

## Small Business Financing.

### Financial preferences throughout the life cycle of a firm

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#### ABSTRACT

In this paper, the strategic financing choices of small businesses are examined through the lens of the business life cycle. The growth of small and medium-sized firms, i.e., those most vulnerable to information and incentive problems, is often constrained by the lack of access to external finances. Understanding the financial determinants of small and medium-sized firms at different stages of the business life cycle allows managers and policy-making institutions to correctly support firm growth. Here we argue that the controversy in the empirical literature on the determinants of financial decision-making is based on a failure to take into account the different degrees of information opacity, and, consequently, firms' characteristics and needs at specific stages of their life cycles. The explanatory power of financing theories based on informational opacity is therefore highlighted and tested in this study. The results of an inductive approach based on cluster analysis showed that, in a bank-oriented country, firms tend to adopt specific financing strategies as they progress through the phases of their life cycle, and that a firm's financing strategy is influenced, among other factors, by asymmetric information considerations and the role of financial institutions. Thus, firms follow a "pecking order" of financing over time. Young firms have inadequate internal financial resources to sustain growth and thus do not or, because of financial constraints in the capital market, are unable to seek new equity finance. Contrary to conventional wisdom, debt is fundamental to growth in the early stage of a firm. During their mature stages, firms rebalance their capital structure, substituting debt for internal capital. Therefore, start-up and young firms need an increasing amount of debt to sustain their growth, while they rebalance gradually their capital structure after a consolidation of the business. The pecking order theory seems to do not apply for young firms, where debt seems to be at the first place; by contrast, this theory has a high magnitude for firms that have consolidated their business.

**Key words:** *Financing decisions, source of finance, capital structure, financial growth cycle, small and medium sized firms.*

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## 1. Introduction

An analysis of the international literature on capital structure, as one of the main elements in determining value, shows that a main research priorities is the attempt to apply capital-structure theory to small firms (Berger and Udell 1998, Michaelas *et al.* 1999, Romano *et al.* 2001, Gregory *et al.* 2005)<sup>2</sup>. Small and medium-sized firms play an essential role in the European economy. They account for more than 95% of the total number of operating firms and for around two-thirds of jobs and half of the turnover in the non-agricultural business sector (European Commission and Eurostat 2001). Given their economic relevance, the role of the small and medium-sized firms and their ability to growth and have success is essential for the economic development. The ability of firms to grow is important, because it has been suggested that firms with low or negative growth rates are more likely to fail (Phillips and Kirchhoff, 1989). Due to their prominent role in the economy, the source of finance to support their growth is a crucial topic. In particular, Storey (1994) suggests that firm growth is affected by the availability and cost of funding; the availability of finance for investment is vital to the sustainability and viability of a small and medium-sized firm. Their growth, both considering start-up and existing companies, significantly depends on access to external finance. Small businesses are likely to suffer most from information and incentive problems and thus are particularly constrained in their capacity to obtain external finances (Berger and Udell 1998). Carpenter and Petersen (2002) show empirically that the growth of small firms is constrained by the source of finance. Therefore, much of the attention surrounding the growth of small and medium-sized firms is affected by capital-structure decisions (Gregory *et al.* 2005).

The issues that are most important for capital structure decisions of small and medium-sized firms differ from those of large corporations and, correspondingly, this gives rise to different financial behaviors. Among several aspects that distinguish small from large companies<sup>3</sup>, one of the most important is *informational opacity* (Berger and Udell 1998). This informational opacity, in the form of costly verification, adverse selection, and moral hazard, typically affects the financial policy of small firms, specifically in terms of debt and external equity sources<sup>4</sup>. Costly verification and adverse

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<sup>2</sup> Zingales (2000) also has emphasized the fact that "...the attention shown towards large firms tends to partially obscures (and often ignore) firms (of small and medium size) that do not have access to the (public) financial markets...".

<sup>3</sup> Large firms use a variety of financing instruments, public and private, while small firms typically use bank loans and private equity, mainly based on the financial support of the entrepreneur and his or her family. Moreover, small businesses do not issue securities that are priced in public markets.

<sup>4</sup> According to Berger e Udell (1998), the opportunities to invest in positive net present value projects may be blocked if potential providers of external finance cannot readily verify that the firm has access to a quality project (adverse selection

selection problems tend to favor debt contracts, whereas moral hazard problems tend to favor external equity contracts (Berger and Udell 1998). The lack of external finance, and in particular of debt or equity, may reflect an entrepreneurial choice but it can also be due to inefficient local financial institutions. Specifically, the effects of financial institutions on the various types of external finance differ such that the relative amount of debt may strictly depend on the abilities of these institutions to solve information problems, e.g., by engaging in screening, contracting, and monitoring activities (Beck *et al.* 2002)<sup>5</sup>.

In one of the most interesting studies of capital structuring, Berger and Udell (1998) asserted that general financial theory is not applicable to all businesses; instead, the particular phase of a business's *life cycle* determines the nature of its financial needs, the availability of financial resources, and the related cost of capital. This approach supports financial behaviors that are life-cycle-specific. As argued by Kaplan and Stromberg (2003), the changing degree of informational opacity that confronts a firm drives its financial growth cycle. From its inception until maturity, the financial needs of a firm change according to its ability to generate cash, its growth opportunities, and the risk in realizing them. This will be reflected by evolving financing preferences and the nature of the specific financial choices that a firm makes during its life cycles. As a consequence, firms at the earlier stages of their life cycles, that arguably tend to have larger levels of asymmetric information, more growth opportunities, and reduced size, should have specific capital structure drivers and applying specific financing strategies as they advance through the different phases of their life cycles.

Despite recent attention to this topic, data on their financing structure during the course of their life cycles are rather limited and the results are inconclusive (Gregory *et al.* 2005). Thus, we still need to enhance our understanding of firms' financial choices in this area, in particular verifying the existence of a *pro-tempore* optimal capital structure and the drivers that are potentially relevant to explain capital structure decisions as they progress along the different phases of their life cycle<sup>6</sup>. In some contexts, equity (specifically, venture capital) has been shown to play a role in the early stages, while debt becomes relevant only in the late stages. In other contexts, the support of a financial intermediary (bank) is fundamental in early stages, whereas the capital structure is rebalanced in later

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problem), ensure that the funds will not be diverted to an alternative project (moral hazard problem), or costlessly monitor use of the revenue by the firm they invest in (costly state verification).

