Trade Margins and Cohorts of Traders in Portugal

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Abstract
This article assesses the contribution of intensive and extensive margins in the firm, destination and product dimensions to yearly changes in total Portuguese exports and imports of goods. In addition, we compare cohorts of international traders in terms of number of firms and trade flows. Moreover, the long time-horizon considered in the article makes it possible to observe the impact of two important events: the great trade collapse that occurred in 2008-2009 and the Portuguese economic and financial adjustment program that was initiated in 2011 and lasted until mid-2014. The analysis builds on a detailed database of international trade transactions in the Portugese economy in the period 1995-2015. (JEL: F1, L25, D21)

Introduction

This article updates and expands the analysis carried out in Amador and Opromolla (2013), which established several stylized facts about the firm's joint decision of where (destinations) and what (products) to export, using the universe of exports by firms located in Portugal in the period 1996-2005. In the last decade, the academic and policy attention to the drivers of trade performance and the increasing availability of transaction-level databases in international trade have been feeding this literature. Nowadays, the existence of longer dynamic data panels makes it possible to study specific shocks and observe the performance of cohorts of traders.

The literature on the margins of international trade is too large to be listed here. The seminal contributions are those of Eaton *et al.* (2004), Schott (2004), Bernard *et al.* (2007), Bernard *et al.* (2010), Iacovone and Javorcik (2010) and Arkolakis and Muendler (2011). Many contributions followed, mostly consolidating stylized facts initially identified. Wagner (2012a) presents a tabular survey of 147 empirical studies for 39 countries, plus 8 studies for multiple countries, that use transaction level data on exports or imports of

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firms. Very recent contributions to the analysis of trade margins are those of Wagner (2016) for Germany and Galuscak and Sutoris (2016) for the Czech Republic in the period 2006-2014.

It is acknowledged that the literature has been giving less attention to the margins of import flows. This may be driven by the simplistic notion that exports contribute to economic growth while imports do not. However, in a world organized along global value chains there is high foreign value added embodied in exports. Therefore, imports are necessary to support domestic production and their margins of change are worthwhile analysing. As for the analysis of cohorts of international traders, there is also little literature because it requires databases that track traders along a relatively large sequence of years. One exception is Wagner (2012b) which studies the cohorts of exporters in Germany that started to export between 1998 and 2002. Still, the author can follow the cohorts of new exporters only over five years after the start.

As for the Portuguese economy, some stylized facts about exporters and export margins have been established. Amador and Opromolla (2013) find that multi-product and multi-destination exporters are in majority and account for a more than proportional share of total goods exports. In addition, the range of products that they export is very diversified. Second, roughly one quarter of the variation in firms' exports is explained by the variation in the number of destinations served and higher sales in a destination are mainly due to the product intensive margin, i.e., higher product sales instead of sales of more products. Amador and Opromolla (2013) also show that both the firm-level extensive (entry and exit of exporters) and intensive margin (sales of continuing exporters) are important in driving the year-to-year variation in aggregate exports. In addition, variation over time in the sales of continuing exporters is mainly driven by the intensive margin at the destination-level, i.e., by variation in the sales of continuing exporters in continuing destinations. Similarly, the latter closely follows the sales of continuing products, by continuing exporters in continuing destinations, i.e. the intensive margin at the firm-destination-product level. At all dimensions (firm, destination, and product) the level of churning is quite high, implying that gross entry and exit flows are much bigger than net flows. Finally, Amador and Opromolla (2013) find evidence that continuing firms enter in new markets mainly by selling old products, i.e., products that were previously sold somewhere by the same firm.

In this article we confirm results obtained earlier and contribute to the literature in different ways. Firstly, we compare results obtained for exports with those that emerge from a parallel analysis for imports. Although some differences exist, the main facts are similar in both types of trade flows. Secondly, we make use of the relatively long time-span in the data to analyse the impact of the great collapse in international trade, which occurred after the onset of the international economic and financial crisis of 2008. The impact of the great trade collapse at the firm-level has been studied for some countries

(e.g., Giri *et al.* (2014) and Eppinger *et al.* (2015)), pointing to the existence of a relatively lower impact at the extensive margin of exports. We also examine the period 2011-2014 that corresponds to the operation of the Portuguese economic and financial assistance program, which erupted within the context of the sovereign debt crisis in the euro area. With the exception of a brief reference in Banco de Portugal (2016), there is still very limited evidence on the impact of this program on Portuguese international trade. We find that the Portuguese economic and financial adjustment program reduced the imports' intensive and extensive margins as well as the cohorts of importers that started to operate in those years.

The article is organized as follows. In the next section we describe the database used for the analysis and assess its representativeness. Next, results are organized along three blocks. Firstly, we present the structure of international traders according to their status as continuing, entering, exiting and single-year firms and how much each of these blocks represented in export and import flows. Secondly, we focus on the contribution of the intensive and extensive margins along firm, destination and product dimensions for export and import flows in the period considered. Thirdly, the article examines the exit rates for each cohort of traders after 1997 and their share in total trade flows. In the last section we present some concluding remarks.

Database

The analysis of product and destination mix is made possible by the use of a database that combines detailed and comprehensive information on trading behavior of firms. The data used comes from customs forms in the case of extra-EU trade and from the Intrastat form in the case of intra-EU trade, aggregating to total Portuguese exports and imports of goods, as reported by the Statistics Portugal (Instituto Nacional de Estatística). The database includes all export and import transactions by firms that are located in Portugal, on a monthly basis, from 1995 to 2015. A transaction record includes the firm tax identification, an eight digit Combined Nomenclature product code, the value of the transaction, the quantity of traded goods (expressed in kilos), the destination or origin country, the type of transport, the relevant international commercial term (e.g, FOB, CIF) and a variable indicating the type of transaction (e.g., transfer of ownership after payment, return of a product).[1]

1. The Combined Nomenclature system is comprised of the Harmonized System (HS) nomenclature with further European Union subdivisions and is run by the World Customs Organization (WCO).

