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Old firms in the Netherlands

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6 CONFRONTATION BETWEEN OLD AND YOUNGER FIRMS, ARE THEY REALLY DIFFERENT?

In Chapter 5, the population of old firms was studied in detail. The conclusions from that chapter are that old firms are in general larger compared to the entire firm population and in line with theory demonstrate more inert behaviour, concerning product or activity as and also for location. Furthermore, it is found that embeddedness in a certain location and a continuous identity are important for old firms, and might be key-elements in long-term survival. The larger context of the regional and local environment, being either adverse or not, does not seem to have an influence on old firms as such. Also, no hard evidence is found for any cluster-type activities influencing long-term survival. The initial results found in Chapter 5 indicate that several of the hypotheses from Chapter 4 can be accepted and one hypothesis rejected. Some of the hypotheses from Chapter 4 are yet to be tested. For this reason, the current chapter will do further analyses using the data and confront these outcomes with a contrast group of younger firms. This will serve as an additional test on the hypotheses. Are old and younger firms really different, and does locational inertia grow with increasing age? Furthermore, it is investigated whether old firms perceive their identity differently than younger firms, and if there is any correlation with age. Through this confrontation, the hypotheses posed at the end of Chapter 4 will be either accepted or rejected. Hypotheses 8 and 9 will be further investigated in Chapter 7.

6.1 Introduction

In the previous chapter it was found that old firms have considerably lower mobility than the average Dutch firm's mobility. This difference in locational behaviour between old and younger firms could be explained either by historical factors or by firm-specific inertial behaviour. In this chapter the latter relationship is investigated further. Some tests are done to determine whether firm-age is important for location behaviour in combination with innovative behaviour, network relationships, market, size, region, and location type as a combination of structural inertia.

The tendency of old firms to show stickiness to their home region or a fixed location with increasing age (in years since founding), as found in earlier chapters will be confronted to the locational behaviour and other characteristics of younger firms (founded after 1850). In the current chapter an analysis is made, to determine whether old firms really differ from younger firms and, secondly, to determine which firm characteristics - alongside age in years - influence this inert behaviour.

The other firm characteristics considered are innovative behaviour, network relationships, market, size (in number of employees), region and location type. This analysis is based on written questionnaires to a sample of 181 firms in the Netherlands; of which 37 of these firms are specifically labelled as ‘old firms’ (founded before 1851) as discussed in the previous chapter. The younger firms were randomly selected as will be discussed later. We start however, in Section 6.2, with the results of an analysis of a larger international database investigating relocation and firm age to place the results from this chapter in a larger international context. In Section 6.3, we return to the investigation of the written questionnaires in a descriptive manner, where a distinction is made between old firms (founded before 1851) and younger firms (founded after 1850). In the following section, a logit-model is used to test the influence of increasing age and other firm characteristics on firm locational behaviour. In Section 6.5, the identities of old and younger firms are confronted and correlated with age. The chapter ends with a discussion on the hypotheses and draws some conclusions.

6.2 Relocation and age of firmsⁱ

In a logit model on a firm’s relocation decision using a sample of 5568 larger firms (more than 200 employees) in 21 countries, firm age was specifically modelled in years (see Brouwer et al., 2004). The dataset used for this specific model is the 1999 Cranet Surveyⁱⁱ, based on standardised questionnaires sent to private and public firms in various countries. The focus of the Cranet Survey is large firms (with more than 200 employees), which in most industrialised countries cover about 50% of employment. It was expected in this model that older firms would show lower mobility propensities, because embeddedness and locational inertia increase with the aging of a firm. The probability of firm relocation was modelled using the following explanatory variables: age in years, size in number of employees, sector, size of the market, the region where the firm is located and the type of organization. Furthermore, other variables that might induce relocation were also included: recent increase in the number of employees, recent decrease in the number of employees, involvement in acquisition of another firm, takeover of the firm and involvement in a merger.

The results for this model are as follows. Larger firms, with more than 1500 employees, are significantly less likely to relocate, probably due to the high costs of site relocation and the high costs in engaging large numbers of new employees. Older firms also have a lower tendency to relocate. In this model age is categorised into three groups. Firms younger than 30 years, firms aged 30 to 80 years and firms that are older than 80 years. The oldest firms have a lower probability of relocation (significant at the 10% level). In earlier versions of the model, age was also modelled using smaller age-bands, anticipating differences in relocation behaviour within the 0 to 30 year age group. However, the results were robust. In terms of the

size of the market, it was found that firms serving a local market have the lowest propensity to relocate, again significant at the 10% level. Firms serving national or international markets are more likely to relocate since these firms are less embedded in a specific spatial context.

Firms that have an increased or decreased their number of employees have a significantly higher probability of relocation. The effects of increases and decreases are similar in magnitude; this implies that firms are equally sensitive to increases and decreases in the workforce. This suggests that firms move if they experience internal growth or reduction; the number of employees differs positively or negatively from the 'optimal' number of employees for the site. Spatial adjustments in premises are most needed when there is increase or decrease of the number of employees, which can result in relocating the firm. Turning to external growth, firms that have recently been involved in an acquisition have a much higher propensity of relocation than firms that have not. Also firms that have been involved in a merger are more mobile, both findings significant at the 1% level. Firms that have been taken over also have a slightly higher probability of relocation than firms that were not, but only significant at the 10% level. Acquisition, merger and takeover can be alternatives to relocation but, as found in this model can also trigger relocation. Growing firms can vary their production between sites, taking advantage of more favourable locations. Both internal (increases or decreases in the number of employees) and external (acquisition, merger and takeover) changes in a firm's size have an influence on relocation likelihood.

Turning to the control variables in this model, the results for the variable 'sector' show that firms in the public service sector have the highest probability of moving, whereas the other sectors have similar probabilities of moving. Firms located in North Europe have the highest probability of relocation, and firms in South Europe are the least mobile. It might be that country-specific factors such as legislation, size of the country, population density and Gross Domestic Product can explain these differences. The type of organisation is also important in the relocation of firms. Single-site firms have a significantly lower likelihood of relocation than other firms.