<sup>5</sup> Beck, Demircuc-Kunt, and Maksimovic (2002) showed that small firms are the most credit-constrained by underdeveloped institutions.

<sup>6</sup> Moreover, this topic is of particular interest also in the valuation of the firm, considering that capital structure decisions, differing along the stages of the life cycle of the firm, directly affect the opportunity cost of capital and the market value of the firm.

stages. A common consensus is the importance of the institutional environment in which a small firm is based (Beck *et al.* 2002 and 2005). To operate in the USA or in Italy, small businesses must have access to a different variety of financial solutions in order to sustain growth in light of asymmetric information. Thus, the financing preferences of these firms are complex and the appropriateness of the available options deserves further research.

The present study contributes to this area of research in that it seeks to verify whether life-cycle is relevant factor in a firms financing behavior. An empirical analysis is used to evaluate the role of the life-cycle and the differences in the determinants of the debt/equity ratio throughout the life cycles of Italian small businesses. Specifically, the following questions are addressed: Do Italian firms have different financial structures during different stages of their life cycles? How do Italian capital-structure determinants change in the course of a firm's life cycle?

The paper is structured as follows. The first part examines the strategic financing choices of firms through formal research hypothesis. In the second part, the sample is introduced, the variables and the model are applied, and the results are shown. The third part consists of the conclusions and a discussion of the implications for management and for future research.

## **2. Capital Structure and Financial Life Cycle**

The notion that firms evolve through a financial growth or life cycle is well-established in the literature. However, there is disagreement concerning sequential financing choices and the debt/equity ratio. Moreover, the growth-cycle paradigm does not fit all small businesses (Berger and Udell 1998), and differences exist not only for management determination but also regarding different *industry* affiliation and *institutional environment* in which firms operate (Harris and Raviv 1991, Beck *et al.* 2002, Rajan and Zingales 2004, Utrero-González 2007). In their review of the capital structure literature, Harris and Raviv (1991) noted that it is generally accepted that firms in a given *industry* will have similar leverage ratios, which overtime are relatively stable, while leverage ratios vary across industries. Specifically, industry is a significant determinant of leverage, that alone has been found to explain up to 25% of within-country leverage variation (Bradley, Jarrell and Kim 1984). Moreover, the *institutional environment* has also a crucial influence on capital-structure decisions, as recently documented by Titman *et al.* (2003) for large companies and by Gaud *et al.* (2005) for small firms. More than the type of financial system (market-based or bank-based), it is the efficiency of the financial system (Rajan and Zingales 1995, Wald 1999, Booth *et al.* 2001, Zingales *et al.* 2004) and of the general institutional context (Petersen and Rajan 1994 and 1995, Berger and Udell 1995) that

determine the financial growth of firms affecting capital structure decisions. Therefore, hypotheses on capital-structure determinants must take into account industry affiliation and the institutional environments. This is particularly the case for firms that are opaque and affected by asymmetric information.

### 2.1 Financial Life Cycle: Theory and Hypothesis

Several hypothesis, as synthesized in table 1, can be proposed to consider the life-cycle in explaining firms financing behavior.

Table 1 – Main hypothesis

Hypothesis	Description of the hypothesis
<b>H.1</b> (pecking-order theory): Myers (1984), Holmes and Kent (1991), Chittenden <i>et al.</i> (1996), Michaelas <i>et al.</i> (1999).	Financial managerial preferences depends on the costs of information asymmetries and of transaction costs, pushing for the utilize at first place of retained earnings, then debt and at last equity. The level of debt in a firm's capital structure is adjusted in response to difference sensitivity to financial needs of the firm over its growth cycle. More-profitable firms will retain earnings and become less leveraged.
<b>H.2.a</b> (financial life cycle): Fluck (2000), Kaplan and Stromberg 2003, Carey <i>et al.</i> (1993), Helwege and Liang (1996)	A life-cycle pattern of firm financing assumes that small firms, that are particularly sensitive to asymmetric information problems, will use outside equity first (such as venture capital finance) and retained earnings, issuing debt at last to satisfy their subsequent financing needs.
<b>H.2.b</b> (reputational effect): Fluck, Holtz-Eakin and Rosen (1998), Diamond (1989)	Young firms, without past experience and a track record, have a low debt capacity. A reputation argument supports the convenient use of debt only in the maturity stage.
<b>H.3.a</b> (reverse financial life cycle): Petersen and Rajan (1994), Hamilton and Fox 1998	Young firms rely on the closest sources of financing, i.e., family capital and bank capital based on family pledges. Firms rebalance their capital structure at the maturity stage. As the firm grows, internal self-generated financial resources substitute debt and the fraction of borrowing declines as the firm matures.
<b>H.3.b</b> (reputational searching effect): Diamond (1991)	Young firms seek to obtain certification of their quality and acquire credibility in the product market by submitting themselves to monitoring by banks. In an actively growing firm and, especially, in a mature one, monitoring becomes secondary, as the track record signals both quality and reliability, the debt level declines.

The use of internal resources as a substitute for external finance must be acknowledged, as in the pecking-order theory, as these reflect the severity of asymmetric information problems. Accordingly, in this study, hypothesis 1 deals with the role of profitability and the preferences regarding internal resources vs. debt. Hypotheses 2 and 3, each of which is further divided into two formulations, address the different theoretical financial preferences during the life cycle of a firm. Hypothesis 2.a attempts to describe the financial life cycle with respect to the age of a firm, while hypothesis 3.a is the reverse formulation. Hypothesis 2.b attempts to describe the financial life cycle with respect to the role of a firm's reputation, while hypothesis 3.b is the reverse formulation. Finally, due to the fact that the previous mentioned effects can be heterogeneous for different industries and for firms operating in different institutional context, we explicitly take into account for industries affiliation and for the context of analysis.

