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Enterprise dynamics and international trade

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This chapter focuses on the demography of international traders, their characteristics and performance over time. The ability to identify new traders allows us to compare their growth (intensive and extensive margin) to other traders. New exporters expand more along the country extensive margin while new importers grow along the product extensive margin. However, only in the first few years of trading do they add new products and countries to their portfolio. After these years, trade growth is mainly achieved by deepening trade in existing products and countries, like already existing traders do.

We also investigated whether trader type and the moment of trade start is relevant in explaining turnover differences between traders. It turns out that born globals that start as two-way traders had the highest turnover and trade value after five years. International traders have a higher survival rate than non-traders. However, survival diverges significantly between the various types of traders. Two-way traders are quite likely to survive the first five years. Survival is also impacted by the country and the products with which trade takes place.

8.1 Introduction

Enterprises that engage in international trade are a special kind of enterprise. They first need to outperform others in order to begin with international trade, because trading is a risky and costly activity, only to be ventured by the largest and most productive firms (Wagner, 2005; Bernard and Jensen, 1997). Analyses in the previous Internationalisation Monitor (2010) and Genee and Fortanier (2010) have shown that Dutch exporters, importers and especially two-way traders are indeed bigger and more productive than non-traders. Within the group of trading enterprises there is a lot of heterogeneity, with the bulk of trade concentrated within a few firms. Most traders trade only a few products with only a few partner countries, while the largest firms trade with many countries and in many products (Wagner, 2005; Bernard and Jensen, 1997; Bernard et al, 2007a; Mayer and Ottaviano, 2007; Muûls and Pisu, 2007).

There are, however, significant dynamics in these characteristics as well as within the population of international traders (Iacovone and Javorcik, 2010; Besedeš and Prusa; 2007). Firms that start trading start out small, with only a few products and partner countries. As such, they differ significantly from seasoned traders. This chapter contributes to current findings by providing a first insight into the dynamics in the Dutch population of commodities traders. For several years now Statistics Netherlands has been able to match international trade flows to enterprises in the General Business Register (see chapter 10 in this edition). With enterprise dynamics in mind, this allows us to follow traders over time; not only as a group but also as individual enterprises.

We start out by illustrating how new traders in the Netherlands expand, first along the extensive margins (i.e. adding new products and countries to the portfolio) and subsequently along the intensive margin (increasing sales), also compared to continuing traders. In addition, we ask to what degree the various types of traders grow/vary in terms of turnover and trade value. We also want to build on the findings of chapter 6 and investigate factors that influence survival of traders. Chapter 6 showed that international traders have a higher survival probability than non-traders, especially two-way-traders. In this chapter we extend the analysis by discerning different types of traders, by making a distinction between survival as a trader and survival as an enterprise, and by including trade portfolio in the analyses. Additionally, we also make a distinction between trader survival and enterprise survival.

The outline of the chapter is as follows. In section 8.2 we will start with a brief review of the literature and background information on international trade dynamics. We will then illustrate the dataset that was constructed for this chapter in section 8.3. Section 8.4 starts with some descriptive data on the demography of international traders. Analyses on trader births and growth are presented, first in terms of product/country combinations and trade value, and then in terms of turnover and trade value. Section 8.5 looks at five year survival probabilities for various types of traders. The type of trade of the enterprise, i.e. with which countries it trades and in which products, is also included in these analyses. Section 8.6 wraps up the chapter with an overview of the main findings.

8.2 Theory and background

Current literature and empirical research by Melitz (2003), Bernard et al (1997, 2007a, 2007b), Wagner (2005) shows that traders are different from non-traders. Trade is associated with uncertainty and costs, which only the best performing and most productive firms are able to overcome. Dutch traders have a turnover that is at least 7 times higher than that of non-traders and a labour productivity that is at least 20 percent higher (CBS, 2010). Enterprises that trade in goods and services perform exceptionally well. Even among traders, there is a lot of heterogeneity. Bernard et al (2007b) already note that trade is concentrated and that most traders in fact only trade a relatively small amount. The majority of traders trade with one country and in one product (Amador and Opromolla, 2008; Iacovone and Javorcik, 2010, Bernard et al 2007a, Muûls and Pisu, 2007). Similar findings were published by CBS (2010), namely that the top 1 percent traders account for 71 percent of Dutch exports and 74 percent of imports. Heterogeneous firm theory offers explanations for this skewed distribution within the population of traders. Economies of scale in production might favour the concentration of trade among a small

number of producers. Country-specific sunk costs associated with expanding trade to new destinations can only be overcome by the most productive traders (Creusen et al, 2011).

A common way to investigate trade growth is to assess the performance of traders along the extensive and the intensive margin. In economic literature, there is much discussion on the relative impact of each margin. Some authors find that the intensive margin is more important in explaining trade growth while others find the extensive margin to be more important (Besedeš and Prusa, 2010). We will follow the approach of Amador and Oromolla (2008), Besedeš and Prusa (2010) and Creusen et al (2011) and define the extensive margin as trade growth by adding new countries and products to the portfolio, and the intensive margin as trade growth by deepening existing trade relations (in terms of products and countries). We will also take into account the role that firm dynamics play in this regard, and distinguish between starters, exiters and continuing traders. And in addition we will look at importers as well as exporters. Traditionally, the focus is on exporters, but importers seem to have similar characteristics and premiums relative to non-traders. As such, our analysis will distinguish between enterprises that import, enterprises that export, and those that do both.

A frequent finding in research on heterogeneous trade theory is that the decision to start selling can make or break a firm. Fiercer competition on the international market might prove to be too much for some firms, causing them to stop trading or exit altogether. Although trade is associated with higher survival probability (Bernard and Jensen, 1997; Wagner, 2011), still around 40 percent of newly founded exporters and importers had exited five years later (see chapter 6). For new two-way traders, this share was around 30 percent. In this chapter we will build further on these empirical findings by distinguishing between enterprise survival and trader survival. By looking merely at enterprise survival a lot of churning in the trader population is disregarded. The fact that an international adventure has not worked out, does not automatically mean exit from the population.

Another contribution that we will make to the growing research on survival of traders is that we want to take into account the type of trade that an enterprise engages in. Since transport cost or expenses related to setting up a network and distribution channel differ from country to country, it is logical to assume that trading with countries for which those costs are higher is riskier than trade with countries for which such barriers are relatively low. Creusen et al (2011) and Wagner (2011) take into account number of products traded when analysing survival, but to our knowledge no attempts have yet been made to incorporate type of product or specific partner countries in the analysis. This chapter aims to fill some of this knowledge gap.

8.3 Data and methodology

In order to say something about the demography of international traders, a broad dataset was created which incorporates information from the General Business Register (GBR) and the International Trade Statistics (commodities). Per enterprise, we determined a) whether or not an enterprise is new in the trade population, b) whether or not it stops trading (i.e. drops out of the trade population at some point in time) and c) whether or not the enterprise drops out of the overall enterprise population. To circumvent a lot of dynamics in the firm trading-status that are difficult to describe, we have decided to look at whether or not an enterprise has trade (imports, exports or both) in order to determine whether the trader is new or not. Characterising an enterprise as a two-way trader, importer or exporter is done at face value for each year: i.e. an enterprise can be an importer in one year, an exporter in the second year and a two-way trader in the third year.

The ensuing dataset comprises five years (2007–2011) of integrated, longitudinal information on enterprises and their trade status. Information from the year 2006 is only used to determine whether an enterprise started trading in 2007 or whether it was an existing trader. There were significant improvements to the matching procedure, especially as of 2010, which implies that we were able to identify more traders as of 2010. This has led to an overstated growth of traders between 2009 and 2010, making it more difficult to interpret population growth.

In this dataset, many traders could be classified as continuing traders since they had imports and/or exports in each consecutive year between 2007 and 2011. However, as in all administrations, in the GBR but also in the trade register (population of VAT-numbers), there are mistakes, mismatches and methodological changes over the years. This could cause an enterprise to be inadvertently classified as an incidental, stopping or starting trader, while its actual trade still continues. As such, we decided that if for one intermittent year the trade status could not be determined, this information was imputed.

Table 8.3.1 shows the composition of our longitudinal dataset on trading enterprises. In total 374,521 enterprises are included, of which 60,474 enterprises already traded before 2007 and reported trade in each consecutive year at least until 2011. We could identify 31,648 enterprises that started trade in 2007, of which 13,399 stopped trading that same year and 8,969 continued to trade up to 2011. We identified 58,925 incidental traders, whose trade status was erratic between 2007 and 2011. For enterprises that started to trade in 2011 it is not yet clear if and when they will stop trading, so they are included as continuing trader. Incidental traders are not distinguished per year.