The conclusions drawn from this logit-model are that relocation propensities decrease with the firm's size and also with the age of the firm. These results seem plausible because larger firms have to incur higher sunk costs, and older firms are more embedded in their spatial environment. Furthermore, firms that experience changes in the number of employees, either increases or decreases are more likely to relocate. Firms that have been involved in a merger or an acquisition activity are much more likely to relocate than other firms. This implies that 'external growth' factors are particularly important in explaining relocation behaviour of large firms. In particular, this model demonstrated that acquisition and takeover are the main reasons for large firm migration. The results from this logit model agree with the

results from the telephone survey described in Chapter 5. However, any comparison should be made with caution since in this model only firms with more than 200 employees were taken into consideration. Nevertheless, the results do indicate that older and larger firms are more locationally inert, as are firms that serve a more local market.

As for takeovers inducing relocation, there are no clear indications for this being the case for old firms in the Netherlands. In the spatial firm histories described in Section 5.3.1, it was seen that out of the nine firms that relocated (short distances), five were involved in takeovers and four were not. Eight old firms had never relocated and, of these, four firms had never taken over another firm. From the histories, however, it can be concluded that the takeovers were mostly of smaller competitors and made in order to decrease competition. Among old firms no inquiries were made about acquisition and mergers since the definition of old firms in this investigation was chosen in such a way that these events are unlikely to have occurred. In secondary data on old firms this 'external growth' is also mentioned, a few examples being: *Firm G*: "a merger with another firm was never considered, even not when the leading men were departing. The opinion was that a merger would damage the firm's identity and bring uncertainty for the employees" (Hagedoorn, 2000, pp.162) and, *firm O*: "our firm has never been taken over or engaged in mergers, since the family has a strong historical pressure to remain independent. In 1991 the seventh and last generation left the firm and a 'third party' became management. This change did not alter the character of the firm. The image that has been created by so many generations causes a charisma of solidity" (Boorsma, 2001e). These two examples provide a view of the general tendency in old firms concerning 'external growth'. Taking over of another firm occurs only if it either reduces competition or enlarges their market; these activities, however, are always done with special care for the maintenance of the continuous identity of the firm.

6.3 Firms and locational inertia

In the previous section, a large international database and the results obtained from an analysis for age and relocation were discussed. In this section, we return to our sample of 181 firms in the Netherlands, including 37 old firms. From this database, a small group of old firms is contrasted with a group of younger firms (founded after 1850), in order to compare and test whether differences exist between the old and younger firms in this specific investigation.

The questions posed in the written questionnaire to the contrast group can be found in Appendix 3. The results for all the written questionnaires (both the old firms and the contrast group) can be found in Appendix 4. The results in this appendix are presented as percentages for the variables investigated over the entire sample, and separately for the old firms (founded before 1851) and the younger firms (founded

after 1850). The questionnaire for the contrast group was sent to 500 firms founded after 1850 pre-selected to reflect the sectors found in the population of old firms. The contrast group returned 144 questionnaires, a 28.8% response rate. Together with the 37 written questionnaires that were returned by old firms (the group described in Chapter 5), the complete survey included 181 cases.

From the results of the telephone survey, the following conclusions about the old firms were drawn (see Chapter 5). Old firms are on average larger (measured in number of employees), less mobile, active in manufacturing, single-site companies, and are family owned. At first sight it seems that the results from the written questionnaires of old firms, as given in Appendix 4, are consistent with the results from the telephone survey. In the analysis in this section, the focus is on the comparison of old firms with younger firms. However, due to sample bias (37 'old firms' vs. 144 'younger firms'), not all the described relationships could be tested for significance.

6.3.1 Site and situation

Since old firms have a low mobility, one could expect old firms to be very content with their situation. However, the average appreciation value that firms gave to their location gives a different impression. Overall, the survey indicates an average appreciation of location level of 7.7 on a 1 to 10 scale. The group of old firms has a lower average appreciation (7.4) of their current location than the average appreciation (7.8) of the younger firms. However, could be argued that because of the higher mobility of younger firms, these younger firms are naturally more content with their current situation. From this, the argument can be reinforced that older firms become more attached to their location over time and despite the slightly lower appreciation levels they will have lower tendencies to relocate. The type of location that firms are situated in; see the results in Table 6.1, can strengthen this argument.

Old firms tend to be situated in the inner city or on the edge of the inner cities, while younger firms seem to be much more situated at specific office and industrial parks on the outskirts of the city or town. In literature it is found that firms are generally born in an urban environment, but their growth often takes place in a suburban environment (Pellenbarg, 1985). This would coincide with the relocation of younger firms from the inner cities to the industrial sites. However, this does not explain why old firms did not experience the same kind of movement. Either old firms are more attached to their specific location and are more embedded, or experienced growth in a period in which mobility was much less common and for this reason made do with their location (Brouwer, 2003; Pellenbarg and Van Steen, 2003).