**Hypothesis 1** (pecking-order theory): The main approach to interpret capital-structure choices from the asymmetric information point of view is the pecking-order hypothesis (Myers 1984), which

suggests that firms finance their needs in a hierarchical fashion. Myers (1984) and Myers and Majluf (1984) pointed out the role of managerial preferences in the choice of financing resources. These choices are made by considering the relative costs of the various sources of finance due to information asymmetries and of transaction costs. The pecking-order theory proposes that firms prefer to use internal sources of capital, relying on external sources only when the internal ones are exhausted. As a result, firms prefer to use less information-sensitive securities, with retained earnings being the most preferred financing source, followed by debt, and then equity capital<sup>7</sup>. This implies that more-profitable firms will retain earnings and become less leveraged, while less-profitable firms will become more leveraged, thus demonstrating an inverse relation between profitability and financial leverage. The pecking-order theory seems particularly relevant for small and medium-sized firms due to their typical features and limited access to external finance (Holmes and Kent 1991). In particular, the pecking order hypothesis provides an instrumental tool to analyze the strategic financing problem of firms along the life cycle (Rocha Teixeira and Coutinho dos Santos 2005). It states that no optimal level of debt becomes “objectively” evident; instead it becomes apparent as a firm’s situation changes over time. Thus, the proportion of debt in a firm’s capital structure is adjusted in response to the impending financial needs of the firm over its growth cycle. Empirical evidence from previous studies that examined small and medium-sized firms (Chittenden *et al.* 1996, Michaelas *et al.* 1999) was consistent with the pecking-order argument, since leverage was found to be negatively related to profitability. Therefore, the empirical model employed here included profitability, defined as earnings before interest, taxes, depreciation, and amortization (Ebitda) to capital (Sogorb-Mira 2005, Fama and French, 2002, Michaelas *et al.* 1999).

**Hypothesis 2.a** (financial life cycle): For start-ups, which are “the most informationally opaque” type of business, it is difficult to obtain external funding (Berger and Udell 1998). Information opacity prevents investors in small firms from distinguishing between high-quality and low-quality companies. Consequently, Berger and Udell (1998) argued that debt, due to the higher interest rate applied by lenders to hedge against the higher default probability, is costly for young firms. Due to asymmetric information, young, informationally opaque firms are less leveraged. This phenomenon can inhibit small firms from using external funding at all (Weinberg 1994), in addition to the fact that cash-flows are needed to service interest payments, and small and young business are typically not able to generate positive cash-flows in the early stages. Consequently, according to Fluck (2000), and to the empirical

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<sup>7</sup> Pinegar and Wilbricht (1989), in their survey, observed that external debt is strongly preferred over external equity as a way to raising funds.

results of Carey *et al.* (1993) and Helwege and Liang (1996), young firms are financed mainly by insiders, business angels, and venture capital. Equity as a source of funds allows the soundness of an investment to be monitored, while “patient” capital can wait for long-term economic returns on investments and thereby meet the longer financial needs of a young firm. Especially given an imperfect market, the venture capitalist professionally supports a young firm with his or her financial resources and skills (Kaplan and Stromberg 2003). In regards, Carey *et al.* (1993) and Helwege and Liang (1996) showed that small entrepreneurial firms frequently issue outside equity before they issue debt. Bank debt is typically more readily available after a firm has achieved significant tangible assets that might be collateralized. The use of debt increases over time and becomes particularly important in the maturity stage of a business (Berger and Udell 1998). As a firm becomes larger and more mature, and less informationally opaque, its financing choices change, including better access to the debt market (Chittenden *et al.* 1996). Therefore, leverage increases with age, as young firms are financially constrained while old firms have convenient access to external finance. Therefore, this life-cycle pattern of firm financing assumed that small firms will use outside equity first (such as venture capital finance) and retained earnings, issuing debt at last to satisfy their subsequent financing needs. This approach contrasts with that described in the pecking-order model mainly with respect to the financing choices of start-up firms.

**Hypothesis 2.b** (reputational effect): Also a reputation argument supports the convenient use of debt only in the maturity stage. Young firms, without past experience and a track record, have a low debt capacity. Vice versa, firms that have consolidated their business, with past history, past profitability, track record, and credibility and reliability in the product market, are not constrained in the credit market and can obtain finance under good economic terms. These firms have typically developed a positive reputation to be spend the financial market (Diamond 1989). Therefore, early in the growth cycle, small businesses have little repayment history or record of profitability upon which external suppliers of funds can rely. For such firms, internal resources (by entrepreneur or his family) are fundamental, and when these are exhausted, venture capital becomes the primary choice. After a period of sufficient profits as well as reliability and credibility in the market, firms gain a positive reputation and are thus able to readily obtaining the required financing, including debt (Hirshleifer and Thankor 1992). As the firm matures, outside stakeholders can examine the firm’s track record and its creditworthiness over time. A firm’s reputation attenuates the problem of asymmetric information and improves its access to external sources of funding, such as trade credit and bank debt (Diamond 1989). Thus, gaining a reputation in the market over time, reducing moral hazard problems, provides to older

firms better conditions for using debt as source of finance. As stated by Diamond (1989) older firms will be able to increase their use of debt. Empirically, Fluck, Holtz-Eakin and Rosen (1998) find that the proportion of funds from insiders increases during the early stages of firm's life cycle, while the proportion of outsider finance declines. However at some point this relationship reverses. They interpret this result as a consequence of the development of a positive reputation in credit markets which allow the firm to obtain cheaper sources of external financing.

**Hypothesis 3.a** (reverse financial life cycle): Entrepreneurs' financial resources and those of their families are, by definition, limited; thus, for a young firm insider financial resources are usually not sufficient to allow start-up and growth. The role of debt funds in providing needed financial support beginning at the start-up phase and continuing thereafter can be explained by the entrepreneur's aim to sustain growth and retain the control of the business (Hamilton and Fox 1998)<sup>8</sup>. Berger and Udell (1998) observed that young firms may be heavily financed by external debt from financial institutions, because this funding is not entirely external<sup>9</sup>. When loaning money to small businesses, most financial institutions require that the owners personally guarantee the loan. These guarantees give the institution recourse to the personal wealth of the small-business owner in the event of default. Similarly, Petersen and Rajan (1994) found that young firms (less than 2 years old) rely most heavily on loans from the owner and his or her family and then on bank loans. Moreover, in their initial years of this business, the largest incremental source of funds is from banks, with the dependence on personal funds gradually decreasing. As the firm grows, a devoted entrepreneur will remain inclined to place self-generated financial resources into the firm. These funds provide further capital and thus the fraction of borrowing from banks declines as the firm matures. Therefore, firms rebalance their capital structure at the maturity stage. Empirically, Robb (2002) reports, in contrast to Fluck, Holtz-Eakin and Rosen (1998), that younger firms use relatively more debt than older firms. Moreover, according to Petersen and Rajan (1994), leverage decreases with the age of the firm, as young firms are externally financed while mature ones mainly use retained earnings and equity. These authors suggested that firms follow a "pecking order" of borrowing over time, starting with the closest sources, i.e., family capital and bank capital based on family pledges, and then progressing to more external sources.

