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## Business relocations in the Netherlands: Why do firms move, and where do they go?

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# **Business relocations in the Netherlands:**

## **Why do firms move, and where do they go?**

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### **Abstract**

This study analyzes determinants of business relocation and identifies regional characteristics which attract relocating firms, using register data provided by Statistics Netherlands. Results indicate that the relocation decisions of firms are not only influenced by firm- and location-specific characteristics, but also by the qualities of a firm's workforce, and by the attractiveness of a municipality for individuals regarding the amenities which are provided. Furthermore, the findings show that relocation decisions are sector-dependent. Generally, its age and being located in an appealing municipality with high sectoral specialization keep a firm from relocating, whereas firms employing large shares of highly educated workers, paying high average salaries and being located in a municipality with high sector-specific wages are pushed out of their present location. Relocating firms avoid specialized municipalities, while they are attracted by densely populated, appealing municipalities with high wage levels (both general and sector-specific) and large shares of highly educated workers, and which are specialized in the firm's own sector.

*JEL classifications: R11, R30*

*Keywords: firm relocation, business relocation, mobility, location choices*

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# **1 Introduction**

The economic landscape of a country is shaped by the formation of new enterprises, the growth and decline of existing businesses, and the spatial redistribution of economic activity due to the relocation of firms. Yet, while numerous studies investigate determinants of new firm formation, or reasons underlying the growth of existing companies, the issue of firm relocation has remained comparatively unchallenged.

Previous studies found that a firm's decision to relocate is motivated by firm-specific and location-specific factors which 'push' the firm from its present location (e.g. Brouwer et al., 2004; Knoben & Oerlemans, 2007; van Dijk & Pellenbarg, 2000; van Wissen, 2000; Wasylenko, 1980), and that firms which relocate are likely to be 'pulled' to regions which are attractive to them (e.g. Capasso et al., 2010; Erickson & Wasylenko, 1980; Holl, 2004; Schmitt et al., 1987; van Dijk & Pellenbarg, 2000; van Wissen, 2000).

This study analyzes determinants of business relocation, and identifies regional characteristics which attract relocating firms. A firm's decision to move is expected to depend upon characteristics of the firm, its workforce, and the region it is located in. The decision of where to locate is assumed to be motivated by the characteristics of the regions the firm can choose between.

The dataset used in this study was provided by Statistics Netherlands (CBS). It is based on register data, and consists of information regarding the characteristics of Dutch firms, employees, and municipalities in the years 2002-2004.

The research contributes to the existing literature in several respects: Firstly, it analyzes a broad and unique selection of region- and/or industry-specific factors regarding their effect on firm mobility, and their ability to attract businesses. Secondly, it tackles the issue of whether the attractiveness of a locality regarding amenities which appeal to individuals also has an effect on the relocation of firms from or to these regions. Thirdly, it analyzes the inter-regional relocation of firms on the very detailed level of the municipality, an approach which has not yet been employed for the Netherlands. Fourthly, it differentiates between seven industrial sectors, thereby taking into consideration potential differences between sectors regarding firms' decisions to move as well as their locational preferences. The analysis benefits from the fact that register data on all Dutch businesses and workers was available, and that detailed municipal information could be constructed.

The results indicate that the relocation decisions of firms are not only influenced by firm- and location-specific characteristics, but also by the qualities of a firm's workforce, and

by the attractiveness of a municipality for individuals regarding the amenities which are provided. Furthermore, the findings show that relocation decisions are sector-dependent. Generally, its age and being located in an appealing municipality with high sectoral specialization keep a firm from relocating, whereas firms employing large shares of highly educated workers, paying high average salaries and being located in a municipality with high sector-specific wages are pushed out of their present location. Relocating firms avoid specialized municipalities, while they are attracted by densely populated, appealing municipalities with high wage levels (both general and sector-specific) and large shares of highly educated workers, and which are specialized in the firm's own sector.

The study is organized as follows: Section 2 provides an overview regarding the theoretical background of the research. Section 3 outlines the characteristics of the data used in this study. Section 4 introduces the model employed in the empirical analysis, and defines the variables which are used. Section 5 presents and discusses the results, and indicates possible limitations of the research. Section 6 concludes. In the Appendix, all tables are provided.