Table 6.1: Results of questionnaires for type of location for all firms, the group of old firms and the group of younger firms

Type of location	all firms in %	old firms in %	younger firms in %
Inner city	11.2	16.7	4.2
Edge inner city	17.9	41.7	11.9
Residential	7.8	8.3	7.7
Office site	3.9	2.8	4.2
Transportation site	6.7	2.8	7.7
Heavy industry site	6.7	2.8	7.7
Manufacturing site	40.2	25.0	44.1
Rural area	5.6	0.0	7.0

In the secondary data on old firms, this first argument of embeddedness is underlined several times. For instance, *firm T*: “*We are still at the same location, although the world around it has changed significantly. Since the municipality does not allow us to expand on the current location, we were forced to use a second additional location. Luckily, we were able to find a suitable spot close by. The owner argues that relocating the entire firm to a specific business site was unthinkable. The firm supplies mechanised products to farmers and for that reason the firm wants to be associated with the rural environment, located between the manure and the fields*” (Scheer, 2002). *Firm A* gives another clear indication of local embeddedness: “*for transportation over the water one needs a location at the waterside. The first owner bought a piece of land where the firm has been located ever since. Seven generations worked and lived at the same location in the same building. The old stable for the horses is still here. Our core business is still transportation, although now over the road and not over the water. The first truck was bought in 1960. Since there was not enough room for parking space at the original location, additional grounds were purchased nearby*” (Boorsma, 2001c). The latter is also a typical example of first-degree path dependency. Many old firms argue that they were just located where the founder happened to live and that they simply continued the firm on this site. Among the younger firms in the survey, only four times was a comparable motivation for embeddedness given: *questionnaire 39*: “*we are a regionally embedded construction firm*”, *questionnaire 67*: “*we are an autonomous locally oriented firm*”, *questionnaire 78*: “*we are a real ‘Twentse’ firm (Twente is Dutch region)*” and *questionnaire 157*: “*we are based in the middle of the regional society*”. Recalling the results from the telephone survey, as described in Chapter 5, it can be concluded that older firms show a stronger attachment to their location and an embeddedness in their region. Old firms have relocated less: 61.1% of the old firms have relocated at least once, compared to 71.3% of the younger firms. From this it can be expected that older firms have adapted more on the current site, such as through on-site expansion, instead of relocating. 69.4% of the old firms had expanded on-site in contrast with

only 48.3% of the young firms, see Table 6.2. In combination with the higher percentage for relocation by younger firms, this indicates that younger firms have a greater tendency to move rather than adapt the current location when growing. This argument is further supported by the fact that 72.2% of the old firms own their premises, while only 45.5% of the younger firms do. Ownership of premises can be seen as sunk costs that induce path dependency and lock-in or, in other words, work against relocation and in favour of on-site expansion.

Table 6.2: Cross tabulation of on-site expansion with age in groups (absolute numbers of firms)

Age	On-site expansion	
	Yes	No
0 – 5 years old	6	11
6-10 years old	7	12
11-25 years old	14	23
26-50 years old	22	16
51-100 years old	22	6
101-150 years old	3	1
151-200 years old	14	7
201 years or older	11	4

From these considerations it can be concluded that, overall, old firms have relocated less than younger firms, the difference in rate being more than 10 %. The type of location where old firms are situated also differs from the type of location where younger firms are to be found, and old firms are less content with their current location than younger firms, albeit just slightly. Again this reflects the first-degree path dependence of old firms' locations. Even though the current site may not be the best, the firms hesitate to relocate because of sunk costs, in premises and material as well as in identity and reputation. The stickiness of old firms to their location does not directly seem to stem from a specific 'contentment' with their location, but is caused by an embeddedness of old firms in their locations, as was also found in Sections 5.2.3 and 5.3.1 and amplified by several illustrations.

Furthermore, when the age of the firms is correlated with a Pearson bivariate correlation with the variables 'premises' and 'on-site expansion' the conclusions above are again supported. It is clear from the values in Table 6.3, that there is a significant correlation, indicating that with an increase in the age of a firm, there is less likelihood of observing rented or leased premises, and more chance of seeing adaptation to the current location. Additionally, the likelihood of locational adaptation is negatively correlated with rented or leased premises, as expected.

Table 6.3: Correlations premises and locational adaptation

	Correlation	Sig.	N
Age x premises	-0.241**	0.001	179
Age x locational adaptation	0.230**	0.002	179
Premises x locational adaptation	-0.176*	0.019	179

** = significant at the 0.01 level (2-tailed)

* = significant at the 0.05 level (2-tailed)

For the firm characteristics described in this section, it is clear that old and younger firms differ. Old firm relocate less, are located at different types of sites, and on-site expansion is also age-related.

6.3.2 Size, market and innovation

Of course, other factors can also influence the likelihood of firms showing inert behaviour. For example, the size of the firm, the market position of the firm, the size of its network of personal relationships, the number of sites (branches) and innovative behaviour. Do these factors differ with increasing age of the firm, and will this perhaps have an influence on relocation behaviour? These factors might offer additional explanations for the embeddedness of older firms in their location.

The size distribution of the old and younger firms differs. Old firms are over represented in both the categories of small firms (2-9 employees) and of larger firms (more than 50 employees). Younger firms are dominant in the intermediate size category; 10 up to 50 employees. This categorisation of firm size is the one used in the Netherlands. Note, however, that the European Commission would consider all firms with up to 250 employees as small or medium sized (Brouwer and Henrich, 2001). Currently, there is no accepted explanation for this size-differentiation, beyond the fact that older firms have had more time to 'grow'. Furthermore takeovers, which are more common among the older firms, could explain their overrepresentation in the larger size categories. One might expect that sectoral differences would lead to size differences, however, no significant correlations were found between size and sector.

In terms of the number of sites, there are not many differences between the old firms and the younger firms. Both groups in the survey are made up mostly of single-site firms. Further, linkages with foreign firms, either through joint ventures or foreign branch plants are uncommon for both groups. One interesting point, however, does arise from the companies that have foreign branches, delocalisation, or sub-contractors. Old firms tend to operate more worldwide (in and outside the EU), while younger firms focus more on the European market. An explanation for this could be that the old firms were established in an era when the Dutch economy was very much based on trade with Suriname and Indonesia, and that the foreign connections of old Dutch firms originate from that time (Brouwer, 2003). This

relationship was also tested for sectoral differences. No significant correlation was found between foreign plants and sector.