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<sup>8</sup> Furthermore, since small businesses are usually owner-managed, the owner/managers often have strong incentives to issue external debt rather than external equity in order to retain ownership and control of their firms (Berger and Udell 1998); indeed, venture capitalists seek to take part in corporate decisions.

<sup>9</sup> The availability of external finance to small business is likely to be highly dependent upon the institutional environment (Demirguic-Kunt and Maksimovic 1996). An information-poor environment, characterized by a weak system of investor protection and poorly developed mechanisms for information sharing, will lack venture-capital markets and has only limited ability to sustain small business without collaterals.



**Hypothesis 3.b** (certification hypothesis): Young firms seek to obtain certification of their quality by submitting themselves to monitoring by banks. This action supports the credibility and the quality of the business with regards other stakeholders. Thus, in the initial stage of its life cycle a firm will allow itself to be monitored by a bank in order to overcome the handicap of its lack of reputation, credibility, and reliability, as well as its difficulties in acquiring customers and interacting with stakeholders (Diamond 1989 and 1991). This reputation-based capital can be used to reinforce the quality perception of the business by other stakeholders in the product market (Berger and Udell 1998). Vice versa, monitoring becomes of secondary importance in the maturity stage, when the firm grows to the point that it becomes self-sufficient in providing signals as to its quality and reliability, based on its cumulative history. Therefore, according to Diamond (1991), the role of the growth cycle in the use of debt is linked to a firm's ability to gain a reputation in the market. In this regard, monitoring is important for reducing information asymmetries and screening moral hazard problems. Young firms lack credibility and thus a positive reputation that is advantageous when interacting with stakeholders (customers, suppliers, employees, etc.). For this reason, financial intermediaries play a critical role in private markets as producers of information on the borrower. They can assess small-business quality and address information problems, through the activities of screening, contracting, and monitoring, before granting credit. Intermediaries screen potential customers (firms) by conducting due diligence, including collecting information about the business, the market in which it operates, any collateral that may be pledged, and the entrepreneur or start-up team. Diamond (1991) argued that the lack of a track record and of creditworthiness can be balanced by the firm through its decision to submit itself to bank monitoring, which can confirm the quality of the business and supports its competitiveness. Monitoring of private information is more efficiently delegated to a financial intermediary rather than to numerous equity investors (Diamond 1984)<sup>10</sup>.

To sum-up, hypothesis 1 suggests the existence of an order of preferences in the financing choices of small and medium-sized firms that face asymmetric information problems. The financial growth cycle suggests the possible existence of different order of preferences among the use of debt along the life cycle of the firm. According to hypotheses 2.a and 2.b, in the absence of family financial resources, early-stage firms start by using equity sources of finance and then rebalance their capital structure in later years using debt. Conversely, according to hypotheses 3.a and 3.b, in the absence of

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<sup>10</sup> In a second scenario Diamond (1989), observed that the institutional environment, in which incentive and informational problems can be more or less severe, influences the use of debt funds; if moral hazard is sufficiently widespread, then firms will build their reputation by being monitored by a financial intermediary.

family financial resources, firms start by using debt as the source of finance and rebalance their capital structure in later years reducing the use of debt. In general, financial preferences along a firm's life cycle can be heterogeneous by industry affiliation and varies according to the institutional environment; thus, our analysis has to control for these factors.

## ***2.2 Role of Industry Affiliation and Institutional Context***

Galbraith (1983) states that industry is the primary determinant of all aspects of firm performance and behavior. *Industry affiliation* may have a relevant influence upon financing choices (Lopez-Garcia and Aybar-Arias 2000); firms within a particular industry, facing similar prevailing circumstances, tend to adopt an analogous financing pattern (Holmes *et al.* 2003). A review of the literature (Harris and Raviv, 1991) suggested a strong relationship between industry classification and average firm leverage ratio, highlighting the existence of differences across industries but consistency within industries. Hall *et al.* (2000) point out that also agency costs may vary across industries and lead to inter-industry differences in financial structure. In general, the life cycle of the firm is affected by the kind of industry a firm operates. The effect of industry affiliation on the life cycle was suggested already in the 1981 by Weston and Brigham. They claimed that life-cycle differs between high-growth and low-growth industries, or between emerging and traditional industries. Industry-specific features affect the role of tangible asset, business risk and growth opportunity influencing their debt ratios. For example, firms operating in high-growth industries carry less leverage, because they have stronger incentives to signal that they do not engage in adverse selection and moral hazard costs in the form of underinvestment and asset substitution. By contrast, firms operating in low-growth industries should use debt because of its disciplinary function in signalling the lack of misuse of free cash flows. However, small and medium-sized firms in high-growth industries have, as stated by Michaelas *et al.* (1999), a greater demand for funds and, *ceteris paribus*, a greater preference for external financing through debt. Young firms, and especially those that operate in fast growing sectors, tend to have greater external financing requirements than firms in low-growth sectors. Empirical findings provide strong support for the hypothesis that industry has an influence on the capital structure of small and medium-sized firms. Hall *et al.* (2000) and Michaelas *et al.* (1999), for UK small and medium-sized firms, Lopez-Garcia and Aybar-Arias (2000) for Spanish small and medium-sized firms, and Van der Wijst and Thurik (1993) for West German small and medium-sized firms observed that leverage ratios vary across industries. Therefore, the role of industry affiliation seems to be relevant but the effect on capital structure of small and medium-sized firms needs to be controlled for.

