New exporters benefit more from information spillovers *

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Abstract

This paper identifies differences across firms in the learning process from peers when entering new markets. We show that new exporters benefit more from information spillovers. We also show that exporters learn mainly from very close firms (sectoral peers in their region). That is, information externalities streaming from peer companies are particularly relevant for new exporters. The fact that knowledge externalities are stronger for incoming exporters increases the relevance of information externalities for export extensive margin and drives consequences to export promotion policies.

JEL: F1, F2, R12, F14

Keywords: Exports, firm-level data, local spillovers, region, sector.

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1 Introduction

Selling abroad is a difficult task. One of the hitches is to choose the appropriate country to export to. Companies try to learn about potential demand in new potential markets. One source of information is the experience of close companies. We will show that intensity of this information externalities might vary across companies. This document deepens into the analysis of knowledge externalities across firms and shows that information spillovers are more intense for new companies. From an economic policy perspective, the presence of positive external effects of exporting activities is one of the more prominent arguments to justify export promotion policies.

We rely on the study from Fernandes and Tang (2014) that shows that information spillovers are relevant when companies start selling abroad; their paper focuses on the regional dimension. We show that sectoral information is also relevant. We expand the sources of knowledge information, from regional to sectoral peers. In a context with scarce resources and increasing costs in the distance of collecting information, companies will try to extract knowledge from close companies. A natural choice for incoming companies is to look at exporters in their specific region and sector. The closer the company is to the potential entrant in both dimensions the more relevant the information coming from peers is for the export entry decision. We examine this idea and show that sectoral spillovers and regional spillovers are specific cases, and good proxies, of this more general framework.

As mentioned, potential entrants try to infer new market potential demand to decide whether to enter or not in a new market. In order to obtain this information firms check how similar companies are performing in a specific foreign market. But this process of information acquisition might have different relevance for different stages in the companies' internationalization process. There is no reason why all companies benefit the same from information externalities. The learning process might differ between experienced companies in international markets and new exporters. The former group has a greater variety of sources of information: they might have data about how their own company performed in previous markets or they might have developed specific internal processes of learning about external markets. For the latter group, the entry decision is a first experience in international markets and they do not have useful historical information available for their entry decision. This latter group will probably rely more on spillovers than companies with more sophisticated information processes. Entry cost might also vary between experienced companies and new entrants. This paper, for the first time in the literature, as far as we know, shows that new entrants benefit more than experienced exporters from peer companies' experience [1].

[1] Greenaway and Kneller (2008) suggest that information spillovers coming from new exporting firms may be more relevant for potential entrants than information coming from established exporters. Cho-

This paper uses a wider time span than previous work, and uses firm level information from a developed country that incorporates exporting firms with long trajectories.

The analysis contributes to the literature on spillovers in several dimensions. First, it relates to spillovers in international trade. The paper of Fernandes and Tang (2014) presents positive spillovers from export activities at the regional level; they conclude that international sales in the neighbourhood reveal information to entrants about foreign market demand and thus enhance new exporter relationship performance: Entry probability and initial sales are higher in areas with higher export activity concentration.[2] Timoshenko (2015) focuses on the learning process that drives company decisions on adding countries and products for new firms and for existing exporters. She shows that new exporters learn about their product appeal differently than older exporters because they have less information about international demand. We combine these ideas and identify learning differences across firms related to information spillovers useful for making proper entry decisions. We also show that geographical proximity fosters industry spillovers, in line with Choquette and Meinen (2014).

Second, this paper relates to the empirical literature of geographical concentration of knowledge spillovers illustrated in the seminal paper of Glaeser et al. (1992)[3]. This strand of literature finds that regional and sectoral knowledge spillovers might have firm positive growth effects[4]. We consider that our approximations make a contribution showing the existence of information spillovers both at the regional and sectoral level.

Third, the paper helps to clarify the sources of export growth. Entry decision determines extensive margin. Extensive margin, following Bernard et al. (2009), is as important for export growth in the long run as intensive margin, and represents 50% of international trade growth in a 10 year period, according to de Lucio et al. (2011). Net entry (new exporting companies) is more relevant than portfolio diversification; this is why companies' first steps in international trade and, consequently, information spillovers are fundamental for country wide export growth.[5]

Finally, the analysis also relates to the export dynamics research branch literature; more specifically, results support the "learning by exporting" hypothesis. Freund and Pierola (2015) state that firms, facing uncertainty in foreign markets, decide to take a low risk approach (small sales) and in case of success increase quickly its export value,

quette and Meinen (2014) analyse this point and show that both types of firms are important source of spillovers.

[2]Kamal and Sundaram (2016) find that the presence of neighbouring exporters increase the likelihood of matching with the same importer of the neighbouring exporters for the first time exporter. Requena and Castillo (2007) focus on industry province spillovers on international trade.

[3]For the Spanish case see de Lucio et al. (2002)

[4]See the meta study of Beaudry and Schiffauerova (2009).

[5]Local and product knowledge externalities about markets are not relevant for intensive margin Koenig et al. (2010) reject this idea.

as we show in section 3. This evidence is more clear cut among new firms. Ruhl and Willis (2017) show that new exporters initially export small amounts and are most likely to exit. This literature stress the role of country specific fixed and sunk export costs or profit uncertainty and exhibits informational externalities, as explained in our model section (Albornoz et al. (2012) or Melitz (2003) and Bernard et al. (2007) and Chaney (2008)). The document also relates to survival literature and trade duration literature (Besedeš and Prusa (2006a), Besedeš and Prusa (2006b)).

Our findings qualify previous results. First, companies learn more specifically from very similar companies (exporting firms in the same sector and region); sectoral dimension of the learning process is as relevant as a regional one. Second, learning is specific to the market and not general to the internationalization process. Third, learning spillovers from companies with experience is relevant for entry decision, initial sales and growth. Fourth, spillovers affect different companies in different ways according to their stage in the internationalization process and their capacity to access useful information about potential markets.

This paper shows that it is possible to identify some strategic policy lines for business internationalization, especially in relation to the promotion and efficient furtherance of information externalities. Knowledge of the microeconomic foundations of the internationalization of the economy and the learning process of firms in its internationalization process allows a better selection of markets and a more adequate design of internationalization policies. Fostering knowledge spillover for internationalization is more beneficial for companies with no previous experience selling abroad.

The paper is organized as follows. The next section presents the hypothesis derived from the model and describes the data used. Section 3 carries out the empirical analyses; this section presents the core results of the document and robustness checks. Section 4 gives a summary and provides some policy recommendations.

2 Initial settings / preliminaries

2.1 Theoretical insights

Firm level models of entry in export markets frequently use signaling models where potential entrants collect information from peers about potential markets. Fernandes and Tang (2014) propose a model where companies collect information from peers about demand in potential markets[6] and conclude that:

1. The number of firm entering a new specific market increases with the signal intensity

[6]The model set-up follows Melitz (2003), incorporating a learning about demand process in line with Moretti (2011).

especially when the signal is more clear (revealed by more firms) and when the expected demand distribution is less disperse.

