# Does Export intensity affect financial leverage of Italian SMEs? Empirical evidence

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#### Abstract

This paper aims to contribute to the ongoing debate in the literature on the financial behavior of SMEs. To this end, we analyzed the impact of export intensity on SMEs' financial leverage and the most significant variables influencing SMEs' financial behavior. Financial information for the analysis was collected from the Bureau Van Dijk (BVD) database. We employed a statistical methodology that ensured the adequate representativeness of both export-oriented and non-export-oriented firms. The analysis showed that export intensity reduces financial leverage. Profitability and corporate risk are negatively related to financial leverage. Finally, asset tangibility and growth are positively related to financial leverage.

Keywords: Export intensity, Financial behaviour, Leverage, Profitability, SMEs

# **1.** INTRODUCTION

The financial behavior and determinants of small and medium-sized enterprises '(SMEs') capital structure have been the subject of intense debate for several decades. The theoretical and empirical literature initially focused on large firms and subsequently expanded to include small firms. Research results have highlighted that the empirical evidence obtained for large firms cannot be generalized to SMEs (Frank and Goyal, 2009; Mac and Bhaird, 2010; Degryse et al., 2012; Chalmers et al., 2020; Vazquez and Oliveira, 2020; Sensini and Novak, 2024).

Therefore, the topic has found ample space for theoretical and empirical study for SMEs (Cressy and Olofsson, 1997; Michaelas et al., 1999; Watson and Wilson, 2002; Van der Wijst and Thurik, 2003; Vos et al., 2007; Rao et al., 2019; Ivanov and Vicente, 2017; Alvarez et al., 2019; Sensini, 2020; Amendola et al., 2021; Chen et al., 2021; Mueller and Sensini, 2021).

In the context briefly outlined, this paper aims to expand the existing literature on the financial behavior of SMEs by focusing on two aspects. First, we aim to assess the impact of exports on leverage by examining the percentage weight of foreign sales of total sales. Second, we strive to investigate the most significant factors that influence the financial behavior of Italian SMEs, utilising the leading indicators suggested by the literature. This aspect, namely the analysis of behavior and differences between export-oriented and non-export-oriented firms, has been rarely studied in the literature (Minetti and Zhou, 2011; Bernini et al., 2015; Mannetta et al., 2015; Chalmers et al., 2020).

Therefore, this paper aims to contribute to the existing literature by assessing the impact of the intensity of export activity on leverage and corporate capital structure. To select the companies to be included in the sample, we employed a methodology to ensure an equal distribution within the sample between export-oriented and non-export-oriented firms. The overall sample size was 820 companies. All the selected companies fall within the parameters established by the European Union to qualify SMEs.

We used a dynamic panel model based on the generalised method of moments (GMM). The work was organised 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 validity of the hypotheses. Section 4 presents and discusses the results of the quantitative analysis. Finally, the last section contains the concluding remarks.

## **2.** LITERATURE REVIEW

The financial behavior of firms is the subject of a heated debate, as evidenced by numerous articles in economic literature. Limiting the analysis to SMEs, the trade-off theory (Kraus and Litzenberger, 1973) and the pecking order theory (Myers, 1984; Myers and Majluf, 1984) are the most representative theories for explaining the financial behavior of SMEs. Furthermore, empirical research has demonstrated that the two theories can be combined effectively. More specifically. The trade-off theory (TO) highlights the existence of an optimal capital structure and focuses on three dimensions: a) fiscal; b) bankruptcy costs; c) agency costs. In this perspective,

firms favor external sources of financing until the financial leverage has reached its optimal level (Modigliani and Miller, 1963; Myers, 2001; Abor, 2008; Diaz and Shan, 2021).