Moreover, previous studies have highlighted the existence of systematic differences in the capital structure claims issued by companies operating in different *institutional contexts* (Rajan and Zingales 1995, Chittenden et al. 1996, Demirgüç-Kunt and Maksimovic 1998, Hall et al. 2001, Lopez-Iturriaga and Rodriguez-Sanz 2007, Utrero-González 2007). The efficiency of the institutional context can reduce problems of opportunism and asymmetric information, with significant effect on the relative magnitude of the costs and benefits associated to debt. The prevalent research has examined companies that face a wide range of institutional environments and has been based on cross-country studies (Chittenden et al. 1996, Levine 1997, Demirgüç-Kunt and Maksimovic 1998, Booth et al. 2001, Titman et al. 2003, Hall et al. 2001). However, a recent literature focused on differences in institutional setting *at local level* (Guiso et al. 2004). In a single country institutional differences can exist at a local level, playing a crucial role in determining corporate financial decisions. Petersen and Rajan (2002) documented the importance of distance in the provision of bank credit to small firms, especially in a country where the problems of asymmetric information are substantial. This argument is close to contemporary debates in Economic Geography, interested in the understanding of firm financing across different regional contexts (Martin 1999, Pollard 2003), and in Regional Economic (Dow and Montagnoli 2007). Specifically, the research into the relationship between law and finance (La Porta et al. 1998) takes into account the role of institutional factors, such as the efficiency of financial and enforcement systems. According to Titman et al. (2003) a principal source of the wedge influencing capital-structure choices may be asymmetric information and the cost of contracting between companies and potential providers of external financing; this wedge is particularly high in presence of a poorly developed financial system<sup>11</sup>. A well-developed financial system can facilitate the ability of a company to gain access to external financing, providing cheaper financing to worthy companies (Guiso et al. 2004). Moreover, differences in financial development also reflect differences in credit protection (Demirgüç-Kunt and Maksimovic 1999, Cheng and Shiu 2007)<sup>12</sup>. Due to the risk of default and the difficulty to get back the liquidation value of the collateral, judicial enforcement affects the ex-ante availability of agents to provide finance. Although the legal system applies all over a country the court efficiency does not equally work among different areas. Therefore, among different geographical areas, more developed and efficient local institutions should allow for a higher use of debt. The

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<sup>11</sup> It appears that firms can raise finance more easily as the financial system develops because physical collateral becomes less important, while intangible assets and future cash flows can be financed. As the financial system develops, it should be able to easily appreciate the soundness of the firm's projects and of its managerial behaviors (Rajan and Zingales 1998).

<sup>12</sup> The *judicial enforcement* is important because the financial system and the regulations governing it work in the interest of investors, protecting creditors only to the extent that the rules are actually enforced.

influence of local institutional factors on capital structure decisions is particularly relevant for small and medium-size firms; these firms face different menus of choices, opportunities and constraints according to the geographic context where they are based (Pollard 2003). While large companies that can operate multinationally are affected by country institutional factors, smaller companies are instead influenced by local institutional factors, that seems to be still important despite the international phenomenon of market integration (Guiso et al 2004).

### **3. Italy as Context of Analysis**

Any research into the Italian economy must take into account the distinct features of Italian industrial and financial structure. In Italy, there is a high concentration of small and opaque firms well-suited for testing theories concerning asymmetric information. While the proliferation of small-scale enterprises has often been pointed to as one of the reasons for Italy's economic success, the limited types of external funds available to Italian companies make them prone to financing constraints. Italian small firms are financially vulnerable because of their dependency on financial institutions for external funding. In this as in other bank-based countries, financial institutions have a significant impact on the supply of credit available to small businesses to support their growth.

Capital markets in Italy are relatively undeveloped compared not only to those in the US but also, to some extent, to those of other large European countries. Although Italy has a bank-oriented financial system, the Italian banking system, until very recently, was not allowed to hold equity in companies and was mostly state-owned and heavily regulated, which limited its effectiveness. Very few companies in Italy have publicly traded corporate debt. Bank debt is by far the most important source of outside funds for Italian firms, and bank loans are the largest net source of external financing. Due to the lack of transparency regulations and high information asymmetries, the contract's costs between borrowers and lenders are high. Non-bank sources of debt, other than trade credit, are few. In relationship-based lending, such as often occurs in Italy, banks acquire information over time through contact with the firm, its owner, and its local community, and they use this information to decide on the availability and terms of credit to the firm.

The institutional framework of the Italian financial system, marked for a long time by a very restrictive regime in terms of the geographical mobility of banks (Alessandrini and Zazzaro 1999). As regards their operative sphere, and the structure of Italian industry, which is largely based on networks of small and medium firms, have made the local bank a primary actor in the development of local economies (Banca d'Italia 2008). A significant disparity exists among different macro-areas in the

country. In particular, the South of Italy is characterized by underdeveloped and inefficiency in the financial system as well as in the enforcement system. In this case a poor institutional environment is provided especially for small and medium-sized firms.

By taking these financial and industrial features of Italy into account it is evident the role of the institutional context in affecting financing decisions for small and medium-sized firms. In light of these arguments, Italy represents an interesting case study. Italy has a financial system that is highly integrated with international financial markets; however, the level of efficiency of the financial system among regions is different (Guiso et al. 2004). Moreover, although Italy has a perfectly integrated market from a legal and regulatory point of view and the same laws apply throughout the country, the enforcement system differs at local level (Bianco et al. 2005). Furthermore, Italy is appropriate for this kind of study because its economy is dominated by small and medium-size firms that do not have the possibility to overcome local constraints by expanding nationally or internationally. Thus, Italy provides an ideal laboratory to test the effect of institutional factors on capital structure.

## **4. Methodology and Data**

### **4.1 Sample**

Guiso (2003) highlighted the fact that Italy has many more small businesses than found in countries at similar stages of development. Kumar *et al.* (1999) noted that the 3.2 million firms in Italy have an average of 4.4 employees whereas the average firm size, measured by the number of employees, in Germany, France, and the UK is respectively 10.3, 7.1, and 9.6. In Italy, firms with less than 100 employees account for close to 70% of total employment, while in Germany, France, and the UK such firms do not contribute more than 30% to employment.