8.3.1 Composition dataset 2007–2011

	Stop in 2007	Stop in 2008	Stop in 2009	Stop in 2010	Continuing trader	Incidental traders	Total
Start in							
2007	13,399	4,981	2,678	1,621	8,969		31,648
2008		23,342	9,922	5,069	26,174		64,507
2009			17,090	5,383	13,530		36,003
2010				27,921	40,064		67,985
2011					54,979		54,979
Already existing trader					60,474		60,474
Incidental traders						58,925	58,925
Total	13,399	28,323	29,690	39,994	204,190	58,925	374,521

In order to investigate how new traders develop after entry, also compared to other groups of traders, we extended the dataset to include information on products and countries, if available.¹⁾ When they start trading, do they start out small with e.g. one product to one country? And when they grow, do they grow along the country extensive margin, product extensive margin, or both? In this respect, products are defined at the level of HS4 (Harmonised System product classification at the 4-digit level) so as to not overstate the number of product variations.

Table 8.3.2 shows for which enterprises there is country and product information available. This number is significantly lower, since many traders are small and are not required to report such information (see footnote 1). For 130,682 enterprises we can distinguish detailed product and country information. Of the 11,530 enterprises that started trading in 2007 and for which we have country and product information, 4,038 have traded each year up to 2011 and 4,220 stopped trading in 2007.

¹⁾ Country and product information is available for enterprises of which their Intra-EU trade value exceeds the Intrastat survey threshold, and for all enterprises that trade with countries outside the EU-27. Enterprises with trade less than the threshold value are included as 'trading with EU-15' in the analyses of section 8.4. They are excluded from the product analyses of 8.4.

8.3.2 Enterprises with product-country information 2007–2011

	Stop in 2007	Stop in 2008	Stop in 2009	Stop in 2010	Continuing trader	Incidental traders	Total
Start in							
2007	4,220	1,688	991	593	4,038		11,530
2008		7,128	3,143	1,349	8,097		19,717
2009			4,448	1,484	4,802		10,734
2010				5,107	8,820		13,927
2011					9,742		9,742
Already existing trader					37,306		37,306
Incidental traders						27,726	27,726
Total	4,220	8,816	8,582	8,533	72,805	27,726	130,682

We also wanted to build on the survival analyses for international traders of chapter 6 by including type of trade in the equation. Are two-way traders more likely to survive than exclusive importers or exporters? In order to analyse survival rates, we selected all firms that started trading in 2007, resulting in 31,648 firms. Exit can be measured as ceasing to trade (opposite: trader survival), or as firm exit in general (opposite: enterprise survival). In this chapter, *enterprise survival* is defined as the year that the firm died, that is not due to mergers or acquisitions, and no restart in the next year. This information is based on the data used in chapter 6. Now it is aggregated on a yearly basis since for traders we do not have monthly start/stop dates. *Trader exit* is defined as the year in which a firm stops trading; i.e. no trade in the following year.

Are enterprises that trade with countries close-by less likely to stop trading than enterprises that trade with countries far away? And is the type of product that is traded (for instance, low-skilled labour intensive products such as clothing) also relevant in predicting survival of traders? Do the results change when we take into account enterprise survival rather than trader survival? In order to answer these questions, we grouped partner countries into four large country groups, namely 1) EU-15, 2) BRIC/Asia, 3) North America and 4) Other countries; and three product groups namely 1) primary products and natural resources, 2) high-tech products and 3) low-skilled labour intensive products and human-capital intensive products, according to the factor intensity classification of Hinloopen and Van Marrewijk.²⁾

²⁾ <https://www2.econ.uu.nl/users/marrewijk/eta/intensity.htm>

8.4 Descriptive statistics

Table 8.4.1 shows some descriptive statistics for various types of importers and exporters. For importers and exporters we distinguish:

1. enterprises that traded each year between 2007 and 2011 (i.e. continuing traders)
2. enterprises that started to import or export somewhere between 2007 and 2011 (lifespan not taken into account)
3. incidental importers (exporters)
4. enterprises that stopped importing or exporting somewhere between 2007 and 2011 (lifespan not taken into account)

Since the events are not mutually exclusive (a starter can also be an exiter a year later), a total is presented separately.

8.4.1 Descriptive statistics on various traders (2007–2011)

	N	Countries		Products		Product/country combinations		Trade value	
		average	median	average	median	average	median	average	median
								<i>x 1,000</i>	
Importers	60,554	4	2	10	3	18	4	4,516	28
<i>of which</i>									
Continuing	27,772	5	3	13	5	25	6	7,520	109
Starters	26,113	3	1	6	2	9	2	1,492	5
Incidental	2,702	1	1	2	1	3	1	79	1
Exiters	25,167	4	1	8	2	14	3	1,544	9
Exporters	32,284	9	3	8	2	38	5	8,991	119
<i>of which</i>									
Continuing	17,623	11	4	9	3	44	7	12,040	402
Starters	9,268	6	2	6	2	25	2	4,725	23
Incidental	711	2	1	2	1	9	1	231	6
Exiters	11,550	8	2	7	2	32	4	3,810	45

Table 8.4.1 shows that the average importer sourced on average 10 products from 4 countries, while the average exporter exported 8 products to 9 countries. Bernard and Jensen (2007a) found similar results for importers, but the average exporter in the US is smaller. The average import value per enterprise was 4.5 million euro, but the median is much lower, indicating that there are many small importers. The average export value for exporters between 2007 and 2011 was almost 9 million euro, with again a much lower median.

Continuing importers are by far the largest importers, both in terms of trade value and in terms of trading partners. Continuing importers had an average of 5 partner countries, 13 products and 25 country-product combinations between 2007 and 2011. Their average import value was around 7.5 million euro, and also their median trade value was the highest of all importers. Incidental importers are smallest, in terms of import value, products and countries. Enterprises that started importing between 2007 and 2011 sourced these goods from 3 trading partners on average, imported 6 products, had an average trade value of 1.5 million euro. This is slightly lower than the average import value of enterprises that stopped importing between 2007 and 2011. Exiting importers are somewhat larger than starters, especially in terms of median trade value and product-country combinations. New exporters start out with an average of 6 trading partners and 6 products. Some of them are immediately successful since the average trade value is higher than that of stopping exporters (median is not). Continuing exporters are most successful, with a high trade value and many products and countries. The average number of product-country combinations is twice as high for exporters as for importers, namely 38 product-country combinations compared to 18 for importers. Also the median and mean trading value is at least twice as high. As such, importers are on average smaller (although not in number of products), source from fewer countries and have a lower trade value. Similar results were found by Bernard et al (2007). This also suggests that trade barriers for imports are lower than for exports.

8.5 Growth after trade start

Extensive Margin

In this section we focus on all enterprises that started trading in 2007. We investigate in what way starting traders expand (even though some of them stopped altogether). Table 8.5.1 shows for starting importers the expansion of trade along the product and country extensive margin. In their first year, 62 percent of them imported one product from one country. In fact, 83 percent of importers that started to trade in 2007 sourced their products from one country. Roughly 64 percent imported only one type of commodity during their start-up year.

After five years, only 31 percent of these importers were still importing one type of commodity from one partner country. However, many had expanded their product portfolio by increasing the number of products they import. Almost 25 percent of them imported 6 or more products after five years. As such, importers that started trading in 2007 mainly expanded along the product margin.

8.5.1 Trade portfolio at import start (2007) and after five years (2011)

2007										
%										
Countries	Products									Total
	1	2	3	4	5	6-10	11-20	21-50	51+	
1	62	11	4	2	1	2	1	0	0	83
2	2	5	2	1	1	1	0	0	0	12
3	0	1	1	1	0	0	0	0	0	3
4	0	0	0	0	0	0	0	0	0	1
5	0	0	0	0	0	0	0	0	0	0
6-10	0	0	0	0	0	0	0	0	0	1
11-20	0	0	0	0	0	0	0	0	0	0
21-50	0	0	0	0	0	0	0	0	0	0
51+	0	0	0	0	0	0	0	0	0	0
Total	64	16	7	4	2	4	1	0	0	100

2011										
%										
Countries	Products									Total
	1	2	3	4	5	6-10	11-20	21-50	51+	
1	31	9	5	2	1	3	1	0	0	53
2	2	6	3	2	1	4	2	0	0	21
3	1	2	2	1	2	3	1	1	0	11
4	0	0	0	1	0	1	1	0	0	5
5	0	0	0	0	0	1	1	0	0	3
6-10	0	0	0	0	0	1	1	1	0	5
11-20	0	0	0	0	0	0	1	1	0	2
21-50	0	0	0	0	0	0	0	0	0	1
51+	0	0	0	0	0	0	0	0	0	0
Total	34	17	10	7	6	13	8	3	1	100

Table 8.5.2 shows that the trade of exporters that started in 2007 was even more concentrated than for importers. Around 67 percent of starting exporters exported 1 product to 1 country. For starting exporters trade is relatively more concentrated along the product margin than for importers. Approximately 73 percent of new exporters are specialised in 1 product. After five years, this share was still 43 percent which is roughly 10 percentage points higher than for importers.

