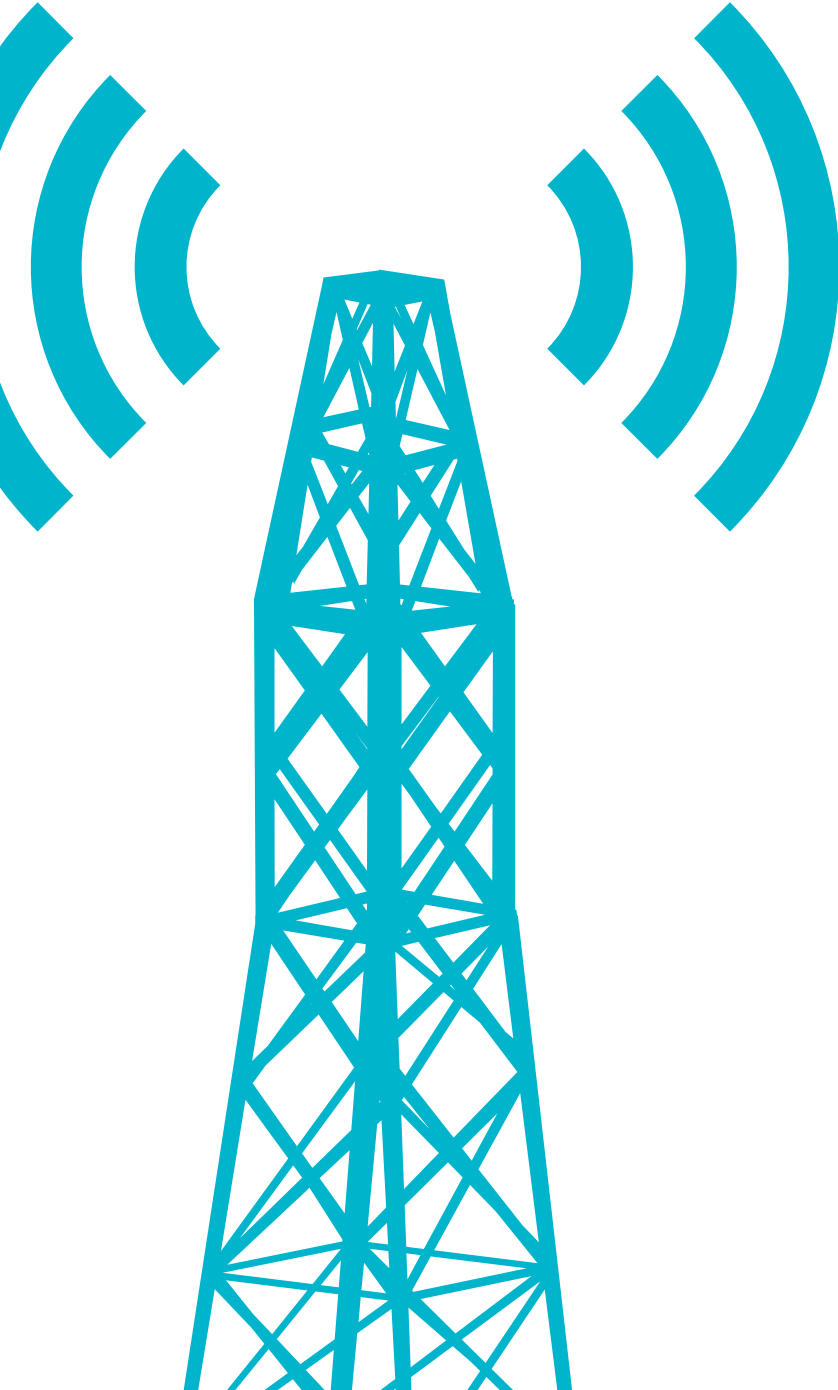


Enterprise demography of international and domestic firms

6



Enterprise demography of international and domestic firms

- 6.1** Introduction
- 6.2** Theory and background
- 6.3** Data and methodology
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This chapter presents the differences between Dutch and foreign controlled enterprises in enterprise dynamics, especially the birth, death and survival rates and the role of international trade. This study found that there were differences in the birth and death rates of foreign and Dutch firms, where firms under Dutch control show the highest births and deaths. At the same time, internationalisation has a positive impact on firm survival.

6.1 Introduction

Economic, social and technological conditions are constantly changing. This offers enterprises opportunities and threats and leads to a great deal of dynamics (births, deaths, mergers and acquisitions). This has an impact on different parameters of the national economy, such as business structure, employment, economic growth and innovation. Therefore the 'Lisbon strategy' was re-launched in 2005 with a particular focus on growth and jobs. New enterprises and their survival in the market are often described as stimulating economic growth and employment creation. They have a positive impact on labour productivity as well. New firms increase the competitive pressure on incumbents, therefore increasing efficiency (Gibcus et al, 2005).

Exiting firms not only lead to the destruction of capital and jobs. There could be economic benefits as well if they exit as a result of market competitiveness. Competition from multinationals leads to market reallocation and survival of only the most productive domestic firms (Alfaro and X. Chen, 2012).

The main research question of this chapter is whether internationally active enterprises experience different dynamics in terms of birth and death rates than enterprises that focus on the domestic market. Internationally active enterprises can either be enterprises under foreign control or enterprises that engage in the international trade in goods.

The analysis provides a first gauge of the differences in survival rates of international and domestic firms. Defining different enterprise events helps to gain insight in enterprise dynamics and their characteristics. The key variables we include in our analysis are size class, economic activity and trade status.