As discussed above, small businesses strictly depend on external finance and, at the same time, are vulnerable to asymmetric information problems. They can thus be constrained by leverage decisions. For this reason, capital structure is a relevant topic for small firms, because it influences their growth patterns. In Italy, credit availability has a strong impact on the growth potential of small firms and on the creation of new ones (Zingales *et al.* 2004). Therefore, small and medium-sized Italian firms provide an interesting case-study to analyze the relationship between asymmetric information, growth cycle, and capital-structure decisions. The sample employed in the study was stratified according to the definition of small and medium-sized firms, defined by EU criteria and based on information obtained from the database<sup>13</sup>. The AIDA (Analisi Informatizzata Delle Aziende) database, collected by Bureau

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<sup>13</sup> Data were obtained for firms with less than 250 employees and total sales of less than €40 million.

Van Dijk, was used in selecting the companies comprising the study sample. A panel-data analysis was carried out to empirically examine the previously described hypotheses<sup>14</sup>. The panel sample was made up of 10242 Italian non-financial small and medium-sized firms not involved in a bankruptcy process; the period studied was from 1996 to 2005. The dataset was restricted to observations that embodied all essential variables for which a record of at least 5 years over the study period was available. The number of firm-year observations was well-balanced across the sample. All of the variables used in the study were based on book values.

#### **4.2 Methodology and Dependent Variable**

To understand corporate financing decisions concerning the capital structure of small firms, sensitivity to asymmetric information along the life cycle was verified. This was done with an empirical procedure that considered the above-described research hypotheses. To account for information opacity across the different stages of the life cycle, the following model was estimated:

$$\text{Leverage} = f [\text{Age}, \text{Age}^2, \text{Profitability}, \text{Local financial development indicator}, \text{Size}, \text{Tangibility}, \text{Group participations}, \text{Ownership structure}, \text{Growth opportunities}, \text{industry dummies}]$$

Empirically we applied a least-squares dummy variable (LSDV) approach, as Michaelas *et al.* (1999) have done. Since the sample was quite large (69,694 observations), there were no problems concerning degrees of freedom in the application of a fixed-effects model estimated in the least-squares dummy variable (LSDV) form. This approach introduces firm type (industry) and time-specific effects into the regression equations, which, in turn, reduces or avoids bias with respect to omitted variables. As a result, the firm type (industry) and the time-specific effects of the omitted and the included variables are captured (Showalter 1999). The econometric technique used in the model included the computation of heteroskedasticity-consistent standard errors. The dependent variable used as a proxy of capital structure was financial leverage. This was calculated as the ratio of financial (or interest-bearing) long-term and short-term debt (excluding trade debt) divided by the total financial debt plus equity (as in Titman *et al.* 2003, Giannetti 2003, Rajan and Zingales 1995).

The model previously expressed is intended to analyze capital structure decisions along the life cycle, through the use of the variable *age*. Firm's age was calculated as the natural logarithm of the number of years since the date of its incorporation. This number was used to determine the stage of the firm during its life cycle, its development of a reputation, and the amount of available information

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<sup>14</sup> Deleted from the dataset were several outliers, in order to reduce their impact on the results. All firm-year observations for which variables used in the estimation were below the 1st percentile or above the 99th percentile were deleted.

concerning the firm and its quality. A positive (or negative) relationship between this variable and debt levels was expected according to hypotheses 2.a, and 2.b (3.a and 3.b). In addition, capital-structure variation at specific threshold points, as argued by Berger and Udell (1998), was taken into account. Specifically, changes in capital structure can be a non-linear function of a firm's age, as considered by Brewer III *et al.* (1996). Thus, to account for non-linearity in the model, the variable AGE<sup>2</sup> was included<sup>15</sup>.

The model consider and control explicitly for the existence of a non-homogeneous financial growth patterns in the capital structure determinants.

Concerning *industry affiliation*, as shown by Harris and Raviv (1991), the relevance of industry-specific features on the capital structure decisions requires the inclusions of industry dummies in the model, in our analysis based on the classification's first two-digits. Instead to present in tables the coefficients for all the dummies the analysis showed the existence of an homogeneous financial life cycle through industries comparing the results for high-tech and traditional sectors. However, considering that Holmes and Cassar (2001) indicate that the control of industry grouping in the regressions had limited effect on the inferences, although industry effects were generally found to be significant, it is noteworthy to verify whether small and medium-sized firms may experience different financing life cycles, both within and across industries. Specifically, at the empirical level, the analysis compare the general results with the output provided considering a sample of firms operating in high-growth industries and a sample of firms operating in traditional and mature industries.

The role of the *institutional context*, fundamental in the provision of funds to small and medium-sized firms, is considered in the model by considering the well-known difference in the South of Italy, characterized by a poor developed and inefficient institutional context, against other Italian macro-areas. Regions that are financially better developed can offer credit to firms at a reasonable price; by contrast, in the regions of the South of Italy, with a low level of financial development and a low protection by the court, the large amount of asymmetric information makes it unlikely that a small firm will have access to reasonably priced external financing. For these reasons, the dummy South, a dummy equal to one for regions south of Rome, is expected to reflect the negative influence of poor and inefficient institutional context on the access to debt, particularly in the case of young firms which are typically in need of external finances.

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<sup>15</sup> In the empirical analysis, other functional forms were tested but they did not add relevant significance to the model.

Several other proxies that have been mainly used in the empirical literature were selected as explanatory variables. The variable *size*, measured by the log of total assets, is included in the model (Sogorb-Mira 2005, Michaelas *et al.* 1999). Since large firms tend to have more easily collateralized assets and more stable cash flows, a company's size is inversely related to the probability of default, allowing to carry more debt. Diamond (1991) also noted that large established firms have better reputations in the debt markets, which allows them to carry more debt. In the model we considered also *asset tangibility*, measured as the ratio of the property, plant, and equipment to total book assets, that can be used as collateral (Van der Wijst and Thurik 1993, Ang 1992). Similar to the issue of size, tangible assets or collateral, by conveying information to investors about the quality of a firm, reduce the degree of information asymmetry and opaqueness (Bonaccorsi di Patti and Dell'Araccia 2004). In the model a *dummy group* is considered; belonging to a business group can mitigate the information asymmetry problems that plague firms going externally to obtain credit (Verschueren and Deloof 2006, Deloof and Jegers 1999). *Growth opportunities*, defined as the percentage change in sales from the previous to the current year, is also considered (Sogorb-Mira 2005, Michaelas *et al.* 1999, Titman and Wessels, 1988). Due to the fact that the governance of a firm, and thus its financial decision-making, is strictly influenced by the *ownership structure* (Jensen and Meckling 1976), our analysis contained a variable that addressed different levels of ownership control, with 0 defined as ownership concentration less than 5%, and 8 representing greater than 50% direct or indirect control of a firm.