## **2 Theoretical framework and hypotheses**

Thousands of firms are set up each year all across the Netherlands. Practically, this means that many of those businesses select their location for non-economic motives such as familiarity with the area, recreational opportunities, or lack of information about alternative options (Holl, 2004; van Dijk and Pellenbarg, 2000). Yet, firms need to be profitable in order to survive, hence being in a non-optimal situation which generates low profits may trigger the decision to relocate. Furthermore, even a location which had been optimal when the firm was founded may have become less advantageous with time, as the firm itself, and/or the economic environment may have changed. Firms which currently find themselves in a sub-optimal situation may thus be 'pushed' to relocate to a more favourable location which better fits their needs in order to increase their profits. On the other hand, a firm may be 'pulled' to another location due to the attractiveness of this site, either in comparison to the firm's present location (van Dijk and Pellenbarg, 2000), or to other alternatives (van Wissen, 2000).

## **2.1    *The decision to relocate***

A firm's decision to relocate can be influenced by various factors, among which are characteristics of the firm, characteristics of its workforce, and characteristics of the region it is located in.

### **2.1.1   *Characteristics of the firm***

The effects of various firm-specific characteristics on the propensity to relocate have been established in the literature: Older firms, for example, will be more embedded in their environment, and will have established long-term trust-based relationships in the vicinity (Brouwer et al., 2004). It can therefore be expected that the likelihood to relocate to another municipality decreases with the age of the firm. Furthermore, since moving costs will be considerably higher for larger firms (Brouwer et al., 2004; Knoben and Oerlemans, 2007; van Dijk and Pellenbarg, 2000), the propensity to relocate to another municipality can be assumed to decrease with the size of the firm.

The potential effect of a firm's financial performance on its likelihood to relocate has not yet been investigated. On the one hand, well-performing firms might be less likely to relocate because they can be assumed to already have found their optimal location. On the other hand, firms which are doing well will be likely to have the financial means to realize a (potentially costly) move in case a good opportunity arrives. We therefore analyze the effect of a firm's financial performance on its likelihood to relocate to another municipality.

Firms which experienced growth or decline regarding the size of their workforce may have to relocate to other premises (e.g. Brouwer et al., 2004), and may find a suitable location in another region. It can thus be assumed that these firms will be more likely to move to another municipality.

### **2.1.2   *Characteristics of the firm's workforce***

Although numerous studies have yet investigated the effect of firm-specific factors on their propensity to relocate, the characteristics of a firm's workforce have never been taken into account. A firm's share of employees with a degree in higher education may have an impact on the firm's likelihood to relocate: On the one hand, a firm with a large percentage of highly educated workers may be more likely to move, as highly educated individuals have been

found to be comparatively willing to relocate themselves, hence the firm may be able to retain its workforce despite the relocation. On the other hand, having a large share of workers with a university/college degree might mean that the firm employs highly specialized employees who might not be willing to move with the firm. It then might follow that the firm is less likely to relocate in order to retain its workers.

The average daily salary received by a firm's employees may also affect the firm's propensity to move, and again both a positive and a negative effect may counteract: Firms paying high average salaries may be required to do so in their present location due to e.g. the general economic conditions in the region, and might therefore be triggered to relocate in order to save costs. Conversely, high salaries may mean that a firm employs a large fraction of specifically valuable workers whom it wants to retain, hence relocation will become less likely.

### *2.1.3 Characteristics of the region*

As argued by Wasylenko (1980), the population density of a municipality serves as a proxy for the demand conditions in the area, and can therefore be expected to have a negative impact on a firm's propensity to relocate.

Firms located in a municipality with high average wages should be less inclined to move out of the area (Wasylenko, 1980), as this variable also captures regional demand conditions. Yet, it may be the case that the average wages in a specific sector in a municipality differ greatly from the average municipal wages in general. It can thus be expected that firms located in a municipality with high wages in its own sector will be more likely to relocate.

The Netherlands exhibit some peculiarities regarding the demographic and economic landscape of the country. Its four biggest cities – The Hague, Amsterdam, Rotterdam and Utrecht – are located in the so-called 'Randstad', a densely populated region in the Western part of the Netherlands with about 7 million inhabitants. Although the Randstad accounts for only about 20% of the country's surface, more than 40% of the Dutch population live in this area, and a large number of firms is located in this region. It can be assumed that firms in (or close to) the Randstad will be more likely to relocate to another municipality, as there may be an large quantity of potentially attractive nearby alternatives which e.g. would not require the firm's workforce to move.

While new firms favour diversity, firms at a later stage prefer specialized areas (Duranton and Puga, 2001). Firms thus tend to move from diverse to specialized regions where they can profit from the industrial base already present in the area (Holl, 2004). It can thus be expected that firms being located in a municipality with sectoral diversity will be more likely to relocate to another municipality.