In the next few chapters, we will further analyse the factors influencing enterprise survival and success. Chapter 7 focuses on the effects of enterprise dynamics on the economy. We will investigate whether survival and economic performance is significantly different for foreign controlled starters than for Dutch enterprises. Similarly, do foreign and Dutch controlled enterprises that exit differ in terms of economic performance? Chapter 8 will dig deeper into the population of international traders and their dynamics. In this chapter we will look at the way a new trader grows, i.e. by adding new products or new countries

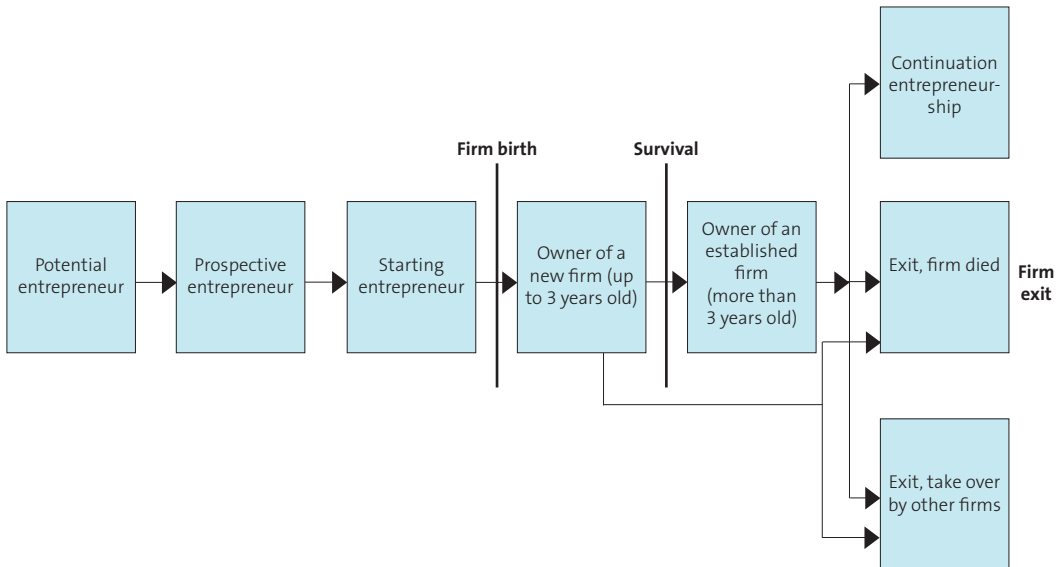
to its trade portfolio, or by increasing the scale of sales. We will also analyse whether the type of trade has an impact on its survival as a trader and as an enterprise. Chapter 9 deals with the economic turmoil caused by the 2008 financial crisis. We will illustrate how the crisis effects the performance of different groups of enterprises in the Dutch economy, in terms of turnover, employment and international trade performance. This chapter tries to determine which enterprises and sectors were struck the most by the crisis, which were least affected and who recovered the most, after the downfall in 2009.

This chapter is arranged as follows. First, we briefly review some of the current literature on enterprise demography (section 6.2). Then we describe the data and methodology used (section 6.3). The results are presented in section 6.4, displaying descriptive statistics on birth and death rates. Section 6.5 presents the *born global* phenomenon. After that we present survival rates (section 6.6). We use a regression analysis to explore the relationship between the survival of a firm and several explanatory variables (section 6.7). Section 6.8 concludes this chapter.

6.2 Theory and background

Enterprise demography is the study of the age structure and growth of enterprise populations, especially as it relates to the births and deaths of enterprises. Many studies have already researched the development of entrepreneurial activity in the Netherlands. Various phases can be distinguished in the entrepreneurial process. Figure 6.2.1 displays the various stages of the entrepreneurial process. In this chapter we will not focus on the entrepreneur but on the enterprise, and describe the births, survival and exits of firms.

6.2.1 The entrepreneurial process



Source: EIM/GEM, 2009.

The survival rates of new firms are dependent upon the initial conditions at the entry. For example, Geroski et al. (2007), reviewing the literature about founding conditions on exit rates, found that initial stocks of financial and human capital are good predictors of a firm's survival. Large firms are more likely to survive as they benefit from economies of scale, have better access to finance and have different managerial capabilities than smaller firms. Hence, if foreign firms are indeed larger at entry, we may expect that their survival rates are higher than those of Dutch entrants.

The age of an enterprise is also an important factor in enterprise survival. Most empirical research shows that the probability of enterprise failure is highest in the earlier years. The difficulty of coordinating strangers, lack of experience and tacit knowledge, insufficient assets and difficulties in establishing networks of suppliers and customers are all reasons why young firms are more at risk of exiting (Carroll and Hannan, 2000).

Despite the limited resources that usually characterise new businesses, born globals achieve substantial international sales from an early stage in their development. There is no clear definition of a born global. In our study we define a born global as a firm that is starting international activities within less than one year after its foundation. The appearance of large numbers of born global firms is revolutionising the traditional character of international business and helping to reshape the global economy.

We also expect that the international trade status of an enterprise has an impact on its survival. The risk that an enterprise takes by starting to trade may be reflected in lower survival rates in the early years for traders. Giovannetti et al (2011) found for a panel of circa 4 thousand Italian manufacturing firms that exporting increased their risk of failure by 32 percent, which the authors attributed to increased competition from foreign producers. Alternatively, trade is generally assumed to stimulate growth, which would suggest lower failure rates among traders. For instance, Kimura and Kiyota (2006) found a failure rate that is 7–18 percent lower for Japanese exporting firms than for non-exporters. Dzhumashev et al (2011) showed for a set of Indian firms that internationalisation can also have a dual effect on survival, each of which emerges at a different point in time. In the initial phase of exporting, exporters are vulnerable to shocks and foreign competition, reflected in higher hazard rates in early years. Over time, exporters benefit from productivity gains and economies of scale, which cause their hazard rates to fall below those of non-exporters. In section 6.6 and 6.7 we will see if international trade right after entry (born globals) is also an important factor of firm survival in the Netherlands.

6.3 Data and methodology

Construction of the dataset

In order to analyse the differences in enterprise dynamics between Dutch and foreign controlled enterprises, we integrated several datasets. The General Business Register distinguishes several categories of enterprise events: births, deaths, acquisitions (and continuations). The establishment of a new enterprise leads to a birth in the General Business Register if the enterprise reports their economic activity (employment or turnover). Mortality involves the closure of an enterprise without continuation.

Information on births and deaths is linked to enterprise characteristics (sector of activity, firm size, locus of control) and data on international trade in goods (importer, exporter and two-way trader). The dataset is created for 2007–2010. The results in this paper are based on the sectors of the business economy (NACE Rev. 2 section B–N, excluding K). Government, education and health care are excluded from the analysis (see table 6.3.1). The combination of the datasets resulted in a micro dataset with information on enterprise dynamics for an average of 750,000 active enterprises each year. Approximately 14 percent of the enterprise population is born each year and about 9 percent of the enterprises dies. The Annex gives an overview of the number of births and deaths of Dutch and foreign controlled enterprises, by sector of activity and size class.

