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Factors Driving Capital Structure of Italian SME's

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Abstract: The purpose of this paper is to study the influence of various corporate characteristics on the capital structure of Italian Small and Medium-sized Enterprises (SMEs). Based on the literature review about the capital structure decisions, this study investigated the relationships between the main determinants: size, profitability, asset structure, growth, earnings volatility and age. Panel regressions with fixed-effects are used to estimate the influence of SME firm determinants on three capital structure measures, total, long-term and short-term debt. The global sample is made up of 854 SMEs and covers the period between 2010 and 2015. Overall, the results suggest that most of the variables used are reliable in explaining Italian SME capital structure decisions. In addition, results suggest that the trade-off and pecking order theories can be used jointly in explaining the capital structure of Italian SMEs. However, results highlight that financing decisions are closer to the predictions of pecking order theory.

INTRODUCTION

Small and Medium-sized Enterprises (SMEs) play a relevant role in delivering economic growth and significantly contribute to employment rates[1-6]. In Europe, there are 25 million Small and Medium Enterprises (SMEs) that employe around 100 million people and represent more than half of Europe's GDP. This role has been gradually, recognized also of governments through policies that have ranged from supporting bank financing (credit guarantee schemes and other facilitation measures) to non-financial support.

However, beyond the different policies, credit constraints often affect SMEs significantly more than large firms[7, 8]. In the last ECB report (2019), large firms registered a continued increase in external financing; conversely, among the largest European economies, SMEs indicated increasing needs for bank loans and credit lines in Spain, Italy and France. In addition, bank-related products still represent the most relevant financing source for SMEs while market-based instruments such as equity, debt securities and other financial instruments are instead used in a residual way and only by few SMEs. The financing difficulties of SMEs are often attributed to information asymmetries, which can result in financial exclusion due to adverse selection and moral hazard[9]. In this regard, literature also highlighted that fixed transaction costs may render the screening and monitoring of small borrowers uneconomical[10]. Moreover, non-regular credit histories, lack of expertise or information in producing financial statements and limited collateral may contribute to increasing credit constraints.

In the context outlined, capital structure decisions play an important role in the survival and development of SMEs. Understanding the way in which firm characteristics influence the capacity to obtain financial

resources may help owners and managers to make better decisions regarding the consistency and adequacy of their capital structure choice[11-14].

The empirical research on the determinants of capital structure has focused mainly on larger firms[15-18]. However, the results obtained regarding large firms cannot generalize for SMEs[19, 20]. Therefore, in the last years, some scholars have focus on this topic, studying the specificities of capital structure decisions for SMEs. In this regard, various empirical research has investigated this topic in different Country[21-35]. However, with limited exceptions linked to the study of specific aspects or specific geographical areas[36-39] few research studies have taken an interest in this research question in Italy. Consequently, the aim of this study is to investigate the capital structure decisions of Italian SMEs using a set of firm attributes suggested by the main literature.

To achieve this, a sample of 854 (5124 firm/year observations) Italian SMEs are used for the period 2010-2015. All the firms included in the sample meet the definition of SMEs given in European Commission recommendation 2003/361/EC of 6 May, 2003. The financial information for the analysis was collected from the Infocamere database as well as the AIDA database of Bureau Van Dijk (BVD).

Overall, the results suggest that most of the variables used are reliable in explaining Italian SME capital structure decisions. In addition, results suggest that the trade-off and pecking order theories can be used jointly in explaining the capital structure of Italian SMEs. However, results highlight that financing decisions are closer to the predictions of pecking order theory.

The methodological approach and the empirical results of this study provide a level of analysis major by the previous research on Italian firms. Furthermore, given by SMEs financial constraints mentioned above, the empirical findings can help SMEs owners and managers to make better decisions regarding the consistency and adequacy of their capital structure.

Literature review: Starting from the seminal papers of Modigliani and Miller[40], the determination of the capital structure of a firm has been a much-debated issue in the literature and it led to the development of several theories. Initially, the empirical application of these theories has focused mainly on large companies[15-18]. However, later, as has been noted by some scholars[19, 20], the results obtained from the studies conducted on large firms cannot be generalized for SMEs. Following this approach, several empirical researches have been developed in recent years with the aim of verifying theories capable of explaining the capital structure decisions of SMEs.