2. Initial sales increase with the signal and more if the signal is built on the information of more firms. Post-entry growth in a new market, conditional on survival, goes in the opposite direction to initial sales; it decreases with the signal and more so if the signal is revealed by more companies. Therefore, the higher the initial sales the lower the growth rate as better information allows an initial volume of exports close to long run steady state equilibrium for firms. Finally, survival increases with the strength of the signal[7].

We qualify previous results and extend the model in various directions: first, including differences across firms in their capacity to estimate potential market demand, and second, focusing learning on companies with similar products (for model details see Appendix A). These extensions provide additional hypotheses to be checked. The additional insights from the extensions included can be summarized as follows: information spillovers are more intense for new entrants and between more similar companies.

Next, we specify the two contributions in the model that drive these hypotheses:

- First, we modify the model in order to include a market demand distribution that may have different variance across firms. This is the basic idea of the paper; firms depart from different international trade knowledge and consequently have different learning abilities about potential markets. Companies that have previous experience will have better knowledge of international markets, while new companies with no export experience will have higher uncertainty. With this assumption we are able to show that companies with better knowledge about international markets, experienced companies, will rely less on spillovers. This hypothesis will be more clearly tested using completely new companies in foreign markets; or putting it in a different way, experienced companies will benefit less from spillover effects[8].

- Second, an additional model specification that underlies our empirical framework relates to product appeal across companies. The model predicts that increasing

[7] After entry, firms' profit depends on its product appeal and per period fixed cost, other information is already known and companies do not depend on information spillovers, nevertheless competition effects still exist; this might explain why both Fernandes and Tang (2014) and this document find a negative effect of neighbours.

[8] An alternative explanation of differences among companies can be derived if the model consider that the sunk cost of entering the market differs across companies. It is observed that companies with experience have higher entry rates and higher experimentation in potential markets, than new companies, this evidence is associated with lower entry sunk cost. If experienced companies have lower entry cost will also have higher entry probability as minimum productivity level required for entry will be lower. In this case, we will find higher entry probability but we would not have any effect on initial sales, growth or survival.

similarity of companies (same region and sector) implies better information for the potential entrant, since the new company can observe more similar companies that make spillovers more evident. Considering close neighbours reduces variance of product appeal within the group and makes potential demand estimations more precise. That is, when the entrant looks at very similar companies the variance of product appeal will be lower and consequently will have a better signal and the entrant will rely more on it. The direct consequence of this is that when estimating spillovers using narrower classification of peer companies we identify spillover effects more accurately than when the classification is wider. More concretely, spillovers will be more easily identified within companies in the same sector and region, than when sectors and regions are analyzed independently.

2.2 Data

Our data set comes from the Customs Database, collected by the Customs and Excise Department of the Spanish Tax Agency, which covers the universe of export transactions in Spain. For each transaction, we know a firm's unique identification code given by Customs, the product at the 2-digit level Combined Nomenclature (CN) classification[9], the destination[10] of the export transaction, the free-on-board (FOB) value in euros of the transaction, and its regional origin at the NUTS 3 classification (provinces)[11]. Our database covers the period 2000-2015[12]. Spain is divided into 50 provinces (Eurostat's NUTS 3 classification), which are shown in Map 1 that presents the percentage of new relations across provinces. New relations vary from a minimum of 34% to a maximum of 78% in Santa Cruz de Tenerife (Canary Islands) of total relations; only three provinces are over 60%. As it is shown in Map 1, about 15% of transactions are new stable relations[13]. The province with more percentage of new stable relations is A Coruna. This area is not especial in any sense from an export point of view. We do not observe specific pattern (related to traditional international trade variables like export size, coastal or

[9]Two digits provide enough detailed classification and avoid information transfers between sectors that might be produced with more detailed classification. We exclude chapter 99.

[10]A great number of export destinations are almost insignificant and are not considered by entrant firms, we keep destinies that represent 99% of export volume, that is, 90 countries.

[11]Note that a firm has a unique origin, that is its unique fiscal province. Although a firm might export more than one product we decided to keep the main product. This strategy has an important advantage without losing relevant information; this strategy maintains stable the dataset across estimations and makes comparisons easier. Database collects information for all companies, a huge number of them export one time and in very small volumes; the analysis concentrates on companies that export over 100,000 over the period.

[12]We use 2003, 2006, 2009 and 2012 because computational restrictions, robustness checks have been made with different periods. Note that observations for the initial period of the sample and the last two periods are dropped because they are needed to build other variables.

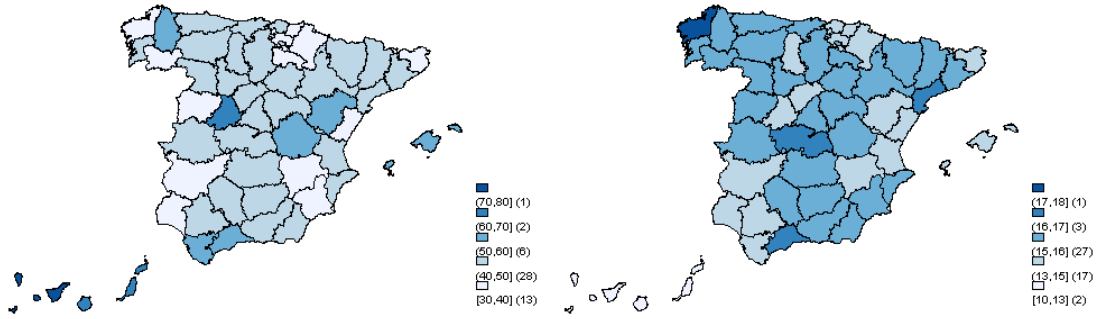
[13]Due to their special geographic features, for the empirical analyses, we do not include the two autonomous cities located in Africa (Ceuta and Melilla); note that we do keep the island regions (Balearic Islands and Canary Islands).

border region) in the distribution across provinces. We observe significant variation of new relations and on their stability.

When both panels of Figure 1 are compared, we observe that there is not a clear cut correlation. Although Corunna has the highest share of new stable relations it also has a lower than average new relation share, Basque country provinces have both a lower than average percentage of new relations and a lower than average new stable transactions.

The correlation between the percentage of old relations in one year and the percentage of new export transactions that become consolidated is very high and positive (97%). The higher the share of old relations in one year, the lower the share of new relations that are occasional. The greater the number of companies with consolidated relationships, the greater the likelihood that a new relationship will be consolidated and the lower the probability of occasional relations.

Figure 1: Percentage of total relations that are new (left) and percentage of new stable relations (right), 2003-2014



Source: Compiled by authors using the Customs database.

Table 1 provides some descriptive statistics on Spanish provinces for the period 1997-2015. Column (1) presents the total number of relations (firm-province-product-country). The next column calculates the share of new relations, for Spain it is 42.3%. Column (2) shows the share of stable relations, i.e. those that continue during year $t + 1$ after entry. Among new ones, 36% (15.2/42.3) of new relations remain active one year later. Finally, columns (4) and (5) in Table 1 are calculated over Spanish totals, and present export value shares over national exports[14] and shares for new relations. Precisely 46% of Spanish exports are located in Barcelona and Madrid. These regions also concentrate almost half of the total transactions. A similar figure (44.4%) is observed in relation to the percentage of total relationships. The next provinces in the ranking are Valencia (5.8%), Pontevedra (3.6%) and Zaragoza (3.5%). It is interesting to observe that Madrid's share of total exports is much higher than that for relations. Average transaction value is higher

[14]The shares are calculated over the total exports of the period.

in Madrid than in other regions although it also has higher share of new transactions with a slightly low survival probability. Only 33% of new relations survive.

