Adaptation or Persistence? Capital Structure Choices of Italian Firms Over Time

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Abstract

Understanding how firms finance their activities is crucial for fostering economic growth. The financial life cycle is a critical framework for understanding how firms' financing needs and strategies evolve over time. This paper examines the capital structure choices of Italian SMEs focusing on the role of firm life cycle. Using financial data from 512,027 firms companies over 2012-2023, we observe a nonlinear relationship between age and leverage. Results confirm a lifecycle pattern where younger firms rely more on debt, while mature firms shift towards internal funding. Our evidence supports the persistence of La Rocca *et al*. (2011)'s findings despite significant economic changes, including the global financial crisis, the coronavirus downturn and recent sustainability challenges. Our findings highlight the importance of tailored financing strategies for SMEs based on their life cycle stage.

Keywords: Capital Structure, Debt, Financial Life Cycle, Firm Value.

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Adattamento o persistenza? Le scelte di struttura del capitale delle imprese italiane nel tempo

Sommario

Comprendere come le imprese finanziano le proprie attività è fondamentale per promuovere la crescita economica. Il ciclo di vita finanziario è un quadro cruciale per analizzare come le strategie di finanziamento delle imprese evolvono nel tempo. Questo studio esamina le scelte di struttura del capitale delle PMI italiane, concentrandosi sul ruolo del ciclo di vita aziendale. Utilizzando dati finanziari di 512.027 imprese dal 2012 al 2023, si rileva una relazione non lineare tra età e debito finanziario. I risultati confermano un modello legato al ciclo di vita, secondo cui le imprese più giovani si affidano maggiormente al debito, mentre quelle mature si orientano verso il finanziamento interno. Le nostre evidenze supportano la persistenza delle conclusioni di La Rocca *et al.* (2011), nonostante significativi cambiamenti economici, tra cui la crisi finanziaria globale, la recessione causata dal coronavirus e le recenti sfide legate alla sostenibilità. I risultati sottolineano l'importanza di strategie di finanziamento su misura per le PMI in base alla fase del loro ciclo di vita.

Parole chiave: Struttura Finanziaria, Debito, Ciclo di Vita Finanziaria, valore d'impresa.

1. Introduction

Despite the increasing trend of business expansion driven by the disruptive force of competition processes arising from global challenges, the role of SMEs (SMEs) in the social and economic context of Italy and Europe remains crucial. This appears even more significant considering that small and medium-sized enterprises (SMEs) make up over 99% of EU companies (European Commission, 2023). It is therefore not surprising that over the years, the attention paid by the entire scientific community to this highly significant reality has grown enormously. The defining characteristic of SMEs is undoubtedly the figure of the entrepreneur and her/his ability to create opportunities for survival and value generation through continuous innovation efforts and a distinctive governance model.

In this context, one of the key aspects for the growth of such enterprises lies in the capital structure choices. The financial function, when formally established, is often the one that faces the greatest constraints for SMEs. These companies frequently encounter difficulties in accessing resources from credit and capital markets (Beck *et al.*, 2006). Such difficulties are often linked to various factors, such as: a) the limited availability of asset-based collateral (Beck *et al.*, 2008; Jaffee and Russell, 1976; Menkhoff *et al.*, 2012); b) the challenges entrepreneurs face in rationalizing and

demonstrating to external financiers the feasibility and profitability of their plans (Berger and Udell, 2006; Cowling, 2010); c) the entrepreneur's fear of losing control over their business (Hutchinson, 1995; Cressy and Olofsson, 1997).

The inevitable consequences of these organizational traits include a high cost of capital, a limited range of financial instruments utilized, and a capital structure composed particularly short-term debt (Comana, 2001), as short-term debts are less risky and financial intermediaries are more likely to finance firms with financial difficulties using this form of debt.

