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Are Venture Capital SMEs more likely to start exporting?

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1. Introduction

Exporting is one of the most complex strategies a firm can undertake, though it is increasingly needed in integrated markets. Small- and medium- sized enterprises (SMEs) are often owned by families or by single owners who are less inclined to export as they usually lack relevant resources, such as managerial skills and capital, to enter the foreign arena. On the contrary, venture capitalists and business angels (hereinafter, VCBA) can provide capital, knowledge, goals, and values to foster small firms' internationalization. Their funding may represent a needed source of finance to overcome initial exporting costs, which together with managerial support might facilitate firms' change in governance, performance, business networks and growth (Martí *et al.* 2013; Paul *et al.* 2017).

While there is ample evidence on the importance of venture capital in enabling firms to carry out ambitious business plans (Da Rin et al. 2011), the literature that addresses the interplay between corporate structure and exports is scant. The few studies focus on the effect of family or corporate ownership on firms' internationalization strategy. For example, Fernández and Nieto (2005) show the presence of a negative link between family ownership and both the extensive and intensive margins of exports. Such a relationship becomes positive only when other companies participate in a family firm's capital (Fernández and Nieto 2006). These authors open the gate for our investigation trajectory as they stress that venture capital firms operating as blockholders may foster rapid internationalization. This claim is strengthened by Zahra et al. (2007) who concentrate on the effect of ownership on the knowledge-based resources for the internationalization of US SMEs. They find a positive association between both the equity held by top management members and venture capitalists on the one hand, and the development of the required tools to internationalize on the other. Despite these results, they do not explicitly address if and to what extent SMEs backed by venture capitalists operate in foreign markets. We fill this gap by investigating whether there is a relationship between VCBA ownership and the likelihood for European SMEs to become exporters. Finally, while some authors analyse the linkage between venture capital and export intensity (Lockett et al. 2008; Smolarski and Kut 2011), we focus on the self-selection hypothesis by looking at the change in status from non-exporter to exporter. Hence, we unfold our research hypothesis as follows:

H: SMEs owned by VCBA face a higher probability of changing the status from non-exporter to exporter, compared to other types of ownership.

To perform this test we employ data drawn from the European Central Bank (ECB) Survey on the Access to Finance of Enterprises (SAFE). To the best of our knowledge, SAFE is the only harmonized and homogeneous dataset that allows us to investigate our research hypothesis for a large set of European countries.

Our contribution to the literature is threefold. First, we extend the meagre empirical evidence on venture capital and firms' export engagement by shedding light on the effect that VCBA ownership may exert on the probability, for the same firm, to change the status from non-exporter to exporter. Second, we are the first to address European SMEs' export decision by exploiting the panel dimension of SAFE. Third, we investigate the export-enhancement effect of other relevant variables that characterize European SMEs, as advocated by Zahra *et al.* (2007). We find firms' trade internationalization benefits from innovation, efficiency, and a favorable business climate, in line with a well-established literature (Commander and Svejnar 2011; Love and Roper 2015; Beverelli *et al.* 2017).

The rest of the paper is organized as follows. Section 2 illustrates the data and the methodology. Section 3 discusses the empirical results. Section 4 concludes.

2. Data, model and empirical strategy

SAFE is conducted every six months (*wave*) since 2009. Starting from April 2014 (the eleventh wave), this survey also supplies information on firms' export status. We restrict our analysis to the period where information on our variables is present over time, namely from the eleventh to the fifteenth wave. Using the same criterion, we select those countries for which the related firms' data are available across the waves.¹

To test our hypothesis, we need to exploit the panel structure of our dataset, which enables us to keep track of changes in the firm-level export status. To this end, we first generate the variable $Exporter_{it}$, which is equal to one if the firm i at time (wave) t exports, and zero otherwise. Then, by using the first difference of this variable ($Exporter_{it} - Exporter_{it-1}$), we consider a firm as new exporter if this difference is equal to one, i.e. when the firm i declares to be exporting at time t and non-exporting at time t-1. We exclude from the sample firms that stop to export, for which the difference is equal to -1, and those that are always exporting. Thus, our dependent variable $Export\ Starter_{it}$ is a dummy equal to one if the firm is a new exporter, and equal to zero when the firm declares to have never exported.

