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Uncertainty and the export decisions of Dutch firms

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Abstract

This paper analyses the export market entry decisions of Dutch firms and their subsequent growth or market exit. Exporters, particularly when entering new markets, have to learn about market conditions and to search for new trade relations under uncertainty. In that sense the paper also investigates the role of economic diplomacy and knowledge spillovers from colleague-exporters. We combine detailed international trade data by firm and destination between 2002 and 2008 with firm data and export market characteristics in order to disentangle the firm and country determinants of successful and less successful export behaviour. First, we find that about 5% of all Dutch exporters have just started in their first market and a similar share of exporters ceases all exports. Still, the starting exporters increase their exports very fast. In each market their export growth in their third year as exporter is about twice as high as for established exporters. Many starters also increase their exports by expanding their number of destinations, but they will retreat swiftly if they are not successful. For all exporters we find that more productive and larger firms are more inclined to enter (additional) export markets, and that larger firms are less likely to leave a market. Market characteristics are important as well. Distance and import tariffs reduce the probability to enter the market and increase the probability to exit. Not only distance to the home country matters, but also the distance to export markets already accessed. Firms seem to follow a stepping stone approach for reaching markets further away (physically and culturally). They first enter more nearby markets before moving to more distant markets. Finally, we find that the presence of support offices abroad and trade missions in destination countries, particularly middle income countries, stimulate the entry of new exporters and the growth of export volume. Knowledge spillovers from exporters with the same destinations have also positive effects on market entry.

JEL : F10, D22, F13
Keywords: strategic export decisions, sequential export market entry and exit, export growth, economic

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1 Introduction[1]

The top 5% of largest Dutch exporters in manufacturing is responsible for 73% of all goods exports. For services exporters this is slightly lower, 62%, but this is still an overwhelming share.[2] Most firms do not trade internationally, and many of the exporting firms trade only with one country.[3] Moreover, Roberts and Tybout (1997) and Bernard and Jensen (2004) conclude that there is a strong persistence in exporting by firms. Exporting firms continue exporting over time and non-exporting firms continue to focus on the domestic market. Bernard et al. (2009) and Eaton et al. (2007) confirm these results by concluding that year by year trade growth is mainly caused by trade growth of existing exporters.

This leads to the interesting question how new exporters can become incumbents, and which aspects determine their success or failure? The recent empirical literature[4] shows that many firms experiment to export for a few years. Sometimes this is succeeded by rapid export growth, but quite often by a disappointing failure and exit from the market. Eaton et al. (2007), Albornoz et al. (2010) and Esteve-Pérez et al. (2011), among others, suggest theoretically and empirically that new exporters start by selling small amounts to neighbouring countries to learn their own export capabilities, before expanding their export to other countries. A central element in these theories trying to explain this behaviour is that firms have to learn about market conditions and are searching for new trade relations under uncertainty.

This paper investigates how Dutch exporters cope with these uncertainties, particularly when entering new export markets. We focus on three (non exclusive) strategies to reduce the uncertainty involved in exporting. Less uncertainty could improve the export decisions of firms and reduce the costs of early exits from foreign markets. The first strategy is that firms learn their export capabilities by exporting to neighbouring countries for which market entry costs and uncertainty is lower. This is called steppingstone behaviour. The second strategy is to learn from other exporting firms in the own region or exporting to a similar destination. The third strategy is to build on economic diplomacy of the government. Do trade missions and trade posts increase market entry? Except market entry we also analyse the subsequent decisions of firms: export growth and market exit decisions.

Rauch and Watson (2003) develop a theoretical model in which the success or failure of exporting depends on the probability of finding trustworthy and capable distributors and trade relations in the new export market. The risk to enter a new export market can be reduced by delivering small amounts first to test the capacity of the foreign trade partner. If this is all right exports will increase rapidly, otherwise the exporters will withdraw from the new market. Freund and Pierola (2008) formalize this uncertainty by modelling that firms can only learn

[1] We appreciate comments of Eric Bartelsman (VU), Steven Brakman (RUG), Henri de Groot (VU), Stefan Groot, Henk Kox, Roger Smeets, Bas Straathof and Bas ter Weel (CPB colleagues). We also thank Fred Kuijpers for his statistical assistance, Harry Habets and Willem de Jong (Statistics Netherlands) for their assistance and effort to match the datasets, and Frank van Leeuwen (EVD) and Selwyn Moons (Ministry of Economic Affairs) for providing data on economic diplomacy. Further, we would like thank the participants of presentations at the Ministry of Economic Affairs, Agriculture and Innovation, Statistics Netherlands and at CPB for providing helpful suggestions.

[2] The numbers are presented in Kox and Rojas Romagosa (2010). This is not a typically Dutch characteristic. Mayer and Ottaviano (2007) show that this concentration of exporters is common all over Europe and Bernard and Jensen (1999) show this pattern for the United States.

[3] Statistics Netherlands (2009) concludes that about 8% of the Dutch enterprises has exported goods in 2007. A third of these exporting firms have served only one foreign market.

[4] Bešedes and Prusa (2006), Aeberhardt et al. (2009), Esteve-Pérez et al. (2011), Alvarez and Lopez (2008), Eaton et al. (2007), Freund and Pierola (2008) conclude that exports rise quickly after a modest but successful begin, or firms retreat quickly from an export market in case of failure for the US, France, Spain, Chile, Colombia and Peru, respectively.

about export costs only after they actually export. Eaton et al. (2009) show that previous experiences may affect new search and learning activities. Firms that receive better signals will intensify their search for new buyers, while firms with poor signals will diminish their searching and/or even cease current export relationships particularly after repeated poor signals. Albornoz et al. (2010) suggest that firms do not only test the quality of trading partners but also the conditions of market demand. Including the latter uncertainties, they develop a formal two-period model in which the uncertainty is resolved after exporting in the first period. This leads to export growth and possibly market entry to other markets or market exit decisions. Albornoz et al. (2010) stress the importance of recent market entry for export growth and market exit. With data for Argentina they confirm the predictions of their model that firms face considerable uncertainty when entering export markets.

We extend the model of Albornoz et al. (2010), which mainly focus on the role of recent starters. We include the distance to nearby export markets (stepping stone behaviour), spillover effects of other exporting firms and instruments of economic diplomacy in the market entry decision. We also examine the impact of spillover effects and economic diplomacy on export growth. Moreover, we include export market and firm characteristics in the analysis of market entry, export growth and market exit. We use dynamic probit estimators with random effects to investigate the market entry and exit decisions and a linear panel estimator with fixed effects for the export growth equation.

We combine detailed international trade data by firm and destination with Dutch firm and export market characteristics in order to disentangle the firm and country determinants of successful and less successful exporting behaviour. First, descriptive statistics show that most exporting firms continue to export. A substantial share of the firms enters new markets, but the share of firms leaving export markets is more or less the same. The gross turmoil of firms starting or ceasing exports is about 5% of the total number of exporters between 2003 and 2007, but the net effect is much smaller. The average export value of both types is similar, but they export on average much less than the average incumbent exporter. It is not that firms do not enter new export markets, but they fail to continue exporting to these markets. Entrants typically leave the export market or increase their exports very fast. Their export growth in their third year as exporter is about twice as high as for continuing Dutch exporters.

The econometric analysis confirms that entry on new markets entails high export growth or swift exit if entry is unsuccessful. More productive and larger exporters, particularly firms that recently started to export, are more likely to expand their number of export markets than less productive and incumbent exporters. Market characteristics matter. First of all, firms are more likely to export to export market nearby the home country or nearby export markets already accessed. Stepping stone behaviour seems to be a deliberate strategy to deal with export market uncertainty. Distance (to the Netherlands) and import tariffs reduce the probability to enter the market and increase the chance to exit. These trade costs have less impact on export growth. Larger markets seem to attract more entrants and will reduce the number of exits, and GDP growth stimulates exports to that country. Experience of other exporters to an export market, does also help to enter that market. However, the export experience has to be market specific. Spillovers from other exporters within the same region or industry, but abstracting from their destinations, are not significant. Economic diplomacy does also help firms to enter new markets. Using instrumental variables to correct for endogeneity, bilateral chambers of commerce, trade posts and trade missions raise significantly the export probability to a market. Trade missions and the presence

of trade posts have also a significant effect on export growth. Overall the firm and export market characteristics included in the empirical model provide us with a richer set of results and insights on export behaviour compared to other papers.

The theoretical background of the empirical model and on the impact of policy instruments and spillover effects is presented in section two. Section three presents the stylized facts on Dutch firm-export market relations and the data sources. Section four focuses on the entry decisions for particular export markets. Here we include firm characteristics and market characteristics. The determinants of export growth are presented in section five. Sections four and five also investigate the role of Dutch policy instruments and spillover effects. Section six concentrates on the firm decisions to leave exports markets and section seven concludes.

2 Literature on firms' export strategy, policy and spillovers

2.1 Basic intuitions on firms' export strategy

The paper of Albornoz et al. (2010) has triggered our thinking on the uncertainty about export capabilities and export markets and the behaviour of firms. Albornoz et al. (2010) develop their arguments in the context of a two-country, two-period model. Each firm decides on exporting to two countries, *A* and *B*. The trade costs (transport costs and import tariffs) for country A are lower than for country B. They extend the traditional Melitz (2003) model by uncertainty with respect to the market entry costs. These entry costs depend on the unknown ability of firms to export (such as marketing costs related to the market characteristics) and unknown market characteristics. Kneller and Pisu (2007) have gathered detailed information on various types of market entry costs using survey data for the UK of a sample of firms participating in export promotion programmes. Nearly 30% of the firms identifies networks and marketing as a problem. This includes obtaining basic information, establishing and building relationships. 42% of the firms experiences problems with legal and administrative procedures in the export market and 37% identifies cultural differences as a market entry barrier.

Albornoz et al. (2010) assume that market conditions for market A and B are perfectly correlated and constant over time. This crucial assumption implies that firms may start to export to only one market, and use the information obtained from that market to assess the profitability of entering the second market. Still, such sequential entry entails forgone profits of one year from postponing entry to the second market. Simultaneous entry in the first year entails instantaneous gross profits from two markets. But then firms cannot make ex ante assessments of market profitability and may export at suboptimal levels on both markets in the first year. The level of the fixed costs to enter any market and the firm's productivity level then jointly determine whether simultaneous entry, sequential entry or no entry at all is optimal. The probability of overcoming the market entry costs increases with firm's productivity, consistent with Melitz (2003), and Chaney (2008).