In this perspective, the theories that have seemed most suitable for the purpose are the trade-off theory[41], the pecking order theory[42, 43] and the growth cycle theory[19].

The Trade-Off theory (TO) takes into consideration three financial elements: tax shields, bankruptcy costs, and agency costs, assuming that there is an optimum capital structure for each firm. In this perspective, financing decisions try to reach an optimal debt ratio, in which the marginal value of debt benefits (tax benefits of interest payments, Modigliani and Miller[44] offsets the costs of issuing more debt[45], the costs of financial distress and reduces agency problems between owners and financial creditors[46]. In this latter regard, financing decisions require particular attention in order to avoid that the excessive increase of the costs of leverage may force the firm to use internal capitals[24, 47, 48]. Therefore, under certain conditions, leverage is advantageous and owners-managers prefer to use debt even if there are internal funds available.

The Pecking Order theory (PO) suggests a hierarchical financing strategy, specifying that firms have a preference order for financing decisions. This order is based on the lowest degree of information asymmetry between owners/managers and investors. Therefore, in the financing choices, internal funds are preferred first, then external ones (with a preference for short-term loans over medium-long term ones) and finally external equity[49, 50]. In this theoretical approach, the leverage is disadvantageous compared to internal sources.

This strategy enables the owner/manager to maintain firm control and it can thus explain why the less profitable firms generally have more debt. In the absence of internal resources able to finance the activity, the only way forward is external debt. In the context outlined, according to this theory there is no optimal capital structure.

Finally, another theory is the growth cycle of Berger and Udell[19]. This approach suggests that the financial structure of a company changes according to its size and age. Therefore, in the early stages, young and small firms use mainly or exclusively internal financial resources as the lack of reliable financial information makes access to external resources more difficult. In the later stages which usually correspond to growth, companies face fewer difficulties and then they access to different external sources.

For the purposes of this study, the theoretical approach of the first two theories mentioned is followed, and therefore the Trade-Off theory (TO) and the Pecking Order theory (PO).

The theoretical approach of the two theories explains the financing decisions in relation to specific characteristics of firms and is important in order to

understand capital structure choices on SMEs[30, 51-57]. Furthermore, the two approaches are complementary and therefore can be used jointly. In this regard, firms can select leverage ratios in line with the benefits of debt financing as suggested by the TO theory but they can separate such behavior by the reasons established in the PO theory.

In the context outlined, given the importance of SMEs for a country's economic and social development, it is relevant to study their capital structure choices which are the result of a set of situations: firm characteristics and the owners/manager's characteristics, credit rationing of lenders of funds, market conditions[50, 58, 59].

In the context outlined, given the importance of SMEs for a country's economic and social development, it is relevant to study their capital structure choices which are the result of a set of situations: firm characteristics and the owners/manager's characteristics, credit rationing of lenders of funds, market conditions[50, 58, 59]. Moreover, these characteristics are all influenced by the phenomenon of asymmetric information. Therefore, on one hand, limited internal resources may force SMEs to use leverage. However, on the other hand, the availability of leverage will be conditioned by the company's ability to ensure lenders regarding its capability to repay the debt. Information asymmetries and agency problems can have a fundamental influence on fixed capital investment[60] and inventory investment.

In addition, financially constrained firms are restricted in choosing their optimal capital structure and so they often mainly rely on their own internal finance[43], losing profitable opportunities for investment by a lack of internal funds[61]. These circumstances make SMEs more susceptible to turbulent economic conditions and increase the risk of financial distress[33].

Factors driving the capital structure of SMEs: The empirical literature on the capital structure has identified a set of firm factors, that may influence the corporate structure of SMEs. Considering the research framework used in previous empirical studies[24, 48, 62], this research examines the influence of the following factors: size, profitability, the tangibility of assets structure, growth, earnings volatility, age.