To study the probability of the *i*-th firm to become an exporter *versus* non-exporters, we propose the following model:

$$\text{Pr}(\textit{Export Starter}_{it}) = \\ = F(\alpha_1 \textit{VCBA}_{it} + \sum_{m=2}^{5} \alpha_m \textit{Ownership}_{mit} + \beta \textit{Innovation}_{it} + \sum_{k=1}^{4} \gamma_k \textit{Performance}_{kit} + \\ + \sum_{r=1}^{9} \delta_r Z_{rit} + \sum_{s=1}^{29} \theta_s \textit{M}_{sjt})$$
 (1)

where i indicates the firm, j the country, and t the time.

To explain the likelihood to start exporting, we employ $VCBA_{it}$, a dummy equal to one if the firm declares to be owned by VCBA, and zero otherwise. A positive parameter α_1 provides support to our research hypothesis H.

Additionally, we use four sets of firm-varying covariates.

- a) $Ownership_{mit}$ accounts for the remaining ownership types (m ranges from 2 to 5), i.e. Family, Business association, Public company and Others.²
- b) *Innovation*_{it} is a dummy equal to one if the firm declares to have undertaken product, process and/or organizational innovation, and zero otherwise.³
- c) $Performance_{kit}$ accounts for firm's perceived change in market conditions and efficiency in the last sixth months. To proxy firm's performance, we rely on the following four indicators (k ranges between 1 and 4). Problem of $competition_{it}$ is a dummy equal to one if the firm reports that the "problem of competition" either due to external market conditions or an internal loss in firm efficiency has become more relevant, and zero otherwise. Growth up_{it} is a dummy equal to one if the firm declares that the number of its employees has increased, and zero otherwise. Relevant cost of $production_{it}$ is a dummy equal

¹ Our sample includes Austria, Belgium, Bulgaria, Czech Republic, Croatia, Denmark, Estonia, France, Finland, Germany, Greece, Italy, Ireland, Hungary, Lithuania, Luxemburg, Latvia, Malta, Poland, Portugal, Romania, Slovenia, Spain, Sweden, the Netherlands, and the UK.

² The controlling group is Single owner firms.

³ The information on this variable (Q1 in the survey) is provided by SAFE every second wave, and refers to the previous 12 months, i.e. two waves.

to one if the company states that the cost of production turned into a major obstacle, and zero otherwise. *Profit up*_{it} is a dummy equal to one if the firm declares that its profit has increased, and zero otherwise.

d) Z_{rit} identifies the r-th standard firm control (r ranges from 1 to 9), i.e. Size ($Micro_{it}$, $Small_{it}$ and $Medium_{it}$), Age ($Very\ recent_{it}$, $Recent_{it}$ and Old_{it}), and Sector ($Industry_{it}$, $Construction_{it}$ and $Trade_{it}$).⁴

Finally, M_{sjt} includes the s-th firm-invariant control (s ranges from 1 to 29), i.e. country and wave dummies, which account for country and time heterogeneity, as well as Distance to frontier_{jt}. The latter is retrieved from the Doing Business of the World Bank and measures the distance of each economy to the frontier, which represents the best performance (i.e. the efficiency in institutions, regulations, and public sector activity) at any point in time.⁵ This is now a standard score of the general context for business activity (Besley 2015), and is used in our framework as a proxy for the effect of the institutional and regulatory context at the country-level.