For exporters, the expansion is somewhat more along the country extensive margin. This could imply that for some exporters the costs of expanding their business to new countries is lower than adapting their production process to create new products. After five years, 81 percent had at most 5 export products. Of course, there are still some enterprises that are major traders. Around 1 percent of exporters that started in 2007, had more than 50 export products and exported to more than 50 countries after five years. But such firms form a minority in the trading population.

8.5.2 Trade portfolio at export start (2007) and after five years (2011)

2007										
%										
Countries	Products									
	1	2	3	4	5	6-10	11-20	21-50	51+	Total
1	67	7	2	1	1	1	0	0	0	78
2	3	5	1	0	0	0	0	0	0	9
3	0	1	1	0	0	0	0	0	0	3
4	0	0	1	0	0	0	0	0	0	2
5	0	0	0	0	0	0	0	0	0	1
6-10	1	0	0	0	0	0	0	0	0	3
11-20	1	0	0	0	0	0	1	0	0	3
21-50	0	0	0	0	0	0	0	0	0	1
51+	0	0	0	0	0	0	0	0	0	0
Total	73	14	5	2	2	2	2	0	0	100

2011										
%										
Countries	Products									
	1	2	3	4	5	6-10	11-20	21-50	51+	Total
1	36	7	2	1	1	1	1	0	0	50
2	3	6	2	1	1	2	0	0	0	16
3	2	1	1	1	1	1	0	0	0	7
4	1	1	1	0	0	1	0	0	0	4
5	1	1	0	0	1	1	0	0	0	5
6-10	1	1	1	1	0	2	1	1	0	9
11-20	0	1	1	1	1	1	1	1	0	5
21-50	0	0	1	0	0	1	1	1	0	4
51+	0	0	0	0	0	0	0	0	1	1
Total	43	18	9	6	5	10	5	2	1	100

New importers expanded more along the product extensive margin while new exporters grew more along the country extensive margin

Intensive Margin

How important adding new products and expanding to new countries is for importers and exporters is shown in table 8.5.3. We investigated this for new importers and exporters in 2007 and continuing traders. Importers that started to trade in 2007 imported in total for 1.2 billion euro of what are by definition new products from new countries. In 2008, they imported in total for 5.2 billion euro, of which 64 percent was made up by products which they already imported in 2007. Similarly, roughly two thirds of trade could be attributed to the same partner country as in 2007 and about one third of trade value was generated by importing from new countries. In their third year, these shares dropped to 5–6 percent, and in 2011 only 2 percent of the import value came from new products and/or from new countries. In comparison, for continuing importers the role of new products and new countries is very low. This indicates that enterprises that start to trade, begin to resemble continuing traders after 2–3 years. At least if they continued to trade.

8.5.3 Growth along the intensive margin

	Importers			Exporters		
	total value	new products	new countries	total value	new products	new countries
	<i>x bln euros</i>	%		<i>x bln euros</i>	%	
Started trade in 2007						
2007	1.2	–	–	1.1	–	–
2008	5.2	36	37	5.9	37	52
2009	3.9	5	6	4.6	6	11
2010	4.3	2	3	4.8	2	6
2011	4.4	2	2	4.9	2	2
Continuing trader						
2007	191.8	–	–	197.9	–	–
2008	217.3	2	5	221.6	2	6
2009	171.2	2	2	182.0	2	3
2010	208.6	1	2	201.2	2	2
2011	220.9	1	1	216.5	1	1

A similar exercise was done for exporters. For starting exporters, the role of new countries is more important than new products, which confirms our conclusions from table 8.5.2. Over half of their export value in 2008 came from exporting to new countries compared to 2007. In their third year, still 11 percent of trade was created by new partner countries. Again, after approximately three years, the enterprises that started to export in 2007 start to resemble continuing traders, for whom new products and countries are barely significant.

Interesting to see is that both new and continuing traders experienced a significant drop in trade value between 2008 and 2009, i.e. the worldwide financial crisis. This indicates that the economic downturn affected all kinds of traders. Chapter 9 in this edition of the Internationalisation Monitor will dig deeper into the impact of the economic crisis of 2009 on enterprise performance and demography.

From table 8.5.1 to 8.5.3 we can conclude that most newly established traders remain relatively small in the short term, both in terms of trade value and in the number of products and countries. Although some expand quickly along the extensive margin, around 70 percent of importers and exporters (conditional on survival) trade at the most with 5 countries and in 5 products. Adding new products and countries to their portfolio is only important in the first and second year of trading. After that, trade growth is mainly achieved by expansion along the intensive margin; i.e. deepening of the existing trade in the same products and with the same countries, as is also the case for more seasoned traders. This is in line with Besedeš and Prusa (2010) and Creusen et al (2011) who also found that the majority of trade growth is due to the intensive margin rather than the extensive margin.

Turnover and trade growth (ANOVA)

Heterogeneous trade theory (Bernard and Jensen, 1997/2007; Wagner, 2007) predicts that enterprises that engage in trade perform better than enterprises that focus on the domestic market. This is because only the most productive firms are capable of overcoming the costs of international trade and international competition. There were similar findings for Dutch traders (IM2010/2011). In this paragraph we ask whether (new) traders outperform non-traders, and whether there are differences in economic performance between various types of traders.

In order to analyse this, we first selected enterprises that were born in 2007 (following chapter 6) which were still active in 2011 (no exit) and for which there was information on turnover and trade in 2011. Then we characterised enterprises as a non-trader 1), an only importer 2), an only exporter 3) or as a two-way trader 4), which is summed up by the categorical variable *TypeTrade*. We also distinguished between enterprises that start trading right away (at entry) and enterprises that start trading later on. This information is captured by the categorical variable *TypeStart*, which has the value 0) when it concerns a non-trader (no start), 1) if the enterprise is a born global and 2) if the enterprise starts trading later than the moment of birth.

The first column of table 8.5.4 shows the results of an ANOVA on (LN) turnover for enterprises that did not trade in their five years of existence, enterprises that started to trade at birth (i.e. born globals) and enterprises that started to trade later on. The born globals born in 2007 realised the highest turnover in 2011, while non-traders again have the lowest turnover five years after birth. Pairwise comparisons are shown in table 8.1a in

the annex. In this model, *TypeStart* had a significant effect on (LN) turnover, as can be seen from the F-values in the lower part of table 8.5.4.

8.5.4 (Corrected) Turnover and trade means for *TypeStart* (2011)

	Average LN turnover	Average LN turnover	Average LN trade value
TypeStart			
No trade	10.8	–	–
Born Global	11.8	11.7	9.7
Later in life	11.5	11.7	8.5
Total	11.0	11.0	11.0
	<i>F-value</i>		
Corrected Model			
Intercept	1,207***	318***	1,023***
TypeStart	1,146,916***	441,343***	118,506***
TypeTrade	1,207***	1	549***
		433***	831***

*** Significant at the 0.05 level

When we also correct for the type of trader that the enterprise becomes (importer, exporter or two-way trader), and exclude non-traders from the analysis, the results change drastically (second column of table 8.5.4). Now turnover of born globals does not differ from enterprises that start trading at a later point. F-tests reveal that when *TypeStart* and *TypeTrade* are included simultaneously, *TypeStart* is no longer significant in explaining turnover differences. *TypeTrade*, i.e. importers, exporters and two-way traders do have different turnover levels when type of start is controlled for, and all differ significantly from each other. The highest turnover is for two-way traders, followed by importers and then exporters.