Assume that fixed entry costs are such that sequential entry is optimal, and that an exporter survives its first entry in market A. In the second year the exporter gains full information on market B, and it will enter that market if it is profitable. Further postponement of entering market B after the second year is always suboptimal,

because it provides neither profits nor additional information on market conditions. So, *recent starters are more likely to enter new markets rather than incumbent exporters.*

The stylized model is rather rigid by the assumption of full information in the second period. Changes over time may affect the decision to enter new markets, even for incumbent exporters. For instance, starters will more likely enter markets with lower realized market entry costs or more favourable market conditions. Incumbent exporters may decide to enter new markets after new changes in market conditions. If we extend the model to multiple countries it does not seem to be straightforward that exporting to market A discloses the same amount of information for exporting to countries B and C. Assume that the market characteristics (such as culture and procedures) are more similar between country A and B than between country A and C. If the firm already exports to market A, the uncertainty involved with entering market B is smaller than the uncertainty involved with entering market C. We extend the empirical model by including this possible stepping stone behaviour and expect that a firm is more likely to enter a market at a certain distance from the home country if it already exports to more nearby markets. We proxy the closeness of a new market of a firm by the smallest distance between the new market and existing markets.

The stepping stone approach is one way of reducing market uncertainty. Knowledge spillovers from other exporters are another possibility. We include various types of knowledge spillovers from "colleague exporters" in the model. Economic diplomacy could also help to resolve market uncertainty. More specifically it can help to deal with government procedures or to overcome cultural differences. Instruments of economic diplomacy, such as trade missions, trade posts and bilateral chambers of commerce are incorporated and we expect that these instruments could raise the export probability.

If expected market entry costs are low and consequently expected profits are high, a firm will export the maximal amount to market A. If the uncertainty and expected costs are high, the firm will only sell a limited amount to experience market demand and his export capabilities. After exporting in the first year, all information is available in the model of Albornoz et al. (2010). The firm then decides to leave market A or to export the profit-maximising amount. In the latter case the exports will (ceteris paribus) increase rapidly in the first year but not in later years on that market. Moreover, it will decide to enter market B or not. The growth in other markets after entry is zero, because with all the necessary information available the exporter will export instantaneously at its optimal level.

As discussed before, all information will not be available after one year, but we do expect that new entrants will experience on average higher export growth than incumbent exporters in the first years after market entry. This is also the case for market exit. The firm receives a lot of information in the first years of exporting. Then they will decide to continue exporting or to leave the market. Therefore we expect that the recent entrants are more likely to exit the market than incumbent exporters.

2.2 Role of policy support and spillover effects

Export promotion is an important activity of many countries. Developed and less developed countries have established export promotion agencies (EPA), economic departments of embassies and foreign trade offices (business support offices) and conduct trade missions.[5] These institutes and activities are often financed by public money and the question comes to the fore whether these activities are effective. In recent years various studies have been conducted to examine the impact of these institutions, see Yakop and van Bergeijk (2011) for an overview.

Rose (2007) has stimulated research on economic diplomacy using gravity equations. He and others explain the value of (bilateral) trade using standard explanatory variables like GDP and distance and include the number of embassies and trade offices. Rose concludes that one additional consulate or embassy increases exports by 6 to 10 percent on average in a sample of about 20 developed countries, this effect reduces if the number of consulates increases. There is, however, an endogeneity problem, because large exports could also stimulate the number of consulates. Using a set a various instruments Rose still finds that export increases by 6%. Nitsch (2007) uses a gravity approach to analyse the effect of state and other visits, quite often called trade missions with political representation. For the US, France and Germany (with data between 1948 and 2003) he concludes that a visit to a country increases bilateral export by 8 to 10 percent. Using a difference-in-difference specification and resolving the endogeneity problem, it follows that bilateral exports are 2 to 3%-points higher in the first years after the visit, but this effect dies out quickly. Veenstra et al. (2010) discriminate high and lower income countries and find that in particular the embassies of high income countries in lower income countries have a positive and significant effect on exports. The EPAs from lower income countries seem to be effective, as Lederman et al. (2006) concludes, but from high income countries not. Head and Ries (2010) analyse the impact of 23 Canadian trade missions headed by the prime minister or the minister of international trade starting from 1994. Using a gravity equation they conclude that bilateral trade with countries visited is significantly higher, but these visits do not increase bilateral trade in their preferred specification with country pair fixed effects. On the one hand, this result suggests that the endogeneity problem could lead to distorted outcomes. On the other hand, the use of country-pair fixed effects makes it hard to identify effects of trade missions.

Related is the question whether these government activities support firms to enter export markets and or whether these activities help them to increase their exports and to become a mature exporter. Several papers inspired by the heterogeneous firms' literature focus on these issues. Görg et al. (2008) use a difference-in-difference estimation method to investigate whether grants from the Irish government helps firms to become exporters. They conclude it is not, only if the grants are large enough these help already exporting firms to become more competitive at the international market. Bernard and Jensen (2004) also conclude that state support in the US does not have a significant impact on export market entry of US firms. Volpe Martincus et al. (2010) conclude that the number of export promotion offices has a positive significant impact on the number of

[5] See Nitsch (2007), Rose (2007), Volpe Martincus and Carballo (2010), and Van Veenstra et al. (2010). The latter authors also discuss the economic rationale for government intervention in export promotion.

traded heterogeneous goods by Latin American and Caribbean countries., while representation by embassies at the export market increase the number of exported homogeneous goods.

Several papers have investigated the role of knowledge spillovers on entry and export volume. Using a theoretical network model, Krautheim (2008) argues that information exchange between firms exporting to the same countries reduces the fixed entry cost of new exporters, thus pointing to spillover effects across exporters. However, empirical results on spillover effects are mixed. For the UK, Greenaway and Kneller (2008) find that regional and sectoral agglomeration enhances the entry of new firms to export markets. Instead, Bernard and Jensen (2004) find no evidence of regional spillovers effects, industry-specific or region-industry spillover effects on the export decision of US manufacturing firms. The latter two papers consider only the impact of spillovers on the primary decision of firms to export or not. In a recent paper Koenig et al. (2010) extensively investigate local spillover effects on the decision to enter a specific market and on the export volume to that market for French exporters between 1998 and 2003. They find significant spillover effects on the entry decision, particularly if they can be specified towards product-types or destination-countries, but no spillover effects on the export volume.

3 Data and descriptive statistics

3.1 Exporter types and related strategic decisions

Table 3.1 classifies several types of exporters, thereby discriminating between the basic decision to export or not and export decisions to specific countries. We distinguish starting exporters and market entrants. Market entrants could be starting or incumbent exporters. A similar distinction holds for market exiters and export stoppers. Note that these definitions do not include starters ceasing all exports after one year or entrants exiting some market after one year or firms that export only occasionally over a longer period of time.[6]

Table 3.1 Exporter types related to strategic decisions

Total exports	
starters	did not export in previous years, but start to export in t and continue in $t+1$
continuing exporters	exported in $t-1$ and continue to export in t and $t+1$
stoppers	exported in $t-1$ and in t, but cease to export in subsequent years
Exports to specific country	
entrants	did not export to country in previous years, but start to export in t and continue in $t+1$
incumbents	exported to country in $t-1$ and continue to export in t and $t+1$
exiters	exported to country in $t-1$ and in t, but cease to export in subsequent years

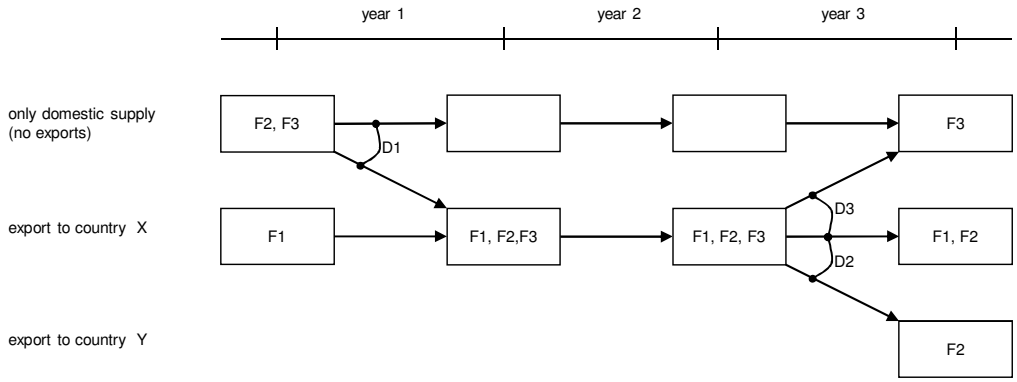
Figure 3.1 illustrates the types of exporters and their strategic export decisions of three firms (F1 to F3) during year 1 to year 3 on exporting to country X and Y. First, we assume that all three firms supply the domestic market, and that in previous years only firm F1exported to country X and no firm exported to country

[6] For these firms we cannot include firm specific effects.

Y.[7] In this figure, decision D1 reflects that non-exporters may *start* to export, like firms F2 and F3 who start in year 1 to export to country X. Decision D2 indicates that exporters may *enter* new countries. Here firms F1 and F2 consider to export to Y in year 3, but only firm F2 will take that chance. Finally, decision D3 shows that exporters may also decide to *exit* country X or even *stop* to export (firms F1 and F3) in year 3, but here only firm F3 is doing so. Looking at the scheme from a medium term perspective, we find that firm F2 has become a successful starter that has even expanded to several markets, while firm F3 appears to be a non-successful starter.

Finally, as new exporters will enter the market in the course of some year, the calculated export growth of the entrant will be upward biased in the second year. To adjust for this, we consider export growth of an entrant in its *third* year and compare it to export growth of incumbent exporters for the same calendar year. In terms of figure 3.1, for country X we compare export growth of entrant F2 with export growth of incumbent F1in year 3.