All the controls at the firm- and country-level should limit potential endogeneity problems which may arise from the data.⁶

Summary statistics of our variables are displayed in Table I. As for our dependent variable, *Export Starter*_{it}, we rely on 12,576 firm-level observations throughout the period of our investigation. The new exporters are 1,467 - for which the dummy *Export Starter*_{it} is equal to one - and the non-exporters are 11,109 - for which the dummy is equal to zero. As displayed in Table I the new exporters account for about 12% of our sample.

As far as the types of ownership are concerned, Table I shows that, as expected, VCBA represent only a tiny share of SMEs we are looking at, while Family and Single owner firms are the largest groups in our sample. This comes not as a surprise when considering the specific features of our SMEs. For instance, we observe that micro-sized units account for almost half of the sample and most of the companies are classified as Very old.

Turning our attention to the sector composition, we notice that Services (the control group) is the largest sector, followed by Trade, Construction and Industry. As for the performance indicators, competition and costs of production represent the major problems for more than half of the sample. Interestingly enough, at least one type of innovation (product, process, and organizational) has been undertaken in about 50% of the cases. Finally, the mean value of the score *Distance to frontier*_{jt} (75.4) indicates that a large number of countries is not far from the best performer in our sample.

⁴ *Micro_{it}*, *Small_{it}*, *Medium_{it}* are dummies equal to one if the firm has less than 9, between 10 and 49, and between 50 and 249 employees, respectively, and zero otherwise. *Very recent_{it}*, *Recent_{it}*, and *Old_{it}* are dummies equal to one if the firm is less than 2 years, between 2 and 5 years, and between 5 and 10 years old, respectively, and zero otherwise. As for the industry composition, the SMEs in the sample operate in the four largest economic sectors at 1 digit level of the NACE classification, i.e. *Industry_{it}* (which includes manufacturing, mining and electricity, gas and water supply), *Construction_{it}*, *Trade_{it}*, and *Services_{it}*. The controlling groups for Size, Age, and Sector are *Large_{it}*, *Very old_{it}* and *Services_{it}*, respectively.

⁵ Distance to frontier_{jt} takes values between 0 and 100, where 0 represents the lowest performance and 100 represents the frontier.

⁶ We are aware that omitted variables that affect the decision to export, the type of ownership, and the choice to innovate could lead to spurious correlations. We address this concern later on.

Table I. Descriptive statistics

VARIABLES	Obs.	Mean	Std. Dev.	Min	p1	p99	Max
		0.44=					
Export Starter	12,576	0.117	0.321	0	0	1	1
Ownership							
VCBA	12,576	0.004	0.061	0	0	0	1
Family	12,576	0.450	0.498	0	0	1	1
Business association	12,576	0.094	0.292	0	0	1	1
Public company	12,576	0.015	0.123	0	0	1	1
Other ownership	12,576	0.038	0.191	0	0	1	1
Innovation ^a	10,150	0.516	0.500	0	0	1	1
Performance							
Problem of competition	12,576	0.624	0.484	0	0	1	1
Growth up	12,576	0.219	0.414	0	0	1	1
Relevant cost of production	12,576	0.654	0.476	0	0	1	1
Profit up	12,576	0.290	0.454	0	0	1	1
Distance to frontier	12,576	75.410	4.077	62.520	63.350	84.690	84.850
Size							
Micro	12,576	0.487	0.500	0	0	1	1
Small	12,576	0.281	0.450	0	0	1	1
Medium	12,576	0.177	0.381	0	0	1	1
Age							
Very recent	12,576	0.010	0.101	0	0	1	1
Recent	12,576	0.048	0.215	0	0	1	1
Old	12,576	0.128	0.334	0	0	1	1
Sector							
Industry	12,576	0.114	0.318	0	0	1	1
Construction	12,576	0.157	0.363	0	0	1	1
Trade	12,576	0.286	0.452	0	0	1	1

Source: ECB SAFE (waves 11-15).