Table 1: Provinces with the most export relationships

Prov.	(1) Total	(2) New	(3) New Stable	(4) Exports Sh.	(5) Relat. Sh.
Barcelona	1 952 830	40.4%	15.1%	22.0%	30.4%
Madrid	896 457	48.7%	16.0%	24.0%	14.0%
Valencia	471 233	42.5%	14.7%	5.8%	7.3%
Pontevedra	113 294	41.7%	15.2%	3.6%	1.8%
Zaragoza	144 566	40.8%	15.5%	3.6%	2.3%
Total	6 413 901	42.3%	15.2%	100%	100%

Source: Authors' calculations based on the Customs' database.

2.3 New exporting firms vs. old firms in new markets

Table 2 provides information about the distribution of total relations according to firm and transaction regularity. As mentioned above, firms might be stable in international markets and introduce new destinations in their portfolios. These new countries might be, at the same time, regular or occasional. Previously exporting companies represent 90% of each year total firm-sector-country tripla.

Table 2: Percentage of total relations by firm and transaction type

		Trade relation			
		Old stable	New stable	New occasional	Total
Firms	Existing	58%	13%	19%	90%
	New stable		2%	2%	4%
	Occasional			5%	5%
	Disappearing			1%	1%
	Total	58%	15%	27%	100%

Source: Authors' calculations based on the Customs' database.

The incoming company to the international market might stop exporting in the next period. These companies represent 5% of transactions; these are occasional exporters as all trade relationships of these companies are sporadic. It might happen also that the company continues selling abroad but to a new market; the relation might disappear but the firm still sells to a new market. These are new stable firms with occasional relations. Finally, new internationalized companies might continue with the same transactions they started in period t during the next year. This is a new firm with a new stable transaction. Table 2 shows that 9% of total transactions belong to new firms, 4% to new firms that are stable, and 5% to occasional firms.

As indicated, 42% of total relationships are new; 15% will continue and 27% will disappear. Almost 60% of the commercial relations that start in year t will not be feasible in $t+1$. New relationships that remain active in year t+1 are six times more frequent among existing companies than among new companies[15]; this points out that existing companies might have better internal learning processes from neighbours or different decision mechanisms.

New exporting firms by definition do not have any previous international experience so they are not able to learn from peers in external markets; their knowledge about foreign demand comes from local neighbours or from sectoral peers.

All firms have the possibility to learn from other companies' experience. When deciding new destinations the sources of information are sectoral and regional peers[16] but as explained previously, it is preferable to take into account the regional and the sectoral dimensions simultaneously. Main text presents this approach; Appendix C provides analysis at the regional and sectoral basis independently.

Finally, we have 1% of total transactions that belong to disappearing companies: not new but disappeared in $t+1$, see Table 2.

Only stable relationships have the possibility to contribute in the long term to extensive margin. Table 2 shows that 73% of total relations are stable, defined as relations that remain in $t+1$. Of the total number of relations 15% are completely new, 13% are shipped by existing companies in previous period and 2% are created by new companies in foreign markets.

Among new stable companies the share of new stable relations is quite similar to the share of occasional ones, about one half. For existing companies the share of perennial relationships is higher. This might be explained by the fact that existing companies already cover their most profitable markets and therefore new markets are increasingly risky for these kinds of companies. It might happen also that fixed costs of entry are lower for already exporting companies that consequently attempt more difficult markets.

3 Empirical analyses

This section presents estimation results. The basic estimation has three regressors: peer average export growth $\triangle ln(x_{cnm,t})$, number of companies exporting $ln(n_{cnm,t-1})$[17] , and

[15]New relationships that disappear in year t+1 are 2 or 3 times more frequent among existing companies than among new companies

[16]Exporting firms have an additional source of information; they might draw information from the companies they met in international markets and they obtain valuable information from their previous experience see de Lucio et al. (2018).

[17]We do not control for region, as in Fernandes and Tang (2014). We have two reasons: first, regional areas are quite similar across Spanish provinces (see maps); second, activity generally concentrates by

the interaction of both terms. The independent variables are specific for sector-province-foreign markets while the dependent variables are also firm specific. The basic specification is:

$$Dependent = \alpha + \beta_1 ln(n_{cn,m,t-1}) + \beta_2 \triangle ln(x_{cn,m,t}) + \beta_3 ln(n_{cn,m,t-1}) \triangle ln(x_{cn,m,t}) + \beta_3 Controls + FE + \epsilon_{imt} \quad (1)$$

Following Fernandes and Tang (2014), the proxy for the signal inferred from similar companies is peer average export growth:

$$\triangle ln(x_{cn,m,t}) = \frac{1}{n_{cn,m,t-1}} \sum_{i \in N_{cn,m,t-1}} [ln(x_{icn,m,t}) - ln(x_{icn,m,t-1})] \quad (2)$$

where the number of peer companies already exporting from the region and sector to a specific market in period t-1 is $n_{cn,m,t-1}$ and cn stands for close neighbours exporting to a market, m.

Close neighbourhood refers to companies simultaneously in the same sector and province. Appendix C also present an estimation of when sectors and regions are considered independently.

As explained in the theoretical section, spillovers are more specifically identified when the peers are more similar. When firms collect information from very close firms (in the same sector and region) the degree of similarity will be higher. This approximation also allows easy integration of regional and sectoral dimensions.

Dependent variables to be included in the basic model are:

- Entry in a new market: it will take value 1 for firm i if it starts to export to market, m, in period t. It will be 0 for all potential markets that the firm does not serve in period t. This variable is built for all potential destinations.
- Initial sales in the new market $ln(x_{im,t})$.
- Sales growth in the new market, $\triangle ln(x_{im,t})$ This variable is built for stable transactions, those that remain active in $t+1$.
- Survival equals 1 when the new country is supplied by the company during the next two periods, 0 elsewhere. Thus the analysis is done for stable relations.

One of our objectives is to identify whether information spillovers are specific to the market or not. The spillover could be specific to the new market or, in contrast, informa-

provinces in a single city so meeting difficulties originated by distance disappears in highly concentrated areas. Results remain quite similar so for the sake of clarity we preferred simplicity.

tion exchange could be not specific to the market but general to the internationalization process, for instance, custom procedures, financial resources for international transactions or logistical aspects. This information is general for international trade. In this case, spillovers would exist independently of the specific potential market and will depend on the number of exporting firms, not on the number of exporters to the specific market. We want to check that information is market specific. In order to do that we use as control variables information coming from companies (from the region and/or the sector) not exporting to the specific combination and check if this information helps to introduce a new export market to the company portfolio. If this were the case, information would be general to the export process and not specific to the market. We control for the peers growth rate in other markets $\triangle ln(x_{cn(-m),t})$, the number of companies exporting to other markets $ln(n_{cn(-m),t-1})$ and the interaction of these last two variables; $-m$ stands for the rest of the markets.