The fact that *TypeStart* is no longer significant when *TypeTrade* is included indicates that *TypeTrade* is more important in explaining turnover differences. Born Globals that start to trade are quite likely to become two-way-traders. Enterprises that start to trade later in life often start to trade as either an exporter or importer. As such, when we control for *TypeTrade*, the turnover differences between born globals and late starters disappear.

The last ANOVA model, presented in column three, also includes *TypeTrade* and *Typestart* (also without non-traders), but now the natural logarithm of trade value is the independent variable. F-values show that in this model, both categorical variables are significant (pairwise comparisons in table 8.1a in the annex). Two-way traders had the highest trade value in 2011, followed by exporters and then importers (all significantly different from each other), and born globals had a higher trade value than enterprises that start trading later on.

8.6 Survival analysis

In this paragraph we will investigate whether the type of trade that an enterprise engages in influences its survival probabilities. Specifically, we ask whether importing and/or exporting, as well as the type of countries and products an enterprise trades in can explain differences in survival. In this regard, survival can be defined as a trader that continues trading or as an enterprise that stays in business. In this paragraph we will look at both types of exit, first when a trader stops trading (trader survival, but the enterprise continues as non-trader), and then whether the enterprises stops as a whole (enterprise survival).

Two-way traders have the highest survival probability: after five years more than 50 percent was still active in trade

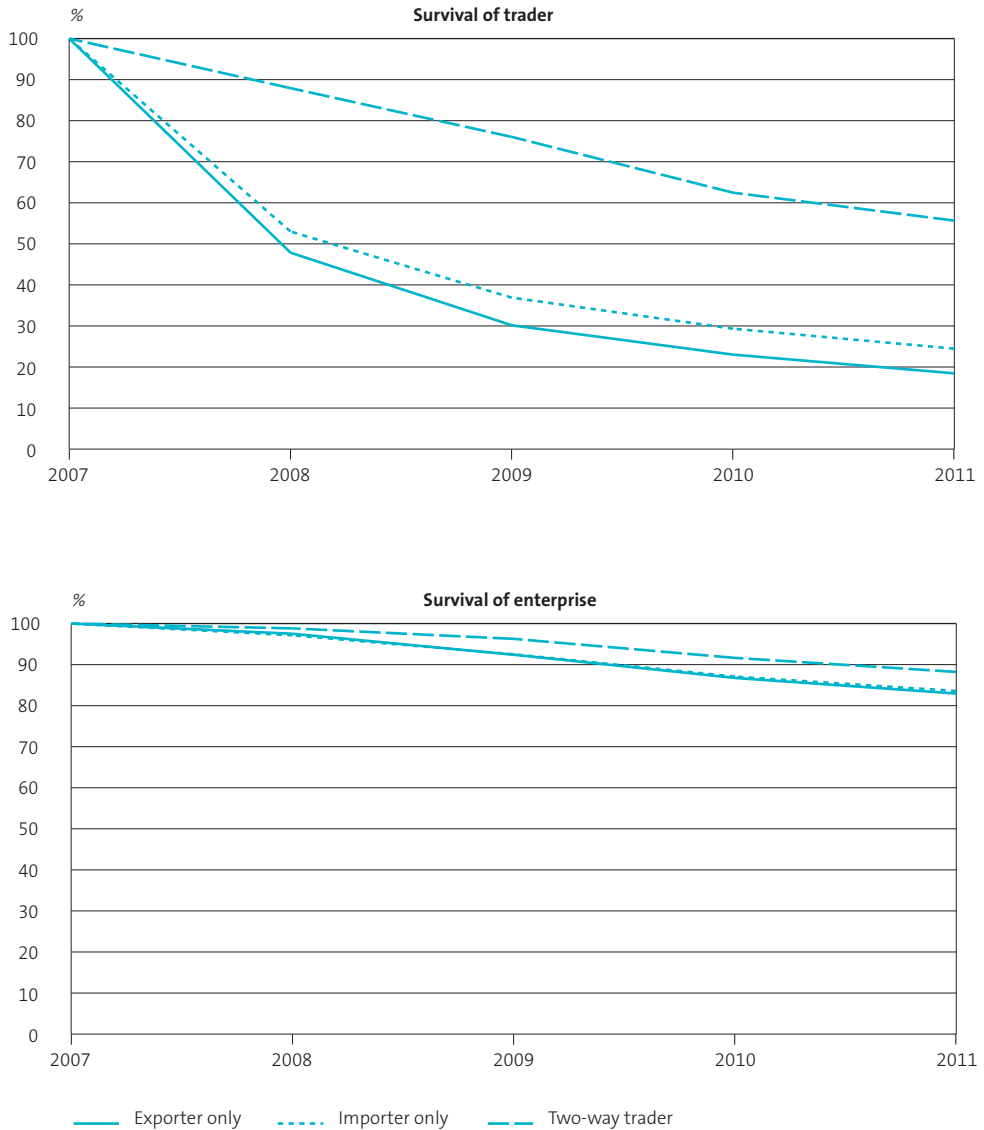
Survival of international traders: type of trader

Graph 8.6.1 shows the results of this exercise. The left graph shows the survival rate of enterprises that only import, only export and two-way traders, where survival is defined as an enterprise continuing to trade. Of all enterprises that started to only import in 2007, roughly 25 percent still reported imports in 2011, indicating that 75 percent had stopped importing within five years. Even fewer exporters were still active in 2011, namely less than 20 percent. This again suggests that engaging in exports is riskier than importing. Two-way traders that started in 2007 had the best survival probability. More than half of them were still active in trade after five years, indicating that enterprises that are able to trade on a significant scale have better prospects than other traders. Similar results were found by Bernard et al (2007a). The differences in survival between the three groups are significant as table 8.2a in the annex shows.

We also tested whether starting to import (only), export (only) or two-way trade was relevant for the survival of the enterprise as a whole. The results are shown in the right graph of graph 8.6.1. The first notable difference with the results of the trader survival analysis is that even though many enterprises stop trading within their first five years, they do not necessarily go out of business. The difference in enterprise survival is not significant between importers and exporters: they have a similar exit rate after five years, namely

around 17 percent. Two-way traders are significantly different in terms in survival and even less likely to exit. Only around 10 percent of them have exited the enterprise population after five years.

8.6.1 Survival rates of new traders (2007)



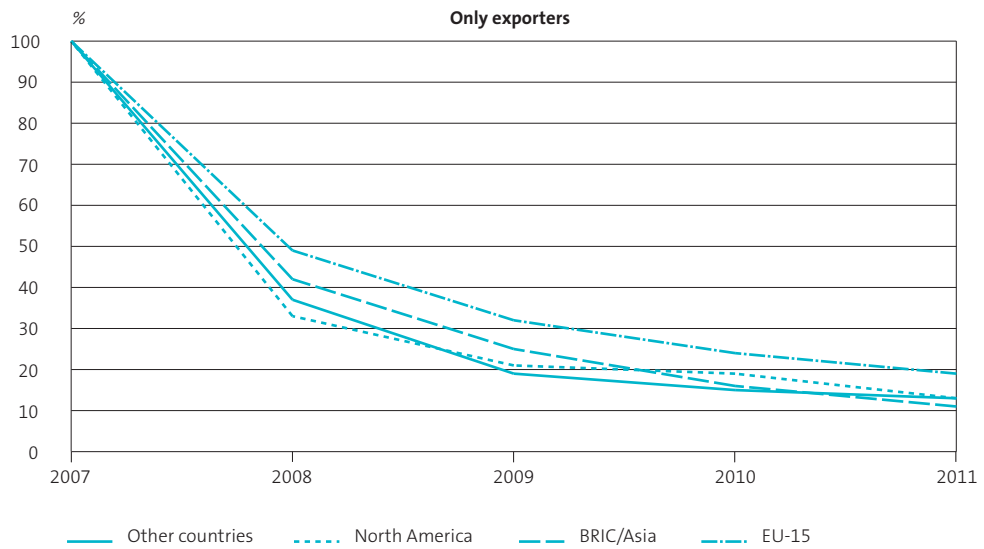
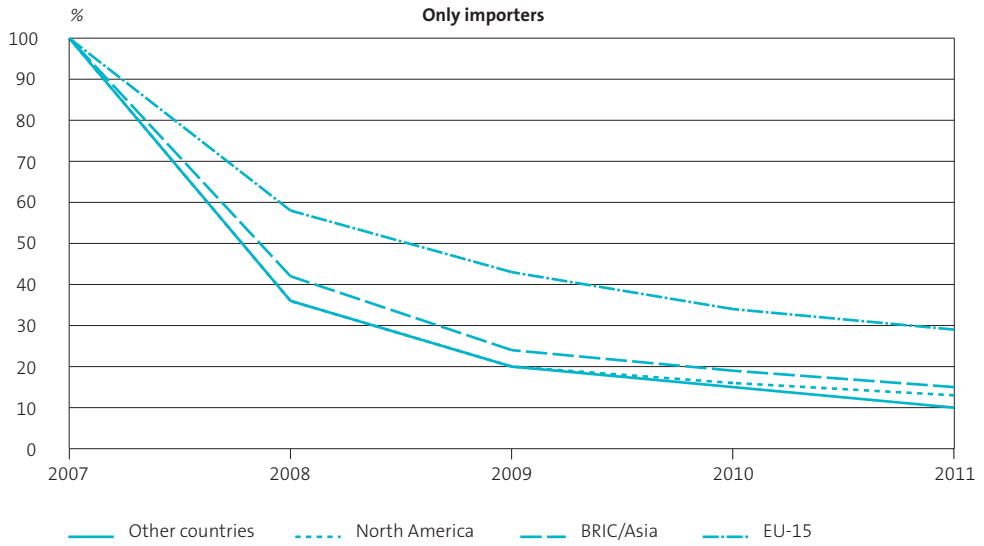
Survival of international traders: country characteristics

