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FIRMS' SURVIVAL IN EXPORT MARKETS AND CREDIT CONSTRAINTS: DOES FOREIGN FINANCING MATTER? EVIDENCE FORM MICRO DATA ON ARGENTINE FIRMS

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Firms' Survival in Export Markets and Credit Constraints: Does Foreign Financing matter? Evidence form Micro Data on Argentine Firms^{*}

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Abstract

We study the importance of foreign financing for the survival of firms in export markets. We base our analysis on a panel of Argentine firms that became exporters between 2003 and 2009, which incorporates valuable information on their access to foreign financing as well as on their performance in export markets. We conduct survival analysis to study the incidence of foreign financing on the permanence of firms in export markets. Access to foreign financing increases the probability of firms to survive in export markets. Diversifying exports in terms of destinations also makes more likely for firms to remain in export markets.

Estudiamos la importancia del financiamiento externo para la supervivencia de las firmas en los mercados externos. Utilizamos un panel de firmas argentinas que comenzaron a exportar entre 2003 y 2009 con valiosa información sobre el acceso de las firmas al financiamiento externo y su desempeño exportador. Utilizamos modelos de duración para estudiar la incidencia del financiamiento externo en

^{*}The opinions expresed here are of the authors and do not necessarily represent those of the BCRA or the CEMLA.

la permanencia de las firmas en los mercados de exportación. El acceso al financiamiento aumenta la probabilidad de supervivencia de las firmas. La diversificación en términos de destinos de exportación hace más probable su permanencia en los mercados externos.

JEL Classification codes: F10, F13, G20, G28 Keywords: Credit constraints, bank credit, international trade

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1 Introduction

The sharp contraction of trade that followed the dramatic tightening of credit conditions in international financial markets after the global financial crisis, made evident the key role of financing for international trade. Given the importance of trade for economic development, having a better understanding of the ways in which access to financing affects the entrance and permanence of firms in export markets becomes crucial.¹ How is it that exporters get access to international markets financing for trade finance and how important is it for their survival in export markets? We will address this questions making use of a unique data base that provides us with detailed information on the access to foreign financing of exporters in Argentina over the period 2003-2009.

The new trade literature focused the attention on firms' heterogeneity in productivity to explain their entrance in export markets, mainly under the framework of the models developed by Melitz (2003), Helpman et al. (2004) and Bernard, Eaton et al. (2003), among others. A more recent strand of literature has emphasized the importance of credit constraints for the performance of firms in export markets. While the models developed by Chaney, 2005 and Manova, 2012 gave theoretical support to this intuition, papers by Muûls, 2008; Manova et al., 2011; Minetti and Zhu, 2011, among others, provided empirical evidence in this regard at the firm level. A related question is how important is financing in international markets for the survival of firms in export markets and in particular, how do firms get access to foreign financing to afford the capital investments required to remain in export markets and eventually expand their activity in them.² We explore here two possible explanations: (i) A signalling argument in which export performance can reveal exporters type and thus be informative for creditors about their ability to repay their debt³ and (ii) a *network* explanation in the sense that once firms enter certain markets, they develop close links within them and become well known, what helps firms to ease the asymmetric information problems that can restrict their access to external financing.

In this first approach to the data on foreign financing and trade we focus

¹See in this respect Amiti and Weinstein (2009), Eaton et al. (2011), Chor and Manova (2012) and Contessi and Nicola (2012), among others.

 $^{^{2}}$ For a first approach to the financing patterns of Argentine exporters see Castagnino, D'Amato and Sangiácomo (2013).

³As suggested by Campa and Shaver 2002 and Bridges and Guariglia, 2008.

on answering a first set of questions that we hope will contribute to improve our knowledge of the patterns in international financing for trade: (i) How do firms get access to foreign financing?; (ii) Do they need have any previous record in export markets?; (iii) Is matching between exports destination and origin of foreign financing a relevant feature in the data? and (iv) Does foreign financing have any incidence in firms survival in export markets?

To this end we study the dynamics of exports and its relationship with the access to foreign financing in Argentina over the period 2003-2009, which is particularly interesting for two main reasons. First, the sharp devaluation of the Argentine peso in January 2002 led to substantial real exchange depreciation, facilitating the entrance of starters in export markets.⁴ Second, the period includes 2009, a year in which both trade and financing contracted severely in the world economy. Those two exogenous events with important repercussion on trade can help to disentangle the links between foreign financing and trade.

The paper is organized as follows: In section 2 we approach to the data trough descriptive analysis, in section 3 we present some econometric results on firms' survival in export markets while section 4 concludes.

2 A first glance to exporters performance and international financing

In this section we provide a first glance to the data on export records and foreign financing at the firm level by means of descriptive analysis.