In the analysis, we take account of the existence of reporting thresholds for exports and imports, which have changed several times in the two decades studied. In order to have a comparable set of firms and to avoid attributing entrance and exit of traders to changes in the reporting threshold, we take the highest report limit in the entire period and apply it to all years, after adjusting for inflation with the consumer price index. This corresponds to considering thresholds of 0.9 and 0.7 million euros for exports and imports, respectively. Therefore, we eliminate small and medium international traders, especially when compared with the sample used in Amador and Opromolla (2013). Nevertheless, our data covers, on average, about 80 and 90 per cent of total exports and imports of goods, respectively. In what concerns the time path of export and imports flows, our sample closely tracks the growth rates of the aggregate trade flows (Figure 1). The data is aggregated at the annual level and all values are expressed in current euros. Although it would be possible to work at the six digits Combined Nomenclature level, we define products at four-digit level according to the HS. This allows us to avoid classification problems related to revisions of the Combined Nomenclature and still allows for a set of more than 1000 potential products. Basic descriptive statistics on the sample used for the article are presented in the Appendix.

(A) Exports of goods (B) Imports of goods

FIGURE 1: Sample and aggregate growth rates of exports and imports

Trade Margins: Firms, Destinations and Products

One of the main purposes of this article is to decompose Portuguese total export and import growth rates into the contribution of three distinct decisions: the decision to entry/stay/exit in export/import markets, the decision of where to export/import and the decision of what to export/import. Consistently with what was done in Amador and Opromolla (2013), we first decompose total export growth in the contribution of

"entering", "exiting" and "continuing" traders, that is, in the extensive and intensive margin at the aggregate level along the firm dimension. We follow Eaton *et al.* (2007) in defining firm's categories. Entrants in year t are those firms that did not trade in $t-1$, trade in t and will trade in $t+1$ as well; exiters in year t are those firms that traded in $t-1$, trade in t but will not trade in $t+1$; continuing firms in year t are those firms that traded in $t-1$, trade in t and will trade in $t+1$ as well; finally, single-year traders in year t are those firms that did not trade in $t-1$, trade in t but will not trade in $t+1$. A simpler approach, used in the calculation of the trade margins below, consists in disregarding the block of single-year traders, basing all categories on information regarding just two periods.

$$\Delta Y_t = \sum_{j \in N} \Delta Y_{jt} + \sum_{j \in X} \Delta Y_{jt} + \sum_{j \in C} \Delta Y_{jt}, \tag{1}$$

where ΔY_t is the change in Portuguese exports from year $t-1$ to year t, N is the set of entering exporters, X is the set of exiting exporters and C is the set of continuing traders. The next step is to break down the change in export shipped by continuing traders into "added destinations" (AD), "dropped destinations" (DD) and "continuing destinations" (CD), that is, in the extensive and intensive margin at the firm level along the destination dimension.

$$\sum_{j \in C} \Delta Y_{jt} = \sum_{j \in C} \left[\sum_{z \in AD} \Delta Y_{zjt} + \sum_{z \in DD} \Delta Y_{zjt} + \sum_{z \in CD} \Delta Y_{zjt} \right], \tag{2}$$

Next, we consider the product that firms choose to export in "continuing" and "added" destinations. First we distinguish among "added" (AP), "dropped" (DP) and "continuing" (CP) products exported by firms in "continuing destinations", that is, the extensive and intensive margin at the firm level along the product dimension.

$$\sum_{z \in CD} \Delta Y_{zjt} = \sum_{z \in CD} \left[\sum_{v \in AP} \Delta Y_{vzjt} + \sum_{v \in DP} \Delta Y_{vzjt} + \sum_{v \in CP} \Delta Y_{vzjt} \right], \tag{3}$$

Finally, we split the export change associated to new destinations into products already sold by the firm somewhere, i.e. old products (OP), and products that were not sold by the firm anywhere, i.e. new products (NP). We consider this as an interaction between the extensive margin along the destination dimension and the product margin.

$$\sum_{z \in AD} \Delta Y_{zjt} = \sum_{z \in AD} \left[\sum_{v \in OP} \Delta Y_{vzjt} + \sum_{v \in NP} \Delta Y_{vzjt} \right]. \tag{4}$$

Therefore, we can write the change in Portuguese exports as:

$$\Delta Y_t = \sum_{j \in N} \Delta Y_{jt} + \sum_{j \in X} \Delta Y_{jt} + \sum_{j \in C} \left[\sum_{z \in AD} \left[\sum_{v \in OP} \Delta Y_{vzjt} + \sum_{v \in NP} \Delta Y_{vzjt} \right] + \sum_{z \in DD} \Delta Y_{zjt} \right] + \sum_{j \in C} \sum_{z \in CD} \left[\sum_{v \in AP} \Delta Y_{vzjt} + \sum_{v \in DP} \Delta Y_{vzjt} + \sum_{v \in CP} \Delta Y_{vzjt} \right] \quad (5)$$

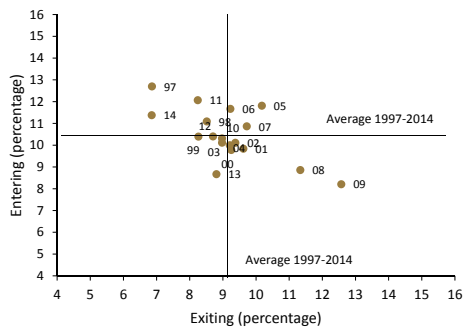
We compute the percent change in total export by dividing each term in equation 5 by $(Y_t + Y_{t-1})/2$, i.e. the average between exports in t and $t-1$. As for the decomposition of total import growth, a similar approach can be easily replicated.