All these aspects have led to various attempts to address the controversial and sometimes conflicting theoretical positions regarding the role of capital structure in relation to business performance and the determinants of such financial decisions. This has spurred numerous analyses worldwide, even many years after the contribution of Modigliani and Miller (1963). Indeed, while the literature has traditionally focused on studying large corporations, significant effort has been required in recent years to assess the applicability and relevance of these theories to SMEs. The interest in capital structure decisions – specifically, the selection of the appropriate mix between debt and equity – is important considering the number of SMEs in Europe, as above mentioned. This also applies to Italy, as according to the latest ISTAT data, micro, small, and medium-sized enterprises represent 99% of all active businesses and employ about 76.5% of the total workforce. For many years now, scholars have become increasingly aware of the financial peculiarities of SMEs and the need to redefine financial management models with respect to company size. Various studies have been conducted on the subject, among which the work of La Rocca M., La Rocca T., and Cariola A., titled *Capital Structure Decisions During a Firm's Life Cycle* (La Rocca *et al.*, 2011), stands out. In this article, the authors analyzed a sample of Italian SMEs over the period from 1996 to 2005, and the financing decisions of such SMEs have been examined through the perspective of the business life cycle. Since the existing literature prior to this 2011 article had yielded rather diverse results regarding the determinants of firms' capital structure, the authors hypothesized that this could be due to a lack of consideration for certain important aspects of the firm that might influence financing decisions. Specifically, one particularly significant aspect concerns the firm's age and, more precisely, the stage of the business life cycle it is in. The researchers have shown that companies typically implement particular funding approaches and establish a unique order of financial choices as they progress through various phases of their business life cycle.

This research aims to study whether, many years later, the findings of La Rocca *et al.* (2011) still persist today. Since the publication of La Rocca *et*

al. (2011), the Italian economic context, and particularly the financial sector, has undergone profound changes, influenced by the sovereign debt crisis, European policies, and global events. After the 2008-2011 crisis, Italian banks faced pressure to strengthen their balance sheets, and European supervision and structural reforms led to greater banking concentration as well as the digitalization of services. Since credit constraints is more pronounced during times of crisis (Albareto and Finaldi Russo, 2012; Casey and O'Toole, 2014), during the pandemic and the recent energy crisis the Italian government introduced public guarantees on loans (e.g., the Guarantee Fund for SMEs), but the increase in ECB interest rates since 2022 has made credit more expensive again, negatively impacting businesses with high debt exposure. Today, the ecological and digital transition represents both a challenge and an opportunity, and banks are increasingly moving in this direction (Fasano and Cappa, 2022). Changes in the Italian economic context have had a direct impact on access to credit for businesses (Basile *et al*., 2024). Today, access to credit is strongly influenced by a company's ability to adapt to the challenges of digitalization and sustainability, often required as prerequisites for obtaining new financing. Recent studies show that SMEs with more sustainable orientation have greater access to bank credit and better ability to pay the cost of bank debt (D'Apolito *et al.*, 2024). In light of all these changes, it is particularly interesting to understand whether the capital structure choices of Italian businesses throughout their life cycle have changed compared to many years ago, or if they remain the same. This, of course, has important implications for both businesses and banks. Banks, by understanding the capital structure of businesses at various stages of their life cycle, could apply targeted financing policies based on the businesses' evolving needs, which change throughout the life cycle. While previous studies, such as La Rocca *et al*. (2011), have examined the capital structure decisions of Italian SMEs and their reliance on debt during different stages of their business life cycle, there has been limited research on whether these findings still hold true in the current economic context. This study aims to fill this gap by analyzing whether the capital structure choices of Italian firms have evolved over time or if they remain consistent with past findings, considering the recent economic and financial developments. Thus, the research gap that this article aims to address is to study whether, as highlighted by La Rocca *et al*. (2011), In the start-up and growth stages, firms continue to rely on debt as a crucial financial resource to sustain their business. In contrast, during the consolidation and maturity stages, debt still plays a central role, though to a slightly lesser extent.

The paper is structured as follows. Paragraph 2 presents the main theories on the topic, a brief literature review, and highlights the research gap.

Paragraph 3 outlines the methodology and variables. Paragraph 4 provides the empirical results, while Paragraph 5 offers conclusions and implications.

2. Literature Review and Research Gap

In this paragraph we report the main capital structure theories to assess the extent to which they can explain the financing models of SMEs.