Given the features of the dataset, our empirical strategy unfolds as follows. First, we estimate equation (1) using a panel probit approach. Second, to corroborate our results, we employ a linear probability model (LPM) as in Benmelech *et al.* (2017). Third, we use the Arellano-Bond system generalized method of moments (SYS-GMM) to tackle potential endogeneity stemming from unobserved heterogeneity, simultaneity, and a dynamic relation between the change in the status from non-exporter to exporter and all the other independent covariates (Roodman 2009; Wintoki *et al.* 2012).

3. Empirical Results

In Table II, Columns 1-4 report the margins of the random effects panel probit specifications, Column 5 displays the outcome of a panel LPM, and Column 6 the SYS-GMM estimates.

^a Note that the number of observations for Innovation drops to 10,150 due to missing data. p1 and p99 are the 1^{st} and the 99^{th} percentiles, respectively.

To test our hypothesis H we rely on the coefficient of *VCBA_{it}*. Specifically, in Column 1, we display the marginal effects of the panel probit estimates, where VCBA are compared to all the other types of ownership. In Columns 2-4 VCBA are measured against the omitted group, i.e. single owner enterprises. Results show that, in all specifications (Columns 1-4), VCBA are about 9% more likely to change their status from non-exporter to exporter when compared either to all other types of ownership or to the single owner only. Noticeably, none of the types of ownership different from VCBA exerts a significant effect on the probability to become an exporter compared to the omitted group. Our results are strongly significant and stable across the different specifications, which also vary for the progressive inclusion of all other regressors.⁷

This finding not only supports our hypothesis H, by asserting that a more innovative and dynamic form of ownership might reduce the barriers to entry into foreign markets, but it also provides fresh and new evidence on the linkage between trade internationalization and firms' ownership (Zahra *et al.* 2007; Paul *et al.* 2017), and between venture capitalism and export engagement (Lockett *et al.* 2008; Smolarski and Kut 2011).

As for the other firm-varying controls, we observe the following evidence. First, consistently with our expectations, the marginal effects of the variable *Innovationit* always exhibit a positive and strongly significant sign. This indicates that firms, which declared to have embarked in product, process and/or organizational innovation, face a higher likelihood (about 3%) to start exporting. Our evidence is consistent with the literature on the linkage between innovation and exports (Becker and Egger 2013).

Second, the negative and significant sign of *Problem of competition*_{it} indicates that firms reporting a decrease in efficiency face a smaller likelihood to become an exporter. Third, SMEs that experienced growth, measured by an increased number of employees, are more likely to begin to export. Surprisingly, the dummies *Profit up*_{it} and *Relevant cost of production*_{it} are never significant across specifications.

All in all, the positive effect exerted by innovation and some measures of performance on the *self-selection* hypothesis enriches the picture provided by Cassiman and Golovko (2011), who point to an interplay between innovation, productivity and trade internationalization.

As for the firm-invariant controls, some interesting insights emerge from our analysis. As expected, we observe that companies located in countries where *Distance to frontier_{jt}* displays a greater score (which means a smaller gap between the economy's performance and the frontier) enjoy a higher likelihood to become newly exporting enterprises. This evidence is consistent with the literature that emphasizes how a friendly business environment enhances production and marketing activities both domestically and abroad (Commander and Svejnar 2011; Besley 2015).

Our findings are not only robust across different specifications (Columns 1-4), but they are also consistent with the estimates from the panel LPM (Column 5) and corroborated after addressing endogeneity via a SYS-GMM (Column 6). Admittedly, given the limited number of firm-wave observations, some caution is required in the interpretation of the SYS-GMM diagnostics.⁸

⁷ To assess the robustness of our findings we performed some additional checks. Specifically, to alleviate the potential concerns that our results might be affected by the choice of the omitted ownership group, we reestimated all specifications of model (1) by omitting in turn all the remaining types of ownership, instead of the Single owner. Results - not reported here for the sake of brevity - confirm our findings and are available upon request.

 $^{^8}$ The AR(2) test rules out serial correlation. We pay little attention to the Sargan J test since it tends to over-reject the null hypothesis of instrument validity in sample like ours (Benito 2005).

