



## Export Intensity and Leverage: An Empirical Analysis of Spanish SMEs

David K. Chalmers<sup>1</sup>, Marco Della Porta<sup>2</sup>, Luca Sensini<sup>3\*</sup>

<sup>1</sup>School of Strategy and Business, UT Toronto, Canada, <sup>2</sup>BeLab, Business Economics Laboratory, Barcelona, Spain, <sup>3</sup>Department of Management and Innovation Systems, University of Salerno, Italy. \*Email: [lsensini@unisa.it](mailto:lsensini@unisa.it)

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### ABSTRACT

The aim of this study was to contribute to the literature debate on financial behavior and corporate capital structure by focusing on two aspects. First of all, we analyzed how the intensity of exports and therefore the percentage weight of foreign sales compared to total sales affect the leverage of companies. Secondly, we have analyzed which are the most significant factors influencing the financial behavior of SMEs. The financial information for the analysis were collected from the Sabi database of Bureau Van Dijk (BVD). To select the companies to be included in the sample, we followed a methodology capable of ensuring that the sample of export oriented and non-export oriented companies was adequately represented. The overall sample size was 2000 companies. The analysis showed that export intensity has a negative and significant impact on leverage, suggesting that as exports increase, leverage decreases. In addition, profitability and business risk are negatively related to leverage, while the tangibility of the assets and growth correlates positively with leverage.

**Keywords:** Export intensity, Leverage, profitability, Spanish SMEs

**JEL Classifications:** G32, M16, M21

### 1. INTRODUCTION

Over the past few years, research into financial behavior and determinants of the capital structure of SMEs has been the subject of growing debate. This circumstance was also favored by the recognition that the empirical results obtained from the analysis of large enterprises (Aggarwal, 1981; Harris and Raviv, 1991; Rajan and Zingales, 1995; Chakraborty, 2010) could not be generalized also for the SMEs (Berger and Udell, 1998; Mac an Bhaird, 2010).

Consequently, some scholars have deepened this theme by declining it on the specific characteristics of SMEs (Michaelas et al., 1999; Cassar and Holmes, 2003; Sogorb-Mira, 2005; Daskalakis and Psillaki, 2008; Rao et al., 2019, Sensini, 2020).

In the context briefly outlined, this paper intends to contribute to the literature on financial behavior and the capital structure

of companies by focusing attention on two aspects. Firstly, we want to analyze how the intensity of exports and therefore the percentage weight of foreign sales compared to total sales affect the financial leverage of companies. Secondly, using a set of indicators suggested by the prevailing literature, we want to analyze what are the most significant factors that influence the financial behavior of Spanish SMEs. Although the literature on the financial behavior of SMEs has developed a lot in recent years, the analysis of the behavior and differences existing between export-oriented and non-export-oriented companies is still less developed (Bellone et al., 2010; Minetti and Zhou, 2011; Bernini et al., 2015). Therefore, we intend to contribute to the existing literature by analyzing how the intensity of export activity affects the financial leverage and corporate capital structure.

To select the companies to be included in the sample, we followed a methodology capable of ensuring that the sample of export-oriented

and that non-export oriented companies were adequately represented. The overall sample size was 2000 companies. We used a dynamic panel model based on the generalized method of moments (GMM).

The work is organized as follows. The next section presents the literature review and our research hypotheses. Section 3 describes the methodology followed to select the sample and test the hypotheses. Section 4 illustrates and comments on the results of the quantitative analysis. Finally, the last section contains the concluding remarks.

## 2. LITERATURE REVIEW

The study of the financial behavior of companies is the subject of strong debate which in recent years has intensified further with a large production of research papers. Among the different approaches of literature, trade-off theory (Kraus and Litzenberger, 1973) and pecking order theory (Myers, 1984; Myers and Majluf, 1984) represent those that have proven to be more explanatory of the financial behavior of SMEs. Moreover, the two theories lend themselves to being used together.

The trade-off theory (TO) hypothesizes the existence of an optimal capital structure and focuses attention on the fiscal dimension, the costs of bankruptcy, and agency costs. Based on this perspective, firms tend to hire external sources of finance and prefer them over internal financial resources until leverage has reached its optimum level (Modigliani and Miller, 1963; Myers, 2001; Jensen and Meckling, 1976; Cassar and Holmes, 2003; Abor, 2008).

The pecking order theory (PO) does not provide for an optimal capital structure and on the basis of the information asymmetry existing between the companies and the lenders, it shows that the companies have a hierarchical financing strategy. In this perspective, companies prefer to use internal financing resources first and then external ones (Cosh and Hughes, 1994; Vos et al., 2007; Sanchez and Sensini, 2014). Therefore, when internal resources are available, the use of leverage is not convenient.

