

An empirical study on the relationship between the spatial environment and the survival of old firms in the Netherlands

DRAFT / PRELIMINARY RESULTS

A.E. Brouwer

a.e.brouwer@frw.rug.nl

Department of Spatial Sciences, University of Groningen, Groningen, The Netherlands

Abstract: *There are few sources on firm's activities during the life course of individual firms. Also not much attention is paid on the influence of the spatial environment on these firm activities in the long-term time frame. This empirical study might shed some light on the relationship between the spatial environment, specific firm characteristics and long term survival of firms in the Netherlands.*

The study is on old firms in the Netherlands, where old firms are defined as those firms that were founded before 1851 and still exist today. The study is divided in two main focuses. The first point of investigation is descriptive and provides basic information on the firm population at stake. Furthermore, the regional differences of the spatial distribution of old firms and percentage of the total firm population are shown. The second focus is an analysis on a telephone survey conducted at the research population is presented. The analysis focuses on the relationship between firm characteristics and the spatial environment and whether or not similarities can be identified in these old firms.

Introduction

Not much is known in the industrial organisation literature about the dynamics of industrial organisations, or what happens to firms over time (Autretsch et. al., 1998). Mostly the survival of firms is studied from the viewpoint of growth of the firm or product (Agarwal, 1997). This project however takes a spatial perspective on the firm lifecycle in long term periods. In most cases the birth of a firm takes place in an urban environment, whereas the growth of firms often takes place in a suburban environment. However the question remains, what happens to the older firm? There is no clear understanding of what happens with older firms and how they became so old. The death of firms has not been investigated very intensive due to shortage of registration and lack of research objects. Nevertheless, investigating old and dead firms can give a better understanding of the factors of (non-)survival of firms. The research of the spatial context of the later phases of the firm's lifecycle can reveal a better perception of the development of the lifecycle of firms as a whole, considered from a spatial-economic context. None of the existing theories expands upon the fact that very old firms (age in years) outlast the effective industrial period of the (successful) entrepreneur considerably. With this, the characteristics of the firm itself and the characteristics of the firm's environment become of greater relevance.

The geographical location of firms has mostly been studied in the light of relocation of firms (Pellenbarg et. al., 2002). This study however focuses on the location of 'old' firms and whether or not this location or changes of location during the life course of these old firms had any influence on the long-term survival of these firms. The study of 'old' firms is part of a larger research group investigating the 'demography of the firm' in which events such as 'birth'; 'migration'; 'survival'; and 'death' of firms are studied in a spatial context. In this field also firm size, firm growth and economic activity are major dimensions. In Economic Geography, the demographically focussed research of firms is primarily focused on regional determinants of firm entry

and migration (Van Wissen, 2002). In the view of Walker (1975) the success of individual firms is a function both of the way they behave and the economic environment in which they exist. Thus, e.g. a firm might choose a location more or less by chance but economic conditions could favour it and the environment would adopt the firm. This would improve the firm's chances of survival.

Which firms have a higher survival probability, why are these differences in firm survival and what are the population consequences? The interaction between the firm and its regional environment is a crucial determinant of firm behaviour. Firms operate in an environment of customers, suppliers and deliverers, local and regional competition, and more generally a network of relationships with usually a strong spatial dimension. New explanations of these phenomena have focused on the concepts of history dependence, chance and learning region, which are familiar terms in the field of evolutionary economics as well (Van Wissen, 2002). History dependence here is used as in the event-history of firms, which describes the values of qualitative variables concerning strategy and behaviour of a firm in a particular observation period (Van Geenhuizen, 1993). The events firm's live through and the actions firms take in a reaction to these events will influence the firm's survival chances. For the event-history of firms, the study of the spatial history of firms can be a useful and complementary contribution to the demography of firms. The spatial history of firms gives insight in the nature of the spatial changes in the life of the firm (Van Geenhuizen, 1995). This spatial history perspective can indicate the different changes per firm, like transition to another product or relocation. This can be used to see how these spatial changes have influenced the status quo of the firm (Van Geenhuizen, 1993). This kind of company history analysis is different from the usual history analysis because of the spatial angle. The spatial dimension is underlined by explicit attention for the localised unit, the establishment of the firm, and with this the spatial organisation of the firm under study (Van Geenhuizen, 1989).

Much research has been done on age dependency; many kinds of organisations have been shown to exhibit a liability of newness. Stinchcombe already wrote in 1965 that in any population new organisations are more likely to die than older organisation and, at any age, organisations of a new form are more likely to die than organisations of an old form (Freeman, 1990). At the same time Swaminathan (1996) argues that firms who survived the first years of their existence in a 'hard' environment will have higher survival-rates on the long run, they have been 'hardened by battle'. Jovanovic's model predicts that firm survival will increase with age and size of the firm, however Agarwal (1997) argues that this model is unrealistic over an extended span of time because it does not allow for a mutation of the environment in which the firm operates and compete. Also Boschma and Lambooy (1999) argue for such a 'context-dependency' for firms and other organisations. They say that regions are regarded as rather stable homogenous entities in terms of their collective knowledge, institutional structures and social conventions. Population size may change as a result of birth, death and migration processes. The composition of a population may regionally differ due to selectivity in birth and death processes, as well as change in the characteristics of incumbent members of a population. Selectivity in entry and exit from a population, in combination with internal change of surviving members is a relevant field of study for firm population (Van Wissen, 2002). However, the influence of the environment and influence of other members of the populations does not fully explain why some firms become so much older than others. The effect of

organisational age on demographic events remains to be fully understood. On the one hand, ageing implies learning, and becoming better equipped. On the other hand, ageing may mean increasing structural inertia, and perhaps becoming obsolete (Van Wissen, 2002). Inertia or resistance to change is one of the main forces determining firm behaviour. Whether or not this inertia is true for very old firms is to be discovered.