Firms benefit from the agglomeration of firms in their own sector, since firms located in such ‘clusters’ may exchange knowledge and workers (Holl, 2004). It can thus be assumed that a firm being located in a municipality in which its own industry is underrepresented will be more likely to relocate to another municipality.

The presence of highly educated workers in a region may also have an effect on a firm’s decision of whether to relocate. Workers with higher levels of education have been found to be more productive, hence it can be expected that firms being located in a municipality with a large share of university graduates will be less likely to relocate to another municipality.

Although van Dijk and Pellenbarg (2000) argue that ‘firms may (...) locate in an area for (...) recreational opportunity’ (p. 194), the relationship between a firm’s relocation decision and the attractiveness of its present location for current and/or potential employees has not yet been investigated. Yet, since firms have been found to leave the Randstad due to the demands and preferences of workers (van Dijk and Pellenbarg, 2000), it can be imagined that firms being located in a municipality which does not appeal to individuals will have an increased propensity to relocate.

## **2.2    *The choice of where to relocate***

The firm’s decision of where to locate is assumed to be motivated by the characteristics of the municipalities it can choose between. Since firms may be pushed out of their present location due to the presence of specific regional qualities (or the lack thereof), the absence of these qualities (respectively their existence) may pull a firm to a specific location.

Since the population density of a municipality proxies regional market characteristics (Wasylenko, 1980), firms can be expected to be drawn to densely populated municipalities.

The municipal wage level also captures local demand conditions, hence municipalities with high average wages should appeal to firms (Wasylenko, 1980). Yet, since the average wage in a specific sector in a municipality might differ to a great extent from the mean wage in the municipality in general, wage levels should also be considered on the level of the

industry. Here, it may be expected that firms are drawn to municipalities with low wages in their own sector.

Regarding the distance of the municipality to the 'Heart of the Netherlands', opposite forces may be at play: On the one hand, the Randstad is the economic center of the Netherlands, it may serve as an 'incubator' or 'nursery' especially for younger firms (van Dijk and Pellenbarg, 2000), and it might be essential for specific industries to be located (or locate to) this area. On the other hand, mature firms might prefer to move to the periphery, since land may be cheaper there (Wasylenko, 1980), and employees can afford nicer homes while at the same time saving commuting time (van Dijk and Pellenbarg, 2000).

Most relocating firms have been found to move across small distances (e.g. van Wissen, 2000), possibly in order to be able to retain their current employees. It can thus be assumed that firms will be drawn to municipalities which are situated close to their present location.

Firms have been found to relocate from diverse to specialized regions in order to profit from the industrial base already present in the area (Holl, 2004). It can thus be expected that firms will be drawn to non-diverse municipalities.

The agglomeration of firms in the same sector facilitates the exchange of knowledge and workers (Holl, 2004). Hence, it can be assumed that firms will be attracted by municipalities with high sectoral specialization in their own industry.

Since productivity has been found to increase with educational attainment, regions with large shares of university graduates will appeal to firms. It can therefore be expected that firms will be drawn to municipalities with large shares of workers having a degree in higher education.

If 'firms may (...) locate in an area for (...) recreational opportunity' (van Dijk and Pellenbarg, 2000, p. 194), they may relocate for similar reasons. Yet, the relationship between a relocating firm's locational choice and the attractiveness of this location for its current and future employees has not been analyzed. If, however, firms can be prompted to leave a certain region due to the demands and preferences of their employees (van Dijk and Pellenbarg, 2000), it can easily be imagined that firms will be drawn to municipalities which appeal to individuals.



### **3 Data**

#### **3.1 Data sources**

The data employed in this study were provided by Statistics Netherlands (CBS). Information regarding firms (location, industrial sector, age, size, financial outcomes) is available on the level of the ‘business unit’ (BE). The data originate from the Social Statistical Database (SSB), the Dutch business register (ABR), the Survey on Employment and Wages (EWL), the Survey Production Statistics (SBS and STS), and information provided by the Dutch Tax Administration.

Information on employees stems from the SSB, which is compiled on the basis of register data from two main sources. Personal information (e.g. date of birth, gender, address) within the SSB originates from the municipal registration system (GBA), while data concerning employees’ jobs (e.g. employer, duration of employment, salary) is provided by the Dutch Tax Administration. Furthermore, information concerning employees’ education originates from the Dutch central student register (CRIHO), which is based on information derived from the Informatie Beheer Groep, a Dutch governmental institution.

Basic data on Dutch municipalities such as population density originates from Statline, a publicly available database provided by Statistics Netherlands providing aggregate regional information such as population or population density on the municipal level. Further information regarding the characteristics of the workforce, businesses and industries present in each municipality was established on the basis of the microdata on employees and firms at hand.