6.3.1 Sector classification

Category	Includes ¹⁾
Manufacturing	SBI 06–39 (natural resource extraction and industry)
Construction	SBI 41–43 (construction)
Wholesale trade	SBI 46 (wholesale trade)
Transport and storage	SBI 49–53 (transport and storage)
Retail trade and hotels and restaurants	SBI 45, 47, 55–56 (repairs, retail trade and hotels and restaurants)
Services	SBI 58–63, 68–82 (real estate, renting, communication services and business services)

¹⁾ Based on the new NACE Rev. 2 classification of the business enterprise sector.

Next we made a separate selection to allow for analysis of survival rates (i.e. the probability that a firm does not die) of Dutch versus foreign firms, for several types of traders, non-traders and for several economic sectors. In order to analyse survival rates, we selected all 108,000 firms that were newly established in 2007. We used the Business Register to identify the date a firm exited the population, and to estimate the survival probability. The exit date is defined as the month the firm died, not due to mergers or acquisitions. Exit dates range from January 2007 to December 2011, covering 60 months of possible existence. In the last sample year 2011 60,000 enterprises were still active.

Variables

For the analysis firms were broken down by sector of activity (manufacturing, construction, wholesale and retail trade, transport and services, see table 6.3.1), firm size (0–1 employees, 2–4 employees, 5–9 employees and >10 employees), locus of control (Dutch versus foreign). We also analysed the birth and death rates of importers (only), exporters (only) and two-way traders (import and export activities).

Analysis

Our analysis consists of two parts. First, we present a set of descriptive tables and figures on enterprise demography (rates on births and deaths) in the Netherlands for the years 2007 to 2010, in terms of the enterprise population. We make a distinction between Dutch and foreign controlled enterprises and between importers, exporters and two-way traders. Secondly, we analyse the survival rates among different types of firms. Finally we do a Cox regression on a model of all our variables with regards to survival.

6.4 Descriptive statistics

The demography of enterprises is displayed in figure 6.4.1, which presents the birth and death rates at foreign and Dutch controlled enterprises in the Netherlands for the period 2007–2010. The birth and death rates are calculated as shares of the total number of active foreign and Dutch controlled enterprises.

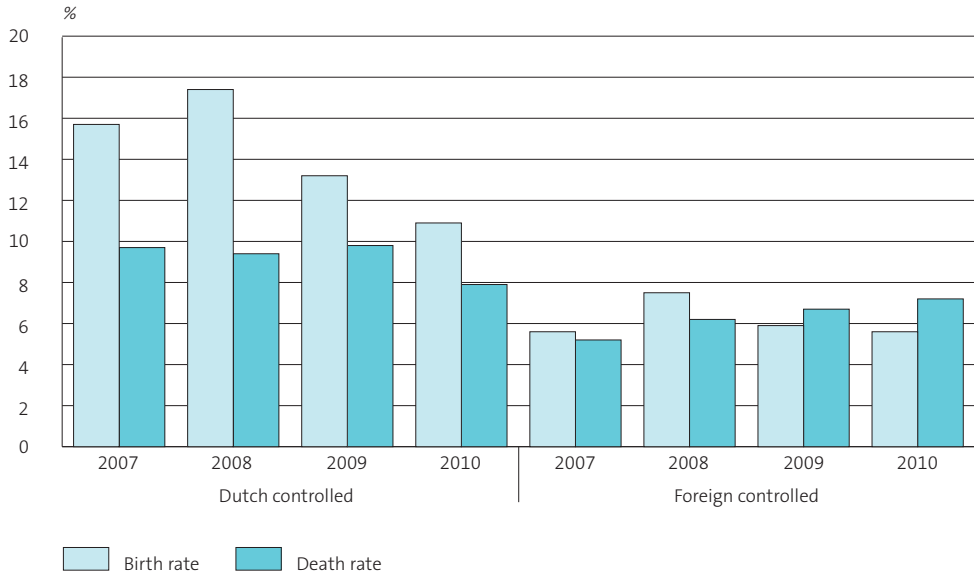
Dutch controlled enterprises showed a higher birth rate than foreign controlled enterprises in the Netherlands, both in number and in share of enterprises. This means: compared to the population of Dutch and foreign controlled enterprises, relatively more Dutch firms are established. Foreign firms encounter more entry barriers (cultural and regional differences, language barriers and a lack of knowledge about the local market) than Dutch firms.

Both Dutch and foreign controlled enterprises show an increase in newly established firms in 2008. After 2008, entrepreneurial activity declined because of the falling demand on the product market during economic crisis. Also, many individuals lost their jobs due to the recession and were forced to look for something different. Some started a new business out of necessity.

More entries and exits under Dutch than under foreign control

Dutch controlled enterprises also showed a higher death rate than foreign controlled enterprises: an average share of 9 percent. This implies that every year, on average 9 percent of the Dutch controlled enterprise population dies. The death rate of foreign controlled enterprises averaged 6 percent, which increased slightly for the 2007–2010 period.

6.4.1 Birth and death rates of Dutch and foreign controlled enterprises



In the observed period, newly established Dutch enterprises outnumber the ones that are closing down. In 2010 the number of Dutch enterprises grew by 3 percent. This is calculated as the number of enterprise births minus number of enterprise deaths, as a percentage of the number of enterprises on 1 January of the year concerned. This 3 percent growth rate in 2010 was lower than in previous years. In 2008, for instance, it was 8 percent.

The number of foreign enterprises increased in the 2007–2010 period. Although there was a negative growth rate in 2009 and 2010, the number of foreign enterprises still rose because of the dynamics in mergers and acquisitions. When looking at transitions between foreign and Dutch controlled enterprises, Dutch to foreign acquisitions lead to an increase in the number of foreign enterprises (not shown).

Figure 6.4.2 provides some information of the firm size distribution of new and dying enterprises in 2007 and 2010. As expected, most new Dutch and foreign enterprises were small with 0–1 employees. The average newly established foreign controlled enterprise had more employees than new Dutch enterprises. Foreign firms are already relatively large in their home market before they invest abroad, and are able to start on a larger scale than Dutch start-ups that do not have such backing (Fortanier, Korvorst and Pouwels-Urlings, 2011).

The dominating trend in firm size in the 2007–2010 period is towards smaller enterprises. The share of new Dutch enterprises with 0–1 employees increased from 71 to 85 percent. This represents the change towards more self-employment (as a freelance or business

owner) in the Netherlands and especially towards starting a new firm without any employees. Foreign new enterprises showed an increase in their share of small enterprises as well but not as steep as that of new Dutch enterprises.