Results

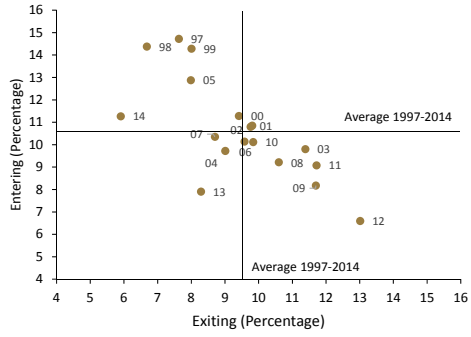
Continuing, entering, exiting and single-year traders

In the first set of findings we consider the firm dimension, i.e., the share of continuing, exiting and entering firms and their relevance in terms of total exports/imports. Panel A of figure 2 compares the share of entering and exiting exporters for the years considered, showing that in 2008 and 2009 strong exit and weak entrance took place. In addition, from 2012 to 2013 the share of exiting firms slightly increased while that of entering firms decreased. As for the import side, in panel B of the figure, the negative relationship between entrance and exiting is tighter, with the period 2012-2013 witnessing a clear move towards lower exit and stronger entrance of importers of goods.

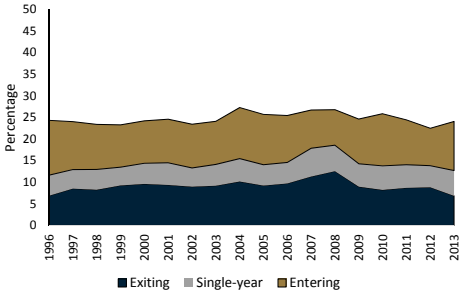
A complementary approach is to analyse the structure of firms and their total exports/imports along each category from a time simple series perspective. While the share of entering and exiting firms is relevant, their net effect is much lower than that of continuing traders. The latter group represents around three fourths of total firms both in exports and imports (the complementary area up to 100 per cent in the lower panels of figure 2). Moreover, single-year exporters or importers represent slightly more than 5 per cent of firms in their respective blocks. All these shares are broadly stable along the period analysed (panels C and D).



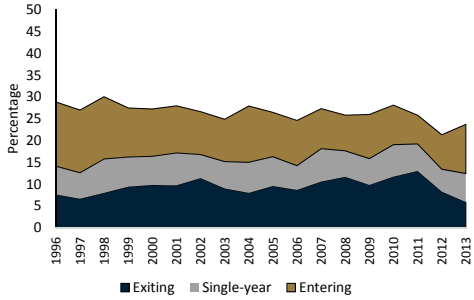
(A) Share of entering vs exiting exporters



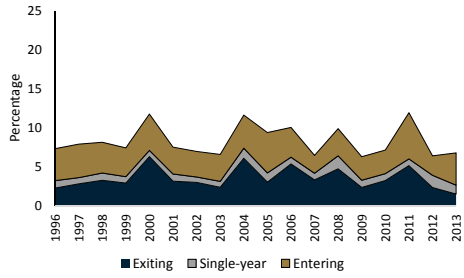
(B) Share of entering vs exiting importers



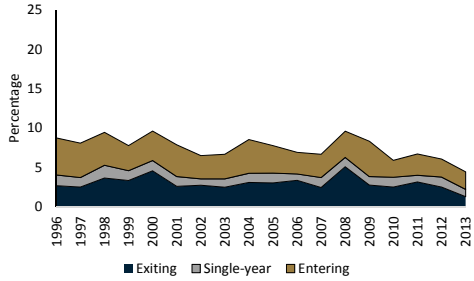
(C) Share on total number of exporters



(D) Share on total number of importers



(E) Share on total exports



(F) Share on total imports

FIGURE 2: Structure of traders along the firm dimension

Note: Entrants in year t are those firms that did not trade in $t-1$ and will trade in t and exiters in year t are those firms that traded in t but do not trade in $t+1$. In panels A and B, labels identify the actual years of entry (t) and exit ($t+1$).

As for the share of entering, exiting and single-year on total exports and imports of goods, results are reported in panels E and F of figure 2. The share of single-year exporters and importers on the respective trade flows is smaller than their share on the number of firms, standing close to 1 per

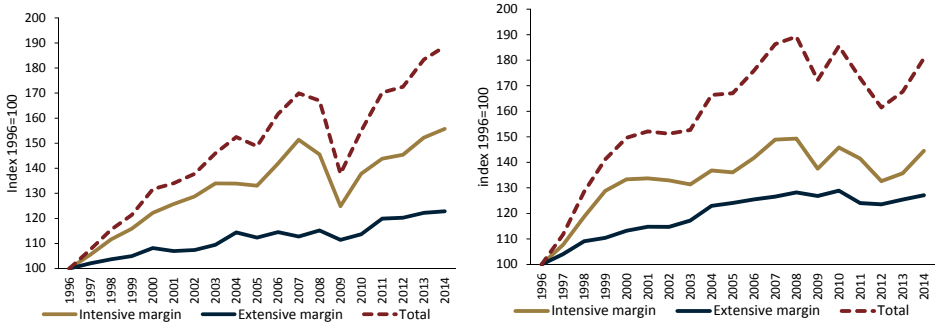
cent. Conversely, continuing traders represent more than 90 per cent of goods exports and imports flows. Therefore, as expected, entering and exiting firms are typically smaller than those continuing. This is in line with Eaton *et al.* (2007) findings, notably the relevance of single-year exporters and their small export and import sales.