Table II. The effect of VCBA SMEs on the probability to become an exporter

VARIABLES	$Pr(Export\ Starter_{it})$									
	(1)	(2)	(3)	(4)	(5)	(6)				
		Probit - marginal effects			LPM	SYS-GMM ^a				
$VCBA_{it}$	0.096***	0.093***	0.101***	0.099***	0.156***	0.321**				
	(0.027)	(0.027)	(0.026)	(0.026)	(0.045)	(0.166)				
Family _{it}		-0.006	-0.005	-0.005	-0.003	0.009				
		(0.004)	(0.004)	(0.004)	(0.005)	(0.062)				
Business association _{it}		-0.003	0.002	0.001	0.000	0.107				
		(0.009)	(0.008)	(0.009)	(0.010)	(0.077)				
Public company _{it}		0.010	-0.015	-0.013	-0.021	0.262				
		(0.020)	(0.022)	(0.022)	(0.029)	(0.174)				
Other ownership _{it}		-0.006	0.005	0.004	0.015	0.053				
		(0.012)	(0.011)	(0.011)	(0.015)	(0.137)				
Innovation _{it}			0.034***	0.033***	0.036***	0.178***				
			(0.006)	(0.007)	(0.007)	(0.047)				
Problem of competition _{it}				-0.012*	-0.014**	-0.813***				
				(0.007)	(0.007)	(0.177)				
Growth upit				0.020***	0.023***	0.706***				
				(0.006)	(0.008)	(0.175)				
Relevant cost of productionit				-0.007	-0.005	0.180				
				(0.008)	(0.008)	(0.164)				
Profit upit				0.007	0.006	-0.120				
				(0.006)	(0.007)	(0.166)				
Distance to frontier _{jt}	0.011***	0.011***	0.011***	0.011***	0.010***	0.070**				
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.032)				
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes				
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes				
Size dummies	Yes	Yes	Yes	Yes	Yes	Yes				
Age dummies	Yes	Yes	Yes	Yes	Yes	Yes				
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes				
Observations	12,576	12,576	10,150	10,150	10,150	10,150				
Number of firms	8,500	8,500	6,865	6,865	6,865	6,865				
Sargan (p-value)						0.000				
AR(1) p-value						0.000				
AR(2) p-value						0.349				

^{***, **, *} indicate significance at the 1%, 5% and 10% level, respectively. Robust standard errors are reported in parentheses.

Note that the number of observations in Columns 3-6 drops to 10,150 due to missing data on the variable *Innovationii*.

4. Conclusions

Export decision is the final outcome of a variety of factors as new exporters face significant sunk entry costs. They need information on foreign markets, *ad hoc* financing to develop new products or adapt old ones to different tastes. We find that European SMEs have a higher probability to start exporting if they are owned by VCBA. As they might have more updated corporate strategies, and better credit mediation, VCBA are more prone to create business networks and provide the capabilities to compete in the international arena (OECD 2015).

We also find a positive link between the probability to become a new exporter and innovation. This result fits with the literature on the virtuous circle between knowledge, new

^a All independent variables are assumed to be endogenous, exception made for standard firm controls and firm-invariant covariates.

products and performance (Guarascio *et al.* 2016). Finally, better institutions, business regulations, and a higher quality of public administration enhance the probability to start exporting. These topics are on the agenda of the European policy makers as a part of the strategies aimed at boosting growth and employment (European Commission 2017).

Our findings support the notion that ownership structure is an important determinant of firms' internationalization. Hence, even in more traditional ownership structures, the inclusion of investors providing fresh capital, innovative governance, and know-how could ease firms' entry into foreign markets.

Due to the limitation of our survey-based analysis, i.e. the lack of balance sheet information, and the short number of waves, further inquiry is needed to extend our investigation. Yet, this is beyond the scope of this study and it remains a matter for future research.

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