We include in all the estimations fixed effects that control for firm-year; firm specific characteristics, firm shocks, and address potential sample selection bias. We also included the appropriate set of fixed effects according to the model specification estimated. In the main text we use product-sector-country fixed effects. This set of fixed effects is able to control for local, sectoral, and destination specific factors, like public policies, product specific shocks or company strategies.

Since, in this section, we work with independent variables with province-sector-market level of aggregation and our dependent variable has a higher level of aggregation (firm level), then our standard errors will be clustered at the province-product-country-year level. We estimate linear probability model as Fernandes and Tang (2014) and Albornoz et al. (2012)

Next, we focus on entry and regional-sectoral spillovers where spillovers are more specifically generated (see Appendix B for sectoral and regional dimension) and address the main question of the paper; differences in the entry probability across firms associated with previous international experience. Then we go deeper in the analysis and we move into initial sales, post entry growth and survival. Finally, we perform a set of robustness checks.

3.1 Entry in new markets

As mentioned, entry variable will be equal to 1 when a firm starts to export to market m, and zero to all destination countries were the company does not sell. For each year we only consider companies that incorporate a new market in their portfolio and all potential markets, whether the firm enters or not. We first estimate the basic model, then we incorporate control variables and finally we consider differences across new and

experienced firms. In order to do that we use a dummy variable with value 1 for the experienced companies that were exporting the previous year.

The model predicts that the probability of entering a new market increases when there is a strong signal about the demand in this market and even more when the signal comes from more exporters. In general, we also expect a positive sign for the number of companies already exporting. We expect that experienced firms will have a lower intensity of all these three effects as they rely less on information from peers.

Table 3 reports estimations for specific origin-sector spillovers. Column (1) presents basic results, all coefficients are significant and positive, as predicted by the model and in line with Fernandes and Tang (2014). The probability of entering a new market increases with the number of companies already exporting, the export growth signal and the interaction between these variables, as predicted by the model.

Companies will more likely enter new markets where the growth signal is more positive and more companies reveal this signal. Results are quite robust across columns. Neighbouring companies in the sector-province provide relevant information for entry decisions, in line with what Fernandes and Tang (2014) document for China. Table 3 confirms the presence of information spillovers in a developed country and when sectoral dimension is incorporated. According to Table 3 not only regional but also sectoral information is relevant for learning. In fact, as predicted in the model, spillovers are more easily identified when coming from very close peers.

The results are robust to the incorporation of control variables, column (2). Control variables (the same variables calculated for exports to the rest of markets) do not modify signs of the main regressors. The variable corresponding to the logarithm of the number of companies from the same province or products that are exporting to other countries has invariantly a negative sign. That is, the more companies exporting from the region or from the sector outside the region the lower the entry probability. In other words, the greater the national competition the lower the residual demand to be attended and, consequently, incentives to enter the market decrease. The negative effects seem to be a consequence of the higher competition. Probably firms cannot obtain additional information from these companies, located in other regions/sector, as with that obtained from peers in their sector-region. Companies in other sectors in the same region or in the same sector from other regions do not provide additional information about demand in new potential markets but generate competition and so, any increase in the number of competing companies outside the region-sector induces higher competition without additional information. According to these results externalities are stronger in low competition local environments with high sectoral specialization, which is in line with the literature that identified Marshal-Arrow-Romer (MAR) externalities. The concentration of an industry in a province fosters knowledge spillovers (tacit or codified information). MAR theories

Table 3: Entry in a new export market. Regional and Sectorial spillovers

	Basic Reg+Sec (1)	Controls Reg+Sec (2)	Reference Reg+Sec (3)	Only Regional (4)	Only Sectorial (5)
Ln(n)	0.0042***	0.0007***	0.0151***	0.0229***	0.0206***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.001]
Growth	0.0010***	0.0008***	0.0023***	0.0019*	0.0021***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.001]
Ln(n)*Growth	0.0003***	0.0004***	0.0006***	0.0006**	0.0007***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Controls-Rest of regions or sectors				
Ln(n)		-7.3281***			
		[0.512]			
Growth		-0.0317***			
		[0.012]			
Ln(n)*Growth		0.0025**			
		[0.001]			
	Previous experience				
Ln(n)			-0.0129***	-0.0126***	-0.0133***
			[0.000]	[0.000]	[0.000]
Growth			-0.0014***	-0.0010	-0.0016**
			[0.000]	[0.000]	[0.001]
Ln(n)*Growth			-0.0004***	-0.0004	-0.0005**
			[0.000]	[0.000]	[0.000]
Obs.	9,406,731	9,406,731	9,406,731	9,412,537	9,412,537
R^2	0.136	0.136	0.137	0.096	0.100

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

considers that competition is worse than monopoly for growth[18].

Column (3) analyses differences across firms. A dummy variable for existing companies interacting with variables of interest (number of companies, growth and interaction of both) is incorporated. In all the cases the baseline coefficients (those for companies with less experience) maintain positive sign and significance. Coefficients are higher for non-experienced companies than those obtained in the base model; that is, companies with less experience enjoy higher spillovers, and rely more on information coming from peers, in line with was predicted in the model. Spillovers are less intense for already exporting companies. Putting it in a different way, the spillovers are more obvious among new companies that start exporting. For new incumbents, peer behavior is an important

[18]Contrary to MAR model, Jacobs argues that spillovers are more intense between industries and emphasizes the positive effect of competition

source of information, maybe the unique source of information about destination markets[19]. The learning process for peers is more intense and beneficial for companies with no other source of information. On the other hand, companies with more experience have additional information, external and internal, that can moderate the impact information spillovers coming from peers.

Coefficients for experienced companies maintain signs when regional and industry analysis are made independently although variables are more statistically significant when industry spillovers are confined regionally, as shown also by Choquette and Meinen (2014). Columns (4) and (5) in Table 3 present contrast information for spillover identification when sectoral and regional dimensions are considered independently. Explanatory capacity and significant levels are higher in column (3). In fact, although signs are maintained, some parameters are not significant for the regional estimation.

3.2 Initial sales, growth and survival

Initial sales estimations are presented in Table 4, columns (1) and (2). Appendix C collects estimation results for the independent analysis of regional and sectoral spillovers. Coefficients have the expected sign in all regressions. We find positive values for the number of companies already exporting and the growth variable. We do not find any effect for the interaction of both variables. This results are in line with expected. Accordingly firms obtain information specifically from companies in the same sector and region about the potential demand. Again it is clear that both sectoral and regional peers provide useful information about new potential markets but information spillovers stem clearly from those peers that are very similar[20].

Column (2) in Table 4 presents estimation coefficients for new and experienced firms. All the interactions of interest variables with the dummy variable for experienced companies have a negative sign, but only the number of companies is significant.

In section 2 we saw that when companies have better information spillovers; they are more precise in their initial export level, they suffer less surprises about real demand in the new market, and consequently their export **growth** is lower in case of survival. Table 4 columns (3) and (4) present the coefficients for sector-country case. Growth after entry is lower the greater the number of companies and the higher the growth rate that was signaled previous to entry decision. In this case previous experience does not seems to have effects on growth after entry.

[19]Both stable firms on international markets and new firms that start to export benefit from positive information externalities.

[20]These results do not vary when introducing control variables as in Fernandes and Tang (2014). Information coming from other sectoral peers in a different region and firms from other sectors in the same region don't affect the spillover identified.