Trade margins

In this subsection we assess the importance of the overall intensive margin on cumulative export and import growth. In addition, we breakdown the yearly overall contributions along the firm, destination and product dimensions. The contribution of these three distinct firm's decisions in the years of the great trade collapse and in the period of the Portuguese economic and financial adjustment programme provides further insights on the mechanisms at play.

The panels of figure 3 plot the contribution of the intensive and extensive margins to the accumulated export and import growth over the period 1996-2014. The intensive margin includes the growth of exports (imports) of continuing products in continuing destinations (origins) by continuing firms. The extensive margin includes the growth of exports (imports) due to net firm, product and destination (origin) entry, as explained in equation 5.

Nevertheless, it should be mentioned that the conclusions based on the cumulative impact of the extensive margins convey a conservative message in terms of its role to trade flows. By definition, a new trader, a new destination (origin) or a new product by continuing traders are only accounted for in the extensive margin in the initial period. After the initial period they become part of the intensive margin. Therefore, the decisions of international traders with different ages feed the intensive margin exactly in the same way. To better understand the differential contribution of old and new international traders to export and import developments we need to follow each cohort separately.



(A) Exports (B) Imports

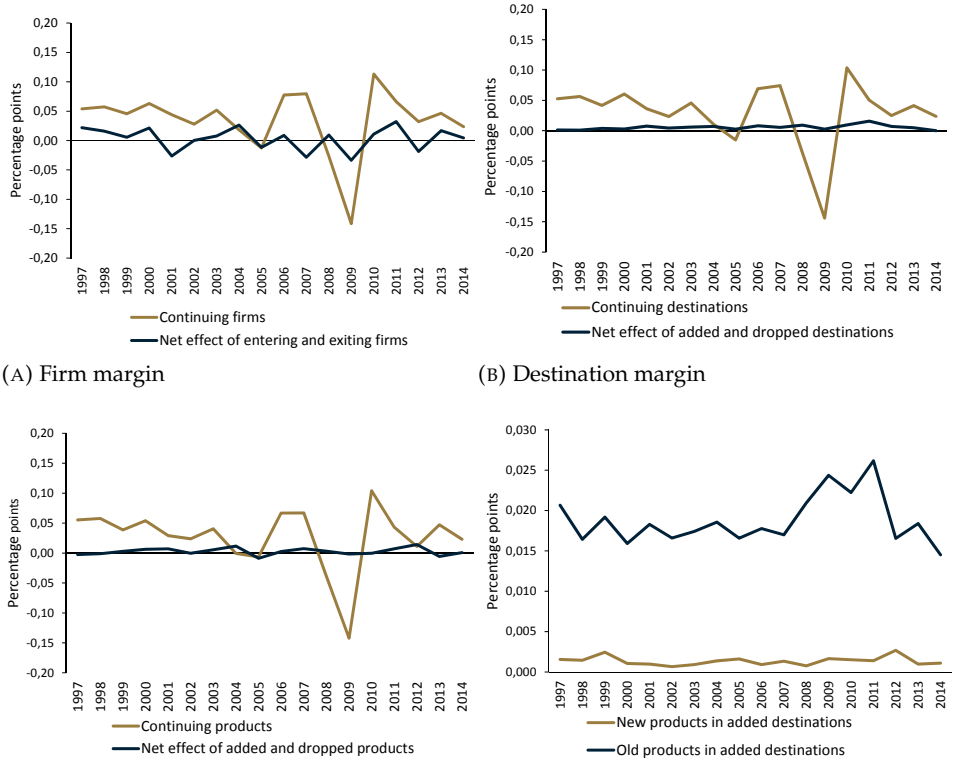
FIGURE 3: Cumulative intensive and extensive margins

As for the export side, it is clear that, after 18 years, the overall intensive margin represents a sizeable share of cumulative export growth. Nominal exports of goods increased by 89 per cent in the period 1996-2014, while the cumulative extensive and intensive margins increased by 23 and 55 per cent, respectively. The interaction between the intensive and extensive margins along the time dimension, interpreted as changes in exports by formerly new exporters, added destinations or added goods, explains why their cumulative growth rates do not add up to cumulative total export growth. A somewhat similar picture is visible for imports of goods. Nominal imports of goods grew by 80 per cent in the referred period, while the overall extensive and intensive margins grew by 27 and 45 per cent, respectively. Therefore, although the extensive margin is relatively small on an yearly basis, it is important in cumulative terms.

Panel A of figure 3 shows a very strong impact of the great trade collapse in the intensive margin but not in the extensive margin. A similar result was highlighted for the Czech Republic by Galuscak and Sutoris (2016). In addition, Bricongne *et al.* (2012) state that the bulk of the collapse in France trade is due to the drop in export volume of large exporters. This is compatible with the well-established fact that exports to foreign markets involve important entry and re-entry costs. For example, firms must allocate resources to adapt to local legislation, establish retail channels and sometimes adjust to local preferences. Therefore, after having paid such foreign market entry costs, in periods of crisis firms prefer to reduce exports rather than completely withdrawing products or immediately exiting from those markets.