In this study, we follow the theoretical approach of these two theories to analyze how the intensity of exports and therefore the percentage weight of foreign sales compared to total sales affect the financial leverage of companies. In this regard, according to the trade-off theory, export-oriented companies make lower leverage because agency costs increase (Jensen and Meckling, 1976; Burgman, 1996), and therefore external lenders have greater costs and difficulties in monitoring the activities of the company. In the same sense, according to the pecking order theory, export-oriented companies make less use of leverage due to the preference of internal financial resources and the increase in information asymmetry. Therefore, based on the above considerations, our first research hypothesis is the following:

H1) Export-oriented firms use leverage less than non-export-oriented firms.

The empirical literature on the financial behavior of companies has suggested some indicators that influence the capital structure

of SMEs (Graham, 1996; Cassar and Holmes, 2003; Abor, 2008; Frank and Goyal, 2009; Chen and Yu, 2011; Jõeveer, 2013). In accordance with the prevailing literature, we have chosen the following indicators: profitability, the tangibility of the assets structure, size, growth, and risk.

For each of the above indicators we have formulated the following hypotheses:

- H2) There is a negative relationship between profitability and leverage;
- H3) There is a positive relationship between tangibility of assets structure and leverage;
- H4) There is a positive relationship between firm size and leverage;
- H5) There is a positive relationship between growth and leverage;
- H6) There is a negative relationship between risk and leverage.

Table 1 shows all the variables taken into consideration in this study and the methods of calculation.

## 3. METHODOLOGY

### 3.1. Sample Selection

The financial information for the analysis was collected from the Sabi database of Bureau Van Dijk (BVD) and regards the period 2010-2016. Three criteria were used for the extraction of firms. First, businesses had to comply with the definition of SMEs provided in the European Commission recommendation 2003/361/EC. Secondly, the companies had to have available balance sheets for the entire period under review, from 2010 to 2016 inclusive. Finally, we have excluded financial companies. Subsequently, in order to have a consistent universe before proceeding with the selection of the sample, we eliminated the companies in the following situations: (a) equity with a negative value; (b) no information available for all variables in the entire study period; (c) holding group; (d) cases with outliers presented by all variables. The universe of enterprises obtained from the procedure just described was subjected to a stratified sampling procedure from which a random sample was extracted (Cochran, 1977). For a fixed sample size, this methodology allows for a more efficient estimate. Economic and financial variables (e.g. turnover, total assets, size) were taken into account for the stratification. This approach, consistent with the main official statistics, allowed us to include in the sample a proportionate number of export-oriented SMEs and non-export oriented SMEs.

**Table 1: Variables**

Dependent variable	
Leverage	Ratio Total Liabilities/Total Assets
Explanatory variables	
Export intensity*	Ratio Export Sales/Total Sales
Profitability	Ratio EBITDA/Total Assets
Tangibility	Ratio Fixed Tangible Assets/Total Assets
Size	Logarithm of Total Assets
Growth	Ratio $(\text{Total Assets}_{i,t} - \text{total Assets}_{i,t-1})/\text{Total Assets}_{i,t-1}$
Business Risk	Standard error of the EBIT average over the period analysed

\*The value is 0 for firms that don't export

The overall sample size,  $n = 2,000$ , was calculated to ensure an error level of  $\alpha = 0.095$  cited to a stratified sampling procedure from which a random sample of size  $n = \frac{n_0}{1 + \frac{n_0}{N}}$

$$n = \frac{n_0}{1 + \frac{n_0}{N}} \quad (1)$$

where  $N$  is the population size and  $n_0$  given by:

$$n_0 = \frac{z^2(0.975)p(1-p)}{\varepsilon^2} \quad (2)$$

The companies in the sample attributed to each stratum were selected based on the incidence of each subgroup within the population. The  $p$  level was fixed assuming a maximum level of  $p = 0.5$  for the variability of any hypothetical dichotomous variable.

### 3.2. Generalized Method of Moments (GMM)

To study the financial behavior of SMEs we used a dynamic panel model based on the Generalized Method of Moments (GMM). This approach (Blundell and Bond, 1998) has the advantage of considering the dynamism of the capital structure and of evaluating the potential endogeneity of the explanatory variables used in this study (Wintoki et al., 2012; Flannery and Hankins, 2013). Therefore, we used the following regression model:

$$Leverage_{i,t} = \alpha + \gamma Leverage_{i,t-1} + \beta X_{i,t} + Y_t + \varepsilon_{i,t} \quad (3)$$

where  $X_i$  is a carrier of the leverage determinants and  $Y_t$  is a fixed effect per year.