Figure 3.1 Decisions in exporting



3.2 Data sources

We use four datasets at firm level which are all gathered and constructed by Statistics Netherlands. The most important source for our analysis is the International Trade (IH) data set. It is a set of customs data extended with a survey across Dutch firms on international transactions of imported and exported goods with all countries between 2002 and 2008. For each transaction the IH dataset contains information on the country of destination, the type of product, the value and the volume in physical units, and the share of the traded value that is related to re-exports. Each record is identified by the VAT-number and an IH relation number of a Dutch firm.[8] The IH dataset does not include intra-EU transactions of firms with total exports (or imports) below a threshold.[9] Firms with smaller exports are expelled from the survey to ease their administrative burden. The IH dataset does include additional data from the Dutch Tax Authorities on the sum of all exports by firm, but can not be

[7] It is quite standard that exporters remain supplying its domestic market (see for instance Melitz (2003)), but this assumption is not crucial for this discussion.

[8] To ease the identification, Statistics Netherlands has created the IH-relation number as a new identifier. This number identifies individual and actual exporters with one or more VAT-numbers, but refrains from the legal and organizational status of exporters. This study uses the IH-relation number as the main identifier of exporters.

[9] The threshold for the export value is 225 thousand euro until 2005, 400 thousand euro in 2006 and 2007 and 900 thousand euro in 2008.

specified towards EU destinations and products. This study uses export data excluding re-exports, deflated to export price levels in 2002.

We combine the IH data with three sources of firm and enterprise data. We use survey data of the Financial Statistics of Large Enterprises and of the Production Statistics for firms' size (measured by employment size in fte's) and for labour productivity.[10] The General Firm Register provides information on the firms' branch of industry and its (main) location at municipal level. We use a matching file, constructed by Statistics Netherlands, for linking individual IH-relation numbers with enterprise and firm identifiers in order to match the IH data with the firm and enterprise data. [11] To avoid potential mismatching between trade data and firm characteristics, we sum the trade data of all IH relation numbers that are related to the single enterprise or firm.

The firm level data are complemented with country data. For market size, we use (the log of) total GDP from the World Bank Development Indicators. Variable trade costs can be (crudely) decomposed into transport costs and trade costs. Transport costs are approximated by the geographical distance between Amsterdam and the most populated cities of the trading partners (source: CEPII). For trade costs, we use the average country-level import tariffs from the Fraser Institute (Gwartney and Lawson, 2008).

Note that the regressions might be vulnerable to potential selection bias, particularly due to the threshold in registering international trade data and by the matching of trade data to firm- and enterprise data. Appendix A provides various robustness checks to check for potential bias due to missing observations of small trade values. These checks are based on the same regression models as in section 4 to 6, but use more restrictive and better controllable parts of the dataset. The results of these checks are similar to the results of the main regressions. In that sense we argue that the impact of potential selection bias is limited.

3.3 Descriptive statistics

This section discusses several descriptive statistics on starting exporters, continuing exporters and firms that cease all their exports (stoppers).[12] Table 3.2 presents an overall picture of the export performance of these groups over the period 2003 to 2007.[13] The number of continuing exporters is about 17 times as high as the number of starters and stoppers. On average, continuers export almost three times as much as starters or as stoppers. Dutch exports are mainly generated by continuing exporters. Starters and stoppers each seem to contribute only a small fraction total export. Still, the replacement of the smaller stoppers by the larger starters contributes 0.7%-point to total export.

[10] Labour productivity is deflated with value added prices of industries at the 2-digit level.

[11] Each IH relation number is uniquely matched to a single enterprise and/or firm. In reverse direction, however, the match may not be unique. Most enterprises or firms are related to one IH-relation number, but some (mainly large) enterprises/firms are related to several IH-relation numbers.

[12] The classification of export types is based on firms' exports excluding re-exports and deflated to the export price level in 2002.

[13] For 2002 and for 2008 we cannot verify whether exporters are starters, continuers or stoppers. Identification for 2002 and 2008 requires data of respectively 2001 and 2009, which are not available.

Table 3.2 Export performance of Dutch firms (average of 2003-2007, non deflated)

	all exporters	starters	continuers	stoppers
		(in % of all exporters)		
Number of exporters	16592	5.6	89.6	4.8
Total export value[b]	85209	2.4	95.9	1.7
		(in % of average export value)		
Average export value[a]	5134	42.7	107.1	36.5

[a] Nominal values in thousand euros; [b] nominal values in million euros.

The differences in firm characteristics between starters, continuers and stoppers are smaller. Table 3.3 presents firm characteristics of the exporters that could be matched to firm level data, and compares them with the firm characteristics of non-exporters.[14] First it shows that exporters are on average more productive and larger than non-exporters.[15] Second, the labour productivities of starters, continuers and stoppers are very similar.

Table 3.3 Firm characteristics of exporters and non-exporters (average of 2003-2007)

	non-exporters	all exporters	starters	continuers	stoppers
			(in % of all exporters)		
Number of firms	25083	4828	2.6	94.5	2.9
Total employment (x 1000 fte)	2002	912	3.1	93.2	3.7
			(in % of average of all exporters)		
Average labour productivity (x 1000 euro)	57.3	72.0	99.5	100.1	97.2

Table 3.4 presents the distribution of exporters to the number of destinations. For almost 60% of the exporters we can determine their individual export destinations, the other exporters are too small and small intra-EU trade values are not surveyed. The best coverage is for continuers. Table 3.4 reveals that starters with observed destinations export only to a few countries. About 63% of all starters exports to only one to three countries and about 15% to more than 10 destinations. Similar results hold for the stoppers. Continuing exporters, however, have a much broader scope. About 25% of the continuers exports to more than 10 countries.[16] These numbers suggest that most starters start at a modest scale, but will expand their number of destinations as they become "older".

Other studies for other countries point to a more "narrow" scope of starting exporters, but differences in definitions and classifications distort good comparability. For France, Eaton et al. (2004) show that in 1986, 35 % of all French manufacturing firms export to only one country, 20% to ten or more countries[17] and only 2% to 50 or more countries. The average export value to a destination by the average firm is nearly 1.5 million euro.

[14] The number of exporters in table 3.2 is much lower than in table 3.1 because we could not match the other 11764 exporters with firm characteristics.

[15] Kox and Rojas-Romagosa (2010) provide a thorough analysis of these productivity differences for Dutch firms and their causes.

[16] This number suggests that the share of exporters serving many destinations is much higher than for the US (see section 2). However, we miss many small exporters in this data sample, as argued in section 3.1

[17] In comparison, 24.5% of all Dutch exporting firms sells to 11 or more countries.

For Belgium, Onkelinx and Sleuwagen (2010) find that 77% of all SME-firms that started to export between 1998 and 2005, eventually exported to at most 5 countries.

Table 3.4 Export destinations for different types of exporters, average of 2003-2007

	starters	continuers	stoppers	total
Total number of exporters	302	9209	334	9844
Number of countries	(in % of number of exporters)			
1	40.5	23.9	42.8	25.1
2	14.4	12.5	14.7	12.7
3	7.4	8.6	8.6	8.6
4-10	22.5	29.7	21.5	29.2
11-20	9.6	16.0	8.5	15.6
21-40	4.2	7.0	2.9	6.8
>41	1.4	2.2	1.0	2.1

[a] Excluding destinations that occur only incidentally for one year.

Table 3.5 illustrates the firms' "expansion drift" in a more dynamic view. In fact, it follows the cohorts of starters and of continuers in 2003 over time, and presents their distributions in the number of destinations in 2003 and in 2007. First, it reveals that after four years (relatively) more starters (33%) have dropped out than continuers (27%). Moreover, in the cohort of starters the number of exporters exporting to one country dropped substantially after four years, while the number of exporters exporting to three or more countries increased. In the cohort of continuers, we observe a similar shift towards more destinations. Still, the shift of starters is more salient and stresses the expansion drift of particularly young exporters.

Table 3.5 Export destinations for the 2003 cohorts of starters and continuers, 2003-2007

	starters in 2003		continuers in 2003	
	2003	2007	2003	2007
Total number of (remaining) exporters	394	261	9505	6917
Exited during 2004/2007		133		2588
Number of countries	(in % of number of (remaining) exporters)			
1	43.9	23.0	24.8	19.4
2	14.5	13.4	13.5	11.1
3	8.6	9.6	9.3	8.2
4-10	21.8	26.4	30.6	30.5
11-20	6.1	15.7	14.1	19.0
21-40	4.6	10.0	5.6	9.2
>41	0.5	1.9	2.1	2.6

[a] Excluding destinations that occur only incidentally in one year.

Even though new exporters mostly start with exporting to a "few" destinations at a modest scale, they may grow exponentially. Table 3.6 compares total export growth and on average export growth per country for starters and

continuers between 2005 and 2007.[18] The most striking result from the table is that for starters the total export growth is larger than the total export growth of continuers. The growth in intensive country margin, as reflected by average growth per country, is also larger for starters. For the starters, the positive difference between their total export growth and the average growth per country is caused by their expansion to other export markets (see table 3.5). For the continuers this difference is much smaller, reconfirming that they enter fewer new markets.[19]

Table 3.6 Export growth of starters and continuing exporters, 2005-2007

	Total export growth (%)[a]		Average export growth per country (%)	
	starters	continuers	starters	continuers
2005	36.7	15.2	35.3	17.4
2006	63.3	21.9	40.5	19.8
2007	58.3	28.2	41.5	27.4
Average 2005-2007	52.8	21.8	39.1	21.5

[a] Total export growth of all countries (including those destinations that cannot be specified)

The numbers in this section illustrate that most new exporters start at a modest scale, i.e. often with a relatively low export volume to only a few countries. If they appear to be successful, they will expand rapidly by entering new markets or by expanding the intensive margins on established markets. The numbers also point to a strong similarity between starters and stoppers, but they cannot verify a direct relation between starting and stopping.

3.4 Policy instruments

The Dutch government uses several instruments to initiate and stimulate international trade relations which can be categorized in two basic groups[20]. The first group concerns specific programmes to stimulate and occasionally subsidize international trade of individual firms such as starters or exporters to developing countries. However, these programmes will not be analyzed here because the participating firms in these programmes can not be linked with international trade and firm level data. The second group concerns several forms of economic diplomacy. This includes the Netherlands Business support offices and several embassies and consulates,[21] and foreign affiliates of bilateral Chambers of Commerce. These offices offer stimulating activities and individual guidance to enhance trade with the host countries. Besides, there are trade missions that are organized by governments or specific sectors (CPA's[22]).