A similar analysis conducted for the import side leads to somewhat different results. The total effect of the great trade collapse is smaller than in exports, suggesting that firms that import have lower costs at cutting supplier relationships. Conversely, the negative impact on imports of the sovereign debt crisis in the euro area and of the Portuguese economic and financial assistance program in 2010-2012 is visible in the extensive and, mostly, in intensive margins.

The results regarding the detailed yearly contribution of extensive and intensive margins at the firm, destination and product dimensions to the nominal export growth of goods are presented in figure 4. As mentioned above, we also breakdown the contribution of products by continuing firms in added markets into new or old products (relatively to the firm portfolio). Panel A refers to the firm dimension and shows that the continuing firms (intensive margin) explain an important part of the drop in exports that occurred in 2009. The contribution of the firm extensive margin, i.e., the net effect of entry and exit, in each year is very small and does not significantly contribute to exports in accumulated terms. However, the gross entry and exit, which is a measure of churning, is higher than the intensive margin. For the average of the period 1997-2014, gross entry of exporters represented 5 percentage points of the yearly export nominal growth rate, while gross exit



(A) Firm margin

(B) Destination margin

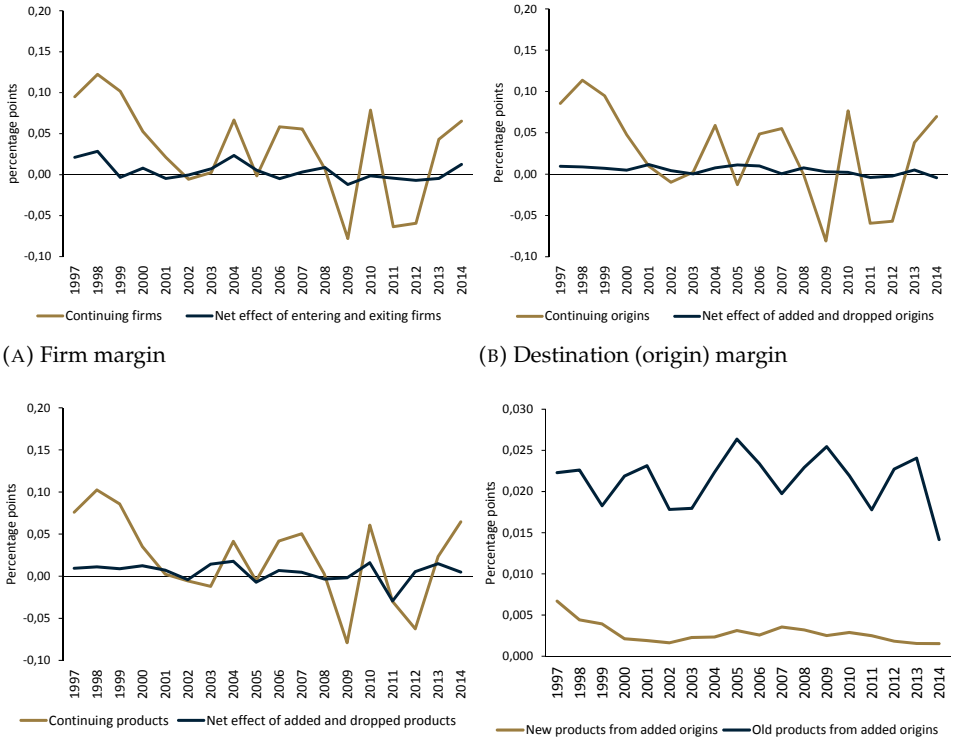
(C) Product margin

(D) Old vs new products

FIGURE 4: Nominal export growth of goods: Intensive and extensive margins

flows represented -4 percentage points. It should be born in mind that such entry and exit in domestic and foreign markets tends to be a positive feature in the economy as inefficient firms should free up resources for new ones. In addition, in a Schumpeterian world, entering is a way to test innovative products and technologies and those that are not valuable for consumers should exit.

The effects of the destination and product dimensions are presented in panels B and C, respectively. In these dimensions the contribution of the extensive margin is even smaller than in the firm dimension but it is positive in most years, thus becoming relevant in cumulative terms. For the period 1996-2014, the accumulated extensive margin in destinations and products contributed to total nominal goods export growth by 10 and 5 percentage points, respectively. Finally, although the level of the contribution to yearly export growth is very low, when continuing firms enter new markets they do it with products that are old in the firm, that is, there is almost no entry in foreign markets with newly developed products (panel D).



(A) Firm margin

(B) Destination (origin) margin

(C) Product margin

(D) Old vs new products

FIGURE 5: Nominal import growth of goods: Intensive and extensive margins

In figure 5 we take the analysis performed above to the import side and most of the results are similar to those recorded for exports. Panel A plots the margins for the firm dimension and shows that the volatility in the nominal growth rate of imports, associated with the trade collapse and the Portuguese economic and financial adjustment programme, was mostly driven by the intensive margin. The extensive margin presents contributions around zero, but remained in negative territory from 2008 to 2013. As in the case of exports, the gross entry and exit of importers (churning) is substantial, representing on average 4 and -4 percentage points of the yearly nominal growth rate of imports in Portugal. The margins associated to the destination and product dimensions (panels B and C) show a similar pattern, with a modest role for the extensive margin, even in cumulative terms. Finally, panel D shows that continuing importers enter new source markets mostly to buy products that are old in the firm. However, there is some entry in foreign markets to reach new products. Although small, the extensive margin in this dimension is higher that the one observed in the export side.