Definition; Old firms in the Netherlands

In economics the relationship between the local conditions and the success of a firm has not been investigated much. It is in economic geography, however here success is not only assessed in terms of profit, but also in terms of firm size or the length of the firm's existence. Whether or not getting very old is a sign of success for a firm? It may be that a firm itself is old, but has been rejuvenated from the inside. The question remains what is old in the context of the firm. The biological metaphor is not so clear here, according to Carroll (1988) there is no specific reason why firms cannot live forever.

The definition of firm's survival can be viewed as the survival of the fittest. Firm age is a measure of the progression time between two existential events; birth and death, age and ageing are therefore extremely important in firm demography. Although firms may pass through a life cycle, the progression is not driven by biological decay. Therefore the meaning of age is different from that in human populations. Studies in firm demography focus on two possible effects of ageing on firm performance: the survival probability and the growth and size effect. Firms learn from their behaviour over time. Mature and older firms are therefore better equipped than young firms, who still have to learn how to behave in the market, this is the theory of the learning organisation (Van Wissen, 2002).

One of the difficulties here is the definition of 'old' in the contexts of the firm. When is a firm old? Is it possible to characterise a firm on the basis of age in years, or can this only be done in the relation to the age of the attributes (product, number of employees, organisation or establishment) of the firm. To define the firm just by age in years can be problematic because in that way no attention is given to the current stage of development of a firm. The development of the firm can be seen when one looks at the age of a company according to the product-lifecycle, in which a firm is not mature, until it reaches the fourth stage of this cycle (Vernon, 1966). This last view is nevertheless less useful, because practice shows that some firms are in different stages of the product-lifecycle at the same time, some firms stay at the same phase constantly or some firms start their cycle in a different phase than the first (Van Geenhuizen, 1993). Another difficulty is the question of what constitutes a firm. Does the company's name, the product or the legal state constitute it? For the underlying research the following statement will be used: A firm stays the same firm if the product stays the same or is differentiated in the same product-line, and / or the name of the company has been unaltered. Age is defined in years since founding, old will be those firms that were founded before 1851 and still exist today. Changes in management and ownership are not included in this statement, because the period of investigation is of such a long period that changes in these factors are unavoidable and will not affect the firm's identity as such. Furthermore all changes, such as location and personnel, are allowed, as long as either the name or the product of the 'original' firm is continued.

REACH database

The data used in this analysis is the result of a telephone survey of the population of old firms in the Netherlands. In total 362 firms were called and the response-rate is 71,0% (257 cases). The contacted firms were founded before 1851 and still exist today (February-April 2003). The firms came from database REACH /Van Dijk, a Dutch commercial database which includes all firms in the Netherlands, including all sectors and size distributions. In this database firms can be selected on name, legal status, economic activity, financial records, number of employees, geographical location and year of foundation. In principle REACH includes all firms that are also registered in the business register of the Chambers of Commerce, the only missing firms are the so-called liberal professions (Verhoeven et. al, 2002).

The firms chosen for this analysis were selected in REACH on basis of the foundation year, before 1851. The choice for the year 1851 can be explained and justified twofold. First, the purpose of this research is to investigate the sub-population of old firms in total. To meet this objective it was necessary to go back in time till 1851, to create a population of old firms, which was just so large that it still could be studied in detail. Second, after the year 1851 the first industrial revolution took off in the Netherlands. Choosing the sub-population at stake founded before this year would make certain that all these old firms are founded before the modern industrial business would take off. An advantage of this is furthermore that all firms in the risk population have survived the same important events in modern business history.

According to REACH, 1188 firms in the Netherlands were founded before 1851 that still exist at present. After an inspection on typo's; input mistakes; double entries; empty holdings and the decision to exclude the 'hotel and catering industry', retail business and 'street trade', 467 old firms remained. These 467 firms were all called and again a reduction of the number of firms appeared to 367 firms. This reduction was caused either by; the firm was not founded before 1851, did not exist anymore (closure, bankruptcy), the firm was a non-Dutch firm (i.g. an 'old' foreign firm, with an establishment in the Netherlands), or belonged to one of the excluded sectors. These firms were removed from the database.

The reasons to exclude the 'hotel and catering industry', retail business and 'street trade' are the following. In a preliminary control survey it was discovered that a considerable amount of firms in these sectors was not as old as claimed. This is due to the fact that in many occasions the year of founding in these cases is not the year of foundation of the firm, but of the year of construction of the premises of the firm. The 'street trade' is excluded since these don't have a fixed location of doing business, which is the main topic of this research.

Regional distribution

With the study of old firms one immediately wonders how this sub-population is spatially distributed in comparison with the total population of firms in the Netherlands. In order to find out the regional dispersion of old firms two steps have been taken. First a map is constructed with all the 364 contacted firms, projecting the location of the old firms and whether these firms have been located on this location since foundation. For this reason, also the non-response part of the database is included, for these firms only the present location is known and not whether these firms have been moved to this location since founding. Furthermore, some firms did not know whether they have relocated in the past, this is caused by a 'memory gap'.

When this occurred, the firms are drawn in the map as 'at this location at present, with unknown location -history'.