Dying Dutch firms are also more prevalent among the smaller size classes, which is to be expected since most start ups are also small. The share of dying Dutch firms with 0–1 employees increased from 62 to 80 percent in the 2007–2010 period. Foreign controlled enterprises are generally much larger when the firm dies.

6.4.2 Births (left) and deaths (right), by size class

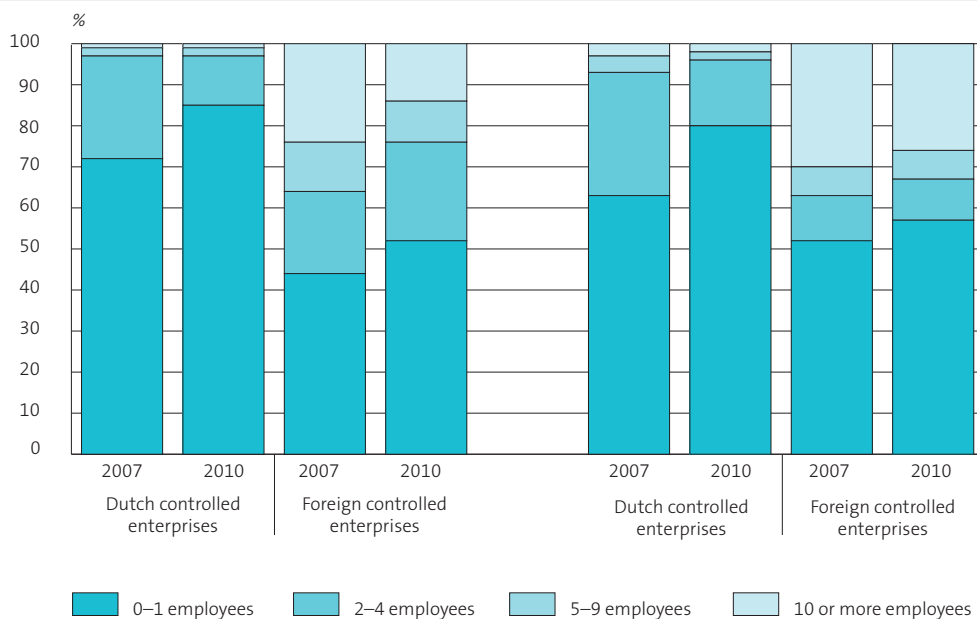
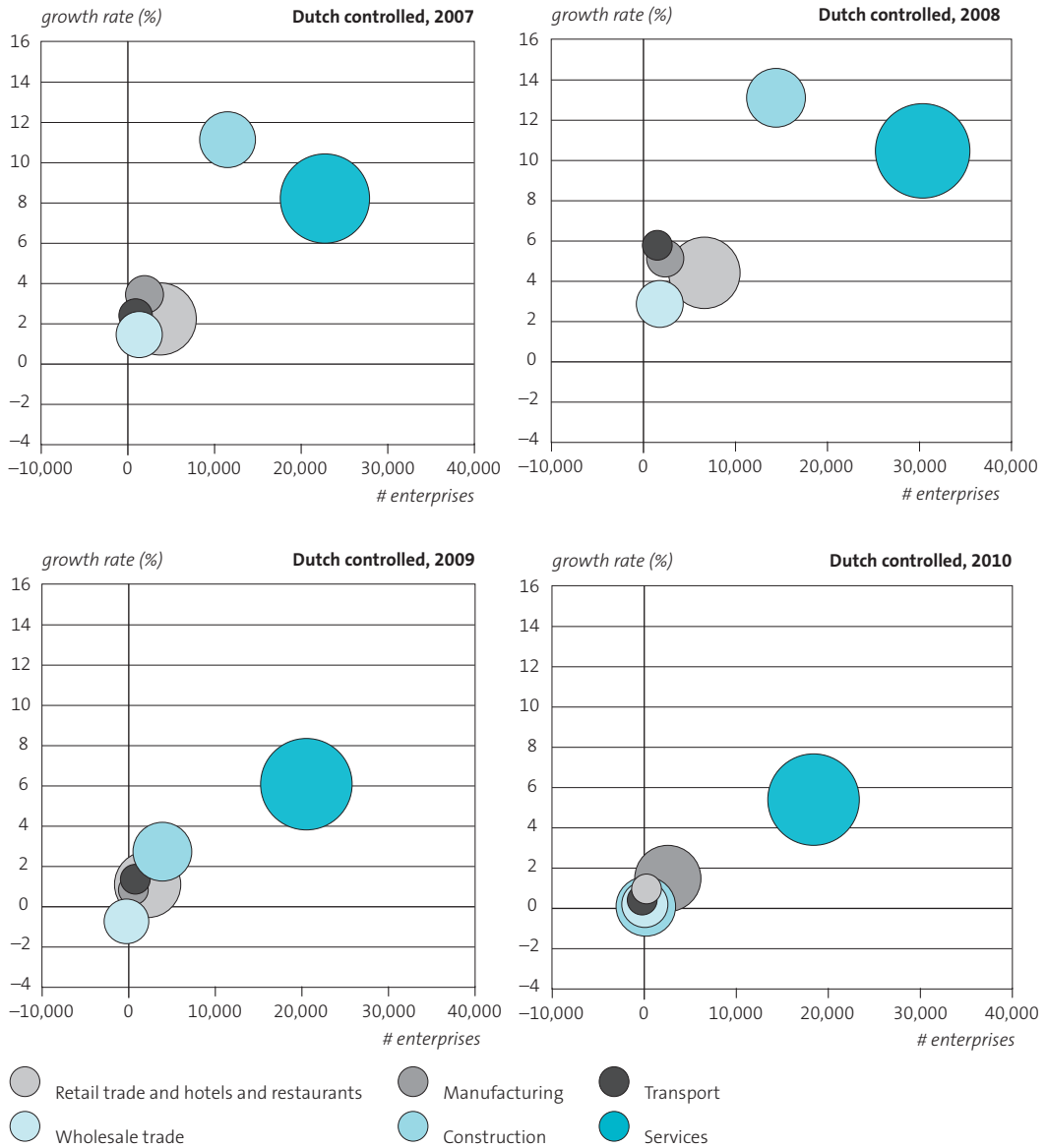
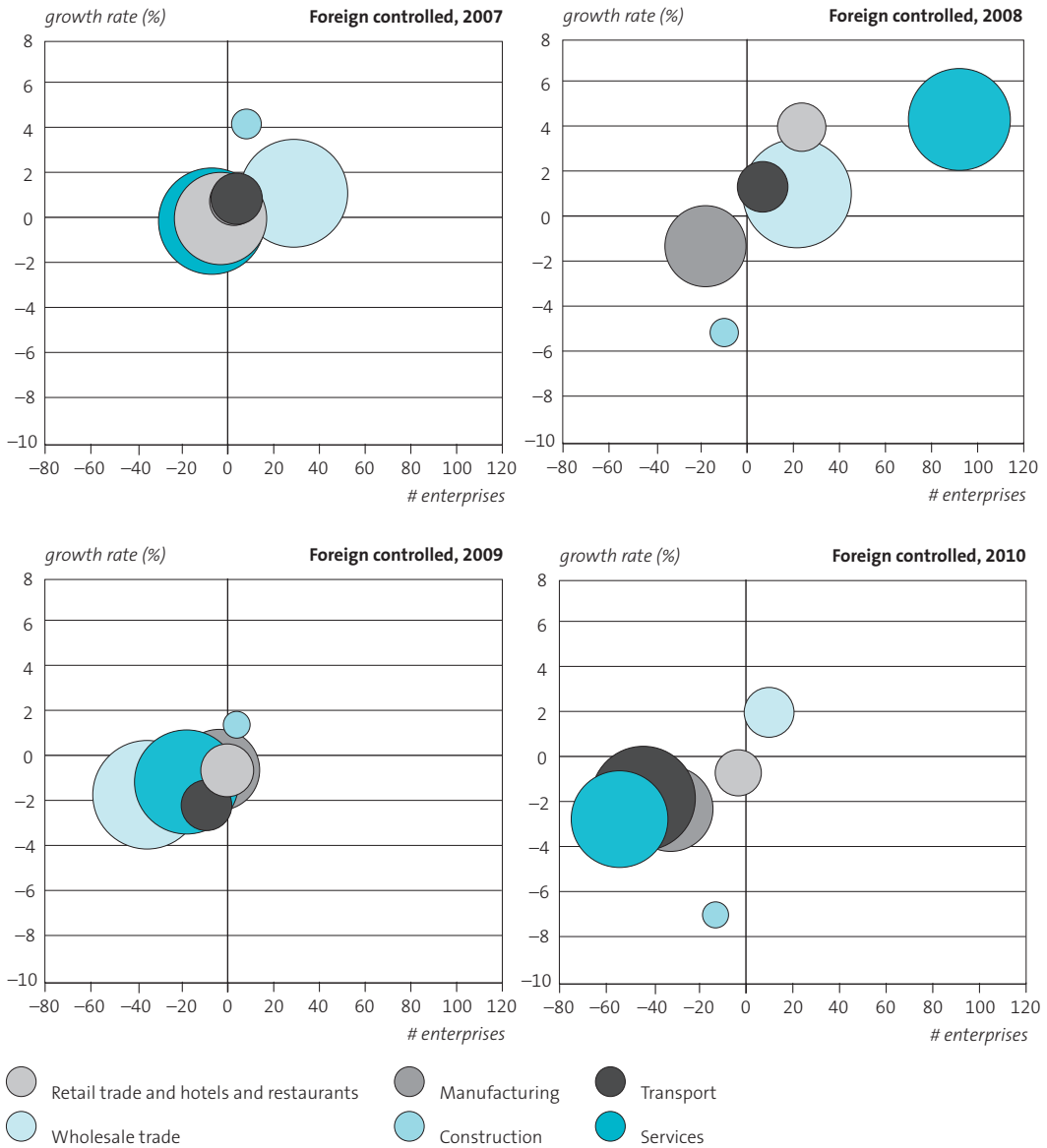