Our data set comprises 8,958 manufacturing firms that exported for at least one spell of two years between 2003 and 2009. That is, we exclude from the sample those firms that were just occasional exporters, not being able to export for at least two consecutive years. Firms are represented in the sample for their largest spell. As can be seen from Table 1, more than half of the firms in our sample (57%) were already exporters in 2003 or began to export in that year but, as it is the first year of the sample we cannot distinguish between this two cases. Almost half of them (43%) started to export within the sample period.

 $^{{}^{4}}$ See in this respect Blalock et al. (2008).

Condition	Number of firms	%
Already exporters in 2003	5,110	57.0
Starters	3,848	43.0
	8,958	

 Table 1. Sample composition.

A first question we want to answer considering the whole sample is if firms having access to foreign financing exhibit a better performance relative to those that did not get any international financing. For this we split the sample into two groups, according to whether firms do have access to foreign financing or not. We look at firms' export records in several dimensions: (i) their permanence in export markets (ii) how diversified their exports are in terms of country of destination (iii) how differently their performance evolved and (iv) to what extent they are able to enter markets that are more quality demanding.

In Tables 2 to 4 we compare the two groups. The evidence indicates that firms receiving foreign financing: i) Remain for a longer period as exporters (Table 2); ii) are more diversified in terms of exports destinations (Table 3); iii) tend to increase the number of markets they export to more rapidly (Table 3) and (iv) have and advantage in terms of their ability to serve high quality demanding markets (Table 4). In fact 10% of the firms have external financing and are mainly exporters to developed markets whereas 7.8% of firms do not have access to foreign financing and have developed countries as their main destination markets.

	Mean of spell
Without foreign debt	3.9
With foreign debt	5.6

 Table 2. Mean of spell.

Year of exporting	Without foreign debt	With foreign debt
1	0.855	0.672
2	0.830	0.636
3	0.785	0.594
4	0.753	0.565
5	0.732	0.537
6	0.693	0.524
7	0.669	0.523

Table 3. Mean Herfindahl-Hirschman Index of exports destination.

 Table 4. Main destination of exports.

	Without foreign debt	With foreign debt	Total
Non-developed Developed	31.6 7.8	50.5 10.0	82.2 17.8
Total	39.5	60.5	100

Focusing on starters, that will be our group of interest when we conduct survival analysis, because we can track their initial conditions in terms of access to financing and other firms' characteristics, we see in Table 5 that those starters that receive financing from international financial are able to diversified more their exports destination and do it more rapidly.

Year of exporting	Without foreign debt	With foreign debt
1	0.890	0.836
2	0.853	0.776
3	0.813	0.729
4	0.783	0.695
5	0.789	0.657
6	0.764	0.678

Table 5. Mean Herfindahl-Hirschman Index of exports destination for
starters.

In Table 6 we see that the extensive margin is a relevant dimension for the expansion of firms in international markets. Firms that exhibit a positive cumulative rate of growth in their export values are more diversified in terms of their exports destinations and they systematically increase the number of markets they serve throughout their export spell.

Year of exporting	Negative cumulative rate of change in exports value	Positive cumulative rate of change in exports value
1	0.748	0.741
2	0.755	0.689
3	0.711	0.629
4	0.679	0.590
5	0.643	0.559
6	0.643	0.526
7	0.655	0.512

Table 6. Mean Herfindahl-Hirschman Index of exports

2.1 Origin of financing and matching

A second issue to explore is how firms obtain financing. In this regard, we suggest two potential explanations: On the one hand, it could be that once firms enter certain markets the establish links within them, become well known and are able to get financing there, eventually from their clients. We refer to this as the *network* explanation. On the other hand the *signalling* explanation suggests that by being able to diversify destinations and reach more developed economies markets, firms reveal their type, in terms of productivity. This in fact, helps them to get financing from international financial markets, because they are perceived as safer borrowers in terms their ability to repay their debt.

Table 7 shows that 69% of the starters did not have any initial foreign financing. Of those, only a relatively small percentage, 20%, were able to gain access to foreign financing after entering export markets. A high percentage of them, according to Table 8, got foreign financing it their earlier years of exporting (86% in at least their third year as exporter). Then, its seems that, at least from this first descriptive approach to the data, entering export markets predominantly precedes the access to foreign financing, but it also appears that those firms that get foreign financing mostly do it in their first years of exporting.

Starters	Number of firms	%
With initial foreign financing Without initial foreign financing	1,203 2,645	31.3 68.7
Of which: got financing onwards	539	20.4

 Table 7. Starters by initial foreign financing condition

Year in which the firm got foreign financing	%
2	57.1
3	28.8
4	9.5

4.6

5

 Table 8. Year obtaining foreign financing

Similarly to the finding for the whole sample of exporters, in Table 9 we see that non-developed countries are the main destination of exports (83% of total) for those firms accessing to foreign financing. At the same time, Table 9 shows that foreign financing distributes quite evenly between developed and non-developed countries as source of funding. Regarding the matching between destination of exports and origin of financing, we see that most of the financing for firms that primarily export to developed countries originates in these countries. At the same time, financing for firms whose main destination are non-developed countries mainly comes from this group of countries.