Information regarding the attractiveness of the Dutch municipalities for individuals was obtained from [www.elsevier.nl](http://www.elsevier.nl), where the 50 so-called ‘best municipalities’ (regarding e.g. economic position, health, education, infrastructure, and accessibility) of the Netherlands are ranked each year.

As the exact location of each municipality (its center) is known, its distance to other municipalities/locations can be established. After determining the ‘Heart of the Netherlands’, which is the central point between The Hague, Amsterdam, Rotterdam and Utrecht, and is located near Alphen aan den Rijn in the province North-Holland, the distance between each municipality and the ‘Heart of the Netherlands’ could be calculated. Similarly, the distance to the firm’s location in 2003 was determined.

### 3.2 *Data description*

Two distinct datasets were constructed.

The first dataset consists of all Dutch firms (on the level of the business unit) which were active with employees in 2002, 2003 and 2004, and for which information regarding all relevant variables for the years 2002 and 2003 was available. In the large majority of cases, a business unit is an independent firm with only one location<sup>2</sup>. As this study aims to identify the determinants of complete inter-municipal firm relocation, only single-site firms were selected.

Firm-level information (e.g. number of employees, sales) is available on a yearly basis. Variables which take into account the characteristics of its workforce, however, are slightly more difficult to come by, since employees can hold multiple jobs with different employers at the same time. We decided to select the job with the highest number of hours per week worked, the most recent start date, and the highest salary. After matching these employees/jobs to their employers, we determined the average salary a firm paid its employees in 2003. Furthermore, since information regarding higher education (university/college degree) is only available for individuals older than 21 and younger than 41 in 2003, we selected those jobs which were held by employees aged 22-40 in order to determine a firm's fraction of workers (aged 22-40) with a degree in higher education.

In 2003/2004, the Netherlands consisted of roughly 485 municipalities (due to reorganizations, the exact number varies slightly from year to year, and has generally been decreasing over time). Since the location of a firm is known for each year on the municipal level, the characteristics of the municipality the firm was located in in 2003 could be determined. These include municipal-level features such as population density and, due to the availability of detailed micro-data on employees and firms, characteristics such as the available labor force per municipality and industry, or the share of highly educated workers (aged 22-40) per region.

The dataset thus entails information regarding characteristics of the firm in 2003, changes regarding the size of its workforce between 2002 and 2003, characteristics of its workforce at the reference date in 2003 (aggregated to firm-level), features of the region (on the level of the municipality) the firm was located in in 2003, and the location (on the level of the municipality) of the firm in 2004. Descriptive statistics are presented in Table 1. Across

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<sup>2</sup> About 98% of the firms (BE) in 2003 had one location. Interestingly, firms with two or more locations are progressively rare, but there is a considerable number of very large firms having five or more locations.

all industrial sectors, the dataset consists of 175.938 firms, of which 3.976 firms (2.3%) relocated to another municipality between 2003 and 2004 (Table 2).

The second dataset consists of those 3.976 firms which actually relocated between 2003 and 2004. For those firms, the characteristics of the municipality they relocated to were determined for the year 2004. They include municipal-level features such as population density and, due to the availability of detailed micro-data on employees and firms, characteristics such as the available labor force per municipality and industry, or the share of highly educated workers (aged 22-40) per region.

## **4 Methodology**

### **4.1 Model**

The decisions taken by a firm regarding its relocation are estimated by means of a two-stage logit model. First, firms can decide to either stay in their present location, or to relocate to another municipality. A binary logit model is estimated which assumes a firm's decision of whether to relocate to another municipality to depend upon characteristics of the firm, its workforce, and the municipality the firm is currently located in.

Next, firms which relocate to another municipality can choose between a maximum of 482 alternatives (483 municipalities in 2004, excluding the municipality of origin)<sup>3</sup>. A conditional logit model is estimated which assumes a firm's decision of where to relocate to depend upon characteristics of the municipalities it can choose between.

### **4.2 Variables determining the decision of whether to relocate**

The variables employed in the analysis consist of firm-specific characteristics, characteristics of the firm's workforce, and characteristics of the municipality the firm is located in. All variables are measured in 2003 (or, in the case of CHANGE\_FIRM, between 2002 and 2003), prior to the firm's potential relocation. Industries are identified on the 2-digit level. For the variables SIZE\_FIRM\_log, SALARY\_FIRM\_log, SALARY\_log, and SALARY\_IND\_log, the natural logarithm is used.

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<sup>3</sup> Not all industries are present in all municipalities. We assume that firms only choose between those municipalities in which their industry is already present.