Finally **survival** has a negative sign, similar to Fernandes and Tang (2014). Experienced companies also have a positive effect on the interaction variable. This effect is not present in new internationalized companies.

Table 4: Initial sales, growth and survival. New companies vs. old companies

	Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(n)	0.1803***	0.3975***	-0.2884***	-0.2880***	-0.0396***	-0.0238**
	[0.044]	[0.054]	[0.098]	[0.108]	[0.010]	[0.011]
Growth	0.2078***	0.2549***	-0.1518**	-0.0183	0.0078	0.0084
	[0.030]	[0.067]	[0.066]	[0.104]	[0.006]	[0.013]
Ln(n)*Growth	-0.0051	0.0060	0.0369	0.0079	0.0016	-0.0081
	[0.012]	[0.027]	[0.026]	[0.042]	[0.002]	[0.005]
	Previous experience					
Ln(n)		-0.2634***		0.0030		-0.0193***
		[0.036]		[0.069]		[0.007]
Growth		-0.0575		-0.1771		-0.0018
		[0.068]		[0.114]		[0.013]
Ln(n)*Growth		-0.0140		0.0383		0.0122**
		[0.028]		[0.049]		[0.006]
Obs.	149,128	149,128	41,198	41,198	149,155	149,155
R^2	0.942	0.942	0.888	0.888	0.821	0.821

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

3.3 Robustness

In this section we perform additional robustness tests. We consider two alternative definitions of experience. We also use different samples in terms of years, firms and sectors. Table 5 focuses on entry decisions and presents our reference estimation for entry decisions for experienced versus novel firms in international markets (find detailed estimates in Appendix C).

Alternative definitions of experience. To ensure that results are independent of our definition of experience we use alternative definitions. In column (1) experience takes a value of 1 if the company exported during three consecutive years, and in column (2) if the firms exported more than three years during all the sample period. This variable characterizes companies that have differential elements that make internationalization more regular from those companies less stable in international markets or occasional exporters. The stable companies have more complex strategies. These firms also have more sophisticated decision processes. They rely less on sporadic information coming

from peers. Previous experience reduces spillover effects in all the cases although it is positive both in columns (1) and (2).

Alternative samples. We further check our results with alternative datasets. In column (3) we include all the years in the period 2010-14. Column (4) considers only manufacturing products[21]. Column (5) considers small firms, with export volumes between 100,000 and 10 million euros. Column (6) considers small regions, without Madrid and Barcelona. In all the cases spillovers have the expected signs (positive) and, in general, remain statistically significant. Lower spillover intensity for experienced companies is observed in all the robustness checks. Results are even more clear for manufacturing industry spillovers.

Table 5: Entry in a new export market

	(1) Exper. Consec.	(2) Exper. Period		(3) 2010- -2013	(4) Manufact.	(5) Small Firms	(6) Small Reg.
Ln(n)	0.0099***	0.0066***		0.0043***	0.0138***	0.0411***	0.0188***
	[0.001]	[0.000]		[0.000]	[0.000]	[0.001]	[0.001]
Growth	0.0024***	0.0014***		0.0020***	0.0021***	0.0058***	0.0021***
	[0.000]	[0.000]		[0.000]	[0.000]	[0.001]	[0.000]
Ln(n)*Growth	0.0006***	0.0004***		0.0001	0.0005***	0.0011	0.0021***
	[0.000]	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]
	Previous experience						
Ln(n)	-0.0060***	-0.0056***		-0.0132***	-0.0114***	-0.0341***	-0.0176***
	[0.000]	[0.000]		[0.000]	[0.000]	[0.001]	[0.001]
Growth	-0.0014***	-0.0007***		-0.0022***	-0.0014***	-0.0036***	-0.0013***
	[0.000]	[0.000]		[0.000]	[0.000]	[0.001]	[0.000]
Ln(n)*Growth	-0.0003	-0.0002**		0.0003*	-0.0003**	-0.0009	-0.0013***
	[0.000]	[0.000]		[0.000]	[0.000]	[0.001]	[0.000]
Obs.	9,406,731	9,406,731		10,592,856	8,681,998	1,691,216	4,010,958
R^2	0.136	0.136		0.131	0.125	0.214	0.178

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

4 Final comments

Companies learn from their close peers. Our analysis shows that export entry decisions rely on information coming from companies that are already exporting to potential markets and belong to the same region and sector. Potential entrants do not know the demand curve in the new market until entry, so they decide their entry strategy in foreign markets

[21] We drop agriculture and extractive industries, whose HS code is below 28.

based on information spillovers coming from peers. Fernandes and Tang (2014) analyse regional spillovers and suggest the interest of sectoral spillovers. The combination of both sectoral and regional dimensions simultaneously makes spillover effects more evident, like in Greenaway and Kneller (2008) or Koenig (2009), although we also observe spillovers when each dimension is analyzed independently.

Results confirm that companies obtain information spillovers from very similar firms that are already exporting to potential new markets. The higher the number of companies and the export growth rate in the sector-province tuple the higher the probability of starting new relations, the greater the initial sales volume, and the lower the growth rate. These results confirm that dynamic information spillovers exist flowing from peers with experience in the potential markets.

Information coming from distant companies does not seem to be useful enough to overcome competition effects and has a negative effect in company international performance. Externalities are stronger in low competition high specialization environments. This result is in line with MAR type externalities.

Learning spillovers are more intense for incoming companies than for experienced exporters. Therefore, entry strategy will depend more on peer behavior for new exporters. Externalities will be less intense for experienced companies.

According to these results, it seems that there exists room for regional - sectorial export promotion policies. For pure extensive margin growth, it is important to foster local relations between companies in the same sector, tailor-made policies might have greater impact on increasing export portfolios than wide-range policies. Initiatives to encourage networking at the regional-sectorial level can contribute to a more efficient selection of the new entrant's export strategy. For experienced exporters more sophisticated policies have to be designed.

Appendix A ANNEX Model insights

Following Fernandes and Tang (2014) and Melitz (2003) we consider a monopolistic competition framework with constant elasticity of substitution, σ, between the different product varieties. Each firm i faces its specific product demand, D_{im}. Firm productivity level, ρ, is drawn from a distribution function, $G(\rho)$. The company i's gross profit when sells to the market m is:

$$\pi^0(D_{im}, \rho) = D_{im}\rho^{\sigma-1} \tag{A1}$$

Firms know their own productivity level. Potential exporters unknown expected profit linked to the export decision, as specific demand that the company faces in the new market, is also unknown. Demand can be broken down into three components:

$$ln(D_{im}) = \frac{k}{n_m} + d_{im} + z_{im},\ where\, \sigma > 1 \tag{A2}$$

Where $\frac{k}{n_m}$ is a constant, k divided by the number of companies n shipping to the market m; this is the first difference with the Fernandes and Tang (2014) model. By dividing the constant by the number of companies, we represent the residual demand that a firm faces in monopolistic competitive framework. The greater the number of companies serving a market the lower the residual demand the company faces [22].

The second term of equation A2 is a specific market component that is equal for all firms, $d_m = P_m^{\sigma} Y_m$; P_m and Y_m are the price index and the total market expenditure, respectively. Finally the third component, z_{im}, is the firm-specific product appeal in the market, this parameter is unknown for the firm before it starts to export and known afterwards. For simplicity, it is assumed that $ln(D_{im})$ components do not vary over time.