#### **4.3 Descriptive statistics**

A preliminary study of our data sample provided the main descriptive statistics of dependent and explanatory variables. Table 2 shows the main descriptive statistics for the variables used in the analysis for the entire sample and for firms during their life cycle, according to the groups sorted by the cluster analysis approach. A brief review of the entire sample shows that the means and medians of several of the variables were asymmetrically distributed. However, since small and medium-sized firms typically comprise a heterogeneous group, this result was not unexpected. Only the variable SIZE was not asymmetrically distributed. Furthermore, in the entire sample, financial debt relative to the capital of the mean firm was about 45%. A comparison of the mean value with the median value, and considering the standard deviation (about 31%), showed that financial debt, as source of finance, varied considerably across firms.



Table 2 – Descriptive statistics

	Whole sample			Sample of firms operating in high-tech industry	Sample of firms operating in utility industry	ANOVA test on differences (F test and p-value)	Sample of firms located in the North of Italy	Sample of firms located in the South of Italy	ANOVA test on differences (F test and p-value)
	Mean	Median	S.D.	(Mean value)	(Mean value)		(Mean value)	(Mean value)	
Leverage	0,453	0,498	0,313	0,381	0,433	65,48 (0,000)	0,461	0,408	228,807 (0,000)
Profitability	0,099	0,085	0,085	0,118	0,099	94,0 (0,000)	0,102	0,081	539,4 (0,000)
Ln(Age)	2,85	2,99	0,740	2,70	2,85	92,7 (0,000)	2,88	2,70	452,0 (0,000)
Dummy South	0,135	0,00	0,344	0,122	0,182	147,5 (0,000)			
Size	16,37	16,35	0,65	16,42	16,43	2,74 (0,097)	16,36	16,38	0,67 (0,412)
Tangibility	0,221	0,187	0,174	0,266	0,359	507,5 (0,000)	0,212	0,284	1450,8 (0,000)
Ownership	5,78	8,00	2,85	6,21	5,70	39,2 (0,000)	5,80	5,62	14,5 (0,000)
Sales Growth	0,311	0,062	1,685	0,356	0,206	15,28 (0,000)	0,510	0,271	67,05 (0,000)
# obs.	69694			7467	3293		60108	9586	

The results shown in Table 2 also suggest that the entire sample, with an average firm age of 22 years, showed a profitability of about 10%, albeit with a certain degree of heterogeneity (the standard deviation was 8.5%). On average, 22% of the firms' assets were tangible and at least half of the sample had a tangibility of about 19%. On average, small firms tended to be related to other firms in the form of a group. The ownership level of the Italian small and medium-sized firms in the sample was, on average, between 25 and 50%, although for at least half of the sample the level was more than 50%.

To investigate possible behavioural differences across industry lines, the effect with regards of high-tech firms (7467 firms, about 10% of the whole sample, referred to chemical and chemical products, pharmaceuticals, aircraft and spacecraft, computing machinery, and medical, precision & optimal instruments) and to utility firms (3293 firms, about 5 % of the whole sample, referred to firms providing utility services such as water, gas, electricity, waste, transports, and telecommunication) was scrutinized. Table 2 showed, as expected, that utility firms use more debt than firms operating in high-tech industry. The latter type of firms are younger, have better profitability, lower tangibility and higher sales growth compared to utility firms. Moreover, to exanimate the effect of the institutional context we sort the sample between the South (9586 firms, about 14% of the whole sample) and the other macro-areas of Italy. Table 2 highlights that firms located in the South of Italy are less leveraged, younger and have lower profitability and sales growth.

## 5. Empirical Results

### 5.1 Main Results

The determinants of capital structure for small and medium-sized firms in Italy were described by exploring the relationship between capital structure and the set of explanatory variables across the life cycle of a firm. The results of the LSDV analyses are reported in Table 3<sup>16</sup>.

Table 3 – Determinants of capital structure decisions.

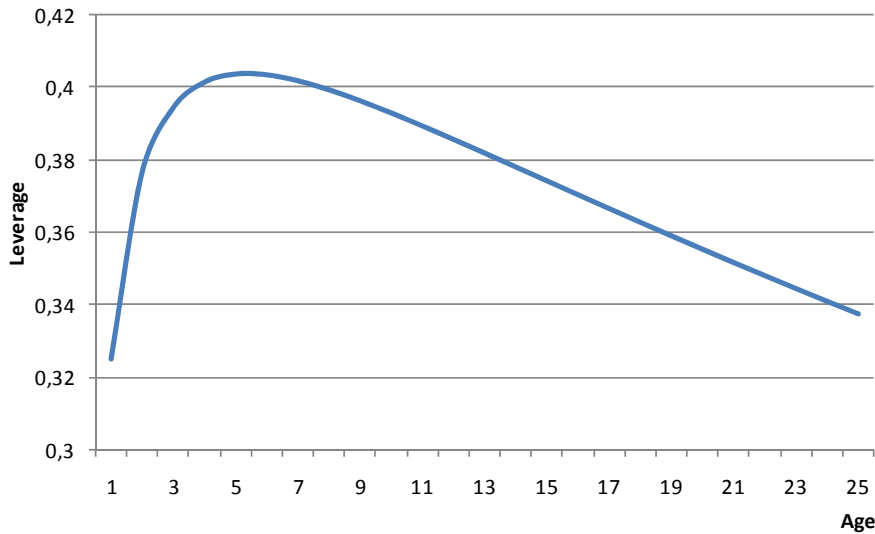
Variables	Whole Sample		Sample of firms operating in high-tech industry	Sample of firms operating in Utility industry	Sample of firms located in the North of Italy	Sample of firms located in the South of Italy
	Coeff and p-value T-test	VIF	Coeff and p-value T-test	Coeff and p-value T-test	Coeff and p-value T-test	Coeff and p-value T-test
Constant	0,325**		0,166***	0,644***	0,392**	0,295**
Profitability	-1,10**	1,05	-1,452***	-0,334***	-1,117***	-0,614***
LnAge	0,094***	24,01	0,126***	0,238***	0,100***	0,079**
LnAge <sup>2</sup>	-0,024***	24,05	-0,027***	-0,047***	-0,024***	-0,019***
Dummy South	-0,11***	1,52	-0,119***	-0,014		
Size	0,038***	1,22	0,027**	0,007*	0,034***	-0,010
Tangibility	0,137***	1,19	0,178***	0,059*	0,169***	-0,014
Ownership	-0,007***	1,02	-0,014***	-0,020***	-0,019***	-0,005***
Growth opp.: SalesGrowth	0,002***	1,02	0,005**	-0,001	0,000**	-0,004*
Industry dummies	Yes		No	No	Yes	Yes
Number of observations	69694		7467	3293	60108	9586
Adj. R <sup>2</sup>	0,113		0,142	0,084	0,154	0,130
F test (p-value)	227,31 (0,000)		47,97 (0,000)	8,486 (0,000)	221,51 (0,000)	18,946 (0,000)
Durbin-Watson	1,986		1,969	1,982	1,975	1,968