In this paragraph we focus on whether the country with which an enterprise trades is relevant for its survival as a trader. Smeets et al. (2010) list several barriers for trade, such as different language, culture and institutions, and we expect that survival of a trader might depend on type of partner country because of such barriers. In order to test this, we grouped partner countries into four large country groups, namely 1) EU-15, 2) BRIC-Asia, (Brazil, Russia, India, China and other Asian countries), 3) NAM (North America, meaning the US, Canada and Mexico) and 4) other countries. The country group with which an enterprise traded (imports/exports) most in 2008 (the year after trade start) is considered to be its main trading partner, and the impact of this concentration is depicted against its five year trader survival rate in graph 8.6.2. The results of this exercise on enterprise survival are shown in graph 8.6.3.

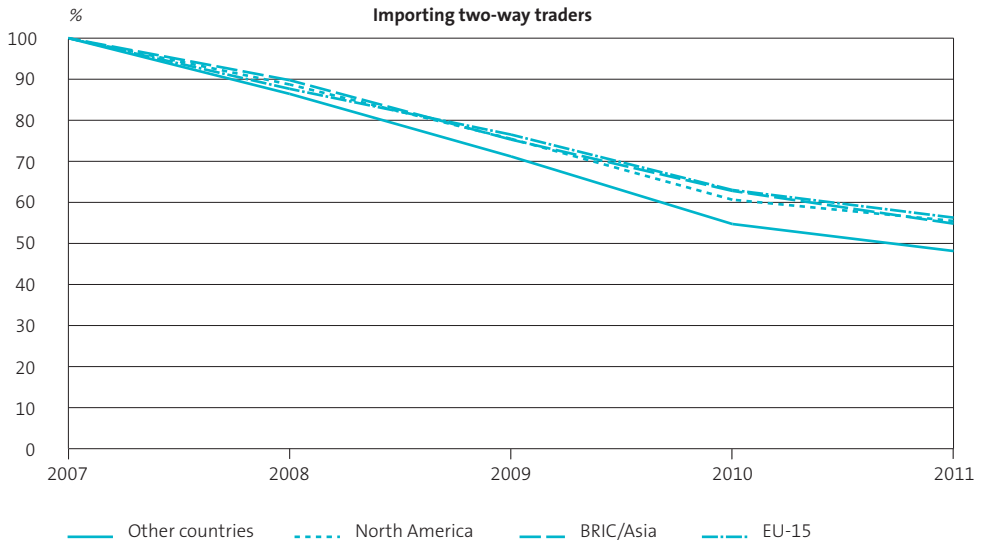
When we divide importers into a group of enterprises that only import (no exports) and those that import and export, we see striking differences in terms of survival (graph 8.6.2). For two-way traders it is not that relevant from where they import, their survival is nearly the same after five years (approximately 55 percent was still active in 2011), i.e. no significant differences in survival. For importers however, importing from the EU-15 has a positive effect on survival compared to importing from further away. After five years, roughly 30 percent of such exclusive importers is still active in trade while the others have become non-traders. Surprisingly, importing from BRIC/Asia starts out a little safer than importing from North-America or other countries but the difference is no longer significant after five years.

The destination of exports seems to be somewhat less relevant for the survival of traders than for importers. Still, exporting to the EU-15 consistently yields the best results in terms of survival after 5 years. Again, two-way traders are less likely to exit than exporters. In 2011 around 50 percent of two-way trading exporters was still active in trade. Especially exporters to EU-15 and other countries have a higher survival rate than exporters to BRIC/Asia and North-America. Roughly 20 percent of exporters to the EU-15 were still active after five years. This is significantly higher than the survival rate of exporters to BRIC/Asia, North-America and other countries, of which only 10 percent is still active in 2011. See table 8.3a in the annex for pairwise comparisons.

8.6.2 Survival rates of new traders (2007); by main partner country



8.6.2 Survival rates of new traders (2007); by main partner country (end)

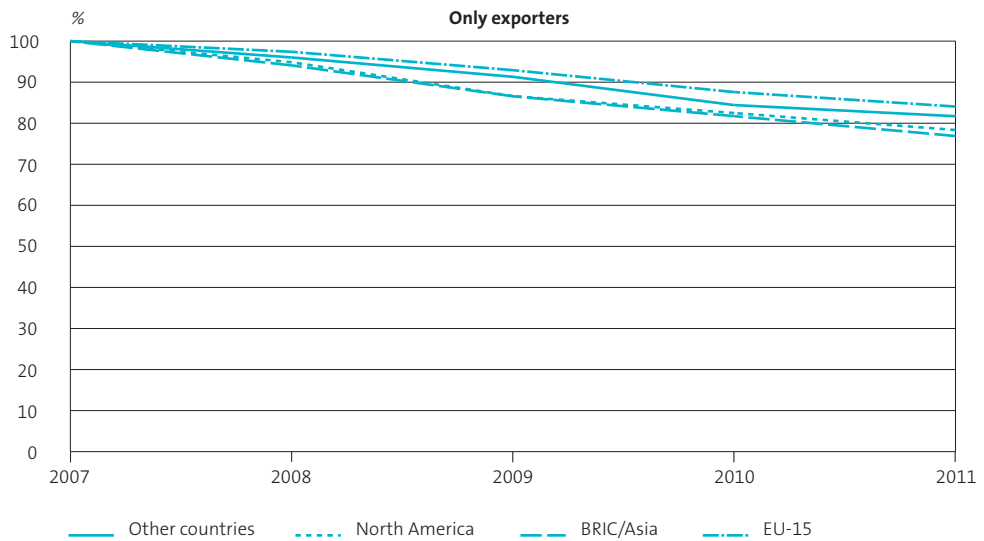
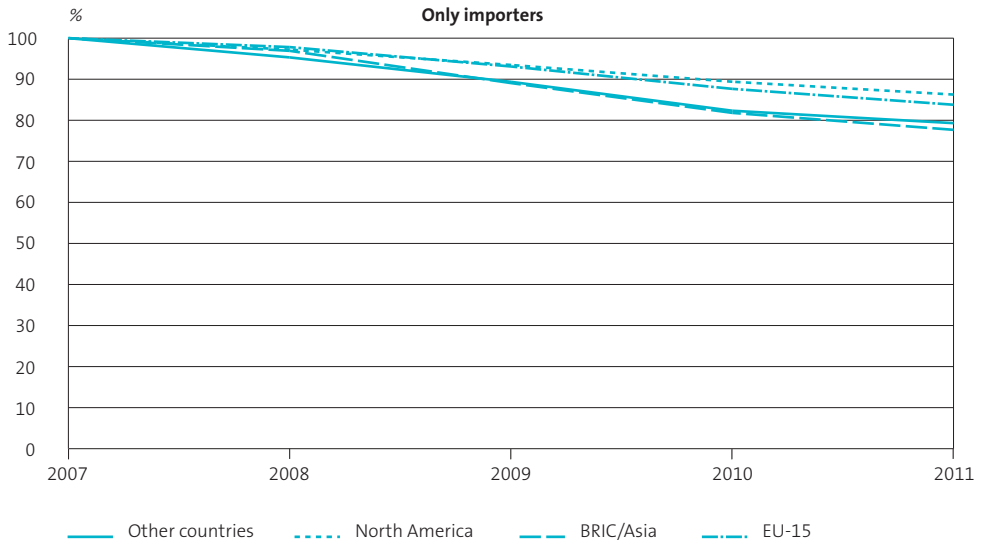


We also investigated whether the conclusions change when enterprise survival is taken into account, rather than trader survival. The results of this analysis are shown in graph 8.6.3. Across the board, enterprise survival is much higher than trader survival. Approximately 85–90 percent of the two-way traders is still active in 2011, regardless of partner country. Of only importers and only exporters, roughly 80 percent is still alive after five years (although many without trade).