Size: Literature argued that firm size is a relevant factor[63, 64] and then it is used as a proxy in explaining SMEs' capital structure. In this perspective, according to the two main theories, there is a positive relationship between size and the firm's debt level. Major size reduces the information asymmetry between the owner-manager and potential capital lenders; conversely, small size worsens this asymmetry. In this regard, size can be considered as an inverse proxy of the probability of financial distress[65] and as an inverse proxy of cash flow volatility[66]. This setting implies that there is a positive relationship between size and the firm's debt level as confirmed by different studies[21, 22, 24] among others). Therefore, in accordance with the dominant literature, the first research hypothesis is the following:

- H_1-Firm size is positively related to total debt

However, the effect of size is mainly dependent on the maturity of debts. This implies the necessity to specify the first hypothesis regarding debt maturity, short-term or medium and long-term.

As noted, smaller size increases problems of information asymmetry and then risk increase. These circumstances hinder access to medium/long term liabilities and compel SMEs to use short-term debt. Therefore, the first hypothesis is divided in two:

- H_{1a}: There is a negative relationship between firm size and short-term debt
- H_{1b}: There is a positive relationship between firm size and long-term debt

Profitability: The Trade-off theory suggested a positive relationship between profitability and debt because more profitable firms should have a major capability to attract external financing. In this perspective, firms prefer external funds in order to benefit from the interest tax deduction.

According to the pecking order theory, the more profitable firms have less debt because they are capable to generate profits and so to self-finance themselves. In this perspective, empirical evidence has shown a negative relationship between profitability and the debt in SMEs[21, 26, 57, 66, 67]. In addition, due to their owners/ managers' reluctance to open up company shares to outside investors, the majority of these firms use firstly earnings to finance their activity and later, debt if fund firms are not enough[50, 58]. Agreeing with the pecking order theory, the second research hypotheses are the following:

- H_2: There is a negative relationship between profitability and total debt
- H_{2a}: There is a negative relationship between profitability and long-term debt
- H_{2b}: There is a negative relationship between profitability and short-term debt

The tangibility of assets structure: The qualitative composition of the assets influences the capital structure. The Trade-off theory suggested that leverage is positively related to the proportion of tangible assets. In this regard, a high tangibility of assets increases the capacity to obtain debt on more favorable terms because it improves the

guarantee of repayment, reducing the risk to debtors[16, 46, 62, 65, 68, 69]. On this line, the Pecking Order theory also argued a positive association because the presence of collateral reduces financial costs and the problems of information asymmetry. Therefore, the third research hypothesis is the following:

- H_3: asset structure is positively related to total debt

However, debt maturity influences patrimonial structure. Generally, fixed assets are used as a guarantee for long-term loans while current assets will be used as a guarantee for short-term loans[22]. Consequently, it is possible to hypothesize that:

- H_{3a}: There is a positive relationship between asset structure and long-term debt
- H_{3b}: There is a negative relationship between asset structure and short-term debt

Growth: Generally, firm growth requires financing resources and internal funds are often not adequate or sufficient to sustain the growth process. Therefore, owners/managers have to consider the recourse to external resources, raised by way of equity or loan. In this regard, according to the Trade-off theory, access to finance is more limited for firms with higher growth rates with a negative relationship between growth and indebtedness. Conversely, the pecking order theory suggests that there is a positive relationship between growth and debt and among debts, short term debt is favored. However, the debate on the relationship between the effect of growth and the debt maturity in SMEs has produced discordant results[21, 22, 57]. In this study, following Michaelas *et al*.[21], we suppose that there is a positive relation of growth with debt. In addition, in line with the pecking order arguments, high growth will be more related to short-term than to long-term debt. Therefore, the research hypothesis are the following:

- H_4: There is a positive relationship between growth and total debt
- H_{4a}: There is a positive relationship between growth and long-term debt
- H_{4b}: There is a positive relationship between growth and short-term debt

Earnings volatility: Trade-off and pecking order theories sustain that the volatility of earnings is a determinant of leverage. In particular, the trade-off theory highlighted that low volatility of earnings increases the capacity of the firm to obtain financing, decreasing the indirect bankruptcy costs while high volatility of earnings produces adverse effects.