The company does not know d_{im} and z_{im}. This uncertainty disappears once it exports to the market. Both components are independently distributed and follow a normal distribution according to: $d_{im} \sim N(\bar{d}_m, v_{d_{im}})$ and $z_{im} \sim N(0, v_{z_{im}})$ respectively. A heterogeneous performance of exporters in market m relates with higher product appeal variance, $v_{z_{im}}$, and implies more uncertainty about the target market. We incorporate here a second difference with the reference model. Firms with less prior knowledge about market demand will have higher $v_{d_{im}}$, less experienced companies are supposed to have less prior knowledge and higher uncertainty than experienced ones. The learning implications of this higher uncertainty is that less experienced companies rely more on spillovers as we will show later.

In this context, expected demand depends on the number of competitors in the market,

[22] In the empirical section we consider that $n_{(m,t-1)}$ is a good approximation of $n_{(m,t)}$

median market-specific component and variance of expected market demand and product appeal across firms:

$$E(D_{im}) = e^{\left[\frac{k}{n_m} + \bar{d}_m + \frac{(v_{z_{im}} + v_{d_{im}})}{2}\right]} \tag{A3}$$

Our third difference with the reference model is that in our case sunk entry cost might vary according to previous experience of firms. Firms will export if expected profit is higher than the specific sunk cost for entering the market K^e_{im}; this condition determines the minimum productivity level, $\underline{\rho}^{(\sigma-1)}$, for entering the market:

$$\underline{\rho}^{(\sigma-1)} = \frac{K^e_{im}}{e^{\frac{k}{n_m}} e^{\left[\bar{d}_m + \frac{(v_{z_{im}} + v_{d_{im}})}{2}\right]}} \tag{A4}$$

Minimum productivity level increases with sunk cost and decreases with product appeal and market variance:

$$\frac{\partial \underline{\rho}^{(\sigma-1)}}{\partial K^e_{im}} > 0, \ \frac{\partial \underline{\rho}^{(\sigma-1)}}{\partial v_{z_{im}}} < 0, \ \frac{\partial \underline{\rho}^{(\sigma-1)}}{\partial v_{d_{im}}} < 0 \tag{A5}$$

The quantity that a firm chooses when exporting is expected revenue and $\sigma E[D_{im}]\rho^{\sigma-1}$ divided by its price, $p(\rho)$; that is a constant mark-up, $\frac{\sigma}{\sigma-1}$, over marginal cost, $\frac{c}{\rho}$.

$$x_{imt} = \frac{\sigma E[D_{im}]\rho^{\sigma-1}}{\frac{\sigma}{\sigma-1}\frac{c}{\rho}} \tag{A6}$$

Learning process

Firms learn from very close neighbours, cn, that export in t-1, cn_{t-1}, and infer the demand level according to the average export revenue of the companies exporting to a specific market and the productivity distribution where $\bar{d}^{nb}_{m,t-1}$ is the demand level of the market that the firm infers.

The learning process described in Fernandes and Tang (2014) and DeGroot (2004) shows that companies infer market demand from competitors and use it to revise prior estimations. The mean of the market specific component, $\bar{d}_m$, being $\bar{d}^{post}_{m,t}$ the mean of the posterior estimated demand

$$\bar{d}^{post}_{im,t} = E[d_{im,t}] = \delta_t \bar{d}^{nb}_{im,t-1} + (1-\delta_t)\bar{d}_{im} \tag{A7}$$

$0 \leq \delta_t \leq 1$ is the actualization parameter of previous belief. When $\delta_t = 1$ firm updates completely its prior estimate on its peer signal, $\bar{d}^{nb}_{m,t-1}$, when $\delta_t = 0$ firm does not update at all their prior demand estimate. There is no learning process.

With this framework $\delta_t = \frac{v_{d_{im}} cn_{m,t-1}}{v_{z_{im}} + v_{d_{im}} cn_{m,t-1}}$. Consequently, the weight, δ_t, the firm puts on the demand inferred from peers increases in the number of close peers and the variance on the market demand the firm has and decreases in the variance of the firm product appeal. For the purpose of this document we have an additional insight of previous analysis; the greater the variance that a firm has about market demand the more the company relies on information spillovers. Putting it in a different way; new firms without previous information about foreign markets will have a higher actualization parameter and an experienced firm a lower one.

The compound variance, $v_{z_{im,t-1}} + v_{d_{im,t-1}}$ is actualized according to $\frac{v_{z_{im,t-1}} v_{d_{im,t-1}}}{v_{z_{im}} + v_{d_{im,t-1}} cn_{m,t-1}}$. Variance increases in previous product appeal and market demand variance and decrease in the number of close peers. An increase in the number of close exporting firms or a reduction in the variance of product appeal and market demand reduces posterior variance which produces an increase in the weight that entrants put on the signal from peers. Better knowledge about foreign markets, i.e. a decrease in the variance, reduces the size of the actualization parameter and the signal is less relevant. This is the hypothesis tested in the empirical section. When sector and regions differ, product appeal will be more different across firms. This is an additional reason to think that firms from the same region and sector have more similar product appeal and consequently a higher actualization parameter. The empirical section relies on this idea although we test different options (only sectoral and only regional spillovers) in Appendix C.

Consequently, a firm will more probably enter a new foreign market when the expected demand increases in relation to its prior estimate, lowering the productivity threshold below its actual productivity level. In this context entry will more frequently occur when the actualization parameter, is higher: more close firms exporting, less knowledge about international markets and more similar product appeals across firms. That is, firms will enter a new market when the signal is more positive, less dispersed and has less uncertainty about the potential demand in the market. In the empirical section we prove that experienced exporter, with more information about international markets that reduce the market demand variance, will rely less on spillovers.

Initial sales (see equation A6) depend also on expected demand and behave similar to entry; initial sales are higher with the strength of the signal, in general with the number of companies revealing the signal and the interaction of both (the signal corresponds to more firms)[23].

[23] Fernandes and Tang (2014) point out that the net effect on initial sales of the number of exporters will depend on the relative strength of two effects. The first effect is how the number of exporters affects posterior demand, and the second one how the number of firms affect variance and precision of the signal. In general, the effect will be positive when product appeal is less disperse (more similar companies) and companies have previous international experience (low market variance), as we prove in our empirical section.

We can also obtain additional information about initial sales and the relative performance of experienced companies versus new in international market companies. The lower $v_{d_{im}}$ is, the lower δ and $\bar{d}_{m,t}^{post}$ are; firms with more experience will have lower initial sales. Lower entry cost (fixed and variables) for experienced companies help to explain this behaviour. Finally initial sales will be lower the higher the number of competitors from different regions or sectors is.

Firms will continue exporting to the new market as long as the operating profit is higher than exporting costs, K_m.

$$Pr[\pi^t(D_{im}, p) > K_{im}] = Pr[D_{im}\rho^{\sigma-1} > K_m] = Pr[e^{(d_m^* + z_{im})} D_{im}\rho^{\sigma-1} > K_{im}] \tag{A8}$$

Survival positively correlates with lower per period fixed costs and higher true demand and productivity. Once the company knows true demand it has no need to infer demand in the market and the spillover disappears. However, when a positive shock is observed, entry increases and consequently we will observe that, low productivity entrants will exit afterwards.