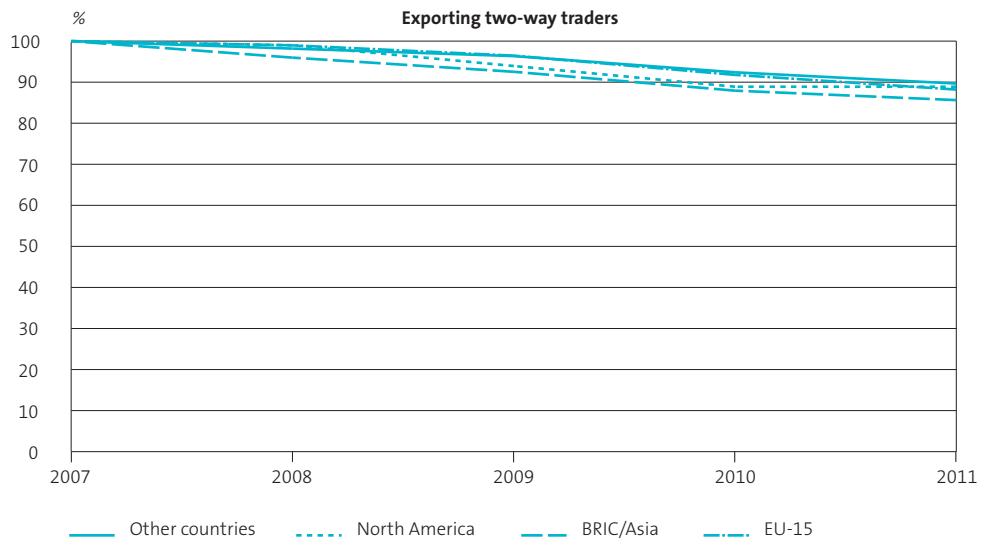
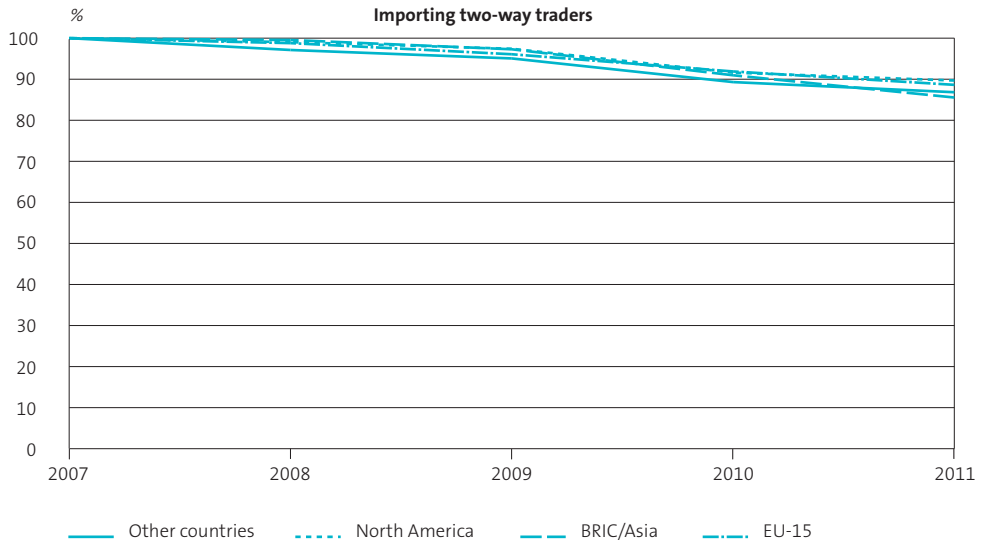
Another remarkable difference is that importing from North-America becomes ‘safer’ and importing from BRIC/Asia becomes ‘less safe’ in terms of enterprise survival than trader survival. Graph 8.6.3 shows that (only) importers that import from EU-15 and North-America have a significantly higher enterprise survival rate, while for trader survival importing from EU-15 was safest. See table 8.3a for pairwise comparisons.

Graph 8.6.3 also shows that trade with BRIC/Asia seems to be associated with somewhat lower enterprise survival rates for all types of traders. This could indicate that trading with BRIC/Asia is somewhat more of a ‘make or break deal’. That is, when things go wrong, the enterprise as a whole exits. The reverse is especially true for importers importing from North-America. The trade relationship may stop but this does not necessarily jeopardize the existence of the enterprise as a whole. Trade with the EU-15 does not seem to have a different impact on trader survival than on enterprise survival.

8.6.3 Enterprise survival of traders (2007); by main partner country



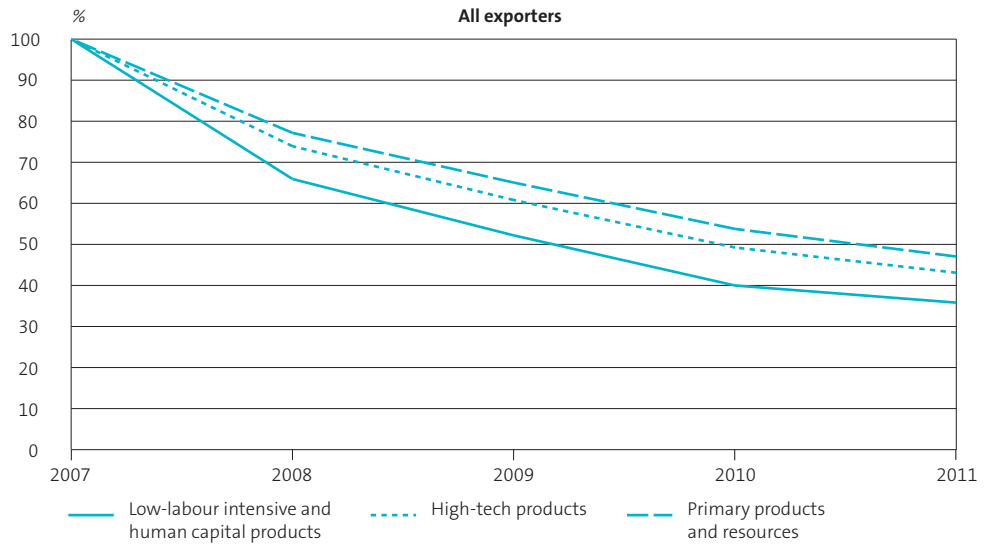
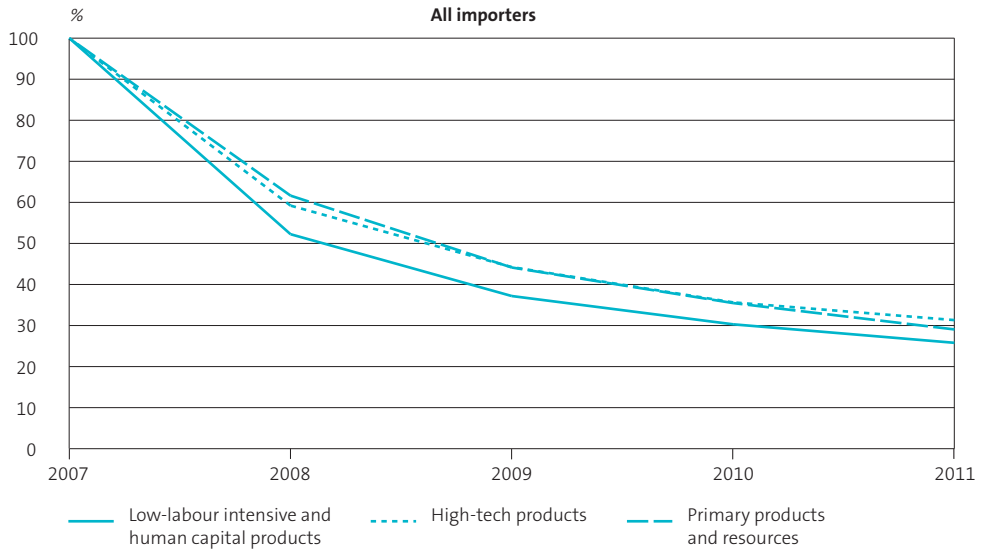
8.6.3 Enterprise survival of traders (2007); by main partner country (end)