[18] To be precise, for starters we present the growth figures in their third year, so for firms that started in 2003 we present their growth figures in 2005, etc. The reason is that new exporters may enter market in the course of some year, so the calculated export growth of the entrant in the second year will be upward biased. Note that the total export growth refers to the growth in the intensive and extensive margin.

[19] The negative difference in 2005 is due to the calculation method. The total export growth is an average weighted by country size. The average growth per country is non-weighted average across all countries. The negative difference between these two growth figures indicates that exports to large and developed countries grow less than exports to small but upcoming markets.

[20] Van den Berg et al. (2008) provide an extensive overview and a social cost-benefit analysis of some programmes and trade missions.

[21] The NBSO's provide similar activities as the embassies and consulates, but they have no formal diplomatic status (see also www.evd.nl).

[22] The CPA's (Collective Promotional Actitivity) are colllective activities, for instance trade missions but also visits or stands on international fairs, of commercial firms. In advance the organisers of these (planned) CPA's may submit for a tender to attain a subsidy of the Dutch governments (see www.evd.nl)

Table 3.7 presents some basic descriptives of Dutch economic diplomacy in several country groups (Appendix A provides more details of Dutch economic diplomacy to the 50 largest trade partners in 2007). In about a half of all countries there are stimulating activities of bilateral chambers of commerce, NBSO's and embassies. Still, the presence of these offices varies widely over country groups. Many of these offices are established in the BRIC countries, particularly in China. They are less represented in EU12 countries and the other countries of the 50 largest trade partners. The governmental trade missions mostly focus to upcoming trade partners, particularly the BRIC countries and EU 12 countries. The sectoral trade missions (CPA's) mainly focus on the BRIC countries and the EU15 countries (mostly Germany and Belgium), but hardly on EU12 and other OECD countries. The CPA's are particularly related to the food industry, transport equipment industry, medical and optical instruments, construction and waste processing.

Table 3.7 Descriptive statistics of Dutch economic diplomacy for largest 50 trade partners in 2007

Country groups (number of countries)	Chambers of Commerce	NBSO, embassy or consulates		Governmental trade missions 2002-2006		CPA's 2005-2006	
	number of countries	number of countries	posts per country[a]	number of countries	missions per country[a]	number of countries	missions per country[a]
EU15 (14)	5	9	2.2	5	1.6	12	5.6
EU12 (12)	6	5	1.0	10	1.7	6	3.3
Rest OECD (10[b])	4	6	2.8	4	2.5	5	3.4
BRIC (3[b])	1	3	6.0	3	3.7	3	8.3
Rest top 50 (11)	3	4	1.3	5	1.8	7	3.3

[a] The total number of establishments of NBSO's and/or trade offices of embassies, averaged only over the number of countries in which one or more establishments are present. A similar procedure holds for governmental trade missions and CPA's.

[b] Three countries of other OECD countries (Chile, Mexico and New Zealand) and one BRIC country (Brazil) do not belong to the 50 largest trade partners in 2007.

4 Market entry

4.1 Basic model

New exporters may start exporting to only one (or a few) neighbour countries with relatively low market entry costs and uncertainty. If they appear to be successful in their first years as exporter, they will probably expand in various dimensions. The results in table 3.5 suggest that starters must expand their foreign markets within a few years to become mature continuers. Only 33% of the starters serves four or more foreign destinations, but for continuers this number mounts up to 52% in 2003. Continuing exporters may enter new export markets as well, particularly due to globalization and opening of new markets.

Following Albornoz et al. (2010) we test whether successful export starters are more likely to enter new markets than incumbent exporters, and whether exporters use current destinations as a stepping stone to explore new markets. The equation reads as:

$$PN_{ikt} = \gamma_0 + \gamma_1 FY_{it-1} + \gamma_2 \log AD_{kt} + \gamma_3 FY_{it-1} \times \log AD_{kt} + \gamma_4 \log GDP_{kt} + \gamma_5 \log D_k + \gamma_6 \log \tau_{kt} + \gamma_7 \log P_{it-1} + \gamma_8 \log E_{it-1} + \delta_i + \varepsilon_{ikt} \quad (4.1)$$

PN_{ikt} is the probability that exporter *i* will enter country *k* in year *t*. The dummy FY_{it-1} indicates that exporter *i* started previous year (*t*-1) as an exporter. Obviously, a positive coefficient of FY_{it-1} confirms the basic prediction from section 2. Additionally to Albornoz et al. (2010) we evaluate the crucial assumption that exporters may use nearby export markets as a "stepping stone" to enter new markets. This strategy may particularly be of interest for recent starters. To check this we include the distance[23] between the new destination *k* in year *t* and the closest country to which firm *i* exported in year *t*-1 and year *t* ($\log AD_{kt}$), and its interaction with the dummy FY_{it-1} to distinguish between continuing exporters and recent starters.

Equation (4.1) also includes the "regular" market characteristics, i.e. the level in GDP ($\log GDP_{kt}$), the distance between the Netherlands and the destination country ($\log D_k$) as an indicator of transportation cost, and the average (ad valorem) import tariffs ($\log \tau_{kt}$). Adopting these country characteristics may to some extent release the necessity to adjust for country and time specific effects.[24] In order to analyse the role of firm characteristics, we include exporter's labour productivity *level* ($\log P_{it}$) and its size by the number of employees ($\log E_{it}$).[25]

We estimate the equation using a probit estimator with random effects in order to control for non-observed firm-specific effects.[26] The assumption of random effects is to some extent disputable because the non-observed firm-specific effects may be correlated to the firm's labour productivity or size. Other estimation techniques that adjust for firm specific effects are not feasible due to data restrictions. We have not sufficient observations with (required) changes in all variables to estimate with logit adjusting for fixed firm specific effects. Estimating a linear probability model is problematic as well, because the observed probabilities of entry are very small so that estimates of that probability may become negative. Estimating with regular probit, and thus skip the control of non-observed firm-specific effects, provide much higher coefficients and seem to overestimate the actual marginal effects.

All results will be presented in terms of marginal effects, i.e. the impact of one percent change from the average of the respective determinant on the probability (in percentages) to enter a new market. For computational reasons we only include the 50 most important export markets for Dutch firms. To estimate

[23] The variable is adjusted for the correlation with the distance to the Netherlands, because in Europe the mutual distances between two countries are much smaller than the mutual distances between countries that are more remote from the Netherlands and Europe.

[24] Note that adjusting for country specific effects, besides adjusting for firm specific effects, puts a high burden on computational time, particularly as the range of exporting countries of Dutch exporters is very wide (see Smeets et al. 2010).

[25] For labour productivity and employment we could again adopt their interaction with the dummy FY_{it-1} in order to distinguish between incumbent and starting exporters. However, the strong correlation between the interaction term dummy FY_{it-1} yields implausible regression results.

[26] Probit with fixed effects is theoretically not possible (see for instance Cameron and Trivedi (2005)).

equation (4.1) we include only exporters which all do not export to market *k* in *t*-1, while in year *t* some of them enter market *k* while the others remain outside that market. In terms of the scheme in figure 2.1, equation (4.1) expresses the decision D2 of exporters F1 and F2 to export to country Y.

The first regression considers all determinants except the firm specific variables. The results of this regression (column (1) in Table 4.1) confirm the basic assertions of Albornoz et al. (2010), the positive and significant coefficient of FY indicates that Dutch firms that recently have started to export will more likely enter new markets than for incumbent exporters. In fact, new exporters have 0.2%-point higher probability to enter new markets than incumbent exporters. This number seems to be small, but is substantial if we take into account that the observed probability of entry is about 1.5% per year.

The first regression also confirms that firms may find it easier to enter new markets if they already export to nearby markets. For example, if a firm opts to export to Lithuania, the probability to enter the Lithuanian market would be 0.17 %-point higher if its nearest *current* destination would be Estonia instead of Denmark. The significant interaction term ($LA \times FY$) suggests that this effect is amplified for recent export starters. These findings indicate (indirectly) that conditions on nearby markets are correlated, and thus that exporters, and particularly recent entrants, learn from current export destinations and use them as stepping stones to enter new markets.

The impact of country specific effects is according our expectations. Firms are more likely export to countries with higher GDP, but less likely to countries at higher distance and with higher import tariffs. As an illustration, we compare the entry to the American market with entry to the Austrian market using figures of 2007. Using the marginal effects in column (1) we find that the larger market size (GDP) of the USA results in a 0.52%-point higher chance to enter that market. But the larger distance to the USA removes the "size advantage" by 0.49%-point. Even with the absence of tariffs in the EU, Austria eventually has only a 0.03%-point higher chance to be entered by a Dutch exporter than the USA.

The second (and other) regression adds firm specific effects to the basic specification. A higher productivity increases the probability to enter a new market, but only at a modest scale. A firm that already exports to other countries[27] would have a 0.05%-point higher chance to enter if it could raise its productivity by 50%. This figure is not negligible, because the average probability to entry is only 1.8% in this sample. Size also has a positive impact on the export probability. For instance, an exporter with 200 employees has nearly a 0.17%-point higher chance to enter a new market than an exporter with 100 employees.

We apply two robustness checks to assess the stepping stone hypothesis. First, we check whether the persistence in exporting to the stepping stone country is a necessary condition to enter the new market. The third column includes the distance between the new destination and the closest country to which firm *i* exported only in year *t*-1 instead of years *t*-1 and *t*, and its interaction with the dummy FY_{it-1}. The results, however, are only slightly different from the second regression. We also investigate the impact of idiosyncratic productivity shocks particularly on entry to new markets. Albornoz et al. (2010) point out that a positive productivity shock may ease entry. We extend the analysis on market entry by including firms' productivity *growth*. Note that

[27] I.e. with a productivity at the median level of all manufacturing exporters that enter a new market.

productivity levels are not necessarily correlated with idiosyncratic productivity shocks, so we keep the productivity level in the equation. The last regression in table 4.1 reveals that productivity growth does have a positive effect on market entry, but the effect is not significant. Moreover, for recent starters some effects are turned over, as the direct effect of being a recent starter (FY) diminishes and becomes insignificant, while the (additional) stepping stone effect for recent starters ($LA \times FY$) is more than doubled. We take the second regression as the baseline for further analysis of the impact of policy (section 4.2) and robustness analysis on the dataset (appendix B).