AGE\_FIRM measures the age (in years) of the firm, and SIZE\_FIRM\_log denotes its size (number of employees). The variable TPE\_FIRM quantifies the performance (sales per employee) of the firm, and CHANGE\_FIRM indicates the change (absolute value) in a firm's number of employees between the years 2002 and 2003. HIGH\_EDUC\_FIRM is the share of a firm's employees (aged 22-40) with a university/college degree, and SALARY\_FIRM\_log denotes the average daily salary (in €) a firm's employees receive.

POPDENS is the population density (inhabitants per square kilometer) of the municipality the firm is located in, and DISTANCE\_HoH denotes the firm's distance (in km) to the 'Heart of the Netherlands', defined as the central point between The Hague, Amsterdam, Rotterdam and Utrecht, located near Alphen aan den Rijn in the province North-Holland.

SALARY\_log is the average daily salary (in €) in the municipality the firm is located in, and SALARY\_IND\_log denotes the average daily salary (in €) in the firm's industrial sector in the municipality.

HERFINDAHL denotes the degree of specialization in the municipality the firm is located in. It is measured using the Herfindahl employment specialization index, exhibiting values which lie between zero and one. A smaller value denotes sectoral diversity in the municipality, whereas a larger value indicates that employment is concentrated in fewer sectors. The value '1' would indicate that only one sector is present in the municipality.

SPECIALIZATION is the sectoral specialization regarding the firm's industry in the municipality. It is measured as the number of employees in the firm's industrial sector in the municipality divided by the number of employees in the municipality, divided by the number of employees in the firm's industrial sector divided by the total number of employees in the Netherlands. A value of 1 indicates that in the firm's municipality, its industry is as present as in the rest of the Netherlands, a value smaller than 1 indicates that in the firm's municipality, its industry is less present, and a value greater than 1 indicates that in the firm's municipality, its industry is more present than in the rest of the country.

HIGH\_EDUC indicates its share of highly educated workers (aged 22-40) present in the municipality, and the variable TOP\_50 indicates whether the municipality the firm is located in has been ranked as one of the 50 most attractive Dutch municipalities for individuals.

### **4.3     *Variables determining the decision of where to relocate***

The variables employed in the analysis consist of characteristics of the 483 municipalities the relocating firms can choose between. All variables refer to the year 2004. Industries are identified on the 2-digit level. For the variables SALARY\_log and SALARY\_IND\_log, the natural logarithm is used.

POPDENS is the population density (inhabitants per square kilometer) of the municipalities the firm can relocate to, DISTANCE\_HoH denotes the distance (in km) between a municipality and the ‘Heart of the Netherlands’, and DISTANCE\_2003 is the distance between a municipality and the location of the firm prior to the move.

SALARY\_log is the average daily salary (in €) in the municipalities the firm can relocate to, and SALARY\_IND\_log denotes the average daily salary (in €) in the firm’s industrial sector in these municipalities.

HERFINDAHL denotes the degree of specialization in the municipalities the firm can relocate to, measured using the Herfindahl employment specialization index with values between ‘0’ and ‘1’.

SPECIALIZATION denotes the sectoral specialization regarding the firm’s industry for each municipality. It is measured as the number of employees in the firm’s industrial sector in the municipality divided by the number of employees in the municipality, divided by the number of employees in the firm’s industrial sector divided by the total number of employees in the Netherlands.

HIGH\_EDUC indicates the share of highly educated workers (aged 22-40) in each municipality, and the variable TOP\_50 indicates whether a municipality has been ranked as one of the 50 most attractive Dutch municipalities for individuals.

## **5       Results and Discussion**

### **5.1     *Why do firms relocate?***

Results show that older firms are indeed less likely to relocate, yet the proposed negative effect of firm size on the propensity to move only holds true for manufacturing firms and firms in the real estate, renting and business activities sector. This is a noteworthy finding, as both Brouwer et al. (2004) and van Dijk and Pellenbarg (2000) find larger firms to be less likely to relocate. Yet, as the study by Knoben and Oerlemans (2008) illustrates, firm size

may proxy other, unobserved characteristics of the firm, since it loses its predictive power as soon as more explanatory variables are entered.

A firm's financial performance does generally not affect its propensity to relocate. Surprisingly, previous changes regarding the size of a firm's workforce also do not prompt firms to move, suggesting that firms may anticipate growth or decline, and may relocate before these changes take place. The only exception is the wholesale, retail and repair sector, possibly due to the fact that in this industry, growth is harder to anticipate.