First, the "corrected" Modigliani and Miller theory (1963), which accounts for the tax benefits of debt. It has been widely demonstrated that the M&M theory fails to capture the "real" behavior of firms in the presence of market imperfections. The same applies to SMEs, whose capital structure choices seem to align more closely with alternative models to those proposed by M&M. One theory that appears more applicable in practice is the trade-off theory. The trade-off theory posits that firms aim to achieve an optimal balance between debt and equity (e.g., Kraus and Litzenberger, 1973). According to this approach, established firms are more likely to rely on debt financing. These businesses typically enjoy stable profits, sufficient working capital, and steady cash flows, making financial flexibility less critical for them. Additionally, they face lower distress costs and reduced informational asymmetry (Berger and Udell, 1998; Fasano and Deloof, 2021; Fasano *et al.*, 2023).

Other important arguments are the Pecking Order Theory and the Signaling Theory. The Signaling Theory (Ross, 1977) does not align with the characteristics of SMEs, which are typically not publicly traded on financial markets and are tightly controlled by a few individuals. A different argument applies, however, to the Pecking Order Theory, which seems particularly well-suited to explaining the capital structure behaviors of SMEs. The Pecking Order Theory (e.g., Myers and Majluf, 1984) suggests that firms prioritize their financing choices based on the degree of information asymmetry. According to this hierarchy, they prefer to utilize internally generated funds first, followed by debt, and resort to equity as a last option. The logic of the "closed garden", characterized by aversion to expanding the shareholder base to outside entities, leads to a preference for internally generated funds, which do not incur transaction and agency costs. In summary, small enterprises prefer to finance themselves through self-financing, primarily due to management's fear of losing control of the company (Donaldson, 1961). However, this approach also conflicts with the limited size and high variability of self-generated cash flows, which are typical characteristics of smaller businesses (Carpenter and Petersen, 2002; La Rocca *et al.*, 2015).

Robb and Robinson (2014) note that start-ups are heavily reliant on

external debt, frequently sourced from banks, with many entrepreneurs securing loans using their personal assets. Similarly, Deloof and Vanacker (2018) emphasize that internal funding alone is often insufficient for a new company's growth, making external debt a critical resource for start-ups.

Klein *et al*. (2019) also underscore the significance of debt for young companies, observing that start-ups have increasingly turned to external debt through digital financing platforms.

Deloof *et al*. (2019) highlight that financial markets help mitigate the funding constraints faced by start-ups, encouraging them to utilize debt. Over time, as businesses mature, they tend to generate internal financial resources, which owners are more likely to reinvest into the firm. Furthermore, firms that take on debt in their early stages are more likely to survive and achieve higher revenues (Cole and Sokolyk, 2018).

Given this brief overview of the main capital structure theories, it is important to clarify that the choice of the right debt-equity mix also depends on a number of so-called firm-specific factors that need to be considered. A key factor is the age of the firm, which helps to understand some of the mechanisms behind the capital structure decisions of SMEs (Sánchez-Vidal and Martín-Ugedo, 2012). This refers to the «life cycle theory of financing» (Berger and Udell, 1998; Fluck, 2000). According to this approach, firms choose their capital structure based on the stages of the business life cycle they are in. In the early stage, characterized by high growth and limited existing operations, and contrary to what is assumed by the Pecking Order Theory, firms prefer to finance themselves through the issuance of new equity or, at most, convertible debt (Helwege and Liang, 1996). Only after this initial startup phase firms will begin to rely on self-financing (if available), debt issuance, and, as a last resort, the issuance of new equity. The use of equity (private equity or venture capital) during the early growth phase is driven by the need to grant maximum control to the promoters of the entrepreneurial initiative, who can move to external financiers only if the company produces positive results, in line with the literature on venture capital (Kaplan and Strömberg, 1999).

A vast body of literature emphasizes that the firm's life cycle is a key driver of SMEs' financing policies, which evolve over time as the firm changes its characteristics. Among these studies, the one by La Rocca *et al.* (2011) is particularly relevant. The authors have, in fact, demonstrated that firms tend to adopt specific financing strategies and a distinct hierarchy of financial decision-making as they move through the stages of their business life cycle. Their results showed that contrary to conventional wisdom, debt is found to be crucial for business activities in the early stages, serving as the first choice for financing. In contrast, during the maturity stage, firms adjust

their capital structure by gradually replacing debt with internal capital. For firms that have established their business, the pecking-order theory shows a high degree of applicability.