From the questionnaires, it seems that old firms are more innovative than younger firms, 63.9% versus 54.5% have innovated at some point. Innovation here is defined as either as product or process innovation: a primary one being the first in the world to apply this new product or process, a secondary one the first in the Netherlands, and a tertiary one new to the firm (Kok et al., 1984; Damanpour and Gopalakrishnan, 2001). This is remarkable since, from the telephone survey, it was concluded that old firms in the Netherlands have a strong focus on 'old-fashioned' arts and crafts-business, which would indicate an attachment to tradition, which not directly makes one think of innovative behaviour. Nevertheless, it seems, for this particular sampleⁱⁱⁱ, that old firms are more pioneers and younger firms more followers regarding innovation. Of course, the times when the innovations happened are also of relevance. For the old firms, the innovation was perhaps during the Dutch industrial revolution; unfortunately, not all the respondents gave out the year of the indicated innovations. From the available answers, it was seen that old firms made their main innovations either between 1870-1890 and/or in the period following the Second World War, while younger firms mostly made their innovations in the last decade. The results for the different kinds of innovations also indicate that older firms have made more primary innovations (new to the world) and younger firms more tertiary innovations (new to the firm). The primary innovations by old firms seem to have occurred mainly in the periods 1800-1850 (primary product or activity) or 1870-1914 (industrial revolution; primary implementation of new production techniques). Secondary and tertiary innovations by old firms have predominantly been in the period of 1980 to the present, and often involved computers. No sectoral differences were found for this variable. An example of an old firm and its innovativeness is *firm C*: *'the mechanisation of our production started in the second half of the 19th century. In 1907 electricity was applied for the use of electric motors. All the time new printing presses came available and the firm followed these new developments on its heels. In 1969, the firm started using typesetting machines. In the beginning of the 1970s the technological developments went very fast in this branch and at the same time economies of scale were introduced'* (Gruythuisen, 2002).

It was expected in Chapter 4 that the firm characteristics would also differ cross-sectorally. However, in this particular sample, none of the firm characteristics differed among the sectors. In research by De Geus (1997) on the long-term survival of 30 international multinationals, it was found that the long-term survival of those firms was not influenced by financial status, specific sector or type of products. The results in this section, so far, are in line with his research.

The relative position of old firms in the competitive market in comparison of younger firms is also different. Of the old firms, 5.6% indicate that they are doing worse than competitors in the same branch, against only 2.1% of the younger firms.

Conversely, 46.2% of the younger firms indicate that they are doing better than the average, against 38.9% of the old firms. Additionally, it is found that old firms tend to have more quality competition and that younger firms focus more on price competition; this might be related to the level of innovation. Furthermore, old firms indicated that they focussed on quality, because of the nature of their product, as it was shown in some of the illustrations that were given in Chapter 5. Nevertheless, younger firms did sometimes also indicate the importance of quality in their responses. Two examples are: *questionnaire 14*: “we are a firm that gives maximum service within a competitive branch” and *questionnaire 342*: “we produce on a small scale and deliver quality products”. However, these two ‘younger’ firms were both founded before 1950, so in the total firm population they might well be considered as ‘old’. The general focus of the younger firms (1 to 50 years old) is, however, on price competition and large-scale production, as for example *questionnaire 94*: “we deliver our product fast at an acceptable price” underlines.

The results for market relationships are interesting. In general, as well as with a focus on consumers, suppliers and competition, old firms have a more international outlook. This can be an indication of either the past (same line of argument as above for worldwide connections) or because of their long history of doing business. Then again, in percentages, also old firms tend to operate more in a local market, in terms of suppliers, customers or competition. 8.3% of the old firms say they have a local network of market relationships against 5.6% of the younger firms. This indicates a little more local embeddedness by old firms. More interesting are the strong correlations between these variables, as can be seen in Table 6.4 below.

Table 6.4: Correlations in market relationship

	Correlation	Sig.	N
Competition x network	0.728**	0.000	177
Supplier x network	0.570**	0.000	177
Consumers x network	0.836**	0.000	177
Competition x suppliers	0.606**	0.000	177
Competition x consumers	0.785**	0.000	177
Suppliers x consumers	0.573**	0.000	177

** = significant at the 0.01 level (2-tailed)

It is very clear that all three variables (the spread of competition, suppliers and consumers) are very important in determining the firm’s network of personal relationships. However, it is remarkable to see that the strongest relationship in defining the firm’s network is the spread of consumers, whereas the spread of the firm’s competitors is generally supposed to be the defining element. Of more

interest for this investigation is the relationship between the network of market relationships and relocation in combination with the age of the firm. In Table 6.5 below, these correlations as well as the correlations with the other variables, are given. Even though old firms operate on national or international markets, a firm can still be locally-oriented in some ways. Two examples of this are: *firm B*: “*even though the company has anchored itself in recent decades on the national market, the central role of the city of Utrecht is constant*” (Van Gerdingen et al., 1998, pp.5). Then *firm D*: “*The first decades of the 20th century were golden times for distilleries, between 1900 and 1920 export in litres for our firm doubled. Our company became known worldwide and the name and location of our main quarters in Rotterdam were mentioned on every bottle*’ (Slyterman and Vleesenbeek, 1995, pp.29 and 33).

Table 6.5: Correlations between age, relocation and other variables

	Correlation	Sig.	N
Relocation x network	-0.035	0.643	178
Relocation x innovation	-0.120	0.109	179
Relocation x branch situation	-0.023	0.759	179
Relocation x sort of competition	-0.030	0.697	176
Relocation x size	0.010	0.897	179
Relocation x sites	0.017	0.897	179
relocation x foreign connections	0.035	0.640	179
Age x network	0.059	0.435	178
Age x innovation	0.208**	0.005	179
Age x branch situation	0.027	0.719	179
Age x sort of competition	0.150*	0.047	176
Age x size	0.229**	0.002	179
Age x sites	0.021	0.781	179
Age x foreign connections	0.163*	0.029	179

** = significant at the 0.01 level (2-tailed)

* = significant at the 0,05 level (2-tailed)

The relationships with age, also in Table 6.5, show some noteworthy result. As expected from the percentages discussed above, significant positive correlations are found between age and innovation, and between age and firm size. This means that when firms get older, the likelihood increases that the firm is larger and has implemented more innovations. Also positive, but less significant, are the relationships between age and type of competition and age and foreign connection. When firms get older, they have a higher probability of having worldwide connections and, with aging, also the likelihood of having competition based on quality rather than on the price of the product or activity increases. As noted before, unexpectedly, none of these variables were found to be sector dependent.