Figure 6.4.3 presents the annual growth in number of enterprises (births minus deaths) on the x-axis, the annual growth in shares of total enterprises (y-axis) and the size of the enterprise population in number of enterprises (the size of the bubble) for Dutch and foreign controlled enterprises by sector of activity for 2007–2010.

6.4.3 Enterprise growth rate of Dutch controlled enterprises, by sector of activity



6.4.3 Enterprise growth rate of foreign controlled enterprises, by sector of activity (end)



Relative to the size of the enterprise population, there were differences in enterprise growth rates across the various activities of the business economy and between Dutch and foreign controlled enterprises. For example, most entries and exits of foreign enterprises tended to be in wholesale in 2007–2010 where many foreign controlled enterprises are active (bubble size). In 2007, the number of enterprises in the wholesale trade grew by 1 percent (y-axis) whereas it decreased by 1.5 percent in 2010 (see figure 6.4.3). In contrast to foreign enterprises, the proportion (bubble size) of the Dutch wholesale sector is a lot smaller and there are fewer entries and exits of Dutch enterprises in this sector.

The number of Dutch enterprises grew by 23 thousand in 2010 of which 83 percent were in services. The highest growth rates in 2010 tended to be in services, namely 6 percent, whereas the lowest growth rate was in manufacturing. This reflects relatively low entry and exit barriers for a number of services and higher barriers for many industrial activities.

In contrast to Dutch enterprises, foreign enterprises showed negative growth rates in 2009 and 2010. Most entries and exits of foreign enterprises tended to be in the wholesale trade and in services. These sectors accounted for more than two thirds of the decline in foreign enterprises. Although almost all sectors show negative enterprise growth rates, there were still differences across the sectors. Foreign firms had the lowest growth rates in construction and services in 2010. The highest growth rate was in transport and storage. In 2010, the number of foreign firms in transport and storage actually grew by 2 percent.

6.5 Born globals

The internationalisation process of firms has been the topic of widespread research (Bernard and Jensen, 1997; Wagner, 2011; Muûls and Pisu, 2007). It has been demonstrated that many firms now do not develop in incremental stages with respect to their international activities. They often start international activities right from their birth, enter very distant markets right away, and enter multiple countries at once. Lin and Wang (2008) called such firms born global. In this study we define a born global as a firm that is starting international activities right from birth or very shortly afterwards. In this paragraph, we will describe the born globals.