In contrast, the pecking order (PE) theory emphasises the information asymmetry between firms and financiers, suggesting a hierarchical financing strategy. From this perspective, firms initially finance themselves using internal resources and then resort to external ones (Titman and Wessels, 1988; Cosh and Hughes, 1994; Vos et al., 2007; Sanchez and Sensini, 2017; Carvalho and Suarez, 2024). Consequently, when firms have their resources available, leverage is not convenient. In this study, we employ the theoretical framework of these two theories to examine whether export intensity affects SMEs' leverage. From our perspective, according to the trade-off theory, export-oriented firms achieve lower leverage. This circumstance arises from the fact that agency costs increase (Jensen and Meckling, 1976; Diaz et al., 2014; Williams et al., 2016; Chalmers and Hughes, 2019), and therefore external financiers face more significant costs and difficulties in monitoring the firm's activities. In this regard, the pecking order theory comes to the same conclusions. Export-oriented firms tend to use less leverage due to their preference for internal financial resources and the increased prevalence of information asymmetry (Hughes et al., 2013; Campos et al., 2014; Chen et al., 2019; Diaz and Vicente, 2020). Therefore, based on what has been highlighted, our first research hypothesis is the following:

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

Regarding the financial behavior of companies, the literature has identified a series of indicators that can influence the capital structure of SMEs (Cassar and Holmes, 2003; Abor, 2008; Frank and Goyal, 2009; Diaz, 2014; Chen et al., 2019). Following the prevailing literature, we have selected the following indicators: profitability, capital structure, tangibility, size, growth, and risk. For each of the above indicators, we have formulated the following hypotheses:

H2) Profitability has a negative relationship with leverage;

H3) Tangibility of asset structure has a positive relationship with leverage;

H4) Firm size has a positive relationship with leverage;

H5) Growth has a positive relationship with leverage;

H6) Risk has a negative relationship with leverage.

In Table 1, we have summarized all the variables used and the calculation methodology.

Tab. 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 (Total Assets <sub>i,t</sub> – total Assets <sub>i,t-1</sub> )/Total Assets <sub>i,t-1</sub>			
Business Risk	Standard error of the EBIT average over the period analyzed			

To determine the variable relating to export intensity, a value of zero was used for firms that do not export.

# **3.** METHODOLOGY

The SME data required for the analysis were extracted from the Bureau Van Dijk (BVD) database and cover the period from 2015 to 2022. The selected companies had to have financial statements available for the entire period under consideration. Furthermore, we excluded financial companies. Finally, to achieve a more representative universe, we excluded companies with negative equity and those with outliers in all variables. The universe of companies resulting from the applied selection procedure was then subjected to a stratified sampling, based on economic and financial variables, from which a random sample was drawn. According to the prevailing literature, this methodology enables more efficient estimation (Chen et al., 2019). At the end of the sampling procedure, we obtained a proportional number of export-oriented and non-export-oriented SMEs. The overall sample size, n = 1,200, was calculated to ensure an error level of  $|\epsilon| \le 0.05$  for the estimation of a p-proportion with a probability 1- $\alpha$ =0.095

$$n = \frac{n_0}{1 + n_0}$$

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

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

(2)

(1)

Sample firms were assigned to each stratum based on the incidence of each subgroup within the population. The p-level was determined by assuming a maximum level of p = 0.5 for the variability of any hypothetical

dichotomous variable.

The financial behavior of SMEs has been studied using a dynamic panel model based on the Generalized Method of Moments (GMM). According to the prevailing literature (Blundell and Bond, 1998), this approach has the advantage of considering the dynamism and variability of the capital structure, allowing us to evaluate the potential endogeneity of the explanatory variables (Flannery and Hankins, 2013). In this perspective, we used the following regression model:

 $Leverage_{i,t} = \alpha + \gamma Leverage_{it-1} + \beta X_{i,t} + Y_t + \varepsilon_{i,t}$ (3) where Xi is a carrier of the leverage determinants and Yt is a fixed effect per year.