Once the firm enters the market it knows the true demand and its growth will be determined by the difference between observed demand and ex-ante estimation.

$$\triangle\, x_{im} = ln\left(\frac{x_{mt+1}}{x_{mt}}\right) \tag{A9}$$

Therefore, the growth rate will depend negatively on the previous expected demand level in t and will behave in the opposite direction than initial sales.

Accordingly, with what has been explained, we propose a model that focuses on differences across firms on their prior knowledge about the potential market, which reduces market demand variance. This model is built on Fernandes and Tang (2014) and is able to show how more information about the potential market previous to entry derives in: a more precise estimation of potential demand, a lower mistake rate, higher entry probability and higher initial volume of exports (leaving lees room for growth). The model shows that these effects will be lower in experienced companies. We also show, that competition from non-core firms reduces demand, other things being equal. With a lower estimated demand the entry probability and the initial sales will be lower while growth will not be affected.

Additional to Fernandes and Tang (2014) hypothesis [24] which state:

1. Firms will more probably enter a foreign market when more companies reveal a

[24] The model does not incorporate strategic or dynamic considerations.

positive signal about demand in the potential market, and more with the interaction of these two variables;

2. Initial exports to a new market will be higher with the strength of the signal when entry decision is taken, growth will be lower and survival is not affected;

   We additionally obtain from the model the following hypothesis that we check in Section 3:

3. Experienced companies will rely less on information spillovers.

4. Spillovers will be more evident the more similar the companies are, so they will be clearer at the regional and sectoral dimension than at both scopes independently.

Appendix B ANNEX Descriptive

Table A1: A. Descriptive relations

Prov.	Total	New	New Stable	New Occasional	Exports share
Barcelona	1.952.830	789.116	295.545	493.571	22,0%
Madrid	896.457	436.281	142.923	293.358	24,0%
Valencia	471.233	200.186	69.561	130.625	5,8%
Pontevedra	113.294	47.212	17.216	29.996	3,6%
Zaragoza	144.566	58.985	22.431	36.554	3,6%
Total	6.413.901	2.711.390	975.197	1.736.193	100%

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p¡0.01, ** p¡0.05, * p¡0.1

Appendix C ANNEX Additional estimations

Table A2: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	0.0125***	0.0229***	0.0286	0.3011***	-0.2179*	-0.2175	-0.0614***	-0.0382**
	[0.001]	[0.001]	[0.071]	[0.075]	[0.131]	[0.136]	[0.015]	[0.016]
Growth	0.0010**	0.0019*	0.0916	0.0660	-0.4221***	-0.4301	0.0315*	0.0144
	[0.000]	[0.001]	[0.083]	[0.179]	[0.156]	[0.332]	[0.017]	[0.041]
Ln(n)*Growth	0.0002**	0.0006**	0.0039	0.0337	0.0822**	0.0912	-0.0071*	-0.0048
	[0.000]	[0.000]	[0.019]	[0.040]	[0.034]	[0.067]	[0.004]	[0.009]
	Previous experience							
Ln(n)		-0.0126***		-0.3275***		-0.0021		-0.0278***
		[0.000]		[0.032]		[0.053]		[0.007]
Growth		-0.0010		0.0212		0.0146		0.0193
		[0.000]		[0.195]		[0.359]		[0.043]
Ln(n)*Growth		-0.0004		-0.0348		-0.0128		-0.0026
		[0.000]		[0.044]		[0.075]		[0.009]
Obs.	9,412,537	9,412,537	158,989	158,989	47,362	47,362	159,016	159,016
R^2	0.096	0.096	0.910	0.910	0.804	0.804	0.737	0.738

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Sectoral spillovers

Table A3: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	0.0094***	0.0206***	0.1315**	0.3679***	-0.1787	-0.1890*	-0.0277**	-0.0118
	[0.000]	[0.001]	[0.058]	[0.063]	[0.109]	[0.113]	[0.012]	[0.013]
Growth	0.0006**	0.0021***	0.0227	-0.1410	0.1218	0.5652*	-0.0138	0.0181
	[0.000]	[0.001]	[0.095]	[0.228]	[0.197]	[0.300]	[0.017]	[0.037]
Ln(n)*Growth	0.0003***	0.0007***	0.0285	0.0776	-0.0267	-0.0953	0.0068*	-0.0013
	[0.000]	[0.000]	[0.021]	[0.048]	[0.043]	[0.066]	[0.004]	[0.008]
	Previous experience							
Ln(n)		-0.0133***		-0.2861***		0.0058		-0.0192***
		[0.000]		[0.030]		[0.046]		[0.006]
Growth		-0.0016**		0.1995		-0.7374**		-0.0390
		[0.001]		[0.237]		[0.357]		[0.039]
Ln(n)*Growth		-0.0005**		-0.0601		0.1146		0.0099
		[0.000]		[0.050]		[0.079]		[0.009]
Obs.	9,412,498	9,412,498	158,626	158,626	47,056	47,056	158,653	158,653
R^2	0.099	0.100	0.915	0.915	0.816	0.816	0.750	0.750

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Regional-Sectoral spillovers Period 2010-2013

Table A4: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	-0.0066***	0.0043***	0.1719***	0.3796***	-0.3924***	-0.4006***	-0.0627***	-0.0531***
	[0.000]	[0.000]	[0.055]	[0.063]	[0.132]	[0.139]	[0.012]	[0.013]
Growth	0.0002***	0.0020***	0.2322***	0.3577***	-0.1627**	-0.1420	-0.0003	-0.0100
	[0.000]	[0.000]	[0.028]	[0.061]	[0.067]	[0.106]	[0.005]	[0.012]
Ln(n)*Growth	0.0004**	0.0001	-0.0200*	-0.0577***	0.0047	0.0194	0.0026	0.0043
	[0.000]	[0.000]	[0.011]	[0.022]	[0.025]	[0.040]	[0.002]	[0.004]
	Previous experience							
Ln(n)		-0.0132***		-0.2471***		0.0034		-0.0116
		[0.000]		[0.035]		[0.066]		[0.007]
Growth		-0.0022***		-0.1506**		-0.0347		0.0120
		[0.000]		[0.064]		[0.131]		[0.013]
Ln(n)*Growth		0.0003*		0.0460*		-0.0197		-0.0021
		[0.000]		[0.024]		[0.050]		[0.005]
Obs.	10,592,856	10,592,856	169,855	169,855	47,269	47,269	169,855	169,855
R^2	0.130	0.131	0.945	0.945	0.892	0.892	0.824	0.824

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Regional-Sectoral spillovers Manufacturing