Pecking order theory suggests that high volatility of earnings increases the information asymmetry problem and then increases the cost of debt. The two theories highlight that the volatility of earnings is inversely related to the capacity of the firm to obtain debt[25]. In this regard, it is possible to hypothesize that:

- H_5: There is a negative relationship between volatility and total debt

Age: The age of the firm is another factor that conditions the capital structure. In this regard, pecking order theory suggests that older firms have a greater chance of generating internal resources and therefore make less use of external resources. Conversely, young firms make greater use of external debt[21, 70]. In addition, a negative relationship between age and short-term debt and a positive relationship between age and medium/long-term debt are in agreement with the predictions of this theory. However, according to the principles of this theory, greater firm age allows greater capacity of retained earnings implying a lower level of firm debt. Therefore, the relationship between age and debt may be positive or negative according to the predictions of this approach. Trade-off theory foresees that greater age allows the firm to acquire reputation and therefore, lower debt costs and so, the relationship between age and debt is positive. Based on the above, the last research hypothesis are the following:

- H_6: There is a negative relationship between age and total debt
- H_{6a}: There is a positive relationship between age and total debt
- H_{6b}: There is a negative relationship between age and short-term debt

MATERIALS AND METHODS

Database, sample and variables: This study focuses on the relationships between the determinants (size, profitability, asset structure, volatility, growth and age) and debt for SMEs located in Italia. The financial information for the analysis was collected from the Infocamere database as well as the AIDA database of Bureau Van Dijk (BVD).

The sample includes Italian SMEs for the period 2010-2015. Three criteria were then used to justify the inclusion of a company into the sample.

Firstly, firms had to meet the definition of SMEs given in European Commission recommendation 2003/361/EC of 6 May, 2003. Briefly an SME is a firm that respects the following conditions: a number of employees $\geq$10 and <250; 2) operating incomes over two million euros and <50 million euros total assets over two

million euros and <43 million euros. Secondly, firms had to have available financial statements for the full period under consideration from 2010-2015 inclusive. Thirdly, we eliminated firms in the financial and insurance sectors. In order to have a panel of full information, we eliminated firms in the following situations: equity with a negative value; cases with errors in the accounting data; no information available for all the variables in the whole period of study; holding company; cases with outlier's values presented by all variables. The final sample is made up of 854 SMEs and covers 6 years and so a balanced panel with 5.124 observations was obtained.

This study uses quantitative analysis to assess the capital structure of the sample firms. Starting from the book value information in the data we select a set of variables of interest following the main theoretical literature mentioned above[21, 26, 32, 64, 67] among others). In this perspective, the capital structure is determined through three dependent variables, the ratios of the total, medium and long-term and short-term debt. In summary, all the variables used have been determined as specified below. Summarizes the description statistics.

Dependent variables:

- Tdt_{it} Total debt; Total liabilities/total assets
- $MLD_{i,t}$ Medium and long-term debt; non-current liabilities/total assets
- $MLD_{i,t}$ Short-termdebt Current liabilities/total assets

Independent variables:

- $SIZE_{i,t}$ Size logarithm of total assets
- $PROF_{i,t}$ Profitability EBIT/total assets
- TASi,t Tangibility assetstructure Tangible assets/total assets
- $GROW_{i,t}$ Growth (Total $assets_{i,t}$-total $assets_{i,t}$-1)/total $Assetsi_{t-1}$

  $Ev_{i,t}$ EarningsVolatility Variation (t; t-1) in net income/net income (t-1)
- $AGE_{i,t}$ Firmage natural logarithm (year of data -year of foundation)

RESULTS AND DISCUSSION

Table 1 summarizes the descriptive statistics for the total sample, considering dependent and independent variables. The results show that SMEs fund themselves through a greater percentage of debt than equity. As evident, the debt (55.3%) is the main financing source for Italian SMEs. In particular, short-term debt represents the most important source of funding (39.4%) to finance activities. Short Term Debt (STD) represents 71.25% of Total Debt (TD). The average size of assets is 10.172 and is calculated as the natural logarithm of total assets as noted above.