Table 4.1 Decision to enter specific markets (marginal effects in percentage points)

Dependent variable Entry on specific market	(1)	(2)	(3)	(4)
FY: start to export in t-1	0.168***	0.161***	0.133***	0.054
	(0.020)	(0.070)	(0068)	(0.101)
LA: Log distance to nearest market	-0.269***	-0.401***		-0.459***
(in t-1 and t)	(0.009)	(0.019)		(0.023)
LA x FY	-0.189***	-0.209***		-0.488***
	(0.025)	(0.069)		(0.148)
LA1: Log distance to nearest market			-0.304***	
(only in t-1)			(0.015)	
LA1 x FY			-0.186***	
			(0.060)	
Log GDP	0.149***	0.220***	0.216***	0.260***
	(0.004)	(0.008)	(0.008)	(0.010)
Log distance to Netherlands	-0.262***	-0.365***	-0.374***	-0.425***
	(0.007)	(0.014)	(0.014)	(0.017)
Log tariffs	-0.018***	-0.024***	-0.024***	-0.027***
	(0.001)	(0.002)	(0.002)	(0.002)
Log productivity (lag)		0.091***	0.095***	0.073**
		(0.019)	(0.018)	(0.030)
Δ log productivity				0.035
				(0.027)
Log employment (lag)		0.232***	0.239***	0.276***
		(0.013)	(0.013)	(0.018)
Observed probability to enter	1.474	1.756	1.756	1.843
Method	probit with RE	probit with RE	probit with RE	probit with RE
No observations	1873480	580311	580311	460855
Log likelihood	-115962	-42810	-42805	-35601

Notes: Numbers in brackets are standard error. *** and * denote respectively 99% and 90% statistical significance.
The indicated probabilities as well as all marginal effects (and standard errors) are multiplied by 100 so that they reflect probabilities in % and marginal effects in %-points.

4.2 Impact of economic diplomacy

We estimate the impact of the policy instruments for economic diplomacy on the entry of firms to export destinations and their export growth, and add these trade policy variables to equation (4.1).

Table 4.2 presents the effects of a foreign affiliate of the Chamber of commerce in the destination country, the presence of embassies and NBSO's, the number of embassies and NBSO's, the number of trade missions and missions by sector. The regressions without adjustments (first row) show that the missions by sector (CPA's) have no significant impact on market entry. The effect is positive, but not discriminating. This could be different for specific sectors, but on average we do not find a significant positive effect. The other economic diplomacy instruments have a significant and positive impact on the probability to enter a specific export market. The export probability will increase by about 0.1%-point if the bilateral chamber of commerce is present, which is substantial given the overall export probability of 1.8%. The impact of NBSO's is slightly smaller than for the chamber of commerce. One additional trade mission would raise the export probability by about 0.1%-point as well. The number of NBSO's has a minor effect on the export probability, only 0.01%. We are also interested in the question whether these policy instruments are particularly useful for recent starters. Therefore we have also added cross terms between a dummy for recent export starters and the policy instrument. The resulting coefficients are positive, but not significant. [28] This suggests that the economic diplomacy instruments have no significant additional impact for starting exporters compared to experienced exporters.

As discussed in the literature review the causal relation between trade and the policy instrument is not obvious. First of all, governments could decide to support firms because market entry is high. Second, this decision could be based on the size of the market and/or market opportunities which is also a decision variable for the firm. For that reason we use instrumental variables. So in the first stage, we have instrumented the trade policy instruments (except CPA, because these were not significant at all) on GDP/market size, GDP growth and distance to the Netherlands. In the second stage, we do not use the predicted value of these trade policy instruments based on the explanatory variables, but the predicted errors. These errors may then better capture non-trade related reasons for these institutes, for instance guidance and information exchange to entrants.

The results in table 4.2 show that differences between both approaches, i.e. using adjusted or non-adjusted data on economic diplomacy for all countries are minimal. This suggests that the possible endogeneity of the trade policy instruments or its correlation with specific causes for market entry, such as market size, distance and GDP growth do not affect the estimations results substantially.

Smeets et al. (2010) show that market entry costs are higher in countries with a lower quality of institutions, less transparency, more corruption and more cultural dissimilarity. Quite often these are developing countries. It could be the case that economic diplomacy is more needed in these countries than in high income countries, such as the EU-15 and the USA. To test this hypothesis we separate the instruments of economic diplomacy for high income countries (EU-15, ten OECD countries and Singapore and Hong Kong) and for mainly middle income and some lower income countries (such as the new EU member states and BRIC countries, see appendix

[28] These coefficients are not presented here, but are available on request.

A).[29] Table 4.2 presents the respective results of the policy instruments that are adjusted for GDP, GDP growth and distance. Overall the impact of NBSO's and trade missions on market entry is larger in middle income countries than in high income countries.[30] In particular, there seems to be no significant positive relation between NBSO's and market entry in high income countries.

Table 4.2 Market entry and economic diplomacy

Dependent variable Entry on specific market	Chambers of commerce	Dummy for NBSO's	Number of NBSO's	Number of trade missions	Number of CPA's
Non-adjusted policy instruments					
all countries	0.0530***	0.058***	0.009***	0.085***	0.038
	(0.0148)	(0.018)	(0.004)	(0.015)	(0.052)
Policy instruments adjusted for GDP, distance to the Netherlands					
all countries	0.0543***	0.038***	0.008*	0.094***	
	(0.0145)	(0.018)	(0.004)	(0.015)	
high income countries		-0.0021	0.010	0.082***	
		(0.026)	(0.007)	(0.026)	
middle income countries		0.100***	0.007	0.100***	
		(0.027)	(0.005)	(0.019)	

Notes: Numbers in brackets are standard error. *** and * denote respectively 99% and 90% statistical significance. All marginal effects and standard errors are multiplied by 100 so that they reflect marginal effects in %-points.
All regressions are estimated with a probit model with random effects. The coefficients and standard errors of the other variables from the baseline model are similar to those in Table 4.1, column 2. In all regressions the observed probability to enter a specific market is 1.756%, and the predicted probability 0.50%.

4.3 Spillover effects

Following Koenig et al (2010), we also investigate the spillover effects on the decision of Dutch exporters to enter new markets. Entrants may gain knowlegdge from several types of exporters. To discriminate between the types of spillovers, we separately add four indicators to the entry equation to equation (4.1). We include the number of exporters in the same municipality as an indicator of local spillovers, the number of exporters in the region within 15 km of the firms' municipality referring to regional spillovers. Further we use the number of exporters in the same 2-digit industry reflecting to sectoral spillovers, and the number of exporters to the same destination country reflecting country spillovers.[31] The regressions are all estimated with probit with random effects but with different cluster variables to adjust for local effects (geographical location and size of municipality), industry-specific effects or firm-specific effects. The use of different cluster variables affects the magnitude of the baseline coefficients, and consequently the predicted probability to enter a new market.

[29] Because the Dutch top 50 of export destinations does nearly not include poor countries, we do not consider these ones.

[30] A similar regression for the chambers of commerce yields implausible results.

[31] The indicator for destination spillovers is adjusted for the impact of country-specific effects (GDP, distance to Netherlands and tariffs) to avoid collinearity with the *direct* effect of the country-specific effects on entry.

The results in table 4.4 show that spillover effects are significant between firms exporting to the same country (see column 4). The results suggest that the marginal effects of country spillovers would exceed the marginal impact of any other determinant. The impact of spillovers between exporters in the same municipality is less eminent. We find no evidence of regional or sectoral spillovers. This finding is to some extent consistent with the results of Koenig et al (2010), i.e. that spillovers related to specific markets have the largest impact on entry to that market.

Table 4.4 Spillover effects on entry (marginal effects in percentage points)

Dependent variable dummy on entry on specific market	local spillovers	regional spillovers	sectoral spillovers	country spillovers
FY: start to export in t-1	0.670***	0.687***	0.880***	0.187***
	(0.124)	(0.124)	(0.150)	(0.150)
LA: Log distance to nearest market	-1.28***	-1.25***	-1.44***	-0.380***
(in t-1 and in t)	(0.052)	(0.042)	(0.156)	(0.020)
LA x FY	-0.380*	-0.387*	-0.242*	-0.227***
	(0.134)	(0.131)	(0.117)	(0.076)
Log GDP	0.349***	0.340***	0.397***	0.192***
	(0.015)	(0.013)	(0.043)	(0.008)
Log Distance (to Netherlands)	-0.557***	-0.551***	-0.631***	-0.316***
	(0.0026)	(0.0023)	(0.070)	(0.0014)
Log tariffs	-0.026***	-0.023***	-0.034***	-0.015***
	(0.004)	(0.004)	(0.005)	(0.002)
LP: log productivity	0.161***	0.149***	0.218***	0.073***
	(0.025)	(0.024)	(0.034)	(0.019)
LE: log employment	0.189***	0.176***	0.283***	0.181***
	(0.014)	(0.014)	(0.032)	(0.014)
No. exporters in same municipality	0.061*			
	(0.036)			
No. exporters in same region		-0.077		
		(0.063)		
No. exporters in same industry			0.086	
			(0.067)	
No. exporters to same country[a]				0.720***
				(0.041)
Observed probability to enter	1.616	1.623	1.758	1.621
Method	probit with RE	probit with RE	probit with RE	probit with RE
No observations	447636	426922	578651	444975
Cluster variable	municipality	municipality	industry	exporter
Number of clusters	437	377	37	4610
Log likelihood	-33763	-32345	-46708	-33666

Notes: Numbers in brackets are standard errors. *** denotes 99% statistical significance. The indicated probabilities as well as all marginal effects (and standard errors) are multiplied by 100, so that they reflect probabilities in percentages and marginal effects in %-points.
[a] Adjusted for the impact of country-specific effects, i.e. GDP, distance to Netherlands and tariffs.