Cohorts of exporters and importers

An important approach in the analysis of the growth rate of exports and imports is the contribution of the successive cohorts of traders. First, it is interesting to assess the pattern for their survival and growth. Second, it is relevant to evaluate whether events like the great trade collapse or the Portuguese economic and financial assistance programme have lasting effects on the cohorts of traders that enter international trade on those years.

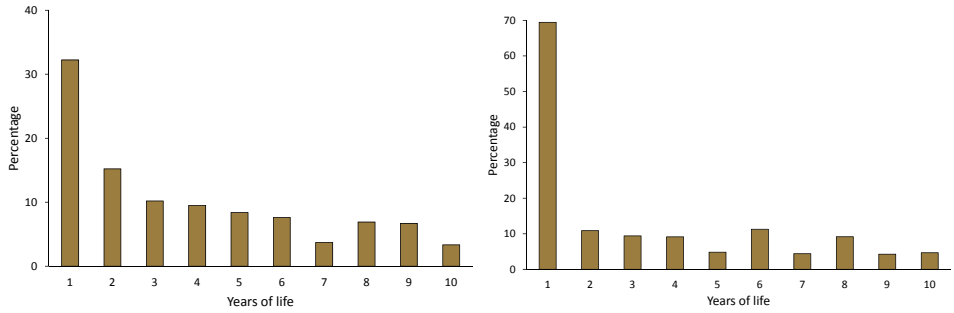
Figure 6 presents the average exit rate per year of life for the cohorts of exporters that started activity in the years 1996-2014 (panel A), as well as the average growth rate of exports per firm (Panel B). The exit rate of new exporters is particularly high in the first year of life, as almost one out of three exits foreign markets. This exit rate drops to about 15 per cent in the second year and slowly decreases afterwords. In our sample, almost 60 per cent of new exporters exit in the first five years of activity. Although the empirical literature on the cohorts of international traders is limited, this number is higher than the one reported by Wagner (2012b), which is based on cohorts of new exporters in Germany from 1998 to 2002 and finds that between 30 percent and 40 per cent of the new exporters sell on the international market in all five years after starting to export.[2]

The ratio of exports per firm increases on average about 70 per cent in the first year of the cohort, meaning that those that survive strongly increase exports. This growth rate decreases to an average of 10 per cent in the second year, stabilizing afterwards on a range between 4 and 9 per cent.

The yearly number of firms and the value of their exports for each cohort is difficult to represent in a meaningful way. The panels of figure 7 suggest a representation that plots cohorts as stacked layers. Therefore, on an horizontal perspective, the thickness of each layer defines the evolution in the cohort's number of firms (panel A) and their exports (panel B), while a vertical reading gives the breakdown of the total number of exporters starting activity after 1997 and their exports by cohort.

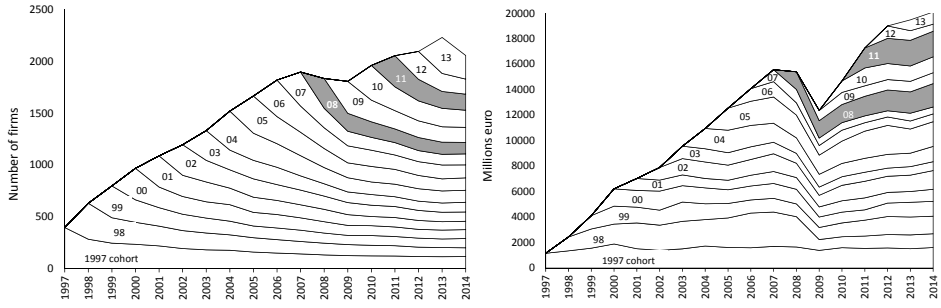
Panel A of figure 7 shows that the size of each cohort in terms of number of firms virtually stabilizes after around eight years, which corresponds to the information conveyed by the exit rates presented above. The cohorts born in 2008 and 2011, which correspond to the beginning of the great trade collapse and the first year of the Portuguese economic and financial assistance program, follow a normal pattern in terms of number of exporters and a comparatively good performance in terms of total exports, especially the 2011

2. Félix (2017) analyses overall firm creation and survival in Portugal. The article estimates a Kaplan-Meier survival function and reports that 48 per cent of new firms survive throughout the 8-year sample period (2005-2012). Nevertheless, these rates cannot be compared with those in this article because exit from foreign markets does not necessarily correspond to the death of the firm.



(A) Exit rate of exporters (B) Growth rate of exports per firm

FIGURE 6: Exit rate of exporters and average growth rate of exports, per year of life