## 4. RESULTS AND DISCUSSION

### 4.1. Descriptive Statistics

According to the literature (Pindado et al., 2015), for all the variables we used delayed models from  $t-1$  to  $t-4$ , while for leverage we used delayed models from  $t-2$  to  $t-5$ . Furthermore, to test the validity of the models and verify the absence of correlation between the tools used and the error term, we used the Hansen model.

In this regard, the results of Table 2 show that there are no serial correlation problems in the second order of models. For leverage and export intensity we only considered values between 0 and 1, while for growth we only considered values between  $-1$  and 1. This approach is consistent with other studies (Kayhan and Titman, 2007). Besides, we used Wilcoxon's nonparametric test to verify the significance of the distribution of values.

Within the limits of their explanatory capacity, the results of the descriptive statistics highlight some significant differences between the two samples of companies. In particular, with reference to the average, the export-oriented companies sale 39% of their turnover abroad, have a higher level of the tangibility of the activities (23% against 20%), greater profitability (11% against 8%) and size (9.4 vs. 7.9), higher growth (4% against 0%) and a lower level of risk (1.74 vs. 2.28).

### 4.2. Regression Analysis and Discussion

Table 3 shows the results deriving from the development of our regression model.

The analysis of models 1 and 2 shows that the intensity of exports has a negative and significant impact on leverage, suggesting that as exports increase, leverage decreases. This result is consistent with the two main theories of capital structure, that of pecking orders and that of the trade-off. In fact, following the first theory, the increase in exports accentuates the problems of information asymmetry and therefore pushes the company to use more internal financial resources. Likewise, following the second theory, the increase in exports involves greater uncertainty in the relationship with the lenders and therefore the fixed transaction costs can make the screening and monitoring of SMEs uneconomical (Beck and de la Torre; 2007). Therefore, the first hypothesis is confirmed.

In line with what we had assumed (H2), profitability is negatively correlated to leverage. These results are in line with the pecking order theory but are not consistent with that of the trade-off. Indeed, the pecking order theory suggests that the most profitable companies use the profits to finance themselves and therefore make less use of external debt (Van der Wijst and Thurik 1993; Chittenden et al., 1996; Michaelas et al. 1999; Sogorb-Mira 2005; Degryse et al. 2012). Furthermore, profitable businesses follow a hierarchical scale in financing choices, preferring internal funds first and then external ones (Vos et al., 2007). Otherwise, the trade-off theory has suggested that profitable firms have better chances of attracting external funds and therefore prefer debt also for tax reasons.

**Table 2: Descriptive statistics**

Variable	Export Firms			Non export firms		
	Mean	Median	StD	Mean	Median	StD
Leverage	0.56	0.62	0.21	0.52	0.55	0.27
Export intensity	0.39	0.28	0.34	-	-	-
Profitability	0.11	0.10	0.11	0.08	0.07	0.12
Tangibility	0.23	0.21	0.21	0.20	0.18	0.22
Firm Size	9.4	9.2	0.56	8.2	7.9	0.73
Growth	0.04	0.07	0.19	0.00	0.01	0.24
Business Risk	1.74	0.91	3.25	2.28	0.93	4.62

Wilcoxon z-test: All variables \*\*\* (Significance level: 1%)

**Table 3: Factors driving leverage**

	1		2	
Dependent variable				
Leverage	0.859 (0.000)	***	0.288 (0.000)	***
Explanatory variables				
Export intensity	-0.041 (0.068)	*	-0.051 (0.006)	***
Profitability			-0.262 (0.000)	***
Tangibility			0.462 (0.000)	***
Size			0.093 (0.459)	
Growth			0.057 (0.000)	***
Business Risk			-0.067 (0.000)	***
Intercept	0.070 (0.001)	***	0.121 (0.772)	
Year fixed effect	No		Yes	
AR(1)/AR(2)	0.000/0.021		0.000/0.861	
Hansen J statistic	0.567		0.923	

Significance level: \*\*\* 1%; \*\* 5%; \*10%; AR1: p-values first order autocorrelations; AR2: p-values second order autocorrelations

The tangibility of the assets is significant and positively correlated with the leverage and it confirms the third hypothesis of this study, suggesting that companies with more tangible assets can use the latter as guarantees when financing and therefore have greater ease in accessing financial resources. This result is also consistent with both theories mentioned above. In fact, following the first theory, greater tangibility of the assets increases the ability to obtain debts as it increases the repayment guarantee, reducing the risk for the debtors. Likewise, following the second theory, the presence of guarantees reduces financial costs and problems of information asymmetry (Jensen and Meckling, 1976, Harris and Raviv, 1990; Fama and French, 2002; Frank and Goyal, 2003; Jimenez et al., 2006; Rajan and Zingales, 1995; Titman and Wessels, 1988).