### 4. RESULTS AND DISCUSSION

Following the literature (Díaz, 2014; Pindado et al., 2015), we used lagged models for all variables, ranging from t-1 to t-4. Instead, for leverage we used lagged models from t-2 to t-5. Furthermore, we employed the Hansen model to verify the validity of the models and to assess the absence of correlation between the instruments used and the error term. As evident from the results reported in Table 2, there are no problems of serial correlation in the second-order models. For leverage and export intensity, we only considered values between 0 and 1. For growth, we only considered values between -1 and 1. This setting follows the approach already used in other studies (Diaz et al., 2014). Finally, we used the non-parametric Wilcoxon test to verify the significance of the distribution of the values.

Tab. 2 – Descriptive statistics						
Export Firms			Non Expor	t Firms		
Mean	Median	StD	Mean	Median	StD	
0.54	0.62	0.22	0.51	0.54	0.26	
0.37	0.29	0.33	-	-	-	
0.12	0.11	0.12	0.08	0.06	0.12	
0.22	0.22	0.23	0.21	0.18	0.21	
9.3	9.2	0.57	8.3	7.9	0.72	
0.03	0.07	0.18	0.00	0.01	0.24	
1.72	0.91	3.23	2.28	0.93	4.62	
	Export Firms Mean 0.54 0.37 0.12 0.22 9.3 0.03 1.72	Kean Median   0.54 0.62   0.37 0.29   0.12 0.11   0.22 0.22   9.3 9.2   0.03 0.07   1.72 0.91	Tab. 2 – Descriptive   Export Firms Median StD   0.54 0.62 0.22   0.37 0.29 0.33   0.12 0.11 0.12   0.22 0.22 0.23   9.3 9.2 0.57   0.03 0.07 0.18   1.72 0.91 3.23	Tab. 2 – Descriptive statistics   Export Firms Non Export   Mean Median StD Mean   0.54 0.62 0.22 0.51   0.37 0.29 0.33 -   0.12 0.11 0.12 0.08   0.22 0.22 0.23 0.21   9.3 9.2 0.57 8.3   0.03 0.07 0.18 0.00   1.72 0.91 3.23 2.28	Tab. 2 – Descriptive statistics   Export Firms Non Export Firms   Mean Median StD Mean Median   0.54 0.62 0.22 0.51 0.54   0.37 0.29 0.33 - -   0.12 0.11 0.12 0.08 0.06   0.22 0.22 0.23 0.21 0.18   9.3 9.2 0.57 8.3 7.9   0.03 0.07 0.18 0.00 0.01   1.72 0.91 3.23 2.28 0.93	Tab. 2 – Descriptive statistics   Export Firms Non Export Firms   Mean Median StD Mean Median StD   0.54 0.62 0.22 0.51 0.54 0.26   0.37 0.29 0.33 - - -   0.12 0.11 0.12 0.08 0.06 0.12   0.22 0.22 0.23 0.21 0.18 0.21   9.3 9.2 0.57 8.3 7.9 0.72   0.03 0.07 0.18 0.00 0.01 0.24   1.72 0.91 3.23 2.28 0.93 4.62

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

The results of the descriptive statistics, within the limits of their relevance, highlight some interesting differences between the two company samples. Therefore, for the purpose of greater significance, these differences have been explored in the subsequent analysis.

The next table (Table 3) shows the results of our regression model.

	1		2	
Dependent variable				
Leverage	0.858	***	0.287	***
	(0.000)		(0.000)	
Explanatory variables				
Export intensity	-0.041	*	-0.052	***
	(0.067)		(0.007)	
Profitability			-0.262	***
			(0.000)	
Tangibility			0.461	***
			(0.000)	
Size			0.093	
			(0.456)	
Growth			0.057	***
			(0.000)	
Business Risk			-0.067	***
			(0.000)	
Intercept	0.071	***	0.123	
	(0.001)		(0.771)	
Year fixed effect	No		Yes	
AR(1)/AR(2)	0.000/0.021		0.000/0.861	
Hansen J statistic	0.568		0.924	

## Tab. 3 – Determinants of leverage

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

The analysis of the two models (1 and 2) highlights that export intensity has a negative and significant impact on leverage. Consequently, the increase in exports reduces leverage. This result is consistent with the two main capital structure theories illustrated above. In fact, following the trade-off theory, an increase in exports exacerbates the problems of information asymmetry and forces the firm to utilize more internal financial resources. Additionally, according to the second theory, the increase in exports leads to an increase in uncertainty in the relationship with financiers, resulting in higher fixed transaction costs (Beck and de la Torre, 2007; Mueller et al., 2019). Consequently, our first hypothesis is confirmed.