Table 6.5.1 considers the number of firm births broken down by shares of non-traders, importers, exporters and two-way traders (who import as well as export). In 2007, 11 percent of the newly established enterprises in the Netherlands started to import or export within less than a year after their foundation. Firms that only export accounted for around 2 percent. Our data show that importing goods is more common for newly established firms than exporting. Exporting is a more specialised activity. Selling a product

abroad makes extra demands on an enterprise: additional investments, extra effort of the staff and a larger economic risk. It is therefore very important for entrepreneurs who want to focus on the foreign market to be well prepared. Firms entering a foreign market have to explore that market well. This reflects the relatively low barriers for importing and higher barriers for exporting. Some 6 percent of the enterprises imported goods in 2007. In their first year, firms that were exclusively importers or exporters tend to trade relatively few products (1.4) with a relatively small number of countries (2.5 vs. 1.6). Two-way traders start trading with an average of four products with four countries. In 2007, born globals contributed only 1 percent to import and export value but over time, the import and export values shares represented by the born globals of 2007, doubled.

Firms are likely to keep the same trade status during their lifetime when they are starting as non-traders or two-way traders (Muûls and Pisu, 2007). We found that only 11 percent of the new non-trading enterprises in 2007 started to import or export later than one year after their start.

6.5.1 Enterprise births, by international trade

	2007	2008	2009	2010
Total	107,825	126,850	103,315	84,305
	%			
Traders	11	11	8	14
importers only	6	6	4	8
exporters only	2	2	1	3
two-way traders	3	3	2	3
Non-traders	89	89	92	86

After the economic crisis, we see a recovery of the share of born globals. In 2010 the share of born globals was 14 percent, a slightly increase on 2007 and 2008. Advances in telecommunications and other technologies have considerably reduced the costs and risks involved in internationalisation, which makes it possible for an increasing number of small and medium sized firms to exploit opportunities in foreign markets. The proportion of the small firms' share of born globals has changed compared to the previous years. Over the years, small firms with 0–1 employees have been responsible for an increasing share of born globals. Starting at 60 percent in 2007, their contribution was up to 80 percent in 2010.

In the Netherlands, wholesale, retail, and services contributed 85 percent to the total number of born globals. Trade activity appears to be more common in wholesale than in

the other sectors. Enterprises in the wholesale trade comprise about 50 percent importers and exporters.

6.6 Survival rates

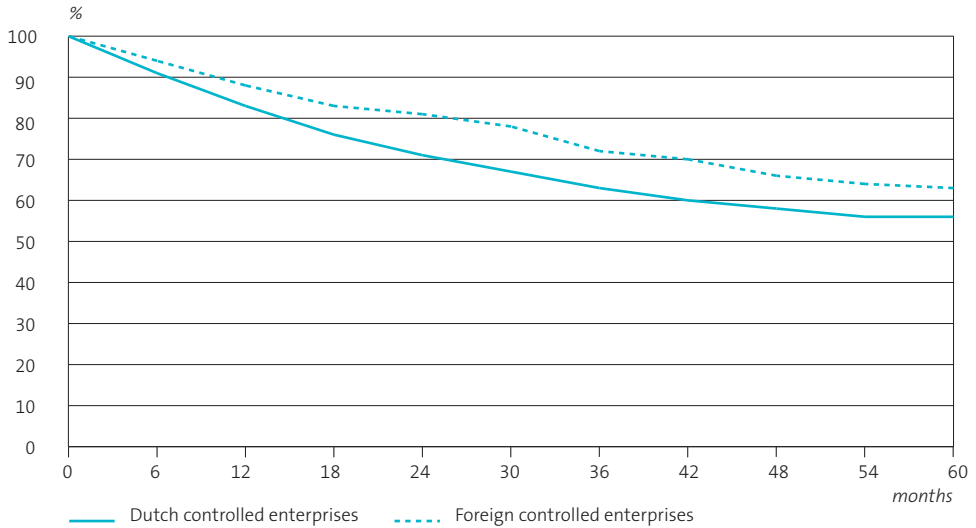
Many industries display a great deal of turbulence as new firms enter the market and existing firms exit (Caves, 1998). In this paragraph we describe the enterprise characteristics that influence the probability of firm survival. Survival is defined as the percentage of new firms that continue to operate when they reach a given age. Firms are most exposed to risks in their first few years. About 83 percent of the new enterprises that entered the market in 2007 survived one full year, 63 percent survived three years and 56 percent still survived after five years. We analysed the survival rates among different types of firms.

Figure 6.6.1 presents the survival rates for the 2007 cohort of new start-ups that are under Dutch and foreign control. The figure shows that the survival rate of the new firms in 2007 declined steadily for both categories over the five-year period observed. More foreign controlled than Dutch controlled enterprises survived.¹⁾ 88 percent of foreign enterprises that entered in 2007 survived one year, whereas 83 percent of Dutch enterprises did. After five years in business, 56 percent of the Dutch enterprises survived versus 63 percent of the foreign enterprises.

Foreign firms are larger at entry, so we expect a higher survival rate than for Dutch entrants. Indeed, we found higher survival rates for larger firms in our data. After 5 years, 83 percent of the large foreign firms were still active and only 62 percent of the small foreign firms (<10 employees). Large firms are more likely to survive as they benefit from economies of scale, have better access to finance and have different managerial capabilities than smaller firms (Fortanier, Korvorst and Pouwels-Urlings, 2011).

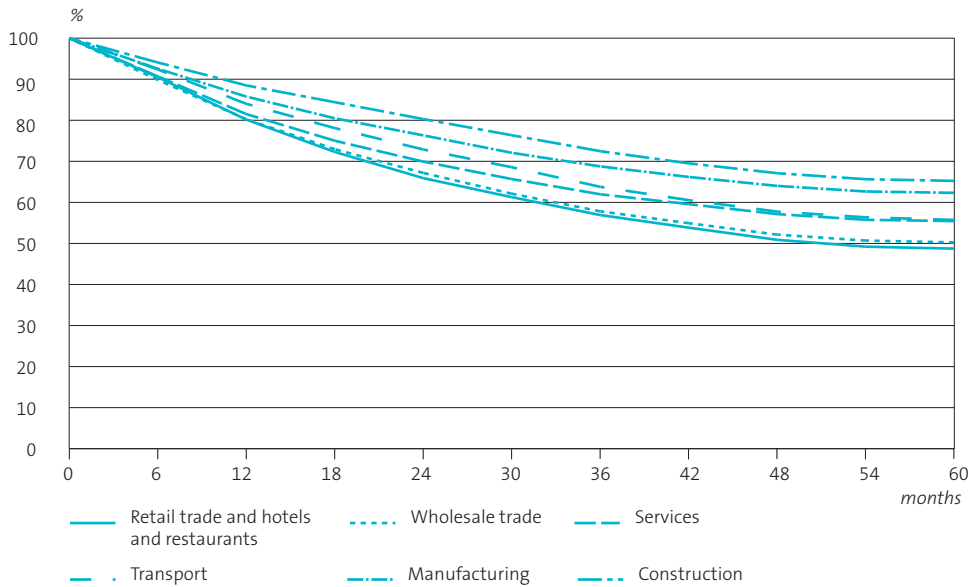
¹⁾ We analysed survival rates for different years of cohorts of new firms and found the same survival rate patterns among Dutch and foreign controlled enterprises.