No significant relationship between relocation and the other variables investigated were found. The correlations founded were all very weak and some negative. There is no evidence that these additional firm characteristics have any real influence on the locational behaviour of firms. It can be concluded from this section that older firms have locational inertia, though not directly due to any of the variables tested here, and also that old and younger firms have clearly different characteristics.

6.4 Relocation history modelled

Locational inertia is, in this investigation, among other things, reflected by the relocation activity of firms. The relocation history (relocated at least once) is in this section, modelled by means of a logit model^{iv} relating the probability of relocating to a set of explanatory variables x_i . The probability of relocation is $F(x_i', \beta)$ where $F(.) = \exp(.) / [1 + \exp(.)]$, and β is the vector of coefficients (Greene, 1997). The logit equation is used to empirically test whether a set of firm characteristics is associated with firm relocation. Using this model, the probability of relocation versus non-relocation is estimated. When a variable is statistically significant, it implies that firms with this characteristic have a higher probability of relocating.

The explanatory variables^v are all regrouped in dummy-categories^{vi} and are labelled as follows: AGE (age in years), SIZE (number of employees), NETWORK (network of relationships), INNOVATION (innovative behaviour), REGION (region in which the firm is located), PREMISES (ownership status of premises), and ADAPTATION LOCATION (on-site expansion). Table 6.6 below, presents the estimates based on the logit model. In the logit model, the disturbance term had a standard logistic distribution. Since the explanatory variables are categorical, one level has to be omitted from the set of explanatory variables reflecting the various levels, to avoid identification problems. The combination of these omitted levels gives the characteristics of the reference group and the estimate for this group is reflected by the coefficient for the constant. Each of the other coefficients reflects the difference in the relocation probability for a firm with characteristics that differs from the reference group (compare Van Dijk et al., 1999).

From the literature, it is expected that with an increase of age, the structural inertia will increase. Thus, the probability of relocation should decrease with the increasing age of the firm, as was also found in Section 6.2.2. However, very young firms also do not relocate. The first five years can be considered to be the 'incubator' period for new firms, in which young firms are busy surviving and, because of this, have very low mobility (Stam, 2003). The mobility of firms is expected to be highest right after this incubator period, which is why the 6-9 year age group is the reference group. The estimated parameters for AGE show that older firms have a low probability of relocation, as well as the youngest age-group.

Table 6.6: Empirical results logit analysis

All observations	Coefficient	t-value
Constant	2.564	
AGE (in years) ^{vii} 6-10 years		
0 – 5 years	-2.846	2.70***
11- 25 years	-1.427	1.47*
26 – 50 years	-0.910	0.92
51- 100 years	-0.942	0.93
101-200 years	-1.435	1.98*
201 + years	0.304	0.26
SIZE (in number of employees) 1-5 employees		
6-9 employees	1.708	2.70***
10-25 employees	1.000	1.40*
26-50 employees	-0.016	0.02
51 or more employees	0.933	1.19
NETWORK (of relationships) International		
National	0.452	0.89
Regional	0.916	1.73*
Local	-1.333	1.50
INNOVATION no		
Yes	-0.567	1.34*
REGION west Netherlands		
South Netherlands	-0.407	0.72
East Netherlands	-0.877	1.62*
North Netherlands	-0.846	1.20
PREMISES rental / lease		
Ownership	-1.558	3.45***
ADAPTATION LOCATION no		
Yes	-0.449	0.99
* = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level		
Overall percentage = 74.6%		

The youngest group has a significantly low relocation probability, but this is understandable from the literature. The oldest age group seems to have a higher tendency of relocation, which is not in line with the expectations, however, the result is not statistically significant. This result can perhaps be explained by the fact that, in the sample, only a very small number of the very old firms replied, and as such may not be representative of this specific age group. In terms of the age groups 11 – 25 years old, 26 – 50 years, 51-100 years old and 101- 200 years old, the evidence, however weak, is consistent with the expectations in so far that the relationship is not linear but indicates that older firms, in general, are less mobile.

When the relationship between size and relocation is discussed in literature, it is stated that smaller firms are more willing to relocate. The results here indicate the opposite. Larger firms have a significantly higher probability of relocating. Especially in the categories 6-10 employees and 11- 25 employees the chances of having a relocation history is quite high. This could indicate that locational inertia does not in fact increase with firm size. However, for firms with more than 25 employees, no significant relocation probability was found, indicating that firms with more than 25 employees have the same relocation likelihood as firms with 1 – 5 employees. However, it should be taken into consideration that due to a previous relocation, old firms might have been able to grow. The timing of a relocation is not known for all respondents and could thus not be modelled. It could be that the large firms relocated in the early days of their existence and, due to this relocation, they had the possibility to grow more than firms that did not relocate. From the written questionnaires to old firms (N=37), the year of relocation is known for some respondents. 22 ‘oldies’ had relocated and, of these, for 16 the year of relocation is known. Four old firms had already relocated for the first time before 1900 and, of these ‘historic movers’ three had relocated several times. Two firms relocated around the 1920s and both of these relocated again right after the Second World War. Five firms relocated for the first time around the Second World War, and all but one have relocated more than once. Only two old firms have relocated in the most recent decade. This seems to indicate that relocation for most old firms is something in the past and points towards the sense of spatial lock-in and embeddedness once again.

Now, the control variables are discussed. The estimated parameters for NETWORK were expected to show that firms with a ‘larger’ network of market-relationships would have a greater chance of relocation. The results are twofold. Very clearly, it can be seen that firms with a local network have significantly lower probability of relocating than firms that have an international network. However, for regional networks, the probability to relocate is slightly higher than for international networks. The results indicate that firms with a local network have the smallest probability of relocation, in other words show the most locational inertia. The divergent results for firms with a regional network can perhaps be explained by the large percentage of firms in this sample that relocated within their home region in all age groups. This result agrees with the result discussed in Section 6.2.2.