Overall, we find that recent export starters will more likely enter new markets than firms that already exported to other countries. Entry to new markets becomes easier if the firm already exports to nearby countries, thus pointing to a stepping stone strategy. Further, firm size and productivity affect positively the probability to enter new export markets. Market characteristics are also decisive in entering markets. Higher trade costs, whether caused by distance or higher import tariffs, lower the probability to enter a new market as is also the case for a smaller market (lower GDP). The probability to enter an export market is at most 0.1%-point higher if bilateral chambers of commerce, NBSO's and trade mission are present. This is quite substantial if the average observed market entry probability is about 1.8%. The export probability also increases if there are more firms exporting to the same country.

5 Export growth

5.1 Basic model

The theoretical and empirical literature suggests that if market entry appears to be successful, exports of new entrants may grow more rapidly than the sales of incumbent exporters. The stylized facts on export growth in table 3.6 show that the average export growth per country of recent starters is twice as high as that of continuing exporters between 2005 and 2007.[32] To test this fact econometrically, we regress export growth on the status of exporters. The equation reads as:

$$\begin{aligned}\Delta \log X_{ikt} = {} & \beta_0 + \beta_1 FY_{ikt-2} + \beta_2 FM_{ik} + \beta_3 FY_{ikt-2} \times FM_{ik} \\ & + \beta_4 \Delta \log \bar{X}_{i,-k,t} + \beta_5 \Delta \log GDP_{kt} + \beta_6 \log D_k + \beta_7 \log \tau_{kt} \\ & + \beta_8 \log P_{it-1} + \beta_9 \log E_{it-1} + \delta_i + \varepsilon_{ikt}\end{aligned} \qquad (5.1)$$

with $\Delta \log X_{ikt}$ the growth of the exports of exporter *i* to country *k* in year *t*. The dummy FY_{ikt-2} indicates whether exporter *i entered* country *k* two years ago (*t*-2). As discussed in section 2.1, we focus on export growth of a (recent) entrant in its *third* year and relate it to the export growth of incumbent exporters for the same calendar year. A positive impact of this dummy suggests that successful entrants would have higher export growth than incumbent exporters to country *k*. FM_{ik} indicates that country *k* is the first destination of exporter *i*. The positive impact of the cross term $FY_{ikt-2} \times FM_{ik}$ would indicate that export growth of entrants would be even higher on their first market, thus pointing to an additional growth premium of new export *starters*.

To verify the impact of the firm's overall export strategy on export growth, we include the average export growth in the other destinations ($\Delta \log \bar{X}_{i,-k,t}$). In case of strategic substitutes, export growth will only be higher for those markets on which the firm focuses its export capacity. In case of strategic complements, growth will be higher if the firm can benefit from serving many markets. We use the same country determinants of the host

[32] See footnote 18.

country as in the entry equation, except that we also adopt the GDP-growth to control for cyclical effects. We also include firm's characteristics such as the productivity *level* ($\log P_{it-1}$) and employment size ($\log E_{it-1}$).

We estimate this equation by least squares (LS) with fixed effects, thereby adjusting for firm specific effects (δ_i) and clustering the standard errors. The estimation results are presented in Table 5.1. All regressions reveal that growth is higher if exporters have just entered the market, which is in line with the literature mentioned in footnote 4. Exporting entrants would have a growth premium of 13%-point (in their third year) when compared to incumbent exporters. However, recent entrants have to face less export growth if the market is (one of) the first market(s). Eventually, the export growth of these recent *starters* would be 11%-point lower than the export growth of the incumbent exporters. The result on the growth of starters contrasts with the theory and the empirical findings of Albornoz et al (2010). The average export growth on other markets seems to enhance the export growth on this market. This suggests that exporters benefit from economies of scale in exporting to more countries, and thus consider markets as strategic complements.

Table 5.1 Export growth on specific markets

	(1)	(2)	(3)
Dependent variable			
export growth on specific market			
FY: entry in t-2	0.134***	0.130***	0.0860***
	(0.0175)	(0.0173)	(0.0251)
FM: entry on first market	0.00315	0.00194	-0.248
	(0.0801)	(0.0799)	(0.199)
FY x FM	-0.239***	-0.245***	-0.325***
	(0.0660)	(0.0664)	(0.0912)
Average growth other markets	0.562***	0.563***	0.520***
	(0.0306)	(0.0305)	(0.0405)
Log GDP	-0.0111***		
	(0.00248)		
D log GDP		0.964***	1.099***
		(0.111)	(0.128)
Log Distance	-0.00492	-0.00696*	-0.00523
	(0.00418)	(0.00416)	(0.00559)
Log tariffs	-0.00240**	-0.00172	-0.00126
	(0.00117)	(0.00116)	(0.00151)
LP: log productivity (lag)			-0.0279
			(0.0468)
LE: log employment (lag)			-0.00499
			(0.0661)
Method	LS with FE	LS with FE	LS with FE
No. Observations	123273	123273	68600
No. Exporters	6353	6353	3114
R-squared (within)	0.064	0.065	0.044

Notes: Numbers in brackets are clustered standard errors. ***, ** and * denote respectively 99%, 95% and 90% statistical significance.

Further, export growth seems to be higher in smaller countries. This might seem surprising, but there are two potential explanations. First, it may point to the rise of new markets for instance in Middle and Eastern Europe and Asia between 2002 and 2008. Second, firms that enter smaller markets with less competitors may attain higher market shares at a higher pace (see also Melitz and Ottoviano (2008)). GDP growth in the host country has a positive impact on export growth to that country, as expected. In our country example, the decline of US GDP in 2007 by 7% would be fully translated to a decline in export volume of 7% on the American market, this in contrast to export growth on the Austrian market of 3.4%. Distance and import tariffs have in general a negative, but not significant or robust impact on export growth. The regression results also reveal that firm characteristics, particularly the firm's levels in labour productivity and employment, have no significant impact on the export growth.

5.2 Impact of policy instruments and spillovers

We also investigate the impact of policy instruments on export growth which are added to equation (5.1). Table 5.2 presents for each variant the results of the main variables of interest. The first row reveals that export growth is positively correlated with the presence of embassies,consulates and NBSO's. It increases trade by 2.4%-point which is still substantial. The number of NSBO's does not affect the growth of exports. The number of trade missions has also a positive and significant impact, but chambers of commerce have no impact. The average firm export growth on a market is 4.4%-points higher if it is visited by one extra trade mission. This effect seems substantial, but has to be compared with the export growth per market for continuing exporters (on average nearly 22% per year between 2005 and 2007) and for recent starters (on average 39% in the third year of exporting in the same period). Nitsch (2007) predicts a somewhat smaller effect of 2 to 3% on total bilateral exports, for which the growth figures are also lower. He finds that this effect dies out quickly; we do not have the data to check this.

The policy instruments could be affected by the dynamics of the market, such as the rise of the BRICs. For instance, table 3.7 shows that the number of Dutch missions per BRIC-country is much higher than for the EU members. Moreover, the decisions for trade missions could be affected by the size of the market and other variables related to trade growth. For both reasons we apply the same instrumental variables approach as for market entry. For the establishments of the chambers of commerce and the number of NSBOs the results do not change. Their impact on export growth is still negligible. For trade missions the effects are somewhat larger, but do not differ statistically significantly from the first regression. For the presence of NBSO's this is different. The coefficients double in size suggesting that export growth is 6% higher in destinations with NSBO's. Also for export growth we have tested whether the presence of NBSO's or trade missions contributed more to export growth of recent exporters than of incumbents. We did not find a significant difference.

Table 5.2 Export growth and economic diplomacy

Dependent variable: export growth on specific market	Chambers of commerce	Dummy for NBSO's	Number of NBSO's	Number of trade missions	Number of CPA's
Non-adjusted policy instruments					
with all countries	0.00753	0.0241**	-0.000602	0.0443***	0.0168
	(0.00882)	(0.00965)	(0.00192)	(0.0122)	(0.0302)
Policy instruments adjusted for GDP, distance to the Netherlands					
with all countries	0.00358	0.0557***	0.00400	0.0535***	
	(0.00919)	(0.0128)	(0.00258)	(0.0128)	
high income countries		0.0322***		0.0216	
		(0.0142)		(0.0135)	
low income countries		0.118***		0.126***	
		(0.0298)		(0.0288)	

Notes: Numbers in brackets are clustered standard errors. ***, ** and * denote respectively 99%, 95% and 90% statistical significance. All regressions are estimated with LS with fixed effects. The coefficients and standard errors of the other variables from the baseline model are similar to those in Table 5.1, column 3.

We have distinguished the impact of economic diplomacy instruments for high and middle income countries. We focus on the presence of NBSO's and trade missions, because these have a significant correlation with export growth in the sample of all 50 countries. Using policy instruments adjusted for country specific factors, we find remarkable differences. For the high income countries, there is a positive but small impact of both policy instruments on export growth. For the middle income countries, these instruments have a more substantial impact on export growth. The presence of a NBSO (or embassy trade post) or an (additional) trade mission would both induce an increase 12%-point in export growth.

Finally, we have analysed the impact of spillover effects on the export growth per country. We include the spillover-variables and apply the cluster procedure as discussed in section 4.2. The results in Table 5.3 show that only country spillovers have a positive and significant impact on the export growth per country.

For export growth, we conclude that recent entrants on new markets have a higher export growth than incumbent exporters. Recent market entry of starters has no significant positive impact on export growth compared to experienced exporters. Trade missions and NBSO's are positively correlated to export growth as are knowledge spillovers from firms exporting to the same market.

Table 5.3 Export growth on specific markets

Dependent variable export growth on specific market	local spillovers	regional spillovers	sectoral spillovers	country spillovers
No. exporters in same municipality	0.161			
	(0.186)			
No. exporters in same region		0.493		
		(0.522)		
No. exporters in same industry			-0.487	
			(0.357)	
No. exporters to same country[a]				0.0478***
				(0.0170)
Method	LS with FE	LS with FE	LS with FE	LS with FE
No. Observations	46177	44163	68507	45927
Cluster variable	municipality	municipality	industry	exporter
Number of clusters	373	329	40	2296
R-squared (within)	0.0895	0.0916	0.0783	0.0543

Notes: Numbers in brackets are clustered standard errors. *** denotes 99% statistical significance.
The coefficients and standard errors of the other variables from the baseline model are similar to those in Table 5.1, colum3.