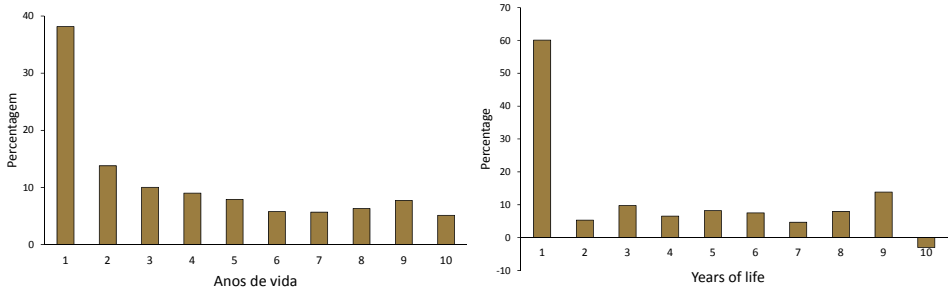


(A) Number of exporters (B) Value of Exports

FIGURE 7: Number of exporters and value of goods exports per cohort in each year

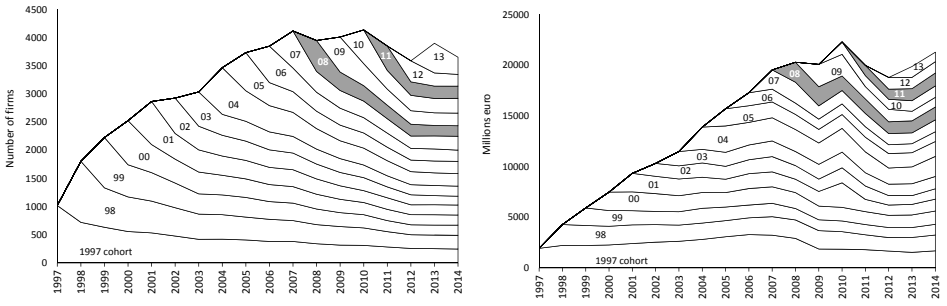
cohort. This suggests that firms that start to export in crisis years, and manage to survive, are not handicapped. These exporters show ability to act in times of higher uncertainty and structural trends related with international trade participation and specialization may dominate macroeconomic fluctuations. In the Portuguese case, the 2008 and 2011 crisis took place against a background of strong export growth that had been initiated several years before. Indeed, Portuguese firms were adjusting for some time to a new pattern of comparative advantages, which followed the shocks of Asian competition and EU enlargement to Central and Eastern European Countries.

Next we repeat the cohort analysis for the import side. Figure 8 presents the average exit rate per year of life for the cohorts of importers that started activity in 1996-2014 (panel A) and also the average growth rate of imports per firm (Panel B). Similarly to what was observed for exports, the exit rate of new importers is very high in the first year of life. However, this exit rate drops faster than in the export case. In parallel, the ratio of imports per firm



(A) Exit rate of importers (B) Growth rate of imports per firm

FIGURE 8: Exit rate of importers and average growth rate of imports, per year of life



(A) Number of importers (B) Value of Imports

FIGURE 9: Number of importers and value of goods imports per cohort in each year

increases on average about 60 per cent in the first year of life of the cohort but decreases to values below 10 per cent in the following years.

As for the cohorts of importers of goods in the Portuguese economy (figure 9), we observe that the initial number of firms in each cohort has been decreasing, notably after 2008, but those that survive seem to increase in number. In 2014, the share of importers born in post-1996 cohorts is relatively close, despite the difference in terms of age. Nevertheless, the value of imports per cohort evolves in somewhat different ways. For example, the post-2008 and, mostly, post-2010 cohorts show lower import levels. This relates with the macroeconomic turmoil that followed the latest international economic and financial crisis, which hit the Portuguese economy in a set up of strong macroeconomic imbalances. The Portuguese economic and financial assistance program, which took place in the context of the European sovereign debt crisis, led to a significant contraction of imports.

Final Remarks

This article examines the path of the extensive and intensive margins in the Portuguese exports and imports of goods in the period 1995-2015. Although the literature on trade margins is large, the time dimension is just starting to be explored. This research requires a long dynamic panel of transactions in international trade, which is typically non-available. Moreover, the literature on trade margins considers all continuing firms in the same way, independently of their age. In order to address this criticism, in this article we also analyse the cohorts of international traders in terms of their exit rate and trade values per firm.

The article concludes that the contribution of the intensive margin to total nominal export growth is higher than that of the extensive margin, though in cumulative terms the latter posts a significant number. The same pattern is visible for imports but the cumulative effect of the extensive margin is higher and closer to the intensive margin.

As for the impact of the great trade collapse, it is clearly visible on the exports' intensive margin, while the Portuguese economic and financial assistance program mostly reduced the imports' intensive margin. The disaggregation of the extensive margin along the firm, destination and product dimensions corroborates their low yearly contributions to the growth rate of exports and imports of goods. Nevertheless, the gross contributions of these margins are important.

The cohort analysis shows that the exit of international traders is higher in the early years of life and the growth rate of exports per firm is very large in the first year. Moreover, the cohorts born in 2008 and 2011, which correspond to the beginning of the great trade collapse and the first year of the Portuguese economic and financial assistance program, perform well. Therefore, firms that start to export in crisis years, and manage to survive, are not necessarily handicapped. As for imports of goods, the number of new firms has been decreasing, as well as total value imported by younger cohorts.

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Appendix: Descriptives based on the data used

	Number of firms	Exported products		Destination countries		Exports by firm	
		Mean	Median	Mean	Median	Mean	Median
1995	2286	7,1	4	9,8	8	12,7	4,5
2000	2693	7,3	4	10	7	14,1	4,2
2005	2905	7,4	4	9,3	6	12,8	3,6
2010	2876	10,4	4	10,1	7	12,7	3,3
2014	3160	12,2	5	11,6	7	13,3	3,2

TABLE A.1. Number of products, destinations and value of exports by firm

Note: The values for the mean and median exports by firm in the two last columns of the table are expressed in million euros of 2014.