For the variable INNOVATION, it is found that firms that have innovated have lower relocation probabilities than firms that did not innovate. Therefore, innovative firms show more locational inertia. The literature is ambiguous about the relationship between innovation and location, some argue that innovation is the result of localized learning capability, indicating that firms located in a tight localized cluster have higher innovation rates and will not relocate, and others seem to argue the opposite (Malmberg, 1997). The results from this survey tend to

support the first line of argument. Since old firms have higher innovation levels and tend to operate more in local networks of relationships they have relocated less, although the results in Table 6.5 do not strongly indicate such relationships.

The results for the variable REGION show that all other regions than 'West of the Netherlands' show a lower probability of relocating. Since West Netherlands is the area containing the Randstad, which is the most urbanized and most economic dynamic area (Pellenburg and Van Steen, 2003), the highest probability of relocation being for firms in this region is in line with the literature.

The variable PREMISES also produced results that are in line with the literature. Firms that own their premises have very significantly lower relocation probabilities than firms that either rent or lease their premises. Since premises can be seen as sunk costs, it is only to be expected that firms that own their premises have more locational inertia.

As for on-site expansion, modelled here as the variable ADAPTION LOCATION, the results are not convincing. It seems that firms that did expand on-site have a slightly higher locational inertia, but, the result is not significant. However, one would expect that firms that have spent money on their current site would be less willing to relocate or, vice versa, that firms with more locational inertia are more willing to adapt their current site instead of relocating, considering this to be a less disruptive change than complete relocation.

6.5 Old and younger firms' identities

In the written questionnaires, the issue of the firm's identity was also raised. This section describes how old firms perceive their firm's identity differently than younger firms, and whether there is any correlation with age. In the previous chapters it was found that, in general, old firms have a strong identity that has remained stable over their existence. The sense of identity of old firms is also strongly related to other firm variables remaining stable. Old firms mostly identify themselves through the nature of their product or the activity of the firm. Furthermore, 'continuous family-involvement', 'tradition, culture and age' and 'location' were given as important elements in identifying old firms as being the same since founding.

The categories as used in Section 5.2.3 were also used in the corresponding question in the questionnaires and it was found, during the content analysis, that younger firms do describe themselves differently. Three additional elements had to be created that were not mentioned by old firms at all during the telephone survey. These three new categories are: 'the service of the firm', 'the employees of the firm' and 'being a starter'.

In assessing old firms only those firms are used which consider their identity to be unchanged (one questionnaire had missing values, and 23 out of the 36 old firms claimed an unchanged identity). As for the younger firms, in this questionnaire the

respondents were only asked to describe their corporate identity, not any change in that identity (105 respondents out of 144 completed this question). In total therefore 128 questionnaires are analysed here.

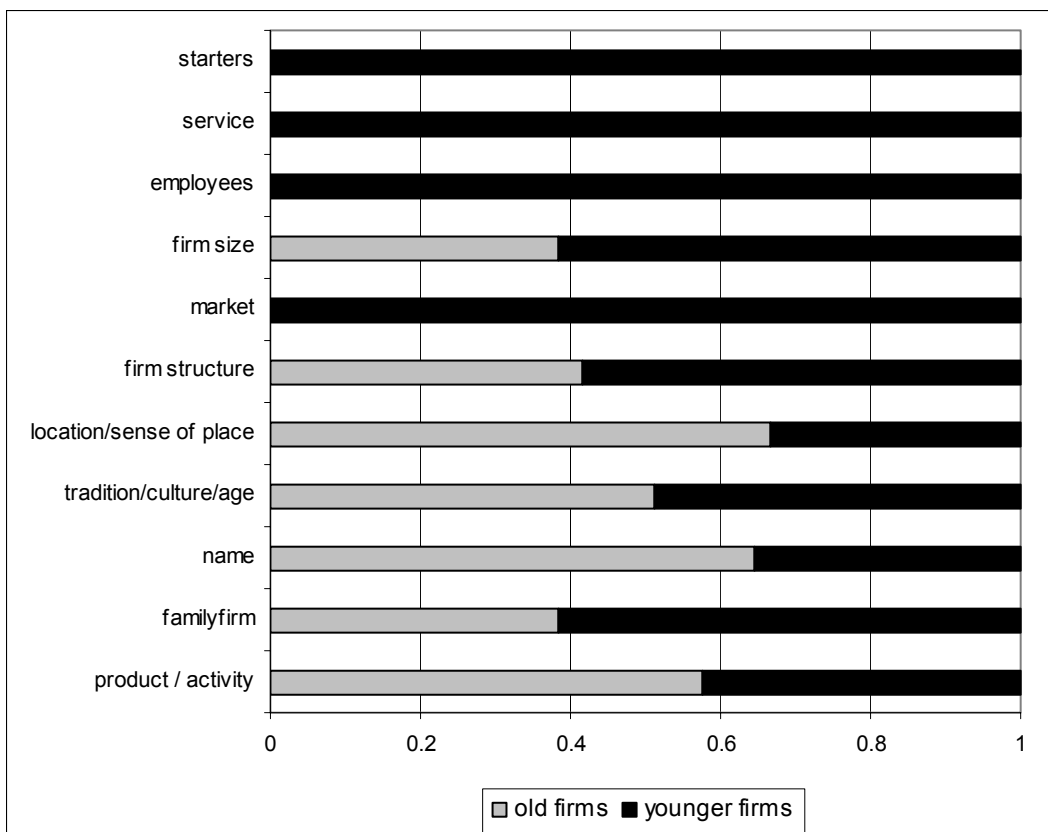
In Figure 6.1, the relative importance given, by old and younger firms, to the different identifying elements is shown. The categories 'starters', 'service' and 'employees' are only applicable for younger firms and thus receive the full weight. Also 'market' as an identifying element was in all the questionnaires, only used by younger firms, unlike the outcomes of the telephone survey. For example, market was mentioned by *questionnaire 157*: "a good business with a large market share, we aim to grow through specialisation" and *questionnaire 248*: "we are a wholesale company that operates solely in the Dutch market". Except for the three new categories, this figure clearly indicates that old firms identify themselves using different elements than younger firms do. For old firms 'name', 'product / activity' and 'location / sense-of-place' are relatively more important in their identity, while for younger firms more emphasis is given to firm size and structure. It is interesting that, in this analysis, being a family firm is relatively more important for younger firms than for old firms, while there are in reality relatively more old family firms. In the entire sample, about half of the questioned firms are family firms.