6.6.1 Survival rates of new start-ups of Dutch and foreign controlled enterprises 2007



The results of the survival rates of new enterprises by sector of activity are presented in figure 6.6.2. There is a difference in survival rates across sectors. Survival rates are highest for firms that started in construction and manufacturing in 2007. In construction maintenance operations continue (for example because of constant demand from housing corporations), whereas in times of economic crisis new orders collapsed. Many industrial activities have relatively high entry and exit barriers. Firms have the lowest survival rates in the wholesale and retail trade.

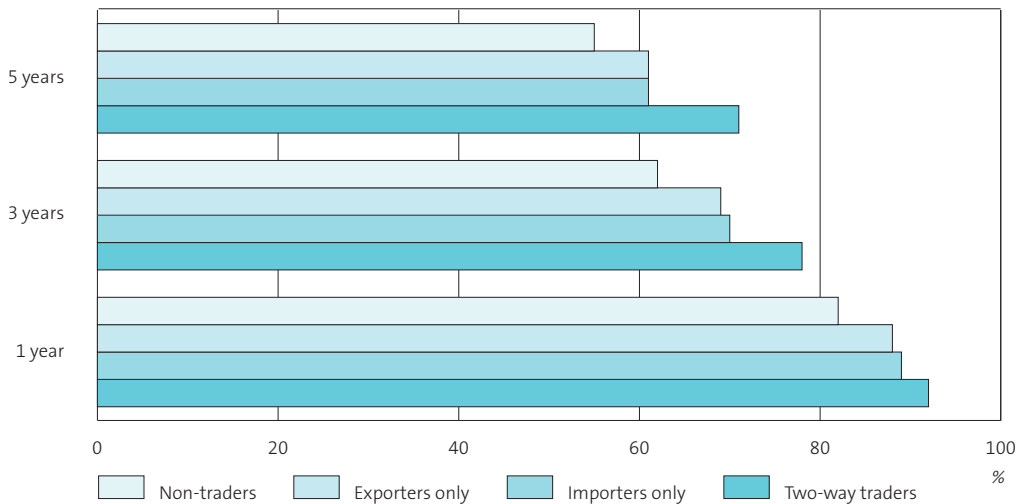
6.6.2 Survival rates of new start-ups 2007, by sector of activity



We also looked at the relationship between firm survival and three kinds of international trade activities (export only, import only and two-way trade). Two-way traders tend to be more productive than firms that either only import, or only export, or do not trade at all (Vogel and Wagner, 2010). Therefore, Wagner (2011) expected a lower exit probability for two-way traders than for exporters or importers. We found the same results. Figure 6.6.3 presents survival rates for the 2007 cohort of new enterprises that are importers only, exporters only, two-way traders and non-traders. The figure shows that more two-way traders survived than any of the other categories. For example, 92 percent of the two-way traders that entered in 2007 survived for one year, whereas 89 percent of the importers and exporters did. The gap in survival rates between these categories almost doubles as the number of years in business increases. After five years in business, 70 percent of two-way traders survived compared with 61 percent of the importers and the exporters.

International trade has a positive impact on firm survival

6.6.3 Survival rates of new start-ups with and without trade 2007



6.7 Regression analysis

In paragraph 6.6 we found differences in the probability of firm survival among different types of enterprises (i.e. Dutch versus foreign control). In this paragraph we test whether the differences in survival rates were statistically significant. We used a Cox regression model to explore the relationship between the survival of a firm and several explanatory variables. Interpreting the Cox model involves examining the coefficients for each explanatory variable. A positive regression coefficient (B) for an explanatory variable means that the hazard (risk of death) is higher and thus the survival rate is worse. Conversely, a negative regression coefficient implies a better prognosis for enterprises with higher values of that variable (Walters, 2009). The actual method is much too complex for a detailed discussion here.

We first tested whether the differences in survival rate for foreign controlled start-ups in 2007 were statistically significant from those of the Dutch controlled start-ups. The regression results confirmed that foreign controlled firms did indeed have a lower hazard ratio. The probability of an instant exit for foreign controlled firms is 24 percent lower than for Dutch controlled enterprises.

The sector of activity in which an enterprise starts has a statistically significant impact on its chances of survival. We tested the differences in survival rates between start-ups in the six sectors of activity. It turned out that start-ups in transport and storage and services did not differ significantly in terms of survival after five years. Start-ups in 2007 in the other sectors do differ significantly from each other, and again the highest hazard ratios are found for enterprises in the wholesale and retail trade.

Firm size is also highly significant in the survival of our 2007 start-up cohort. Regression results showed that the probability of failure after five years is much higher for firms that started with less than 4 employees than for larger firms. Similar results emerged when we tested the impact of firm size on the 2007 cohort of foreign controlled start-ups.

Table 6.7.1 shows the results of a Cox regression in which all four enterprise characteristics of the 2007 start-up cohort are jointly taken into account. This leads to somewhat different results than for the univariate analysis. For instance, the impact of foreign control on firm survival is no longer significant after five years when firm size, sector of activity and trade status are controlled for.

Firm size plays a key role in firm survival, especially when firms start out small (less than 5 employees). Larger firms (5 employees or more) are less likely to exit, but there is no difference in survival rate between firms with between 5 and 9 employees and larger firms (reference group).

Again, the sector of activity in which the enterprise starts its business is relevant for its probability of survival. New enterprises in the construction sector are more likely to be alive after five years than those in manufacturing. New firms in other sectors of activity are less likely to survive than those in manufacturing.