<Insert map about here, map will be ready in June. For this reason this point will not be elaborated at this moment>

Secondly, with a non-parametrical Chi-Square test is examined if the distribution of old firms over the twelve provinces is as to be expected from the distribution of the total firm population over these twelve provinces. The following resulted:

	Observed N	Expected N (%)	Residual
Groningen	28	30.8	- 2.8
Friesland	77	37.3	39.7
Drenthe	26	26.8	- 0.8
Overijssel	118	66.6	51.4
Gelderland	212	136.9	75.1
Utrecht	52	94.6	- 42.6
Limburg	47	69.1	- 22.1
Noord Brabant	117	183.1	- 66.1
Zeeland	63	24.5	38.5
Zuid Holland	186	254.4	- 68.4
Noord Holland	260	241.3	18.7
Flevoland	2	22.6	- 20.6
Total	1188		

Test statistics
Chi-square: 272.437
df : 11
Asymp. Sig: .000

Table 1: spatial distribution of the Netherlands test one (Source: REACH 2003)

As can be seen the dispersion of old firms in the Netherlands differs significantly over the provinces in the Netherlands. Generally speaking, old firms are overrepresented in the peripheral provinces in the North East and South West, and underrepresented in the provinces in the West and the South of the Netherlands. These last provinces are either more urban or industrial, both representing a more 'dynamic' and more modern economy. However there is one strange point, in the province of Noord Holland where Amsterdam, a very economic dynamic area of the Netherlands is located, there are more old firms than expected. In all the other 'dynamic' provinces there are less old firms than expected. Nevertheless, the explanation for this can perhaps be found in the fact that the larger Amsterdam region is very dynamic, in contrast with the north part of Noord Holland - 'de kop van Noord Holland' - that is known as a less dynamic area. For this reason the test was repeated, however this time with the province of Noord Holland divided in the larger Amsterdam region and de 'kop van Noord Holland'. The result is shown in table 2.

From this table can be seen that indeed with the division of Noord Holland into the more and less dynamic part, it become clear that the less dynamic part has an overrepresentation of old firms, while in the more dynamic part of Noord Holland - the larger Amsterdam region- has an distribution of old firms which is close to the expected number.

With these tests there is only one problem, that is the data used come from 'polluted' REACH-database, and are not 'cleaned' on mistakes or double entries. Assuming that the pollution of the database is more or less equal for all age-cohorts, the value of the analysis will be more or less equal. The same is valid for figure 1

	Observed N	Expected N (%)	Residual
Groningen	28	30.8	- 2.8
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Drenthe	26	26.8	- 0.8
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Limburg	47	69.1	- 22.1
Noord Brabant	117	183.1	- 66.1
Zeeland	63	24.5	38.5
Zuid Holland	186	254.4	- 68.4
Kop van Noord Holland	139	122.5	16.5
Amsterdam region	121	118.8	2.2
Flevoland	2	22.6	- 20.6
Total	1188		

Test statistics
Chi-square: 273.390
df : 12
Asymp. Sig: .000

Table 2: spatial distribution of the Netherlands test two (Source: REACH 2003)

< insert figure 1 about here >

Figure 1 shows the firm-age-pyramids for the Netherlands and for all the different provinces. Very distinct can be seen that the youngest age-group is the largest, with for all provinces a number greater than 50 percent of the total population. The province of Flevoland has the largest percentage of firms younger than 10 years, with 68.9 percent of Flevoland's total firm population. This can be explained by the fact that Flevoland is a rather 'new province' which was created by the 'polder' land-creation in the second half of the 20th century. The lowest percentage of this group is in the province of Zeeland, which possibly can be explained by the fact that Zeeland is a province in the more periphery region of the Netherlands, which consists of several peninsulas, with less fast infrastructure than in other parts of the Netherlands. In general all the provinces give the same pyramid shape with a very large basis of young and 'middle-aged' firms. For the Netherlands in total, the sum of the first three age groups (0-10 year, 11-25 years and 26-50 years) contains 95.4 percent of the total firm population. The individual provinces display an equal image.

The oldest age group is for this research the most interesting age-category of these pyramids. It is quite clear that this group is a very small percentage for all the provinces as well as for the Netherlands in total. Again the provinces of Zeeland and Flevoland hold the extremes of this category. In the province of Flevoland the age group 151 years or older is only represented by 0.01 percent of the firm population. This can be explained in the same manner as for the high percentage of young firms in the same province. The province was non-existent in 1851, so the few old firms that are now located in Flevoland for sure have moved to this province. For the province of Zeeland it is less clear why this province has the largest percentage of old firms; 0.26 percent. As was explained in the non parametric Chi-Square tests, this province is 'less dynamic' and therefore the high percentage of old firms is consistent with the assumption that in dynamic areas there are relatively less old firms and in less dynamic areas are relatively more old firms.

Survey results

In the telephone survey questions were asked to the old firms concerning the year of founding, legal status, present location, foreign branch plant and product / activity, identity of the firm as well as questions about change of product/ activity, relocation and family involvement during the existence of the firm. The response rate of the

survey is 71%; 257 cases. In this section first the status quo of the 'old firm population' is given followed by an analysis.

Status quo

All characteristics of the sub-population of old firms as resulted from the telephone survey will be presented here. The numbers presented in this section will be elaborated in the next section; the analysis.

Founding year

All firms were founded before 1851, the mean founding year in the database was 1813. The age-distribution of the firms is:

Founding year	% of firms	Cumulative % of firms
Before 1801	22.2	22.2
1801-1820	11.3	33.5
1821-1840	30.7	64.2
1841-1850	35.8	100.0

Table 3: age distribution of old firms (Source: telephone survey)

It is clear, as to be expected from the shape of the pyramids in the previous section that the 'youngest' age group of old firms is over represented.

Legal status

The distribution of the legal status is the following:

< insert figure 2 about here> the largest group is 'public limited companies'. This is to be expected, since this is the legal form which is by law the most simple to transfer to firm over to heirs or to hand over control to others (Van Vuren and Mol, 2003). Because these old firms exist longer than several generations of entrepreneurs it is important for the firm's persistence that the take-over is secured (Lotti and Sanetrelli, 2002).

Sectors

< insert figure 3 about here> As one can see the largest group represented in the sectors is manufacturing industry. Most of the firms in this category can be seen as craft-business like the production of beer, liquor, traditional candy, book printing and bindery, mills or production of metal objects, forthcoming from a blacksmith. Since the population of old firms originated from before the industrial revolution it is to be expected to find so many of these 'old-fashioned' products and activities.