The effect of a firm's share of highly educated employees on its propensity to move appears to be sector-dependent: In the construction sector and in the real estate, renting and business activities sector, firms with larger shares of workers with a university/college degree are more likely to relocate, whereas the effect is negative for firms in the hotels and restaurants sector. Both the construction sector and the real estate, renting and business activities sector largely consist of very small, often one-person businesses. Here, it might be the case that a person with high educational attainment is more capable of collecting and processing information regarding business alternatives in other locations (e.g. Börsch-Supan, 1990; Eliasson, 2003). In addition, individuals with high levels of human capital have been found to be more willing to relocate in order to advance their careers (Chen and Rosenthal, 2008; Kronenberg and Carree, 2010). Furthermore, we find that firms paying high average salaries are more likely to relocate, suggesting that these firms are indeed triggered to relocate in order to save costs.

The proposed negative effect of population density on the likelihood to relocate can only be found for the real estate, renting and business activities sector. Keeping in mind that the Netherlands are by and large a small and densely populated country, this finding may not be too surprising.

Firms in the wholesale, retail and repair sector as well as in the hotels and restaurants sector which are located in a municipality with high average wages indeed tend to be less likely to relocate, whereas high sector-specific wages on the level of the municipality tend to have the opposite effect, at least for firms in the wholesale, retail and repair sector, the financial intermediation sector, and the real estate, renting and business sector. These findings indicate that the municipal wage level in general captures local demand conditions and will keep a firm within the municipality, whereas high sector-specific wage levels in the municipality may push the firm to an alternative location. Furthermore, the results illustrate that both the relevance of local market conditions and industry-specific wage levels are sector-dependent.

Generally, the closer a firm is to the ‘Heart of the Netherlands’ in the middle of the Randstad, the more likely it is to relocate to another municipality. These findings might suggest that firms either used the economic center of the Netherlands as an incubator region, or relocated within this region to more attractive premises.

The degree of sectoral diversity in the municipality does not have the proposed positive effect on relocation. On the contrary, firms in the real estate, renting and business sector have an increased likelihood to move out of specialized municipalities. These findings suggest that municipalities with sectoral diversity do not appear to push firms out of the region, but may be appealing locations for firms in a variety of industries, possibly due to other, unobserved characteristics.

Although firms are expected to value being located among other firms in the same sector, a negative effect of sectoral specialization in the municipality on the propensity to relocate can only be observed for firms in the wholesale, retail and repair sector as well as the hotels and restaurants sector. These findings indicate that the negative effect of sectoral specialization on the propensity to relocate is sector-specific, and - at least for the hotels and restaurants sector - may be triggered by characteristics of the region the firm is located in (tourist regions, coastal areas, inner cities).

The presence of graduates in a municipality does not have the expected retaining effect. Instead, in one sector (hotels and restaurants), firms are even more likely to move if they are located in a municipality with a large share of university graduates. These findings suggest that in general, the presence of highly educated workers in a region does not affect a firm’s propensity to move.

Being located in an area which does appeal to individuals induces firms to stay in their present location. This finding holds true for both the transport, storage and communication sector, and the real estate, renting and business activities sector. These findings suggest that for firms in sectors which are not capital-intensive, the pleasantness of their surroundings for individuals indeed matter, and do have an actual effect on those firm’s relocation decisions.

## **5.2    *Where do firms go?***

Results indicate that across all sectors, firms are indeed drawn to densely populated municipalities, suggesting that the size of the local market is a relevant pull factor which attracts relocating businesses.

Firms are also drawn to municipalities with high average wages, suggesting that the municipal wage level indeed captures local demand conditions. Surprisingly, however, municipalities with high sector-specific wages also appeal to firms, at least in some sectors.

The larger the distance of a municipality to the economic center of the Netherlands, the more it appeals to firms in the manufacturing sector, the wholesale, retail and repair sector, and the real estate, renting and business sector. These findings illustrate the diverse preferences of firm in different sectors: firms which do not depend upon centrality and closeness to their customers (e.g. manufacturing, wholesale) may move to the ‘outskirts’ of the country, possibly in order to save costs, whereas in other sectors, this effect can not be observed.

As expected, the larger the distance of a municipality to a firm’s previous location, the less the firm is drawn to it, suggesting that relocating firms might indeed try to retain their current workforce.

Contrary to our expectations, we find that firms avoid relocating to regions with high levels of specialization. These findings are in line with those presented in section 5.1, and suggest that municipalities with sectoral diversity, possibly due to other, unobserved characteristics, may be appealing locations for firms in a variety of industries.

