated. However, data with respect to these years have been used to calculate the growth rate of firms for the base years 2002 and 2003.
13. Significance levels of the differences between various groups are reported here because only firms that survived for at least two subsequent years have been included in the calculations. In contrast to the other calculations reported in the previous tables, Table 3 is therefore not based on population data. Because all other tables are based on population data, all differences automatically pertain to the population as a whole (i.e. they are automatically significant).

References

- Aguilarbarajas, I. (1990) An evaluation of business estates in Mexico, *Progress in Planning*, 34(2), pp. 93–187.
- Audretsch, D. B., Keilbach, M. C. & Lehmann, E. E. (2004) *Entrepreneurship and Economic Growth* (Oxford: Oxford University Press).
- Birch, D. L. (1979) *The Job Generation Process* (Cambridge: MIT Press).
- Bonny, H. W. & Kahmert, R. (2005) Zur ermittlung des Gewerbeflächenbedarfs: Ein Vergleich zwischen einer Monitoring gestützten Prognose und einer analytischen Bestimmung, *Raumforschung und Raumordnung*, 63(3), pp. 232–240.
- De Vor, F. & de Groot, H. L. F. (forthcoming) Agglomeration externalities and localized employment growth: The performance of industrial sites in Amsterdam, *The Annals of Regional Science*.
- Ganser, R. & Williams, K. (2007) Brownfield development: Are we using the right targets? Evidence from England and Germany, *European Planning Studies*, 15(5), pp. 603–622.
- Gregory, R., Lombard, J. R. & Seifert, B. (2005) Impact of headquarters relocation on the operating performance of the firms, *Economic Development Quarterly*, 19(3), pp. 260–270.
- Gustavsen, B., Nyhan, B. & Ennals, R. (2007) *Learning Together for Local Innovation: Promoting Learning Regions* (Luxemburg: CEDEFOP).

- Hommen, L., Doloreux, D. & Larsson, E. (2006) Emergence and growth of Mjardevi Science Park in Linköping, Sweden, *European Planning Studies*, 14(10), pp. 1331–1361.
- Huisman, C. & van Wissen, L. (2004) “Facts and figures” van de demografie van bedrijven in Nederland, in: P. Pellenbarg *et al.* (Eds) *Ruimtelijke aspecten van de bedrijvendynamiek in Nederland* (Assen: Koninklijke Van Gorcum).
- Knoben, J. & Oerlemans, L. A. G. (2008) Ties that spatially bind? A relational account of the causes of spatial firm mobility, *Regional Studies*, 42(3), pp. 385–400.
- Knoben, J., Oerlemans, L. A. G. & Rutten, R. P. J. H. (2008) The effects of spatial mobility on firm performance, *Economic Geography*, 84(2), pp. 157–183.
- Louw, E. & Bontekoning, Y. (2007) Planning of industrial land in the Netherlands: Its rationales and consequences, *Tijdschrift voor Sociale en Economische Geografie*, 98(1), pp. 121–129.
- Louw, E., Needham, B., Olden, H. & Pen, C.-J. (2004) *Planning van bedrijventerreinen* (Den Haag: Sdu uitgever).
- Mariotti, I. (2005) *Firm Relocation and Regional Policy* (Groningen: Groningen University).
- Neumark, D., Zhang, J. & Wall, B. (2006) Where the jobs are: Business dynamics and employment growth, *Academy of Management Perspectives*, 20(4), pp. 79–94.
- Owens, R. E. & Sarte, P. D. (2002) Analyzing firm location decisions: Is public intervention justified? *Journal of Public Economics*, 86(2), pp. 223–242.
- Pellenbarg, P. H., van Wissen, L. J. G. & van Dijk, J. (2002) Firm migration, in: P. McCann (Ed.) *Industrial Location Economics*, pp. 110–148 (Cheltenham: Edward Elgar).
- Scott, P. (2001) Business estates and British industrial development, 1897–1939, *Business History*, 43(2), pp. 73–98.
- Siegel, D. S., Westhead, P. & Wright, M. (2003) Science parks and the performance of new technology-based firms: A review of recent UK evidence and an agenda for future research, *Small Business Economics*, 20(2), pp. 177–184.
- Stam, E. (2007) Why butterflies don’t leave: Locational behaviour of entrepreneurial firms, *Economic Geography*, 83(1), pp. 27–50.
- VOKA (2006) *Ruimte om te ondernemen: Op zoek naar bedrijventerreinen in Vlaanderen* (Antwerpen: Vlaams Economisch Verbond).
- Van Oort, F. G., Ponds, R., van Vliet, J., van Amsterdam, H., Declerck, S., Knoben, J., Pellenbarg, P. H. & Weltevreden, J. (2008) *Verhuizingen van Bedrijven en Groei van Werkgelegenheid* (Rotterdam/Den Haag: NAI Publishers/RPB).
- Van Steen, P. J. M. (1995) *Ondernemen op en Buiten het Bedrijventerrein: Een blik op het Bedrijventerrein als Vestigings- en Investeringslocatie* (Groningen: University of Groningen).
- Van Stel, A. & Suddle, K. (2008) The impact of new firm formation on regional development in the Netherlands, *Small Business Economics*, 30(1), pp. 31–47.
- Yuen, B. (1991) Planning and development of business estates in Singapore, *Third World Planning Review*, 13(1), pp. 47–68.