Table A5: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	0.0042***	0.0138***	0.0856	0.3097***	-0.2635*	-0.2519	-0.0586***	-0.0369***
	[0.000]	[0.000]	[0.052]	[0.063]	[0.139]	[0.154]	[0.011]	[0.013]
Growth	0.0009***	0.0021***	0.1674***	0.1773**	-0.2944***	-0.1182	-0.0014	0.0020
	[0.000]	[0.000]	[0.032]	[0.080]	[0.089]	[0.159]	[0.007]	[0.017]
Ln(n)*Growth	0.0003***	0.0005***	0.0046	0.0251	0.0711**	0.0353	0.0038	-0.0057
	[0.000]	[0.000]	[0.013]	[0.031]	[0.032]	[0.057]	[0.003]	[0.007]
	Previous experience							
Ln(n)		-0.0114***		-0.2644***		-0.0089		-0.0255***
		[0.000]		[0.043]		[0.089]		[0.008]
Growth		-0.0014***		-0.0123		-0.2275		-0.0049
		[0.000]		[0.085]		[0.187]		[0.018]
Ln(n)*Growth		-0.0003**		-0.0249		0.0473		0.0117*
		[0.000]		[0.034]		[0.066]		[0.007]
Obs.	8,681,998	8,681,998	125,859	125,859	32,245	32,245	125,883	125,883
R^2	0.125	0.125	0.943	0.943	0.901	0.901	0.828	0.828

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Regional-Sectoral spillovers Small companies

Table A6: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	0.0143***	0.0411***	0.3302***	0.5412***	-0.2071	-0.1899	0.0264	0.0147
	[0.001]	[0.001]	[0.122]	[0.135]	[0.257]	[0.265]	[0.023]	[0.026]
Growth	0.0030***	0.0058***	0.2066***	0.2921***	-0.1047	0.0028	0.0243	0.0394**
	[0.000]	[0.001]	[0.073]	[0.105]	[0.123]	[0.122]	[0.015]	[0.020]
Ln(n)*Growth	0.0004**	0.0011**	0.0309	0.0353	-0.0179	0.0337	-0.0017	-0.0145*
	[0.000]	[0.000]	[0.028]	[0.043]	[0.048]	[0.058]	[0.005]	[0.007]
	Previous experience							
Ln(n)		-0.0341***		-0.3289***		-0.0300		0.0192
		[0.001]		[0.088]		[0.158]		[0.016]
Growth		-0.0036***		-0.1499		-0.2427		-0.0219
		[0.001]		[0.115]		[0.190]		[0.022]
Ln(n)*Growth		-0.0009		-0.0017		-0.0899		0.0193**
		[0.001]		[0.048]		[0.083]		[0.009]
Obs.	1,691,216	1,691,216	57,617	57,617	16,308	16,308	57,627	57,627
R^2	0.211	0.214	0.958	0.958	0.928	0.928	0.894	0.894

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Regional-Sectoral spillovers Small regions - no Madrid-Barcelona

Table A7: Entry, initial sales, growth and survival. New companies vs. experienced companies

	Entry		Initial sales		Growth		Survival	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(n)	0.0040***	0.0188***	0.2385***	0.4514***	-0.2742**	-0.2693**	-0.0384***	-0.0236
	[0.000]	[0.001]	[0.054]	[0.068]	[0.113]	[0.124]	[0.012]	[0.015]
Growth	0.0009***	0.0021***	0.2255***	0.2655***	-0.2326***	-0.0708	0.0108	0.0089
	[0.000]	[0.000]	[0.038]	[0.080]	[0.072]	[0.115]	[0.007]	[0.015]
Ln(n)*Growth	0.0011***	0.0021***	0.0058	0.0040	0.0835**	0.0055	0.0016	-0.0078
	[0.000]	[0.000]	[0.019]	[0.037]	[0.037]	[0.061]	[0.004]	[0.007]
	Previous experience							
Ln(n)		-0.0176***		-0.2580***		-0.0053		-0.0179*
		[0.001]		[0.050]		[0.088]		[0.011]
Growth		-0.0013***		-0.0488		-0.2177*		0.0014
		[0.000]		[0.080]		[0.131]		[0.016]
Ln(n)*Growth		-0.0013***		0.0019		0.1095*		0.0119
		[0.000]		[0.038]		[0.067]		[0.008]
Obs.	4,010,958	4,010,958	74,937	74,937	21,983	21,983	74,952	74,952
R^2	0.177	0.178	0.942	0.942	0.877	0.877	0.822	0.822

Source: Authors' calculations based on the Customs' database.

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

References

Albornoz, F., Pardo, H. F. C., Corcos, G., and Ornelas, E. (2012). Sequential exporting. *Journal of International Economics*, 88(1):17 – 31.

Beaudry, C. and Schiffauerova, A. (2009). Who's right, Marshall or Jacobs? the localization versus urbanization debate. *Research policy*, 38(2):318–337.

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2007). Firms in international trade. *The Journal of Economic Perspectives*, 21(3):195–130.

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2009). The margins of us trade. *American Economic Review*, 99(2):487–93.

Besedeš, T. and Prusa, T. J. (2006a). Ins, outs, and the duration of trade. *Canadian Journal of Economics/Revue canadienne d'conomique*, 39(1):266–295.

Besedeš, T. and Prusa, T. J. (2006b). Product differentiation and duration of us import trade. *Journal of International Economics*, 70(2):339 – 358.

Chaney, T. (2008). Distorted gravity: The intensive and extensive margins of international trade. *American Economic Review*, 98(4):1707–21.

Choquette, E. and Meinen, P. (2014). Export spillovers: Opening the black box. *The World Economy*, 38(12):1912–1946.

de Lucio, J., Herce, J. A., and Goicolea, A. (2002). The effects of externalities on productivity growth in Spanish industry. *Regional Science and Urban Economics*, 32(2):241 – 258.

de Lucio, J., Mínguez, R., Minondo, A., and Requena, F. (2011). The extensive and intensive margins of Spanish trade. *International Review of Applied Economics*, 25(5):615–631.

DeGroot, M. H. (2004). *Optimal Statistical Decisions*. Wiley Online Library.

Fernandes, A. P. and Tang, H. (2014). Learning to export from neighbors. *Journal of International Economics*, 94(1):67 – 84.

Freund, C. and Pierola, M. D. (2015). Export superstars. *Review of Economics and Statistics*, 97(5):1023–1032.

Glaeser, E. L., Kallal, H. D., Scheinkman, J. A., and Shleifer, A. (1992). Growth in cities. *Journal of Political Economy*, 100(6):1126–1152.

Greenaway, D. and Kneller, R. (2008). Exporting, productivity and agglomeration. *European Economic Review*, 52(5):919–939.

Kamal, F. and Sundaram, A. (2016). Buyer - seller relationships in international trade: Do your neighbors matter? *Journal of International Economics*, 102:128 – 140.

Koenig, P. (2009). Agglomeration and the export decisions of french firms. *Journal of Urban Economics*, 66(3):186 – 195.

Koenig, P., Mayneris, F., and Poncet, S. (2010). Local export spillovers in france. *European Economic Review*, 54(4):622–641.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, 71(6):1695–1725.

Moretti, E. (2011). Social learning and peer effects in consumption: Evidence from movie sales. *The Review of Economic Studies*, 78(1):356–393.

Requena, F. and Castillo, J. (2007). Information spillovers and the choice of export destination: A multinomial logit analysis of Spanish young SMEs. *Small Business Economics*, 28:69–86.

Ruhl, K. J. and Willis, J. L. (2017). New exporter dynamics. *International Economic Review*, 58(3):703–726.

Timoshenko, O. A. (2015). Product switching in a model of learning. *Journal of International Economics*, 95(2):233 – 249.