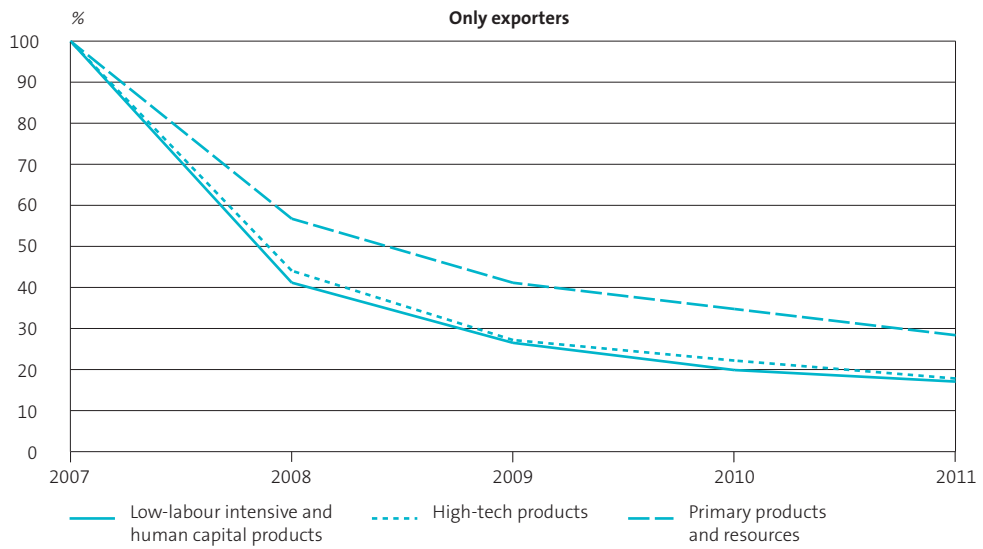
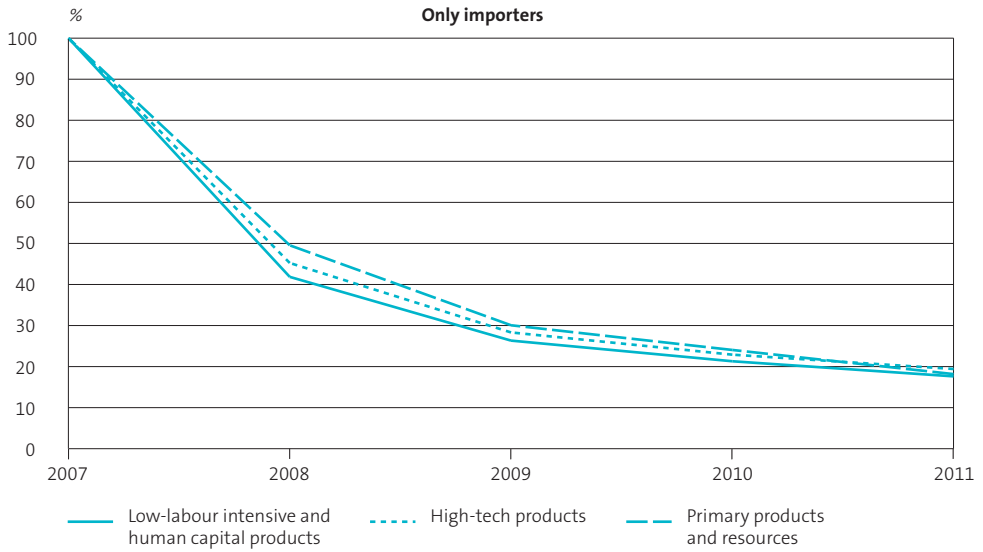
Survival of international traders: product characteristics

In this section we focus on whether the type of product an enterprise imports and/or exports also has an impact on its survival. In order to test this, we aggregated an enterprise's trade into three large product groups according to their factor intensity. Group 1 consists of primary products and natural resource intensive products (e.g. mineral fuels, ores). Group 2 are low-skilled labour intensive products and human capital products (e.g. clothing, vehicles). Group 3 are high-tech products (e.g. computers, chemicals). The product group in which an enterprise trades (imports/exports) most in 2008 (the year after trade start) is considered to be its main trading product, and the impact of this concentration is depicted against its five year survival rate (as a trader).

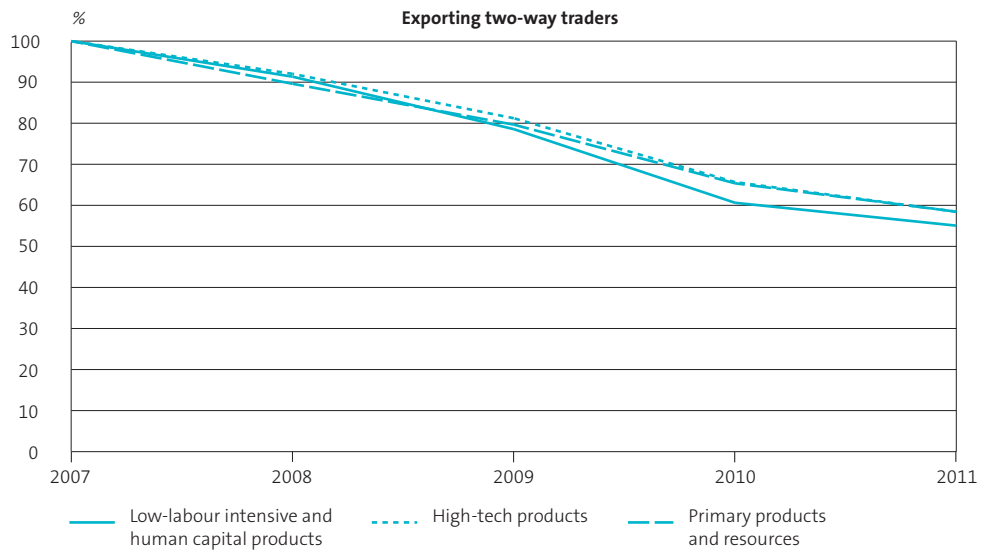
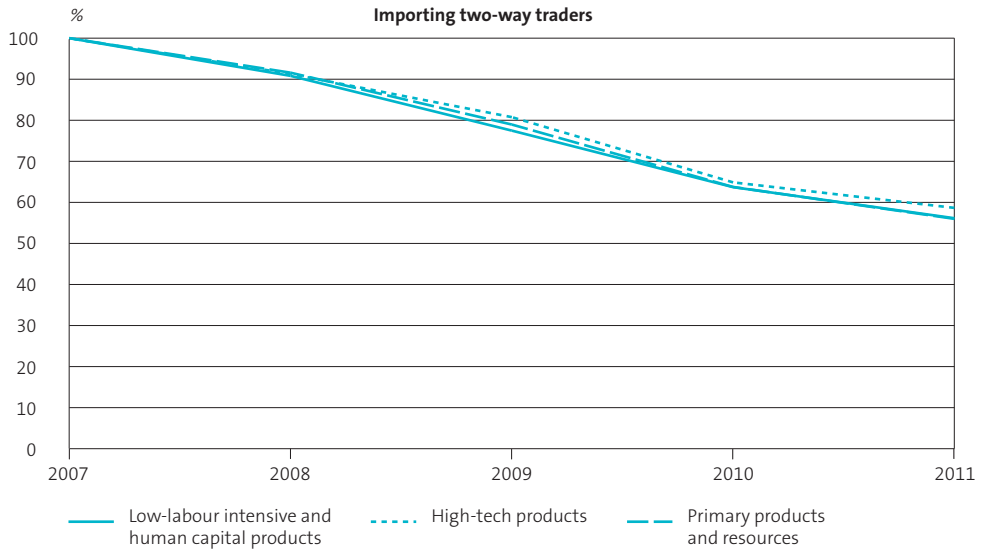
8.6.4 Survival rates of new traders (2007); by main product



8.6.4 Survival rates of new traders (2007); by main product (continued)



8.6.4 Survival rates of new traders (2007); by main product (end)



Graph 8.6.4 shows that there is only a difference in survival for importers in general (two-way traders and importers together), for each individual category the differences are no longer significant. The top left graph shows the difference in survival between importers that import primary products, resources, low-skilled labour intensive products and enterprises that import high-tech products. Enterprises that import high-tech products have a higher (statistically significant) survival probability than importers of low-skilled labour intensive products. For two-way traders or importers there are no significant differences in survival in terms of products traded.