3. Data, Methodology and Variables

In answering the research question, in line with meny previous empirical studies we extracted the financial statements of Italian limited liability companies from the Orbis database (e.g. Fasano and La Rocca, 2024). Orbis is a dataset developed by Bureau Van Dijk, a company part of the Moody's group, specializing in data collection, processing, and distribution. Orbis is a global database providing detailed information on millions of companies, including Italian ones, covering financial, demographic, and corporate structure data. For Italian firms, Orbis obtains financial statement data from official sources, namely the Chamber of Commerce, ensuring updated and reliable information. Specifically, financial data were extracted for 512,027 Italian limited liability companies classified as SMEs based on the European Union definition over a 12-year period from 2012 to 2023. Subsequently, a statistical analysis was conducted, followed by an econometric analysis to address the research gap.

The variables considered are commonly used in studies in this field. Specifically, we used the same variables as La Rocca *et al*. (2011), additionally including a variable that measures a firm's liquidity level, which is important for private firms (Bigelli and Sánchez-Vidal, 2012). Leverage, which measures the overall financial debt level, calculated as the ratio of financial debt (both short- and long-term) to total assets, a commonly used measure to assess a firm's indebtedness. Cash, which represents the cash and cash equivalents available to firms, also expressed as a ratio to total assets. Size is the natural logarithm of total assets. ROA, calculated as the ratio of net income to total assets, which measures a firm's profitability level. Sales growth, which measures revenue growth year-over-year and serves as a proxy for the firm's ability to seize growth opportunities. Tangibility measures the proportion of tangible assets a firm holds relative to total assets, a critical variable as firms with more fixed assets can provide greater guarantees to banks. Lastly, the Age variable was calculated, representing the firm's age as the difference between the current year and the year of the firm's founding.

The Table 1 provides a description of the variables.

The methodology used follows that of La Rocca *et al.* (2011), which involves estimating the following model.

$$Leverage = Age + Age^2 + control\ variables$$

We used the OLS model with heteroskedasticity-robust standard errors. The dependent variable is Leverage. The capital structure choices during a firm's life are studied using a quadratic model, including both the variable Age, measuring the firm's age, and the variable Age², necessary to test for a potential nonlinear relationship. For better interpretability, the logarithm of the Age variable was used. Age is a crucial factor in financing decisions, as it often reflects the firm's ability to secure funding due to its reputation and higher likelihood of providing guarantees to banks.

Table 1 – Descriptions of variables

Dependent variable	**Calculation**
Leverage	(Long-Term Bank Debt + Short-Term Bank Debt) / Total Assets
Explanatory variables	
Age	Natural logarithm of a firm's Age
Cash	Cash & cash equivalents / Total Assets
Size	Natural logarithm of Total Assets
ROA	Net Income / Total Assets
Sales Growth	(Sales t – Sales t -1) / Sales t -1
Tangibility	Tangible Assets / Total Assets

4. Results

4.1 Descriptive Statistics and Correlation Matrix

Below are the descriptive statistics of the variables, including the mean, standard deviation, 23rd, 50th (median), and 75th percentiles, as well as the minimum and maximum values.

Table 2 – Descriptive statistics

	mean	sd	min	p25	p50	p75	max
Leverage	0.090	0.155	0.000	0.000	0.000	0.134	1.000
Age	15.222	13.404	0.000	5.000	11.000	22.000	143.000
Cash	0.172	0.192	0.000	0.026	0.101	0.256	3.201
Size	6.503	1.550	0.001	5.397	6.437	7.555	13.138
ROA	0.058	0.159	-0.777	0.014	0.046	0.109	0.591
Sales Growth	0.144	0.328	-0.269	-0.078	0.060	0.285	0.845
Tangibility	0.172	0.179	0.003	0.025	0.096	0.280	0.538

The Table 2 shows that the variable values align with the existing literature. The Table 3 presents the correlations between the variables of interest.