6 Exit from markets

Starting and incumbent exporters can also decide to leave an export market.[33] Due to uncertainties firms start exporting by trial and error exercise and find out whether a market is profitable for them. In many cases it is not, and they leave the export market quickly. We test whether entrants are more likely to exit a specific market rather than incumbent exporters. The empirical model reads

$$\begin{aligned} PX_{ikt} = {} & \alpha_0 + \alpha_1 FY_{ikt-1} + \alpha_2 FM_{ik} + \alpha_3 FY_{ikt-1} \times FM_{ik} \\ & + \alpha_4 \Delta \log \bar{X}_{i,-k,t} + \alpha_5 \log GDP_{kt} + \alpha_6 \log D_k + \alpha_7 \log \tau_{kt} \\ & + \alpha_8 \log P_{it-1} + \alpha_9 \log E_{it-1} + \delta_i + \varepsilon_{ikt} \end{aligned} \qquad (6.1)$$

with PX_{ikt} the probability that exporter *i* will exit country *k* in year *t*+1 A positive coefficient of FY_{ikt-1} confirms the major assertion on exit. A positive effect of the cross-term $FY_{ikt-1} \times FM_{ik}$ indicates that starting exporters have an even higher probability to exit their first export destination, i.e. country *k*. We also include the export growth in other countries as indicators of strategic complements or substitutes. A positive coefficient suggests that the exporter focuses on other (growth-)markets and retreats from the current market *k* (strategic substitutes). A negative impact indicates that the exporter benefits from serving more markets (strategic

[33] See Alvarez and Lopez (2008), Freund and Pierola (2010) and Eaton et al. (2007).

complements). As in previous sections we add the regular country variables to control for country specific effects. We also we include the firm's characteristics and their interaction with FY_{ikt-1}. The theory suggests that a higher productivity level may reduce the probability to exit, because higher efficiency raises the chance to survive and to become profitable.

This equation is estimated with a probit method including random effects to adjust for non observed firm specific effects. We use a data set comprising of all exporters in the previous year, of which some will exit the market in this year while the others will continue exporting to this market. In terms of figure 2.1, we include firms F1 to F3 because until year 3 they all export to country X, and after year 3 firm F3 will exit while firms F1 and F2 continue their exports to country X.[34]

The estimation results on the probability to exit markets are presented in table 6.1. The first and most appealing result is that recent entrants on each market have a 9 to10%-point higher chance to exit a market rather than incumbent exporters. This difference is relatively high, knowing that the observed average probability to exit is 11-15% depending on the sample. But there is one reservation: recent *starters* seem to exert more patience with learning on their first market, because they have only a 3%-point higher probability to exit than incumbent exporters in the second regression.[35] This overall effect just confirms the theory discussed in section 2.1. Albornoz et al (2010) also find negative coefficients for the additional effect of recent starters, but only in case of adjustment for firm specific effects. Without adjustment for firm specific effects they find positive effects. Onkelinx and Sleuwaegen (2010) conclude that recent export starters (labelled as born globals) have a 9% higher exit probability than old traders.

The average export growth on other markets reduces the probability to exit the current market. This result (again) points to complementary benefits in serving more markets. The impact of the country characteristics on exit is consistent with ex ante expectations. Exporters have a higher probability to exit if the market is smaller and geographically more distant, and if the country levies higher import tariffs. In our comparison between the USA and Austria, the "size advantage" of the USA provides a 9 to 11%-point smaller chance to exit the US market, but this advantage is (again) largely offset by the large distance and import tariffs, creating disadvantages of respectively 7%-point and 1.5%-point higher chance to exit the USA. Combining all results, we find that Dutch exporters to the USA have 1 to 2%-point lower chance to exit than exporters to Austria.

The coefficients on firm characteristics suggest that larger incumbent exporters have a lower probability to exit than smaller exporters. Labour productivity has no significant impact on the chance to exit.

[34] We do not include failures, i.e. entrants that exit the market within the same year.

[35] In fact, the coefficient of FY×FM, which only holds for firms that recently have started to export, largely offsets the positive coefficient of FY.

Table 6.1 Exit from specific market (marginal effects in percentage points)

	(1)	(2)
Dependent variable		
exit from specific market		
FY: entry in t-1	9.417**	10.702***
	(0.340)	(0.492)
FM: entry on first market	-2.301**	1.436
	(1.09)	(1.63)
FY x FM	-13.976**	-9.127***
	(0.590)	(0.575)
Average growth other markets	-2.619**	-1.892***
	(0.141)	(0.174)
Log GDP	-3.156***	-2.517***
	(0.084)	(0.103)
Log Distance	3.887***	3.442***
	(0.139)	(0.164)
Log tariffs	0.441***	0.393***
	(0.0272)	(0.029)
LP: log productivity		0.517
		(0.360)
LE: log employment		-1.644***
		(0.248)
Observed probability to exit	14.858	11.819
Method	probit with RE	probit with RE
No observations	221982	116183
Log likelihood	-71766	-31557

Notes: Numbers in brackets are standard error. *** and ** denote respectively 99% and 95% statistical significance. The indicated probabilities as well as all marginal effects (and standard errors) are multiplied by 100 so that they reflect probabilities in % and marginal effects in %-points.

To conclude this section, we find that entrants have a higher chance to exit a specific market than incumbent exporters on that market, except for recent starters on their first market. Further, exporters will more likely exit a country if the country is small and more distant, and if it has higher tariffs. We also find that smaller exporters have a higher chance to exit, but we find no significant and robust impact of productivity.

7 Concluding remarks

This paper examines firm and market determinants of market entry, export growth and market exit. We exploit a rich database of international trade transactions of Dutch firms between 2002 and 2008 and link these data to other firm data and export market characteristics. From the data we learn that most exporting firms continue to export to specific destinations, and that a substantial share of the firms enters new markets. The gross turmoil of firms starting or ceasing to export is about 5% of the total number of exporters, but the net effect is much smaller. The recent starters export on average much less than the average continuer. This suggests a strong persistence of exporting, particularly for successful starters to attain the higher (average) export level. When entering new markets, exporters (either starting or continuing exporters) may fail to continue exporting or to increase their sales at the new markets. Entrants typically leave the export market or increase their exports very fast. Their export growth of recent starters in their third year as exporter is about twice as high as for continuing Dutch exporters.

We investigate not only the role of recent starters with respect to market entry and exit and export growth, but also the role of export market and firm characteristics. The econometric analysis confirms the stylized facts and results for other countries. Entry on new markets entails high export growth or swift exit if entry is unsuccessful.

Firms that recently started to export are more likely to expand their number of export markets than incumbent exporters. Entry to new markets becomes easier if the firm already exports to nearby destinations, and thus uses the latter countries as a kind of stepping stone. The stepping stone is particularly relevant for recent starters. Further, larger and more productive firms are more likely to enter new markets than smaller and less productive firms. Less experienced exporters have also a higher probability to leave export markets. These firm characteristics have no impact on export growth. Market characteristics neither matter for export growth (except GDP growth), but distance to the Netherlands and import tariffs reduce the probability to enter a new market and increase the chance to exit. Larger markets seem to attract more entrants and reduce the number of exits.

Our results for Dutch exporters stress the role of recent exporters on export markets and their high growth figures if they are successful. Fresh exporters seem to be more dynamic but also more vulnerable. This paper does not concluder *why* these firms are more vulnerable. The export experimentation literature suggests that firms have to learn their own capabilities with respect to exporting and to learn the business climate and consumer tastes and demand in the foreign destinations. One way of doing this is trial and error by firms themselves. Providing information on the necessary skills for exporting and on the foreign markets could be helpful for stimulating the presence of firm at foreign markets. Additional regressions reveal that the presence of support offices and trade missions to destination countries, particularly middle income countries, stimulate the entry of new exporters and export volume. This suggests that institutions could be helpful in reducing the uncertainty of Dutch firms, although there may be some doubts on the causality between export entry and economic diplomacy. A third possibility is that firms learn from other exporters. Knowledge spillovers from exporters with the same destinations have similar positive effects on export entry.

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8 Appendix A: Economic diplomacy per country

Table 8.1 Descriptive statistics of economic diplomacy per country (50 largest trade partners in 2007)

Country	Chamber of Commerce	NBSO, embassy or consulate(s)	Trade missions 2002-2006	CPA's 2005-2006
	presence (Y / N)	number of establishments	number	number
EU15				
Austria	Y	0	0	0
Belgium	Y	1	0	11
Denmark	N	1	0	1
Finland	N	1	1	1
France	N	4	0	6
Germany	N	7	4	22
Greece	N	0	0	1
Ireland	N	0	0	5
Italy	N	2	0	5
Luxembourg	Y	0	0	1
Portugal	Y	0	0	2
Spain	N	1	1	4
Sweden	N	1	1	0
United Kingdom	Y	2	1	8
EU12				
Bulgaria	N	0	2	1
Cyprus	N	0	0	0
Czech Republic	Y	1	2	6
Estonia	N	0	1	0
Hungary	Y	1	1	0
Latvia	Y	0	1	0
Lithuania	N	0	1	0
Malta	N	0	0	0
Poland	Y	1	4	4
Romania	Y	1	2	5
Slovakia	Y	1	2	3
Slovenia	N	0	1	1
rest OECD				
Australia	N	0	1	0
Canada	N	4	0	3
Iceland	N	0	0	0
Israel	Y	0	0	0
Japan	Y	2	0	3
Norway	N	1	0	0
Republic of Korea	N	1	1	0
Switzerland	N	0	0	1
Turkey	N	3	4	7
United States of America	N	6	4	3
BRIC				

China	Y	11	4	14
India	N	4	3	3
Russian Federation	N	3	4	8
Rest top 50				
Croatia	N	0	2	1
Egypt	N	0	1	0
Hong Kong	Y	0	0	0
Israel	Y	0	0	0
Malaysia	N	0	0	1
Saudi Arabia	N	1	0	2
Singapore	N	0	0	1
South Africa	Y	0	2	4
Taiwan	N	1	0	0
Ukraine	N	1	3	9
United Arab Emirates	N	2	1	5

Table 8.2 Number of assignment of CPA's to branches of industry

SITC-code	Branch of industry	number of CPA's 2005-2006
1	Agriculture	1
11	Crude petroleum and natural gas	1
15	Food products and beverages	9
17	Textiles	3
18	Wearing apparel	5
22	Publishing and printing	6
23	Coke, refined petroleum products and nuclear fuel	1
24	Chemicals and chemical products	1
26	Other non-metallic mineral products	2
27	Basic metals	2
28	Fabricated metal products	5
29	Machinery and equipment n.e.c.	8
30	Office machinery and computers	1
31	Electrical machinery and apparatus n.e.c.	0
33	Medical and optical instruments, watches and clocks	11
35	Other transport equipment	18
36	Furniture; manufacturing n.e.c.	7
40	Electricity and gas	8
41	Water supply	0
45	Construction	16
51	Wholesale trade	1
52	Retail trade	0
60	Land transport and pipelines	1
61	Water transport	1
62	Air transport	3
63	Supporting and auxiliary transport activities	7
72	Computer and related activities	7
73	Research and development	6
74	Other business activities	1
80	Education	5
90	Sewage and refuse disposal, sanitation and similar activities	15
92	Recreational, cultural and sporting activities	0
93	Other service activities	1
Total		153

9 Appendix B: robustness checks on selection bias

9.1 Entry

We apply various robustness checks, amongst other to check for potential bias due to missing observations of small trade values. Table 9.1 presents the results of the baseline regression (column (2) in Table 4.1), but now with sub-sets parts of the data.