Generally, municipalities in which firms in the same sector are already present appeal to firms. This suggests that firms are indeed pulled to their new location by agglomeration forces, wishing to benefit from the locally constrained exchange of knowledge and flow of workers taking place.

As hypothesized, regions with large shares of university graduates are generally attractive to firms. These findings indicate that firms might indeed be aware of the relationship between educational attainment and the productivity of individuals.

Firms in the real estate, renting and business sector are drawn to attractive municipalities. These results correspond to those presented in section 5.1, and suggest that firms in sectors which are not capital-intensive indeed relocate to municipalities which appeal to individuals.

### **5.3    *Limitations***

This study is, however, not without limitations. Certainly, the analysis would have benefited from the inclusion of information on firms’ histories, their intentions and future plans, and on



the networks they are located in. Unfortunately, the register data available do not provide this information.

## **6 Conclusion**

Results show that older firms are less likely to relocate, whereas the proposed negative effect of firm size on the propensity to move only holds true for specific sectors. We also find that the characteristics of a firm's workforce have an impact on its probability of moving, since firms employing higher shares of individuals with a university/college degree, as well as those paying higher average salaries are generally more likely to relocate.

Population density does not affect firm's likelihood to move. Interestingly, while the average wage level in the municipality the firm is located in negatively affects the firm's propensity to relocate, the average wage level in the firm's sector in the municipality it is located in has a positive effect. Furthermore, for some sectors, the likelihood to relocate decreases with a firm's distance to the economic center of the Netherlands.

Sectoral diversity does not induce firms to relocate, indicating that sectoral diverse municipalities may possess certain features which make them attractive to various industries. Firms which are located in municipalities in which own-sector specialization is high are less likely to relocate. Yet, as this only holds true for firms in the wholesale, retail and repair sector as well as the hotels and restaurants sector, it may be suspected that the negative effect of sectoral specialization on the propensity to relocate is triggered by characteristics of the region the firm is located in (tourist regions, coastal areas, inner cities).

Firms located in municipalities with high fractions of workers with a university/college degree are not less likely to move, whereas the attractiveness of a municipality for individuals has an effect on the mobility of firms, since firms in both the transport, storage and communication sector, and the real estate, renting and business activities sector located in one of the 50 'best' Dutch municipalities are less likely to relocate.

Regarding firms' choice of where to move, results indicate that firms relocate to densely populated municipalities, and are also attracted by high wage levels - both sector-specific and aggregate - in the municipality. Municipalities which are located further away from the 'Heart of the Netherlands' are attractive to firms in some sectors, as are those which are sectorally diverse. Firms are also drawn to municipalities which are specialized in their own sector, employ high shares of highly educated workers, and appeal to individuals.

These findings illustrate that the relocation decisions of firms are not only influenced by firm- and location-specific characteristics, but also by the qualities of a firm's workforce, and by the attractiveness of a municipality for individuals regarding the amenities which are provided. Furthermore, the findings show that relocation decisions are sector-dependent. Generally, its age and being located in an appealing municipality with high sectoral specialization keep a firm from relocating, whereas firms employing large shares of highly educated workers, paying high average salaries and being located in a municipality with high sector-specific wages are pushed out of their present location. Relocating firms avoid specialized municipalities away from the economic center of the Netherlands, while they are attracted by densely populated, appealing municipalities with high wage levels (both general and sector-specific) and large shares of highly educated workers, and which are specialized in the firm's own sector.

Interestingly, the results suggest that while regional characteristics do not push firms from (or keep firms at) their present locality, they are able to 'pull in' relocating firms.

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**Table 1: Descriptives**

	Mean	SD	Min	Max
<b>AGE_FIRM</b>	15.28	11.38	1.00	40.00
<b>SIZE_FIRM_log</b>	1.80	1.16	0.00	9.13
<b>TPE_FIRM</b>	183733.20	945164.68	0.02	2233699369.00
<b>CHANGE_FIRM</b>	2.19	14.46	0.00	2446.00
<b>HIGH_EDUC_FIRM</b>	0.13	0.26	0.00	1.00
<b>SALARY_FIRM_log</b>	4.26	0.41	2.62	9.88
<b>POPDENS</b>	1509.42	1471.89	25.00	5610.00
<b>SALARY_LOG</b>	4.47	0.15	4.12	5.18
<b>SALARY_IND_log</b>	4.36	0.27	2.84	7.13
<b>DISTANCE_HoH</b>	73.49	47.34	2.12	208.45
<b>HERFINDAHL</b>	0.09	0.03	0.06	0.45
<b>SPECIALIZATION</b>	1.40	2.58	0.00	280.39
<b>HIGH_EDUC</b>	0.20	0.09	0.05	0.39
<b>TOP_50</b>	0.24	0.43	0.00	1.00