Number of employees

The smallest number of employees of the questioned firms was one employee, the largest firm has 1100 employees. The mean is 108 employees. The distribution of employees and percentage of firms in the database is as follows:

Number of employees	% of old firms	Cumulative %
1-9	45.9	45.9
10-99	43.6	89.5
100 or more	10.5	100.0

Table 4: number of employees and percentage of old firms (Source: telephone survey)

The larger categories, 10-99 and 100 of more employees, are over represented in the sub-population of old firms, as can be seen in the table 5, which shows the distribution of employees and the percentage of firms.

Number of employees	% of firms	Cumulative % of firms
1-9	91.2	91.2
10-99	8.2	99.3
100 or more	0.6	100.0

Table 5: number of employees and percentage of old firms (Source: Brouwer and Henrich, 2001) Note: These percentages for the total population is based on all firms in the Netherlands with one to 250 employees, larger firms were not taken into consideration. Nevertheless these numbers give a rather good representation of the size distribution of the entire Dutch firm population.

On average it can be said that old firms are larger measured in numbers of employees. In other words, the population of old firms has a different size distribution than the total firm population in the Netherlands.

Family involvement, foreign branch plants and on site expansion

In the database 90.7 percent of the firms that are (originally) family firms, these will be called from now on 'family firms'. The remaining 9.3 percent of the firms are not family owned firms. From those firms that are no family firm, only 5 of 24 cases were founded before 1800, the remaining between 1801 and 1850. So apparently the family-structure was more popular in the 19th century and earlier. The structure of non-family firms becomes more popular during the 19th and the 20th century.

Although the larger average size of old firms, only 12.1 percent of the firm has a foreign establishment. 56.4 percent of the old firms did expansion on the current site.

Relocation

From the question on relocation, the following resulted:

- Don't know (memory gap) : 1.9%
- 0 times relocated : 52.9%
- 1-3 times relocated : 42.4%
- More times relocated : 2.7%

When the answer to this question was 'the firm did relocate', the succeeding question was whether these relocations did occur inside the own region or did the firm relocate over longer distances. 60.6 percent of the relocated firms answered yes to this region. When this is taken into consideration it can be concluded that old firms have a tendency to stay on one region or location, or consequently, old firms show a 'stickiness' to their home-region.

Product continuity

For the product/ activity over the lifetime of the firm the following results are calculated:

Product continuity	Frequency (cases)	Percentage
No change	155	60.3
Total change	19	7.4
Differentiation	83	32.3
Totals	275	100.0

Table 6: product continuity in the population of old firms (Source: phone survey)

No change indicates that the product and / or activity of the firms did not change in origin, however the production process might have been modernised over time. Total change means that the firm has held the same name, but produced a completely different product at business start-up than it produces nowadays, or has changed to

complete different activities. Differentiation means product and or activity differentiation. The product has changed gradually over time, but can still be considered to the same product -group or core-activity. From this high percentage of non-change can be concluded that old firms stick to their traditional products most of the time.

Analysis

Hannan and Freeman (1989) claim that mortality rate decreases with age and size, so in other words, when one studies the 'old' survivors, one would expect that these firms are quite large, or at least larger / larger size-distribution than the total population of firms. Looking at the results presented in figure 4, this statement is true for this survey, for size measured in number of employees. The size distribution of the old firm population when compared with the size distribution for the total firm population clearly presents that the category of one employee is considerable smaller for old firms than for the total firm population. Furthermore, the larger categories are for the old firms considerably larger than for the entire firm population. On average the older firms have relatively more firms with more employees.

<insert figure 4>

Diversification of product may reduce exit-rates. In other words, product diversification may be an incentive for survival (Siegfried and Evans, 1994). Although the 'survivors' in this survey mostly have unchanged products / activities, it is striking that only 7.4 percent of the old firms did experience complete product / activity change. However, since it is unknown in what distribution the non-survivors experienced this aspect, it is impossible to really conclude that change of product / activity is an incentive for exit.

High variations in survival rates across industries is consistent with that found in other European countries and North America (Autretch et.al., 1998). From figure 5 (distribution of sectors and product-continuity) it is quite clear that product differentiation is most common in the largest represented sectors; manufacturing industry and wholesale. In the construction sector it stands out that in this sector no change of product appeared. Construction, real estate and financial institutions are the most 'product-stable' sectors. Transportation, manufacturing and wholesale do the most product-change and differentiation.

<insert figure 5 about here>

In family-firms they strive for profit maximisation is subordinate to the economic and social consequences of the family involved. More important are matters of succession and getting involved in the stock market for the continuation of the firm (Arnoldus, 2002) This is also argued by Lotti and Santarelli (2002) who found that the largest risks for exit in family firms are at the moment of succession. Those entrepreneurs who do not have heirs, or no heirs that wish to continue the activity prefer to close down the business rather than hand over the control of the firm to an outsider. They conclude that the likelihood of survival among small family firms is solely a matter of age and there evidence indicates that there is a high risk of sudden exit (death) from the market in the age period during which a firm is more likely to face the problem of succession. A large percentage of the 'old' firms is family-firms, see figure 6, with the

following characteristics. It is clear that the characteristics that family-firms have in this database do not really differ from non-family firms.

< insert figure 6 about here >

< insert figure 7 about here >

From figure 7 it is distinct that old firms don't relocate very often. But how is this compared to the total firm population? To get an impression of how the relocation numbers of old firms are compared to the relocation numbers of all firms, figure 7 is compared to figure 8, which are the results of the FRW-firm-panel. This panel can be seen as a representative of the entire firm population of the Netherlands. For this panel a sample of the Dutch firm population is questioned on all firm dynamic actions on a regular interval.