Furthermore, the category 'tradition, culture & age' which, in the previous chapters, received a very high score for old firms is now evenly weighted by old and younger firms. Younger firms mentioned this category several times in connection with their firm-specific culture, the way of doing things, tradition in the short term and age at the other end of the spectrum. They distinguish themselves by being a young firm, usually simultaneously with being a starter. For example, *questionnaire 500*: "we are a new firm in which the service to our customers is of paramount importance. The firm has an open character, which is reflected in its atmosphere and structure" and *questionnaire 342*: "we are a medium sized family firm producing in the foodstuff sector. We are small-scale and deliver quality by reputation".

A few respondents in the 'younger firm' group gave their young age as a specific identifying element, for example in the following responses: *questionnaire 129*: "we are a high tech starter" and *questionnaire 188*: "our firm is young and dynamic". Alongside age, firm size is also an important element. Among others: *questionnaire 2*: "we are a small firm with very committed employees", *questionnaire 18*: "this firm is a medium sized construction firm with a good reputation for quality, atmosphere and communication with clients", and *questionnaire 372*: "this is a small family firm with ten employees that all have craftsmanship". Not only was a small size emphasized, also larger firms did this, for instance *questionnaire 451*: "we are a relatively large firm with a large market share". From these illustrations, the notions for craftsmanship and reputation also come forward. Apparently, this is not just important for the identity of old firms

(also in Figure 6.1 the category ‘tradition, culture & age’ was evenly weighted by old and younger firms).

Figure 6.1: Relative importance of identifying elements



Interesting examples of this being an identifying element for younger firms are given by *questionnaire 249*: ‘we are a small firm with a reputation of solidity and trust. Our employees are well-known for their correctness’, *questionnaire 271*: “This is a renowned construction firm that does not only compete on price. We are a trustworthy firm with smart employees” and *questionnaire 436*: “we consider ourselves to be trustworthy and stable”. This was not just the case for the ‘more established’ firms in the sample, also firms that are only 5 or 10 years of age replied using this kind of identifying elements.

‘Location and sense-of-place’ was not mentioned very often in younger firms’ identities, as discussed already in Section 6.3.1. Apparently, this is more important for those firms that have remained longer in the same location. When age and ‘location / sense-of-place’ were correlated no significant relationship was found. Further, there were no significant relationships for any of the identifying elements with age. Nevertheless, it seems that because some old firms have been located in one place for so long, that their name and place are mentioned in one breath.

Relocating out of this region would harm the firm's image, an example of an old firm emphasizing this is *firm W*: “*we have been located in Makkum since 1594 and are the oldest firm in the Netherlands. We relocated from the centre to the outskirts of the town because we needed space for an extension, but we would never leave Makkum; the firm and the town are connected, not just in the firm's name, but also in its image*” (Tunnissen, 2002). This indicates that old firms are embedded in their locations and, for this reason, their location or sense-of-place is an identifying element. This is underlined even more now that it is found that younger firms do not display such a sense-of-place. Concluding, it can be said that the results from this section are in accordance with the preliminary results in Chapter 5.

6.6 Discussion and concluding remarks

The logit model, as described in Section 6.4, investigated whether a firm's age is an important determinant of location behaviour or whether this is more influenced by other factors such as size, market and networks. From the descriptive analysis, it can be concluded that indeed older firms have relocated less than younger firms. The reasons for this lower mobility however, are not completely clear. There is a difference in location type for both groups as well as a slight difference in their appreciation of the location type. The inert locational behaviour of old firms does not directly seem to come from a ‘contentment’ with their location, but is caused (as the multiple illustrations in this and the previous chapter indicate) by a spatial lock-in and embeddedness over time. Furthermore, it can be concluded, from Section 6.4, that there are differences in the characteristics of old and younger firms. Significant correlations are found with age for the various firm characteristics. However, these characteristics do not seem to be correlated with location behaviour for either age group. The overall conclusion from that section is, nevertheless, that old firms have locational inertia, albeit not directly linked to differences in other firm characteristics, but perhaps more due to path dependence lock-in.

Generally, the findings in this chapter seem to underline the conclusions drawn in Chapter 5. Indeed, the age of the firms does influence locational behaviour: with aging, firms are less likely to relocate. Also evidence is found for immobility in very young firms as well as for firms in the older age categories. It can be concluded that locational inertia does increase with the age of the firm. It is interesting that in the logit model (Section 6.4), the probability of relocating does not reduce with an increase in firm size. However, it can be argued, since this model is testing the past behaviour of firms, it does make sense that firms that have experienced growth (assuming that all firms started small, with few employees), have relocated in their past, especially if one sees that, for 73% of the firms that relocated, the reason for relocation was ‘lack of space’. This explains why size, in this model, has no effect on relocation. Nevertheless, this is slightly contradictory

with earlier findings and the literature. Since the results in this model do not include very large firms (over 25 employees), it could still be that larger firms tend to relocate less.