*Number of observations: 175.938*

**Table 2: Mobility**

	Frequency	Percent
No	171.962	97.7
Yes	3.976	2.3

**Table 3: Logit regression - relocate or not?**

	All	Manufacturing	Construction	Wholesale, retail and repair	Hotels and restaurants	Transport, storage and communication	Financial intermediation	Real estate, resting and business activities
AGE_FIRM	-.042 *	-.052 *	-.039 *	-.035 *	-.035 *	-.052 *	-.051 *	-.046 *
SIZE_FIRM_log	-.023	-.185 *	.022	.021	.351 *	-.013	-.013	-.060 *
TPE_FIRM	.000	-.000	-.000	-.000	-.000 *	-.000	-.000	-.000
CHANGE_FIRM	.001	.002	.002	.005 *	-.000	.000	-.001	.001
HIGH_EDUC_FIRM	.154 *	.157	.856 *	.171	-.932 *	.442	.332	.167 *
SALARY_FIRM_log	.370 *	.550 *	.447 *	.414 *	1.008 *	.041	-.275	.161 *
POPDENS	-.000 *	-.000	.000	.000	-.000	.000	-.000	-.000 *
SALARY_log	-.731 *	-.367	-.013	-1.400 *	-2.444 *	-.492	1.067	-.437
SALARY_IND_log	.747 *	-.012	.351	1.348 *	.637	-.171	.618 *	.359 *
DISTANCE_HoH	-.003 *	-.003 *	-.003 *	-.003 *	-.004 *	-.002	-.001	-.004 *
HERFINDAHL	.975 *	.564	-.492	1.522	3.255	2.595	-3.946	2.250 *
SPECIALIZATION	-.026 *	-.018	-.093	-.102 *	-.256 *	-.015	-.118	.037
HIGH_EDUC	.893 *	.796	1.257	.758	3.712 *	.453	-1.059	.222
TOP_50	-.135 *	.081	-.239	-.076	-.332	-.568 *	.279	-.158 *
<i>Number of observations</i>	<i>175.938</i>	<i>18.896</i>	<i>18.631</i>	<i>56.449</i>	<i>17.326</i>	<i>8.477</i>	<i>4.155</i>	<i>34.058</i>
<i>Pseudo R<sup>2</sup></i>	<i>0.0369</i>	<i>0.0517</i>	<i>0.0282</i>	<i>0.0387</i>	<i>0.0484</i>	<i>0.0371</i>	<i>0.0279</i>	<i>0.0209</i>

\* indicates significance at the 10%-level.

**Table 4: Conditional logit regression - where to relocate?**

	All		Manufacturing		Construction		Wholesale, retail and repair		Hotels and restaurants		Transport, storage and communication		Financial intermediation		Real estate, resting and business activities	
POPDENS	.000	*	.000	*	.000	*	.000	*	.000	*	.000	*	.000	*	.000	*
SALARY_log	1.021	*	1.080	*	.830	*	.941	*	1.709	*	1.494	*	.707	*	1.120	*
SALARY_IND_log	.285	*	.351	*	.537		.611	*	.674		.610	*	.617	*	-.101	
DISTANCE_HoH	.007	*	.011	*	-.000		.006	*	.000		.009		.005		.007	*
DISTANCE_2003	-.056	*	-.051	*	-.077	*	-.054	*	-.050	*	-.053	*	-.073	*	-.054	*
HERFINDAHL	-3.534	*	-6.357	*	-2.889		-2.652	*	-4.332		-1.215		-15.357	*	-3.930	*
SPECIALIZATION	.055	*	.027	*	-.036		.105	*	.165	*	.136	*	.064		.053	*
HIGH_EDUC	3.496	*	1.700		-.626		2.596	*	4.933	*	1.430		5.113	*	5.107	*
TOP_50	.085	*	.110		.100		.080		-.411		.038		-.052		.223	*
<i>Number of observations</i>	<i>1.820.075</i>		<i>127.059</i>		<i>166.194</i>		<i>562904</i>		<i>74.739</i>		<i>97.792</i>		<i>72.627</i>		<i>577.559</i>	
<i>R<sup>2</sup></i>	<i>0.2613</i>		<i>0.2410</i>		<i>0.3172</i>		<i>0.2512</i>		<i>0.2604</i>		<i>0.2795</i>		<i>0.3408</i>		<i>0.2605</i>	

\* indicates significance at the 10%-level.