Table 3 – Correlation matrix

	1	2	3	4	5	6	7
Leverage	1.00						
Age	0.12***	1.00					
Cash	-0.23***	-0.11***	1.00				
Size	0.27***	0.48***	-0.25***	1.00			
ROA	-0.09***	-0.04***	0.23***	0.02***	1.00		
Sales	-0.06***	-0.20***	0.06***	-0.10***	0.19***	1.00	
Growth							
Tangibility	0.18***	0.19***	-0.25***	0.18***	-0.10***	-0.04***	1.00

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We also calculated the VIF for each variable, finding a maximum value of 1.12 and an average of 1.10. This indicates no significant multicollinearity issues among our variables.

4.2 Main Model Results

Table 4 shows the results of our main model.

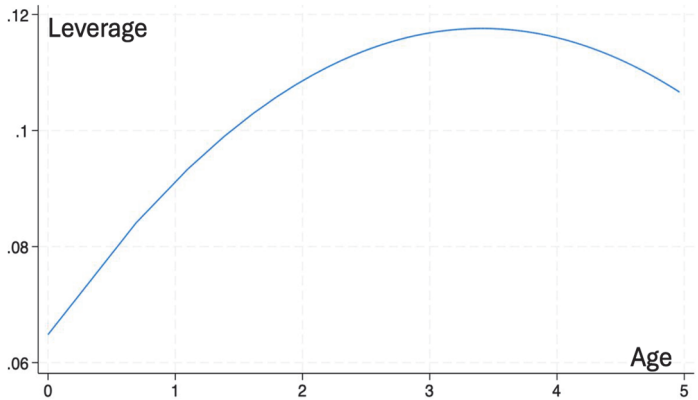
Table 4 – Main model results

	Leverage
Age	0.019***
	(63.92)
Age^2	-0.005***
	(-65.81)
Cash	-0.112***
	(-239.36)
Size	0.023***
	(-339.22)
ROA	-0.044***
	(-82.12)
Sales Growth	-0.004***
	(-15.36)
Tangibility	0.098***
	(186.78)
Number of observations	3.285.512
Adj R-squared	0.136

Industry and year fixed effects are included in the model. *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The model results show that the Age variable is positive and statistically significant, while its quadratic term is negative and statistically significant, confirming the existence of a nonlinear relationship. This approach captures more complex dynamics than traditional linear models, such as the possibility of the relationship diminishing, intensifying, or changing direction. The figure below graphically illustrates the results.

Figure 1 – The leverage-age relationship



In this case, there is a maximum point where the debt-age relationship shifts from positive to negative. This occurs during the maturity phase of the firm, as also shown by La Rocca *et al.* (2011). Italian firms exhibit a similar pattern, with an initial upward trend indicating that young firms increasingly rely on debt to finance their investments. Moreover, in the maturity phase, firms seek to rebalance debt to stabilize their capital structure. As firms grow, internally generated financial resources, along with alternative funding sources, replace debt, reducing the proportion of financing through loans. Results thus show that the conclusions reached by La Rocca *et al.* (2011) remain valid after many years.

4.3 Further test

The Table 5 shows the results distinguishing between long and short-term financial debt. The results of this further test show that the U-shaped age-debt relationship exists both at the presence of long and short-term financial debt.

We also distinguished between northern and southern Region to test whether there could be a different financial behaviour of SMEs operating in

geographical contexts with many economic and social differences. Results are reported in Table 6.

The results show that despite the many north-south differences the financial behaviour of northern and southern firms is the same and in line with our main model findings.

Table 5 – Further test debt maturity

	Long-term debt	Short-term debt
Age	0.084***	0.005***
	(61.08)	(25.33)
Age^2	-0.022***	-0.004***
	(-75.79)	(-9.41)
Cash	-0.186***	-0.080***
	(87.00)	(-284.44)
Size	0.015***	-0.009***
	(57.85)	(214.02)
ROA	-0.013***	-0.022***
	(-5.00)	(-67.56)
Sales Growth	0.024***	-0.004***
	(22.11)	(-21.78)
Tangibility	0.514***	-0.019***
	(268.79)	(-61.53)
Number of observations	3.285.512	3.285.512
Adj R-squared	0.104	0.111