The average profitability is 4.3%. The tangibility of the asset is 23.9%. This data confirms a low level of tangible fixed assets and this suggests a high prevalence of working capital. This could also be confirmed by the large prevalence of short-term debt. On average, the growth is 9.83% and age is 18,4 years old.

In order to avoid multicollinearity among the selected covariates, we compute the Pearson correlation coefficient for the independent variables. SI; PR; AS; GRO; VOL; AGE. The results, reported in Table 2, show linear correlation values that are in modulus <0.3 confirming the absence of multicollinearity.

Table 3 highlight the results of the panel data models explaining debt ratios for the total sample. SThe relationships between SME size and total debt, medium and long-term debt and short-term are statistically significant. Therefore, size appears to be an important covariate in explaining SMEs' capital structure decisions and the sign of the relation is always positive for TD, STD and MLD. Given the reached results we have to reject sub-hypothesis H_{1a} based on a negative relation between size and short-term debt whereas we confirm the Hypothesis H_1 and sub-Hypothesis H_{1b}.

The conclusion we give on our estimations is in line with previous empirical findings on the determinants of SME's capital structure conducted in other countries[21, 26, 67] among others).

In accordance with the pecking order theory, profitability is negatively related to the different types of debt; however, this relationship is particularly strong for long-term debt. These results suggest that the most profitable SMEs tend to finance their operations using more internal rather than external funds. This preference for internal sources of financing helps owners/managers of profitable SMEs to maintain a high degree of control and decisional independence[49]. On the other hand, when external financing is needed, owners/managers seem to use first short-term debt which allows a greater degree of freedom and then long-term debt that generally has more restrictive conditions.

According to the results, the relationship between asset structure and debt depends on debt maturity. In particular, tangible assets have a positive effect on total debt and long-term debt but a negative effect on the level of short-term debt. The two relationships are statistically significant at the 1% level. Compared to firm size, asset tangibility appears to be a more important variable in explaining long-term debt. In accordance with the pecking order theory, results highlight a positive relationship between a firm's level of tangible assets and debt ratio. In this line, firms with higher levels of tangible assets may provide creditors with collateral, reducing the problems of adverse selection. Based on these results, we accept Hypothesis H_3 and sub-Hypothesis H_{3a} and H_{3b}.

Growth shows a positive and significant correlation coefficient for total and long-term debt. However, in the

Table 1: Summarizes the description statistics

Variables	TD	LTD	STD	SI	PR	TAS	GRO	VOL	Age
Mean	0.553	0.159	0.394	10.172	0.043	0.239	0.093	23.256	2.90
SD	0.242	0.149	0.203	1.892	0.195	0.283	0.435	165.876	0.551

Table 2: Correlation matrix

Variables	SI	PR	TAS	GRO	VOL	Age
SI	1					
PR	0.082***	1				
TAS	0.241***	0.201***	1			
GRO	0.032	0.092*	0.193***	1		
VOL	0.073**	0.120***	0.185***	0.098**	1	
AGE	0.124***	0.089**	0.063**	0.024	0.043**	1

The table present the estimated coefficient: stars indicate statistical significance respectively at: ***1%; **5%; *10%

Table 3: Results of the fixed effects models

Variables	Total debt	Medium-long term debt	Short-term debt
Constant	0.021(0.523)	-0.031(0.623)	0.712*(0.098)
Size	0.252***(0.001)	0.150***(0.000)	0.321***(0.000)
Prof	-0.198***(0.003)	-0.231**(0.000)	-0.089**(0.048)
TAS	0.285***(0.008)	0.213***(0.000)	-0.180***(0.003)
Grow	0.198**(0.038)	0.102**(0.029)	0.068(0.698)
Earnings volatility	0.002(0.592)	0.001(0.235)	0.000(0.089)
Age	0.058***(0.000)	0.073**(0.045)	-0.089***(0.001)
R^2	0.42	0.38	0.27

case of short-term debt, the coefficient is null and not significant. These findings indicate that SMEs with high growth opportunities have more leverage, especially long-term debt. Indeed, financing growth is a process that often lasts several years and consequently requires long-term debt. Therefore, we confirm Hypothesis H_4.