The firm size has no significant effect on the capital structure and therefore hypothesis 4 must be rejected.

Growth correlates positively with leverage, in line with the hypothesis of this study. The result is in line with the pecking order theory but is not in line with the trade-off theory.

In fact, the pecking order theory shows that there is a positive relationship between growth and debt (Michaelas et al., 1999; Degryse et al., 2012). Conversely, the second theory predicts a decline in funding for growing businesses.

Finally, the business risk is negatively related to the leverage effect and therefore the last hypothesis has been confirmed. In this perspective, companies with a higher level of risk are more likely to find themselves in situations of financial difficulty and therefore have lower financial leverage, in line with the predictions of the trade-off theory.

To verify the solidity of our results, we carried out robustness checks. Furthermore, to further verify the solidity of the results, we use an alternative proxy for corporate risk in column B, calculated as a standard deviation of the ratio between EBIT and total assets (Graham et al., 2015).

The results highlighted in the Table. 4 confirm that companies with a high incidence of foreign sales on total sales have less debt.

**Table 4: Robustness checks**

	A		B	
Dependent variable				
Leverage	0.367 (0.000)	***	0.542 (0.000)	***
Explanatory variables				
Export intensity	-0.023 (0.051)	**	-0.043 (0.041)	**
Profitability	-0.174 (0.000)	***	-0.331 (0.003)	***
Tangibility	-1.129 (0.000)	***	-0.748 (0.000)	***
Size	0.234 (0.000)		0.698 (0.031)	**
Growth	0.003 (0.000)		0.063(0.000)	***
Business Risk	-0.067 (0.000)	***	2.314 (0.439)	
Intercept	-0.167 (0.691)		-0.166 (0.127)	
Year fixed effect	Yes		Yes	
AR(1)/AR(2)	0.000		0.000	
	0.237		0.431	
Hansen J statistic	0.963		0.961	

Significance level: \*\*\*1%; \*\*5%; \*10%

For the other variables, the test confirms the previously commented results with the only exception related to size. As can be seen from model B, the test results show a positive and significant relationship between the size of the company and financial leverage.

This result is in line with the two main theories (Michaelas et al., 1999; Cassar and Holmes, 2003; Hall et al., 2004; among others). Indeed, the size represents an inverse proxy of the probability of financial difficulty (Rajan and Zingales, 1995) and of the volatility of cash flow (Fama and French, 2002). However, this result should be further investigated as the effect of the size on debt depends on their maturity (Sanchez and Sensini, 2017).

## 5. CONCLUDING REMARKS

The aim of this study was to contribute to the literature debate on financial behavior and corporate capital structure by focusing on two aspects. Firstly, we analyzed how the intensity of exports and therefore the percentage weight of foreign sales compared to total sales affect the leverage of companies. Secondly, we have analyzed which are the most significant factors influencing the financial behavior of Spanish SMEs.

The financial information for the analysis was collected from the Sabi database of Bureau Van Dijk (BVD) and regards the period 2010-2016. To select the companies to be included in the sample, we followed a methodology capable of ensuring that the sample of export-oriented and non-export oriented companies was adequately represented. The overall sample size was 2000 companies. To study the financial behavior of SMEs we used a dynamic panel model based on the Generalized Method of Moments (GMM). This approach has the advantage of considering the dynamism of the capital structure and of evaluating the potential endogeneity of the explanatory variables used in this study.

The analysis showed that export intensity has a negative and significant impact on leverage, suggesting that as exports increase, leverage decreases. Profitability is negatively related to leverage, therefore the most profitable companies prefer to use own resources instead of debt to finance their activities. The tangibility of the assets is significant and positively correlated with the leverage, highlighting that companies with more tangible assets can use the latter as guarantees to more easily obtain external financing. Growth correlates positively with leverage. To verify the solidity of our results, we carried out robustness checks that confirmed the validity of the results obtained. The robustness check revealed a positive and significant relationship between the size of the company and the financial leverage, contradicting the results of the analysis. However, this result should be further studied as the effect of size on debt depends on their maturity.

## 6. AUTHORSHIP CONTRIBUTION

Chalmers D.K and Sensini L.: Introduction, Literature Review, Methodology, Results and Discussion, Concluding Remarks; Della Porta M.: Methodology, Results and Discussion, Concluding Remarks.



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