<insert figure 8 about here>

As can be seen from figure 8, firms in the panel from age 25 years or older a constant part of about 60 - 65 percent of the firms have relocated at least once, including the oldest age groups from 70 to 100 years old. In the population of old firms 42.2 percent relocated one to three times, and 2.7 percent relocate more than three times. Together, 44.9 percent of the old firms did relocate at least once. This is substantially less than the 60 - 65 percent of relocation in the representative of the total firm population. Old firms do relocate less, or 'stick' more. If you consider the high number of relocations that was short-distance or in the firm's home region, it can be argued that old firms display a high stickiness to the home region, or as at least do old firms have a much smaller tendency to move. Reasons for this 'stickiness' to the home-region can be the following:

Locational inertia can be caused by large expenses that are required by collecting the necessary information for a search, purchasing and development of the land, building of the premises, interruption of production and, time expended for developing the new site into commercial business (Walker, 1975). But this is valid for all firms. However, Winter (1990) argues that organisational survival is a matter of continuity and routines. Inheritance is a phenomenon reflecting the special advantages that an organisation has in spatially replicating its routines, this can be an argument that survival on the long-run has higher chances when the firm 'sticks' to one well-known and familiar location. Another reason for a low mobility under older firms can be size-related. According to Van Steen (1997) is relocation in home-region is more usual among older firms since a movement over a shorter distance has less influence on the current employees, who will not have to be replaced. Since older firms tend to have more employees and more specific trained employees they tend to stay in the home-region. This would mean that larger 'older' firms would relatively move less, the results from the survey however give a different picture. The percentages of relocation exceed the percentage of no-relocation after the number of 10 employees. This might be caused by the fact that the relocation might have taken place in the early years of the existence of the firms when the firms could have been much smaller in number of employees.

<insert figure 9 about here>

<insert figure 10 about here>

When the results in figure 9 are studied one can see that the 'older' firms are relatively more mobile than the 'younger' firm in the survey. The only age group that has relatively more relocation than non-relocation is the group that was founded before 1800. Overall, one could say that the relocation numbers gradually go down from 59.6 percent to 38.0 percent and the non-relocation numbers go gradually down from 40.4 percent to 62.0 percent with a shorter existence of the firm. Only the age group 1801-1810 is interfering with this pattern. What is the cause of this irregularity is to be researched.

Another reasons for inertia of older firms can be that knowledge spillovers are facilitated by geographical proximity and are therefore often region-specific. The local accumulation of human capital and supportive institutions leads to a comparative advantage, which is hard to copy and difficult to transfer to other areas (Boschma and Lambooy, 1999), this will only become more difficult if a firm is older and so more 'attached' to a specific location. With this also a sense of embeddedness is important. As the population of firms' age, they are more likely to have their actions and structures endorsed and legitimated by powerful collective actors. They are also likely to establish channels of exchange and relationships with other populations and become part of the power structure of the broader ecological communities in which they reside (Baum and House, 1990).

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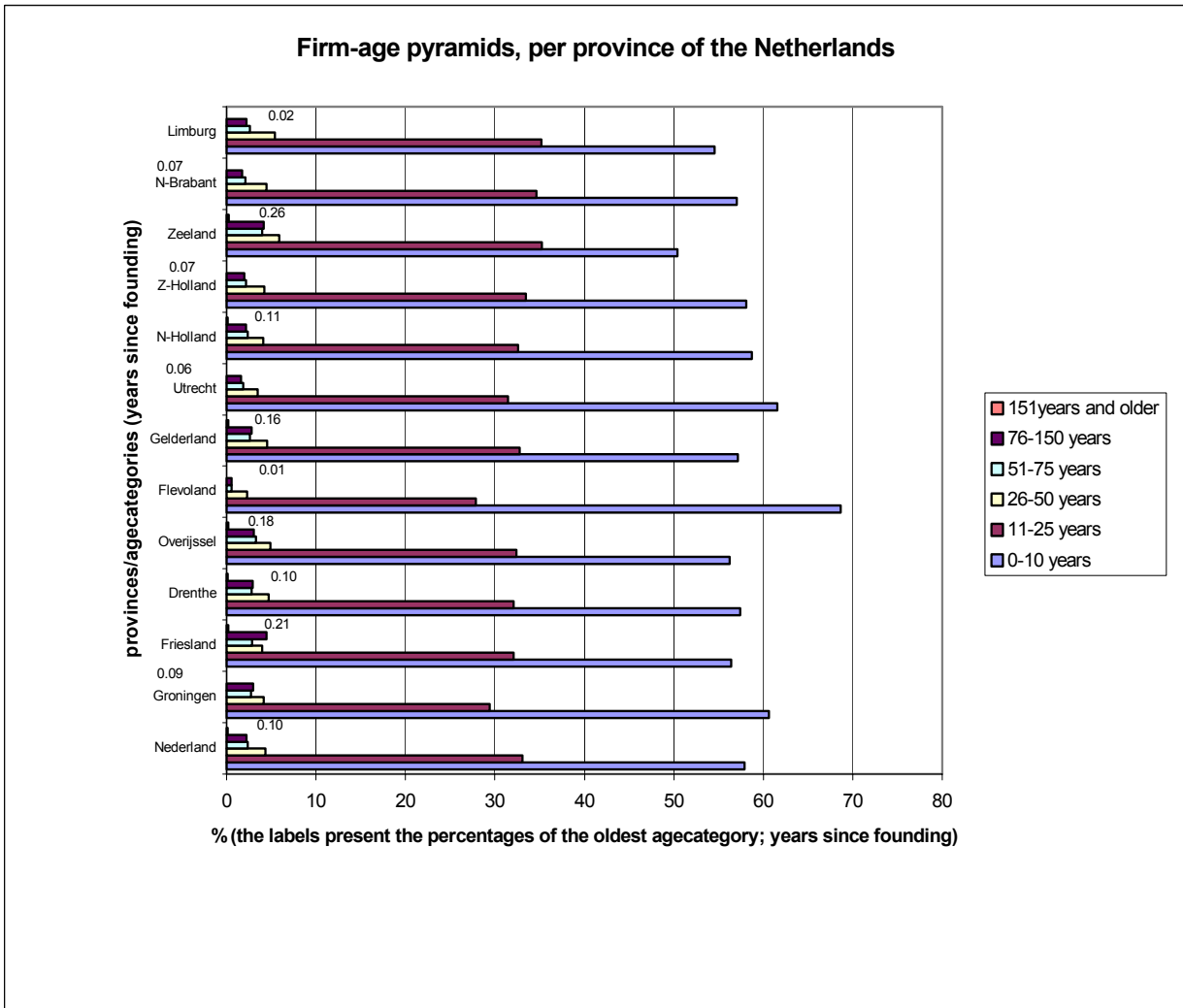