Profitability is negatively related to leverage. These results are consistent with the pecking order theory and our second research hypothesis (H2). The pecking order theory suggests that more profitable firms use profits to finance themselves and therefore have less recourse to external debt (Chittenden et al., 1996; Michaelas et al. 1999; Sogorb-Mira 2005; Chalmers et al., 2020). These results contradict the trade-off theory, which suggests that profitable firms have greater possibilities of attracting external funds and therefore prefer debt, also for tax reasons.

Asset tangibility is shown to be significant and positively correlated with leverage. This result confirms the third hypothesis of this research. Consequently, firms with more significant tangible assets use such assets as collateral to obtain financing.

Firm size is not a relevant factor in determining capital structure. Therefore, Hypothesis 4 of our research must be rejected. Growth is positively related to leverage, consistent with the pecking order theory (Michaelas et al., 1999) but not with the trade-off theory. Therefore, our research hypothesis is confirmed. Finally, firm risk is negatively related to leverage. Consequently, riskier firms have a higher probability of default and lower leverage (Hughes and Sensini, 2013; Sensini, 2016; Novak et al., 2018; Alves and Durand, 2020; Amendola et al., 2020; Diaz et al., 2021), consistent with the predictions of the trade-off theory. Therefore, our last research hypothesis is confirmed. To verify the validity of our results, we performed robustness checks.

	А		В			
Dependent variable						
Leverage	0.367	***	0.542	***		
•	(0.000)		(0.000)			
Explanatory variables						
Export intensity	-0.023	**	-0.043	**		
	(0.051)		(0.041)			
Profitability	-0.174	***	-0.331	***		
	(0.000)		(0.003)			
Tangibility	-1.129	***	-0.748	***		
	(0.000)		(0.000)			
Size	0.234		0.698	**		
	(0.000)		(0.031)			
Growth	0.003		0.063	***		
	(0.000)		(0.000)			
Business Risk	- 0.067	***	2.314			
	(0.000)		(0.439)			
Intercept	-0.167		-0.166			
	(0.691)		(0.127)			
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Tab. 4 – Robustness checks

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

The robustness test confirmed the results just illustrated, but did not confirm those related to size. The results of model B highlight a positive and significant relationship between firm size and financial leverage, in line with the two leading theories (Michaelas et al., 1999; Cassar and Holmes, 2003).

# **5.** CONCLUDING REMARKS

This study aims to contribute to the ongoing debate in the literature on the financial behavior of SMEs. In this perspective, we analyzed: a) the impact of export intensity on the financial leverage of SMEs; b) which are the most significant factors that influence the financial behavior of Italian SMEs. The financial information for the analysis was collected from the Bureau Van Dijk (BVD) database, covering the period from 2015 to 2022. The statistical methodology employed allowed for the inclusion of a sample of SMEs, adequately composed of both export-oriented and non-export-oriented firms. The overall sample size consisted of 1,200 firms. The financial behavior of SMEs was studied by using a dynamic panel model based on the generalized method of moments (GMM). This approach has the advantage of considering the dynamism and variability of the capital structure and of assessing the potential endogeneity of the explanatory variables. The analysis showed that export intensity has a negative and significant impact on financial leverage. Profitability is negatively correlated with financial leverage. As a result, firms with higher profitability tend to prefer using equity rather than leverage.

Asset tangibility is significant and positively correlated with leverage, as assets serve as collateral for financiers. Growth is positively related to leverage. The robustness test confirmed all the results obtained, except the relationship between firm size and leverage.

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