In contradiction with the predictions of both trade-off and pecking order theories, the volatility of earnings seems to have no influence on the capital structure of Italian SMEs. This result may indicate that the volatility of earnings is less important than the other deployed independent variables. Based on these results, H_5 is rejected. Results highlight a positive relationship between age and total debt and long-term debt and a negative relationship between age and short-term debt. Therefore, all Hypothesis H_6 can be accepted.

CONCLUSION

Small and Medium-sized Enterprises (SMEs) play a relevant role in delivering economic growth and significantly contribute to employment rates. However, credit constraints often affect SMEs, conditioning significantly the growth and survival of these firms.

In the context outlined, this study investigates the influence of a set of firm characteristics to analyze the capital structure of Italian SMEs using the theoretical framework based jointly on trade-off and pecking order theories. The sample includes Italian SMEs for the period 2010-2015.

Three criteria were used to justify the inclusion of a company into the sample. Firstly, firms had to meet the definition of SMEs given in European Commission recommendation 2003/361/EC of 6 May, 2003. Secondly, firms had to have available financial statements for the full period under consideration from 2010-2015 inclusive. Thirdly, we eliminated firms in the financial and insurance sectors. In addition, in order to have a panel of full information, we eliminated firms in the following situations: equity with a negative value; cases with errors in the accounting data; no information available for all the variables in the whole period of study; holding company; cases with outlier's values presented by all variables. The final sample is made up of 854 SMEs and covers six years and so a balanced panel with 5.124 observations was obtained.

This study uses quantitative analysis to assess the capital structure of the sample firms. Starting from the book value information in the data we select a set of variables of interest following the main theoretical literature mentioned above: size, profitability, the tangibility of assets structure, growth, earnings volatility, age. The capital structure is determined through three dependent variables, the ratios of the total, medium and long-term and short-term debt.

The results show that SMEs fund themselves through a greater percentage of debt (55.3%) than equity and the short-term debt represents the most important source of funding (71.25% of total debt). Size appears to be an important variable in explaining SMEs' capital structure decisions and the sign of the relation is always positive for TD, STD and MLD.

In accordance with the pecking order theory, profitability is negatively related to the different types of debt; however, this relationship is particularly strong for long-term debt. These results suggest that the most

profitable SMEs tend to finance their operations using more internal rather than external funds and on one side, this helps owners/managers to maintain a high degree of control and decisional independence. However, when external financing is needed, owners/managers seem to use first short-term debt which allows a greater degree of freedom and then long-term debt that generally has more restrictive conditions. Tangible assets have a positive effect on total debt and long-term debt but a negative effect on the level of short-term debt and appear the more important variable in explaining long-term debt.

In accordance with the pecking order theory, results highlight a positive relationship between a firm's level of tangible assets and debt ratio. This highlights firms with higher levels of tangible assets may provide creditors with collateral, reducing the problems of adverse selection. Growth shows a positive and significant correlation coefficient for total and long-term debt, indicating that SMEs with high growth opportunities have more leverage, especially long-term debt.

In contradiction with the predictions of both trade-off and pecking order theories, the volatility of earnings seems to have no influence on the capital structure of Italian SMEs. Finally, results highlight a positive relationship between age and total debt and long-term debt and a negative relationship between age and short-term debt. To sum up, the findings of this study are expected to help the capacity of owners/managers to make better decisions regarding the financing options and the capital structure of their firms, enhancing financial performance and improving access to the capital markets. In addition, results suggest that the trade-off and pecking order theories can be used jointly in explaining the capital structure of Italian SMEs. Further, research should study ownership characteristics, specific sectors and introduce qualitative variables using for instance interview or questionnaires to the firms and bank managers.

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