		Distribution of exports					Distribution of exporters				
		1995	2000	2005	2010	2014	1995	2000	2005	2010	2014
1	Live animals and animal prods	1,4	1,7	1,8	2,8	2,7	2,6	3,5	4,1	5,8	6,6
2	Vegetable products	0,7	0,8	1,2	1,7	1,9	2,2	2,6	4,0	5,1	4,9
3	Fats and oils	0,4	0,3	0,4	0,5	0,8	0,3	0,3	0,6	0,7	1,2
4	Food, beverages and tobacco	4,3	3,9	4,7	6,1	6,3	4,7	4,0	4,3	4,3	4,2
5	Mineral products	5,0	3,3	5,6	9,0	11,3	1,4	1,2	1,8	2,1	2,2
6	Chemical products	3,5	4,0	4,7	5,2	5,2	4,1	3,6	5,8	6,1	5,9
7	Plastics and rubber	2,6	3,6	5,8	7,1	7,7	5,8	6,8	8,0	9,7	9,7
8	Hides and leather	0,3	0,3	0,2	0,3	0,5	1,1	1,2	1,6	1,9	2,3
9	Wood and furniture	4,5	4,7	4,3	3,6	3,3	7,2	6,5	5,6	4,2	4,4
10	Pulp and paper	6,7	5,5	4,7	5,8	5,2	1,7	2,6	2,4	2,9	2,6
11	Textiles and textile articles	23,5	18,4	13,0	10,7	10,1	36,0	32,2	24,4	19,4	18,7
12	Footwear	7,8	6,2	4,4	4,1	4,3	10,5	9,6	7,9	8,7	8,6
13	Non-metal mineral products	3,9	3,2	3,5	3,5	3,1	6,0	5,6	5,2	4,4	4,1
14	Precious materials and jewelry	0,4	0,3	0,1	0,8	0,7	0,2	0,3	0,1	0,3	0,5
15	Base metals	4,0	5,4	7,7	7,6	7,7	5,1	6,5	8,3	8,8	8,9
16	Machinery and electric equip.	17,7	20,2	19,4	14,0	13,8	6,1	8,6	9,6	8,6	8,9
17	Transport equipment	10,4	15,3	14,6	13,0	10,7	2,1	1,9	2,7	2,6	2,6
18	Optical and precision equip.	1,1	0,7	0,7	0,9	1,3	0,5	0,5	0,4	0,6	0,4
19	Arms and ammunition	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,0
20	Miscellaneous manuf.	1,5	1,7	2,8	3,0	3,2	2,0	2,3	3,1	3,3	3,0
21	Works of art	0,0	0,0	0,0	0,0	0,0	0,1	0,2	0,2	0,2	0,2
	Sum	100	100	100	100	100	100	100	100	100	100

TABLE A.2. Distribution of exports and exporters per sector

	Number of firms	Imported products		Origin countries		Imports by firm	
		Mean	Median	Mean	Median	Mean	Median
1995	4330	19,9	13	6,8	6	10,2	2,9
2000	5864	19,0	12	6,3	5	10,9	2,7
2005	6273	19,9	13	6,3	5	9,8	2,2
2010	6059	24,8	13	6,7	5	10,4	2,1
2014	5757	25,2	14	7,1	6	10,1	2,1

TABLE A.3. Number of products, origins and value of imports by firm

Note: The values for the mean and median imports by firm in the two last columns of the table are expressed in million euros of 2014.

		Distribution of imports					Distribution of importers				
		1995	2000	2005	2010	2014	1995	2000	2005	2010	2014
1	Live animals and animal prods	4,2	3,9	4,3	4,8	5,5	5,8	6,2	7,0	8,4	8,2
2	Vegetable products	4,4	2,7	2,7	3,9	4,1	4,1	4,5	5,0	5,9	5,8
3	Fats and oils	0,8	0,3	0,5	0,8	0,8	1,1	0,8	0,6	0,7	1,1
4	Food, beverages and tobacco	4,2	4,0	3,6	4,5	4,7	4,1	3,4	3,9	4,4	4,6
5	Mineral products	9,1	11,1	15,5	15,6	18,4	4,4	4,2	5,1	4,7	4,6
6	Chemical products	8,6	7,7	9,0	10,3	10,5	17,7	17,3	17,5	18,9	19,8
7	Plastics and rubber	4,6	4,4	4,6	5,1	5,8	14,3	14,7	13,8	15,2	15,1
8	Hides and leather	1,4	1,0	0,8	0,9	1,3	2,9	3,5	3,4	3,2	3,1
9	Wood and furniture	1,0	1,3	1,1	1,0	1,2	1,2	2,3	1,9	1,6	1,4
10	Pulp and paper	3,0	2,6	2,4	2,4	2,0	4,7	4,4	4,3	3,7	3,4
11	Textiles and textile articles	8,6	7,0	5,3	5,3	5,7	10,1	7,6	6,5	5,2	5,6
12	Footwear	0,9	0,9	0,8	1,0	1,1	0,9	0,8	0,7	0,7	0,9
13	Non-metal mineral products	1,1	1,2	1,2	1,1	1,0	2,3	2,1	1,9	1,6	1,5
14	Precious materials and jewelry	1,0	0,8	0,3	0,3	0,3	0,9	0,8	0,4	0,2	0,5
15	Base metals	7,7	7,0	8,0	7,8	7,6	8,9	8,2	9,0	8,0	8,1
16	Machinery and electric equip.	21,0	22,4	21,1	16,7	15,1	12,7	13,0	13,3	12,5	11,5
17	Transport equipment	14,9	17,5	14,4	14,3	10,6	1,9	2,9	2,6	2,5	2,4
18	Optical and precision equip.	2,0	2,3	2,1	2,1	2,1	0,9	1,3	1,4	1,4	1,5
19	Arms and ammunition	0,1	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,0	0,0
20	Miscellaneous manuf.	1,4	1,9	2,0	2,1	2,1	1,1	1,7	1,7	1,1	1,0
21	Works of art	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,0
	Sum	100	100	100	100	100	100	100	100	100	100

TABLE A.4. Distribution of imports and importers per sector