The most important explanatory factor in firm survival is trade status. Enterprises that start to trade right away are even less likely to exit than non-traders. Two-way-traders are quite likely to survive their first five years. The probability of instant exit for two-way traders is 52 percent lower than for non-traders when controlled for firm size, sector of activity and locus of control. There is little difference in survival rate between importers only and exporters only.

6.7.1 Cox regression model fitted to the 2007 birth cohort (n=107825)

	Regression coefficient (B)	Standard error (SE (B))	p-value	Hazard ratio (Exp (B))*	95% CI for hazard ratio	
					lower	upper
Foreign control	-0.062	0.077	0.421	0.940	0.807	1,094
Size class (1)						
0–1 employees	0.467	0.157	0.003	1,595	1,172	2,170
2–4 employees	0.453	0.157	0.004	1,572	1,155	2,140
5–9 employees	0.173	0.159	0.276	1,189	0.871	1,624
Sector of activity (2)						
Construction	-0.197	0.026	0.000	0.821	0.781	0.864
Wholesale trade	0.475	0.027	0.000	1,608	1,524	1,697
Transport and storage	0.145	0.034	0.000	1,156	1,082	1,236
Retail trade and hotels and restaurants	0.393	0.025	0.000	1,482	1,412	1,555
Services	0.160	0.024	0.000	1,174	1,121	1,229
Trade status (3)						
Importers only	-0.373	0.020	0.000	0.689	0.662	0.717
Exporters only	-0.309	0.038	0.000	0.734	0.681	0.791
Two-way traders	-0.732	0.037	0.000	0.481	0.447	0.517

Reference group 1: 10 or more employees. Reference group 2: Manufacturing. Reference group 3: Non-traders.

CI: confidence interval.

* Risk of death.

6.8 Conclusions

In this chapter, we analysed the differences between Dutch and foreign controlled enterprises with respect to enterprise dynamics, especially birth, death and survival rates. The analysis is based on micro economic databases from the Business Register of the population of firms in the Netherlands and international trade statistics.

In general, we found that Dutch and foreign controlled enterprises differ with respect to their birth, death and survival rates. There are far more Dutch controlled start-ups, often starting very small. Foreign firms are few in number, but they are on the whole larger in size. This confirmed our expectations based on the literature: since foreign firms encounter more entry barriers, they will enter less frequently than Dutch firms. Furthermore, the newly established Dutch enterprises outnumber the exits. The number of Dutch enterprises grew. The number of foreign enterprises also increased in the 2007–2010

period. Although foreign firms had a negative growth rate in 2009 and 2010, their number still increased because of mergers and acquisitions.

Firms are often starting international activities right from their birth or very shortly afterwards, such firms are considered to be born global. The share of born globals has increased over the years. After the economic crisis, we see a recovery of the share of born globals, in the form of a slightly increase on 2007 and 2008. The advances in telecommunications and other technologies enable more SME's to import or export within one year after their foundation.

We also looked at the survival rates among different types of enterprises. We found that almost three out of five new firms survived at least five years. Survival rates vary by industry with construction having the highest and retail trade the lowest survival rates in the period observed.

Internationalisation has a positive impact on firm survival. Due to the larger than average size and the international orientation of foreign enterprises, they have higher survival rates than Dutch enterprises. Two-way traders tend to be more productive than firms that either only import or export, or do not trade at all. This productivity results in higher survival rates for two-way traders.

We also tested whether the differences in survival rates are significant. Looking at the relationship between firm survival and ownership as the only explanatory variable, we found that foreign firms have a significant lower hazard ratio than Dutch firms. If we jointly take into account more enterprise characteristics, the impact of foreign control on firm survival is no longer significant. The most important explanatory factor in firm survival is trade status. Enterprises that start trading right after their birth are still less likely to exit than non-traders.

In further research it would be interesting to look in more detail to the factors that may influence the probability of firm survival as well. For example, the role of innovation or regional clustering on firm survival.

Annex

Births of Dutch and foreign controlled enterprises, by sector of activity and size class

	2007	2008	2009	2010
Total	107,825	126,850	103,315	84,305
Dutch controlled enterprises	107,580	126,400	102,910	83,875
	%			
<i>By sector of activity</i>				
Manufacturing	5	5	4	4
Construction	17	17	14	12
Wholesale trade	8	7	7	7
Transport and storage	3	3	3	3
Retail trade and hotels and restaurants	20	19	19	21
Services	46	48	53	53
<i>By size class</i>				
0–1 employees	71	72	79	85
2–4 employees	25	25	18	12
5–9 employees	2	2	1	2
> 10 employees	1	1	1	1
	#			
Foreign controlled enterprises	470	645	515	435
	%			
<i>By sector of activity</i>				
Manufacturing	12	14	15	14
Construction	3	2	3	2
Wholesale trade	26	27	30	24
Transport and storage	9	6	7	10
Retail trade and hotels and restaurants	7	7	6	6
Services	42	42	40	44
<i>By size class</i>				
0–1 employees	45	42	58	52
2–4 employees	20	25	20	24
5–9 employees	12	12	6	10
> 10 employees	24	22	16	14

Deaths of Dutch and foreign controlled enterprises, by sector of activity and size class

	2007	2008	2009	2010
Total	66,910	68,860	77,290	61,120
Dutch controlled enterprises	66,480	68,330	76,710	60,555
	%			
<i>By sector of activity</i>				
Manufacturing	5	5	5	5
Construction	11	11	13	15
Wholesale trade	11	11	10	10
Transport and storage	4	4	4	4
Retail trade and hotels and restaurants	27	25	23	24
Services	41	44	44	42
<i>By size class</i>				
0-1 employees	62	69	65	80
2-4 employees	30	25	28	16
5-9 employees	4	3	3	2
> 10 employees	3	2	3	2
	#			
Foreign controlled enterprises	430	530	580	570
	%			
<i>By sector of activity</i>				
Manufacturing	14	21	14	16
Construction	2	5	2	4
Wholesale trade	22	29	33	26
Transport and storage	9	7	8	6
Retail trade and hotels and restaurants	6	5	5	5
Services	47	34	38	43
<i>By size class</i>				
0-1 employees	52	54	41	57
2-4 employees	10	11	16	10
5-9 employees	7	8	10	7
> 10 employees	31	27	33	26