Tab	le 9.	Matching	between	export	destination	and	source	of	financing ((%	5)
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	Financing			
		Non-developed	Developed	Total
Exports	Non-developed Developed	50.1 4.2	33.4 12.3	83.5 16.5
	Total	54.3	45.7	100

Looking more closely to the issue of matching between exports destinations and origin of financing, in Table 10 we show the evolution of the mean percentage of matching at the country level for the firms that were already exporters in 2003 and for starters. The percentage of matching of the firms already established in export markets in 2003 is clearly higher than that of starters and it increases throughout the export spell. Surprisingly the matching of starters decreases. The severe reduction observed in the 7th year for firms already in the market and 6th year for starters can be related to the sharp decline in exports and financing provoked by the global financial crisis in 2009 (because only in that case we can be sure that the year of exporting coincides with this calendar year).

Year of exporting	Already exporters in 2003	Starters
1	20.8	13.7
2	23.9	13.2
3	25.6	12.7
4	24.1	12.2
5	23.8	9.6
6	24.6	2.4
7	4.4	

Table 10. Matching between export destination and source of financing atthe country level (%)

3 Survival in export markets and foreign financing

In this section we focus on the survival of firms in export markets. To mitigate the left censoring problem we concentrate on firms that started to export within the sample period. Remember that we are studying the longer spell of each firm within the sample period. This leaves us with the possibility of having some firms classified as starters that had a previous exporting experience (i.e. a firm that exported in 2003, then stopped exporting for two years and, finally, returned with a spell of three years). We exclude those cases in this analysis, what leaves us with a set of 3,019 firms. We first characterize the patterns in duration depending on firms having or not access to foreign financing. In Figure 1 we present estimates of the Kaplan-Meier survival function for the two groups of starters in our sample. Firms' survival in export markets increases with their access to foreign finance (the survival function is higher for firms with access to financing). Note also the differences in dynamics: notably, the probability of survival of a firm without access to foreign finance decreases more rapidly than that of firms in the other group.





Second, we provide some preliminary evidence on the incidence of access to foreign financing on the probability of firms' survival in export markets, after controlling for indicators of performance that are supposed to be relevant for their permanence in export markets: their ability (i) to reach more quality demanding markets and (ii) to diversify their exports in terms of destinations.

We estimate a Cox (1972) proportional hazard model in which the baseline hazard function is multiplicatively shifted by the covariates. According to it:

$$h(t/\mathbf{x}_j) = h_0(t) \exp(\mathbf{x}_j \boldsymbol{\beta}_x)$$

Were h_0 is the baseline hazard, \mathbf{x}_j , a vector of covariates and $\boldsymbol{\beta}_x$ a vector of coefficients to be estimated from the data. The model does no make any assumption on the shape of the hazard over time.

In this first preliminary set of estimations we focus on the importance of access to financing for firms' survival. Thus, the estimations include a dummy variable that takes the value of 1 if the firm receives foreign financing and zero otherwise. We also include as covariates two measures of firms' export performance: a dummy that takes the value of 1 if the firm mainly exports to developed countries and zero otherwise, as well as the HHI index as a measure of concentration of exports in terms of export values. All regressions also include industry dummies variables.

From Table 11 we see that for the three specifications, access to foreign financing significantly decreases the hazard rate. Consistently with what we found in the descriptive analysis in Section 2, being a firm that mainly exports to developed countries increases the probability of exit from export markets. Although this results could appear as counter-intuitive, it can also be interpreted as an indication that the permanence in developed countries is a difficult task for firms, particularly if they are starters. Finally, being less diversified in terms of export destinations significantly decreases the probability of remaining in export markets.

Although very preliminary, this first results suggest that the access to international markets financing plays a role in explaining the permanence of firms in export markets.

Explanatory Variables	(1)	(2)	(3)
Dummy foreign financing	0.584*** [0.0348]	0.577*** [0.0344]	0.716*** [0.0435]
Dummy export to developed country		1.458*** [0.1040]	1.469*** [0.1042]
HHI exports			19.55*** [3.8381]
Observations	3,019	3,019	3,019

 Table 11. Cox model estimation results: Hazard rates.

*** Significant at 1%, ** at 5%, * at 10%.

Standard errors in brackets.

4 Conclusions

In his paper we focus on the importance of access to international markets financing for exporting firms Given the investment required for firms to enter new destinations or to increase the variety of products they export, having access to foreign financing can be important for their survival in export markets, particularly in the presence of credit constraints, which is usually the case in developing countries, whose financial systems are in general underdeveloped. Focusing on a set of exporting firms over the period 2003-2009 in Argentina , we find that access to financing contributes to the permanence of firms in export markets, as well as diversification in terms of export destination. We also find that exporting to markets that are quality demanding is a difficult task for starters in the exporting activity.

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