Industry and year fixed effects are included in the model. *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 – Results for northern and southern Regions

	Leverage (subsample of southern firms)	Leverage (subsample of northern firms)
Age	0.011***	0.028***
	(18.78)	(58.96)
Age^2	-0.003***	-0.007***
	(-17.59)	(-66.72)
Cash	-0.049***	-0.156***
	(-57.54)	(-230.64)
Size	0.024***	0.021***
	(190.96)	(236.13)
ROA	-0.043***	-0.059***
	(-43.40)	(-73.84)
Sales Growth	-0.008***	-0.004***
	(-16.71)	(-9.21)
Tangibility	0.090***	0.089***
	(105.15)	(-129.93)
Number of observations	779.373	1.683.485
Adj R-squared	0.135	0.121

Industry and year fixed effects are included in the model. *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.4 Robustness test

As a robustness test we ran our main model using a different econometric technique, i.e. panel fixed effect. This model helps control for unobserved heterogeneity and provides more reliable estimates given the extensive longitudinal data. Results, which are reported in Table 7, support our main model findings.

Table 7 – Robustness test

	Leverage
Age	0.022***
	(62.81)
Age^2	-0.013***
	(-107.05)
Cash	-0.005***
	(-9.63)
Size	0.028***
	(176.97)
ROA	-0.065***
	(-133.48)
Sales Growth	-0.005***
	(-27.91)
Tangibility	0.102***
	(126.43)
Number of observations	3.285.512
Adj R-squared	0.067

Industry fixed effects are included in the model. *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5. Implications and conclusions

This study analyzed the capital structure choices of Italian firms, focusing on the impact of their life cycle on these decisions. This is a hot topic in managerial finance literature, and we specifically aimed to examine whether the findings of La Rocca *et al.* (2011) remain many years after the authors' contribution. La Rocca *et al.* (2011), using a dataset from 1996-2005, found—contrary to expectations at the time—that young firms heavily rely on debt. Despite their more challenging and costly access to debt, external resources from banks were crucial in the early stages. The lack of internally generated resources and a robust equity market supporting nascent firms led Italian SMEs to rely on debt during their early years, reducing its use over time.

Years later, our analysis confirms these findings, demonstrating that despite crises, wars, and economic changes over the years, the financing preferences of Italian firms remain unchanged. Our results highlight varying debt levels throughout the firm life cycle, with optimal debt levels depending on

firm age. Choosing between debt and alternative financing sources involves benefits and costs whose relevance changes over time. This trade-off evolves, driving firms to make different financial decisions at various stages. We thus observe that despite the financial difficulties faced by young firms, such companies tend to rely heavily on the use of debt, which seems to be the primary financing choice for these firms.

This study confirms that the capital structure decisions of Italian SMEs are strongly influenced by the stage of the business life cycle. The implications of our work suggest that companies, particularly SMEs, must carefully consider their life cycle stage and adapt their financial strategies accordingly. During the initial stages, it is crucial to develop a proactive approach to attract capital, leveraging available opportunities. Banks play a crucial role in supporting SMEs through targeted financing policies. Understanding the dynamics of the business life cycle allows financial institutions to develop specific financial products tailored to the needs of firms at different stages of development. For example, in the start-up phase, banks can offer loans guaranteed by public funds or collaborate with private investors. In later stages, they could focus on refinancing tools to support expansion or debt restructuring.

One limitation of this study is its reliance on historical data, which may not fully capture the most recent economic changes of the last year. Additionally, the analysis is limited to Italian SMEs, which may restrict the generalizability of the findings to other countries with different economic contexts. For future research, it would be beneficial to conduct similar studies in other Italian regions (see for example Butzbach and Sarno, 2019) or European countries (see for example Michaelas *et al*., 1999) to compare the capital structure decisions of SMEs across different economic contexts. Investigating the capital structure choices of SMEs within specific sectors could also provide valuable insights into sectoral variations. Finally, exploring how the digital (Fasano and La Rocca, 2024b) and ecological (Cariola *et al*., 2020) transitions influence the financing strategies of SMEs could provide important insights for both businesses and policymakers.

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