Exporters show a similar pattern as importers, meaning that the probability of exit as a trader is highest for exporters of low-skilled labour intensive products. Export of primary products also has a significant (positive) impact on survival. Exporters of primary products and exporters of high-tech products have similar survival rates (statistically not different from each other; see table 8.4a in annex). Distinguishing between only exporters and two-way traders shows interesting differences. For two-way-traders, as we saw for imports, the type of product exported is not a significant explanation in survival. However, the exporters that export primary products and natural resources are (statistically) significantly more likely to export after five years than exporters of low-skilled labour intensive products and high-tech exporters.

We also investigated whether the conclusions change when enterprise survival is taken into account, rather than trader survival. In terms of enterprise survival, no significant differences were found for any type of trade, i.e. the type of product that is traded does not seem to be relevant in explaining overall enterprise survival.

8.7 Conclusion

This chapter provides insight into the dynamics of international commodities traders in the Netherlands, their economic development over time, the manner in which they grow (extensive versus intensive margin), and the role that type of trade plays in their survival.

The average Dutch importer sourced on average 10 products from 4 countries, while the average exporter exports 8 products to roughly 9 countries. Already existing traders have by far the largest trade value and the most partner countries. New importers sourced on average 6 products from on average 3 countries. New exporters start out with 6 trading partners and 6 products.

Most traders start and stay small. Almost two thirds of importers that started to trade in 2007 sourced their products from one country and imported only one type of commodity during their start-up year. With 67 percent, exporters are even more concentrated in their first year. After five years, still around 70 percent of importers and exporters

(conditional on survival) trade with 5 countries or less, and in 5 products or less. Adding new products and countries to their portfolio is costly and brings along risk, which only the most productive and profitable firms can afford to do. As a result, growing along the extensive margin is less important. Most growth is achieved by extending already existing relationships, as is also the case for more experienced firms.

Our ANOVA of differences in turnover showed that two-way traders achieve significantly higher levels of turnover than importers, exporters or non-traders. If all else is equal, non-traders have the lowest level of turnover. When an enterprise starts to trade is also relevant in explaining turnover and trade differences. Born Globals realise the highest turnover. However when combined with *TypeTrade*, *TypeStart* becomes insignificant. Born Globals that start to trade are quite likely to become two-way traders. Enterprises that start to trade later on often start to trade as either exporters or importers. As such, when we control for *TypeTrade*, the turnover differences between born globals and late starters disappear.

The last main contribution of this chapter adds to the survival literature. We distinguish between enterprise survival and trader survival, and assess the impact of partner country and product portfolio on both survival types. Two-way traders have the highest survival probability. Over half were still active traders after five years and only 10 percent had exited as an enterprise altogether. Of newly established importers and exporters respectively 25 and 20 percent still traded after five years, and around 18 percent of both groups ceased to exist as an enterprise.

Due to the costs involved with trade and the risks for entrepreneurs, we expect that survival of a trader may also depend on the type of partner country. For two-way traders it is not very relevant from where they import. Enterprises that only import have a higher survival rate when they mainly import from the EU-15. Alternatively, exporting to the EU-15 also yields the best results in terms of survival after five years, compared to exporting to BRIC/Asian countries, North America or other countries (although not significantly so for two-way traders).

When we look at enterprise survival rather than trader survival, trade with BRIC/Asia seems to be associated with somewhat lower enterprise survival rates. Trading with BRIC/Asia could be a 'make or break deal', where trade failure leads to enterprise failure. The reverse is true especially for importers from North-America. When the trade relationship stops this does not necessarily cause the enterprise to exit. Trade with the EU-15 does not seem to have a different impact on trader or enterprise survival.

In this chapter we also investigated whether the type of product an enterprise imports and/or exports has an impact on its survival. Enterprises (including two-way traders) that import high-tech products have a higher (statistically significant) survival probability than importers of low-skilled labour intensive products. Exporters show a similar pattern as importers, meaning that the probability of exit as a trader is highest for exporters of low-skilled labour intensive products. Exporting primary products also has a significant (positive) impact on survival. However, in terms of enterprise survival, there were no

significant differences. Further analysis on trader survival should include the number of products and countries as well as absolute trade value.

Annex

8.1a Pairwise comparisons for ANOVA on corrected turnover and trade means for TypeTrade

	Basic model	Basic model + TypeStart	Basic model + TypeStart on trade value
Non-trader			
Born Global	-1.023***		
Later in life	-0.715***		
Born Global			
Non-trader	1.023***		
Later in life	0.308***	0.028	1.216***
Later in life			
Non-trader	0.715***		
Born Global	-0.308***	-0.028	-1.216***

*** The mean difference is significant at the 0.05 level.

8.2a Pairwise comparisons between different types of traders

	Trader survival	Enterprise survival
Importer only		
Exporter only	0.135*	-0.037
Two-way trader	-0.829*	-0.399*
Exporter only		
Importer only	-0.135*	0.037
Two-way trader	-0.964*	-0.363*
Two-way trader		
Importer only	0.829*	0.399**
Exporter only	0.964*	0.363**

* Significant at 0.005 level.

8.3a Pairwise comparisons between different types of countries

	Import only		Two-way trader	
	trader survival	enterprise survival	trader survival	enterprise survival
EU-15				
BRIC/Asia	0.334*	0.352*	0.032	0.237
Other countries	0.436*	0.279*	0.217	0.163
North-America	0.412*	-0.170	0.025	-0.101
BRIC/Asia				
EU-15	-0.334*	-0.352*	-0.032	-0.237
Other countries	0.103	-0.073	0.185	-0.074
North-America	0.078	-0.523*	-0.007	-0.338
Other countries				
EU-15	-0.436*	-0.279*	-0.217	-0.163
BRIC/Asia	-0.103	0.073	-0.185	0.074
North-America	-0.025	-0.449*	-0.192	-0.265
<hr/>				
	Export only		Two-way trader	
	trader survival	enterprise survival	trader survival	enterprise survival
EU-15				
BRIC/Asia	0.170	0.419	0.333*	0.232
Other countries	0.201*	0.155	0.079	-0.133
North-America	0.197	0.349	0.303	-0.041
BRIC/Asia				
EU-15	-0.170	-0.419	-0.333*	-0.232
Other countries	0.031	-0.264	-0.254	-0.365
North-America	0.027	-0.070	-0.031	-0.273
Other countries				
EU-15	-0.201*	-0.155	-0.303	0.133
BRIC/Asia	-0.031	0.264	0.031	0.365
North-America	-0.004	0.194	-0.224	0.092

* Significant at 0.005 level.

8.4a Pairwise comparisons between different types of products

	All importers		Import only		Two-way trader	
	trader survival	enterprise survival	trader survival	enterprise survival	trader survival	enterprise survival
Primary products and resources						
Low-labour intensive and human-capital intensive	0.109	-0.003	0.056	-0.021	0.006	-0.059
High-tech products	-0.024	-0.065	0.010	-0.027	-0.072	-0.171
Low-labour intensive and human-capital intensive						
Primary products and resources	-0.109	0.003	-0.056	0.021	-0.006	0.059
High-tech products	-0.134*	-0.062	-0.046	-0.006	-0.078	-0.111
High-tech products						
Primary products and resources	0.024	0.065	-0.010	0.027	0.072	0.171
Low-labour intensive and human-capital intensive	0.134*	0.062	0.046	0.006	0.078	0.111
	All exporters		Export only		Two-way trader	
	trader survival	enterprise survival	trader survival	enterprise survival	trader survival	enterprise survival
Primary products and resources						
Low-labour intensive and human-capital intensive	0.299*	0.172	0.279*	-0.026	0.090	0.254
High-tech products	0.104	0.173	0.250*	0.197	-0.015	0.150
Low-labour intensive and human-capital intensive						
Primary products and resources	-0.299*	-0.172	-0.279*	0.026	-0.090	-0.254
High-tech products	-0.194*	0.001	-0.029	0.223	-0.105	-0.104
High-tech products						
Primary products and resources	-0.104	-0.173	-0.250*	-0.197	0.015	-0.150
Low-labour intensive and human-capital intensive	0.194*	-0.001	0.029	-0.223	0.105	0.104

* Significant at 0.005 level.