Figure 1: firm-age pyramids (source: REACH / Van Dijk database, 2003)

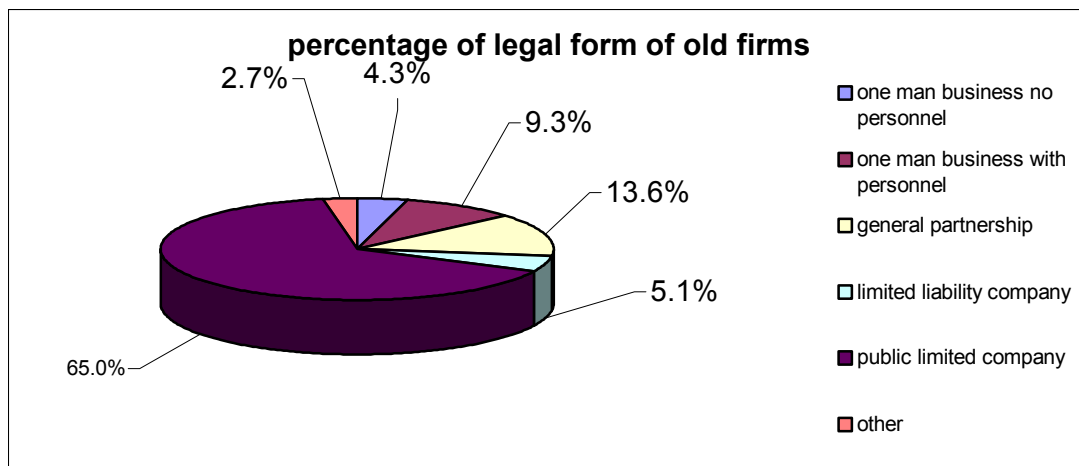


Figure 2: legal form of old firms (source: telephone survey)

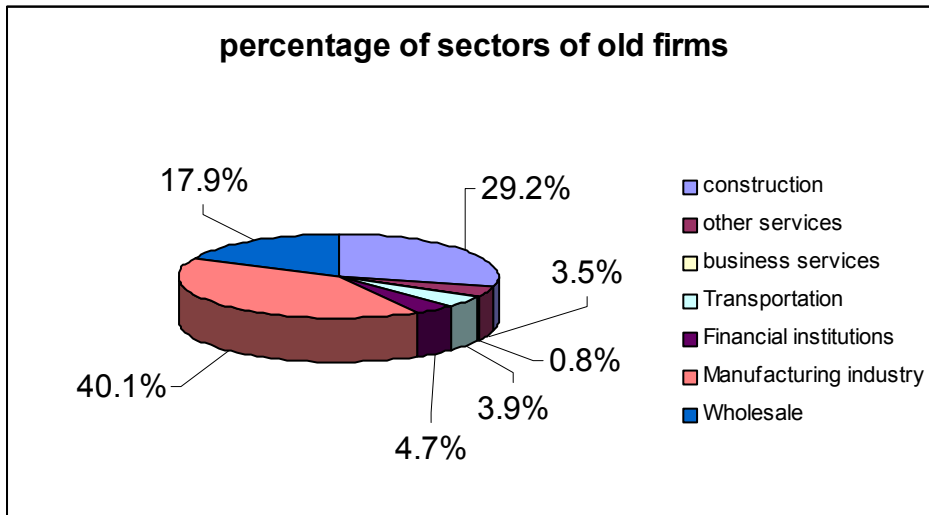


Figure 3: Sectors (source: telephone survey)

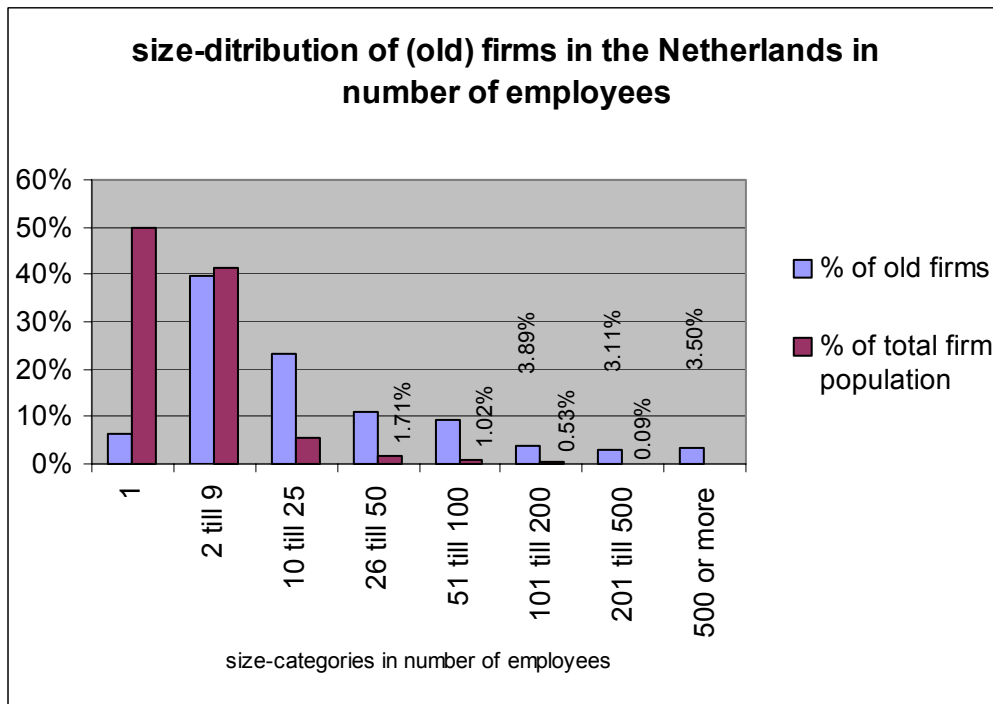


Figure 4 (source: telephone survey and Brouwer and Henrich (2001) Note: The size distribution for the total population is done on all firms in the Netherlands with one to 250 employees, larger firms were not considered. Nevertheless these numbers give a rather good representation of the size distribution of the entire Dutch firm population.