First, we remove the mass of firms that continue to export in the whole period to at least ten countries in each year; in this way we only keep firms that have started to export, firms that have fully ceased to export and/or continuers with relatively few destinations. Still, the overall probability to enter new markets is slightly smaller than in the baseline. In that sense most variables have a smaller impact as well, but they all have the expected sign and remain significant.

Second, we adopt only firms with total exports exceeding 1 million euro in *each* year that they are in the dataset; in this way we remove exporters that may be surveyed in one year and being expelled from the survey in the other year, because their total exports fluctuate around the threshold for surveying. As a consequence the observed and also predicted probability to enter new markets is much larger, but also the underlying determinants. The direct effect of being a new starter increases as well but becomes non-significant.

Third, we only include exports to non-EU countries.[36] In this way we only use detailed product-destination data that are fully registered by the customs. However, less firms serve non-EU destinations. On average the non-EU markets are more difficult to enter than the EU markets due to the internal market in Europe, the smaller distances and higher incomes. The probability to enter these markets is lower. Being a recent starter has no significant effect on market entry, but the stepping stone strategy remains particularly relevant for starters. It could be the case that firms have to build up more export experience before they are able to expand their export to less accessible, non-EU countries. Moreover, the impact of the country characteristics in particular is reduced, but remains significant.

Finally, we also estimate equation (4.1) with only firms in the PS-database and omit the largest firms from the SFGO-database. The results, however, point to slightly differences with the baseline regression including the larger firms. This outcome is not surprising, because in the regressions the impact of larger firms is relatively small due to their small share in number of firms.

[36] To be precisely, we removed the data of the EU-15 countries and the countries that joined the EU from 2004 over the whole period 2002-2008.

Table 9.1 Robustness checks on entry equation (marginal effects in percentage points)

	only start/stop	exports>1mln	only non-EU	only PS-data
Dependent variable				
dummy on entry on specific market				
FY: start to export in t-1	0.158***	0.496	0.077	0.188***
	(0.044)	(0.343)	(0.076)	(0.071)
LA: Log distance to nearest market	-0.187***	-1.052***	-0.286***	-0.374***
(in t-1 and t)	(0.013)	(0.060)	(0.022)	(0.018)
LA x FY	-0.123***	-0.578***	-0.231***	-0.183***
	(0.035)	(0.271)	(0.087)	(0.068)
Log GDP	0.122***	0.594***	0.120***	0.207***
	(0.044)	(0.052)	(0.008)	(0.008)
Log Distance	-0.197***	-1.060***	-0.184***	-0.340***
	(0.010)	(0.051)	(0.013)	(0.013)
Log tariffs	-0.011***	-0.094***	-0.006***	-0.023***
	(0.001)	(0.000)	(0.002)	(0.002)
LP: log productivity	0.031***	0.233***	0.085***	0.094***
	(0.011)	(0.079)	(0.020)	(0.019)
LE: log employment	0.085***	0.514***	0.165***	0.221***
	(0.008)	(0.052)	(0.012)	(0.018)
Observed probability to enter	1.229	3.176	1.100	1.666
Method	probit with RE	probit with RE	probit with RE	probit with RE
No observations	489161	153864	272565	546576
Log likelihood	-26281	-19298	-14683	-38662

Notes: Numbers in brackets are standard error. *** and ** denote respectively 99% and 95% statistical significance. The indicated probabilities as well as all marginal effects (and standard errors) are multiplied by 100 so that they reflect probabilities in % and marginal effects in %-points.

9.2 Export growth

We apply various robustness checks on the third regression in table 5.1. The first regression includes only to starters, stoppers and exporters to a few countries. The results do not change substantially, except that the impact of labour productivity becomes more negative and significant, while the impact of changes in GDP becomes non-significant. If we would only include firms with at least 1mln in total exports per each year, the effects are the same. In the regression with only non-EU countries, exporting to the first export market would have a positive effect on export growth as is the interaction between both. However this effect and the interaction with entry are not significant. The impact of higher tariffs on export growth is positive and significant. It is hard to judge whether the positive effects of recent market entry of starters on export growth are caused by the higher share of small exporters in this data set or the different destinations. Finally, the regression with only PS-data gives no substantial differences with the regression of the full dataset.

Table 9.2 Robustness checks on the export growth equation

	only start/stop	exports>1mln	only non-EU	only PS-data
Dependent variable				
export growth on specific market				
FY:entry in t-2	0.0705*	0.104***	0.0948**	0.0789***
	(0.0419)	(0.0304)	(0.0433)	(0.0272)
FM: entry on first market	-0.292	-0.350	0.321	-0.121
	(0.202)	(0.253)	(0.268)	(0.189)
FY x FM	-0.347***	-0.339***	-0.394	-0.383***
	(0.106)	(0.0771)	(0.241)	(0.0924)
Average growth other markets	0.338***	0.422***	0.285***	0.532***
	(0.0505)	(0.0592)	(0.0543)	(0.0443)
D log GDP	0.460	1.061***	0.404**	1.157***
	(0.286)	(0.133)	(0.164)	(0.160)
Log Distance	-0.00339	-0.00794	-0.0164*	-0.000608
	(0.0119)	(0.00617)	(0.00992)	(0.00613)
Log tariffs	0.00239	-0.00104	0.00396**	-0.000882
	(0.00503)	(0.00153)	(0.00199)	(0.00173)
LP: log productivity	-0.169**	-0.00782	-0.00171	-0.0391
	(0.0714)	(0.0478)	(0.105)	(0.0458)
LE: log employment	-0.00430	-0.0321	0.138	0.0215
	(0.0951)	(0.0607)	(0.123)	(0.0719)
Method	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects
No. Observations	19357	50757	21676	55682
No. Exporters	2080	1359	1861	2820
R2 (within)	0.0347	0.0162	0.0105	0.0509

Notes: Numbers in brackets are standard error. ***, ** and * denote respectively 99%, 95% and 90% statistical significance. The indicated probabilities as well as all marginal effects and standard errors are multiplied by 100 so that they reflect probabilities in % and marginal effects in %-points.

9.3 Exit

Finally, we have also conducted some robustness checks with varying samples as in section 4 and 5, based on a similar model as (2) in table 6.1. Table 9.3 presents the outcomes. The regression with only starters, stoppers and smaller continuing exporters turn over some of the results for the whole sample. First, exporters on their first market attain a significant lower chance to exit. Second, the negative impact of employment becomes irrelevant.

The regression with only firms with total exports above 1 million euro shows that a higher productivity increases the exit probability for *all* exporters. In the regression for only non-EU destinations productivity has a positive and significant effect, contrasting to the theory. Interestingly, the exit probability for entrants at the non-EU markets is high. These markets are not only more difficult to enter, but are also more difficult to survive. Given that the uncertainty in many of these markets is much higher than in the EU, this result is consistent with

the theories of Rauch and Watson and Albornoz et al. (2010). The regression with only PS-data points to a negative impact of labour productivity, which fits the theory in section 2.1.

Table 9.3 Robustness checks on the exit equation (marginal effects in percentage-points)

	only start/stop	exports>1mln	only non-EU	only PS-data
Dependent variable				
export growth on specific market				
FY: entry in t-1	6.523***	10.137***	18.171***	10.810***
	(0.680)	(0.600)	(0.857)	(0.523)
FM: entry on first market	-6.188***	3.904***	7.367**	1.552
	(1.737)	(1.459)	(3.389)	(1.807)
FY x FM	-11.536***	-5.095***	-14.363***	-9.638***
	(1.261)	(0.312)	(1.045)	(0.592)
Average growth other markets	-2.658***	-1.458***	-2.047***	-2.088***
	(0.272)	(0.230)	(0.334)	(0.190)
Log GDP	-2.983***	-1.565***	-3.405***	-2.406***
	(0.174)	(0.089)	(0.171)	(0.109)
Log Distance	4.415***	2.383***	3.966***	3.327***
	(0.285)	(0.145)	(0.318)	(0.175)
Log tariffs	0.155**	0.247***	0.284***	0.396***
	(0.064)	(0.021)	(0.0491)	(0.0326)
LP: log productivity	0.952	0.978***	0.397	-0.835**
	(0.667)	(0.268)	(0.644)	(0.392)
LE: log employment	0.124	-0.284	-0.939**	-1.340***
	(0.475)	(0.195)	(0.384)	(0.322)
Observed probability to exit	22.331	7.869	15.157	12.278
Method	probit with RE	probit with RE	probit with RE	probit with RE
No observations	42775	79765	38821	95030
Log likelihood	-17477	-16563	-13434	-26808

Notes: Numbers in brackets are standard error. *** and ** denote respectively 99% and 95% statistical significance. The indicated probabilities as well as all marginal effects and standard errors are multiplied by 100 so that they reflect probabilities in % and marginal effects in %-points.