The results for other characteristics indicate that firms with a strong local network have the smallest probability of relocating, in other words show the most locational inertia. Firms that have innovated have lower relocation probabilities than firms that did not innovate, or innovative firms show more locational inertia. The results from this survey tend to follow the first line of arguments even though, as described in Section 5.4, no evidence was found for specific clustering activities by old firms except for one firm that says, *firm C*: “*The city our firm is located in has a very long and rich tradition in our branch. We benefit from the fact that many firms in the same field are located close by. We keep each other sharp and keen on competition, new processes and methods. We also use the same suppliers and maintenance service as our competitors for our machines*” (Gruythuysen, 2002, pp.24). As for the region that firms are located in, the results indicate that all other regions show a lower probability of relocation than the west of the Netherlands. Since the West Netherlands includes the Randstad, the higher probability of relocating for firms in this region is as expected. Thinking back to Figure 2.2, in absolute numbers of old firms, the relocation figures for West Netherlands are corresponding with the findings of the model. Firms that own their premises have very significantly lower relocation probabilities than firms that either rent or lease their premises. Since premises can be seen as sunk costs, it is to be expected that firms that own their premises have more locational inertia. Firms that have expanded on-site have slightly more locational inertia; but, the result is not statistically significant. One would expect firms that have spent money on their current site to be less willing to relocate or, vice versa, that firms with more locational inertia are more willing to adapt their current site instead of relocating, considering this to be a less disruptive change than complete relocation.

In Section 6.5, the firms’ identities were investigated and it was concluded that old firms are embedded in their location and for this reason, their location or sense-of-place is an identifying element. The fact that younger firms do not display such a sense-of-place, accentuates these findings. The results from Section 6.5 agree with the results found in Chapter 5. Old firms get locked-in by their reputation, the legitimation of their product, identity and culture, and over generations this becomes a self-reinforcing process within the firm. However, these final statements will be further investigated in Chapter 7.

The conclusions from this chapter can be confronted with the hypotheses from Chapter 4 as shown in Table 6.7 below. From the findings presented here, hypotheses 1, 2 3, 5, 6, 7, 8 and 9 are accepted, although the results from Chapters 5 and 6 are not that convincing for hypothesis 3 and 7, and so these conclusions should be handled with caution. No evidence was found in support of hypothesis 4, and this hypothesis is rejected.

Table 6.7: Conclusions and accepted hypotheses of Chapter 6

Conclusion	Hypotheses
Section 6.3.1: old firms relocate less and are located at different types of location than younger firms Section 6.3.2: old firms have a different size-distribution, are more innovative and compete more on the bases of quality than younger firms.	1: old firms have different characteristics than younger firms ACCEPTED
Section 6.2.2: older firms have a lower probability of relocation; older and larger firms are more locational inert Section 6.4: older firms have a lower probability of relocation	2: with increased age, firms create inertia concerning locational behaviour ACCEPTED
Section 6.2.2: larger firms have higher sunk costs and therefore have lower relocation propensities: older and larger firms are more locationally inert Section 6.4: firms with up to 25 employees have higher relocation probabilities. For larger firms no significantly different probabilities for relocation were found.	3: with increased size firms create inertia concerning locational behaviour ACCEPTED
Section 6.3.1: old firms are more embedded, showing a first-degree path dependency with location. Firm that just happened to be founded at a location have made the best out of this location. Even if old firms are less content with their current location, they will not relocate.	5: locational behaviour of old firms is first-degree path dependent ACCEPTED
Section 6.4: firms who own their premises relocate less. 72 % of old firms own their premises. Section 6.6: The sense of identity of old firms is strongly related to other firm characteristics remaining stable.	6: 'Old firms are positively locked-in to their location, product and identity' ACCEPTED
Section 6.3.2: old firms mostly had their primary innovations between 1870-1890. Section 6.4: Old firms that have relocated generally did this before 1900 or around the Second World War.	7: old firms have experienced adaptation at early times in their lives, concerning growth and location, product and market ACCEPTED
Section 5.2.3 and 6.6: old firms are attached to their history and use their traditional product, original location and premises in their identity. Sometimes they make the best out of the given situation.	8: old firms identities are the result of path-dependence ACCEPTED
Section 5.2.3 and 6.6: old firms keep the same identity when the product or activity does not change, or when they have not relocated. Old firms rely on a trustworthy and reliable identity and reputation	9: Old firms' general inert behaviour is connected to the preservation of their identity, in order to keep up high levels of accountability and reliability ACCEPTED

ⁱ Parts of this section have already been published in Brouwer, A.E., I. Mariotti and J. N. van Ommeren (2004) The firms relocation decision: an empirical investigation. *The Annals of Regional Science* 38 (20), pp. 335-347.

ⁱⁱ Cranet stands for 'the Cranfield Network on European Human Resource Management'. The Cranet Survey is co-ordinated by the Centre for European Human Resource Management at Cranfield School of Management.

ⁱⁱⁱ The written questionnaires on old firms originated from the same sample as of the telephone survey. However, only 37 of 257 old firms replied to the written survey. On average, 'larger' old firms responded to the written questionnaire. The average number of employees in the telephone survey was 108 employees, for the written survey 496 employees.

^{iv} Although the number of observation, N=181, is a rather small sample for a multivariate analysis, applying the rule of thumb that one needs at least 25 cases for each dependent variable, 181 cases are just enough.

^v As for sectoral differences, the descriptive findings have already indicated that there were no significant relationships between sector and other characteristics. Nevertheless, in other versions of the model, the variable 'sector' was explicitly incorporated. The results however, did not indicate any relationship and when modelled without 'sector', the results for the other variables proved robust.

^{vi} Most of the variables have a few observations that are missing. These observations are included in the reference group. In earlier versions of the model, missing observations were explicitly modelled as dummy variables. The results are almost identical.

^{vii} Age is categorized here using slightly different age groups than before, for two reasons. First, because this model tests the influence of increasing age and not so much the differences between old and younger firms as two distinct groups. Second, because the model has a better fit when the dummy variables have groups containing of about the same number of cases.