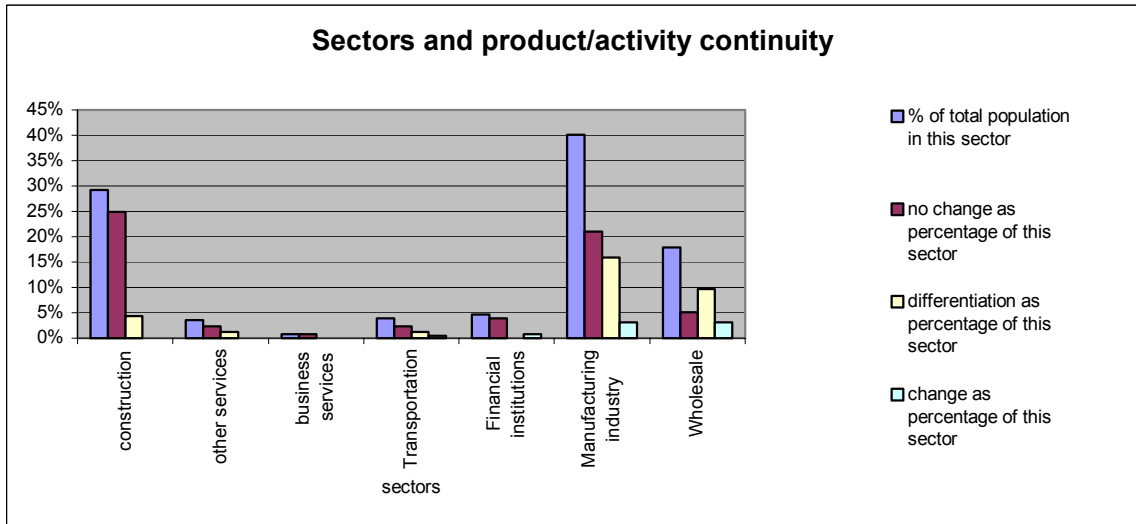


Figure 5: sectors and product continuity (Source: telephone survey)

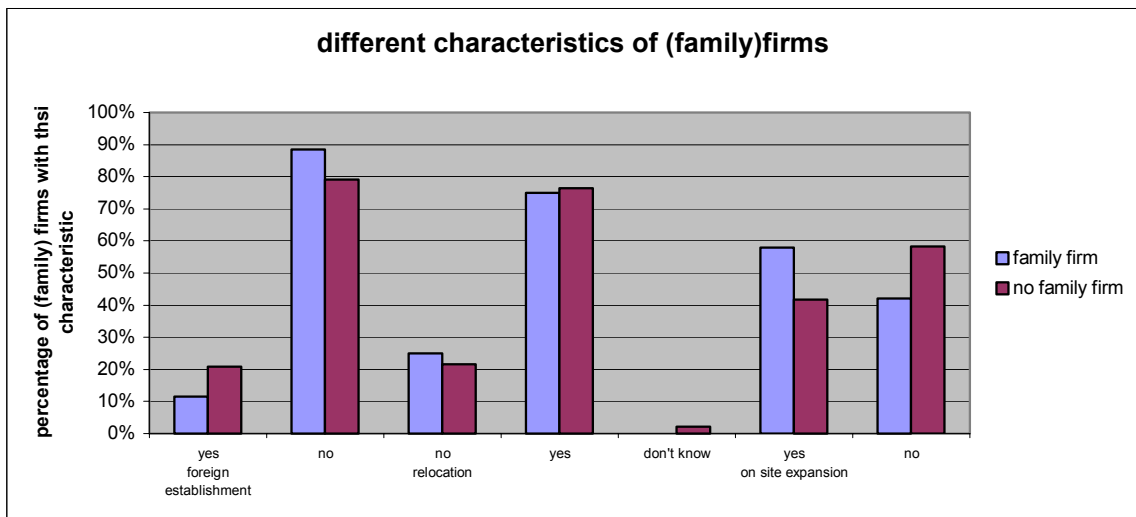


Figure 6 (Source: telephone survey)

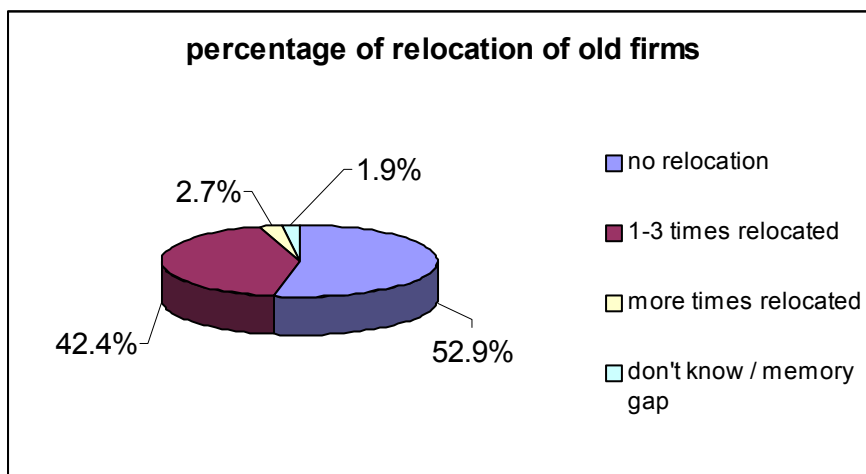


Figure 7: relocation of old firms (source: telephone survey)

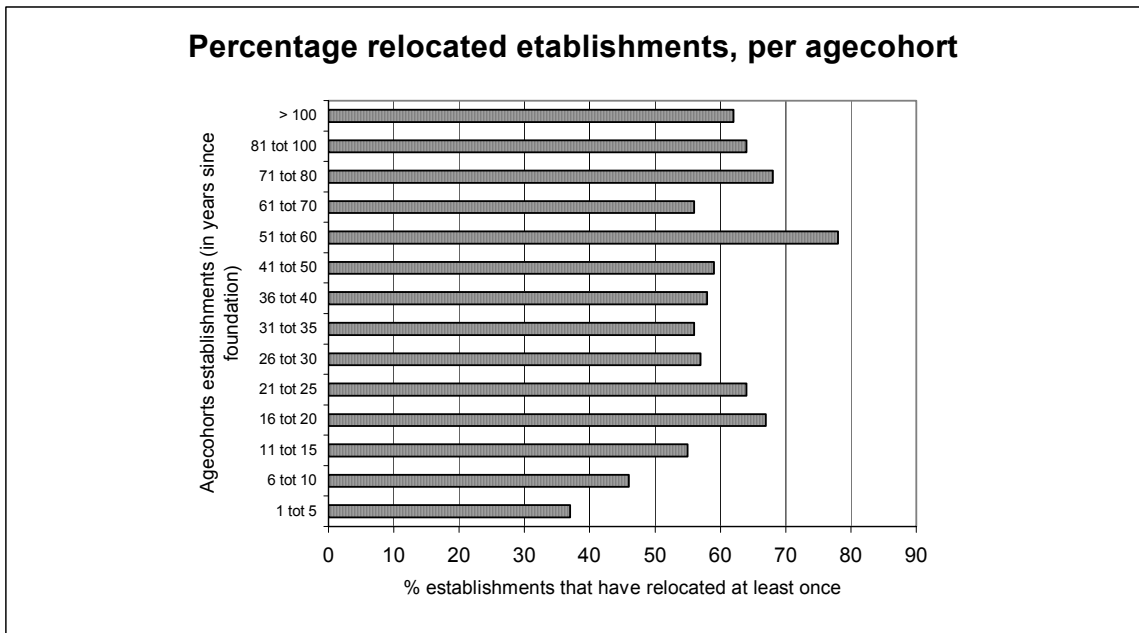


Figure 8 (Source: FRW firm panel (Van Steen, 1997)

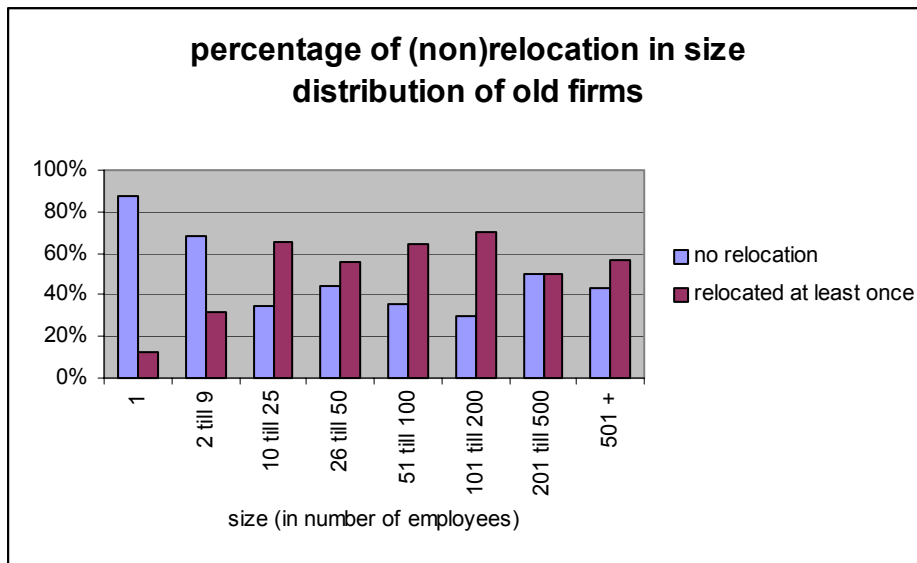


Figure 9 (source telephone survey)

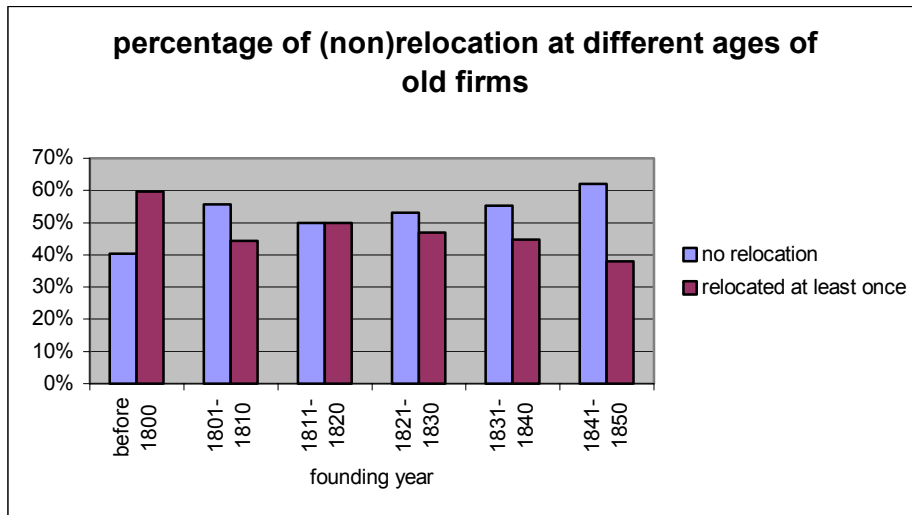


Figure 10 (source telephone survey)