Notes: (\*), (\*\*) and (\*\*\*) indicates that coefficients are significant at 10, 5 and 1 percent level, respectively, according to the t-test. Time dummies were included in the model. Industry dummies were included when signalled.

With regards to the existence of a financial growth cycle, the variable *age* and its squared term showed, considering the whole sample (Table 3), a significant nonlinear relationship with leverage. In the start-up and the growing stages, firms use debt as a critical financial resource. In the consolidation and maturity stages, debt still plays a central role but to a slightly lesser extent. As illustrated in Fig. 1, a young firm cannot grow without the use of debt.

<sup>16</sup> Overall, we examined the values for adjusted R<sup>2</sup>, F and T tests, Durbin-Watson test, and the VIF test to assess the statistical significance of the model. The regression models were always statistically significant (*p-value* of the F test < 0.01) with a relevant adjusted R<sup>2</sup>, indicating that the variables accounted for a substantial part of the variation in leverage across companies. From the Durbin-Watson value, which was generally close to 2, and the VIF test, which was lower than 5, an absence of autocorrelation and multi-collinearity was observed.

Figure 1 – The general effect of age on leverage



Especially in a country like Italy, where the private equity market is poor and the financial system is bank-based, the role of debt seems to be fundamental. After the early stage, as a firm starts to show increased profitability and a capacity to internally generate resources, it slowly rebalances its capital structure. Older firms finance their operations using accumulated internal resources and rebalancing their capital structure. Empirically, our results support the evidences of Robb (2002) that argued that younger firms use relatively more debt from financial institutions than older firms.

It is of interest, especially from a policy making standpoint to verify if the financial growth pattern resulted in table 3 changes over time. Therefore, table 4 showed the results of the  $\ln(\text{age})$  coefficients for a cross-sectional analysis from the 1996 to the 2005. All the other variables and controls, as the dummy South and the industry dummies are enclosed.

The results in all the regressions, showed in table 4, are always statistically significant (p-value of F-test always significant). From the 1996 to the 2005 the financial growth pattern that characterized small and medium-sized Italian firms is showed to be quite sticky, without any economically and statistically significant changes over time.

Therefore, table 3 and 4 showed the existence of a significant financial growth pattern in the use of debt along the life cycle of the firms that is quite sticky over time. It is now relevant to verify if this effect is homogeneous across industries and institutional contexts, and considering the role of the others explanatory and control variables. All of the regression coefficients derived from an analysis of the *whole sample* (Table 3) were statistically significant, considering heteroskedasticity-consistent standard errors. The empirical evidence on the whole sample, showed in table 3, suggested that the

coefficients of profitability, dummy South, and ownership concentration were negatively related to leverage, while those of size, tangibility, and growth opportunities positively affected the use of debt.

Table 4 – Financial growth pattern over time.

Years	Constant	LnAge	LnAge <sup>2</sup>	# Obs.	Adj. R <sup>2</sup>
2005	0.338***	0.067***	-0.020***	8992	0,130
2004	0,301***	0,050*	-0,013***	8329	0.108
2003	0,330***	0,067***	-0,017***	8245	0.096
2002	0,239**	0,060***	-0,016***	7734	0.105
2001	0,228***	0,054**	-0,016***	7537	0.112
2000	0,435***	0,071***	-0,018***	7495	0.113
1999	0,461***	0,071***	-0,017***	6895	0.129
1998	0,649***	0,098***	-0,022***	6752	0.127
1997	0,553***	0,085***	-0,019***	6460	0.121
1996	0,127	0,117**	-0,025***	1255	0.087

Notes: (\*), (\*\*) and (\*\*\*) indicates that coefficients are significant at 10, 5 and 1 percent level, respectively, according to the t-test. Industry and time dummies were included in the model.

As can be seen in Table 3, *profitability* was negatively related to leverage, as also found by Van der Wijst and Thurik (1993), Chittenden *et al.* (1996), and Jordan *et al.* (1998). This relationship is in line with the pecking-order theory. When profitability increases, debt is replaced by internal funds; conversely, debt is used as second choice, to finance the firm when profitability decreases. Small and medium-sized firms tend to use retained profits as much as possible and then raise debt only when additional finance is essential. Firms with higher profits will, therefore, need to borrow less, as they will first make use of internally generated funds before falling back on debt. It seems that asymmetric information problems lead the firm's owners to strictly prefer internal sources of finance to minimize interference in the business by external financial stakeholders. Higher profitability, in the presence of asymmetric information, allows entrepreneurs/managers to be less dependent on creditors for financial resources. Firms with better performance are able to use internally generated financial resources, thus reducing their reliance on debt. The indicator *dummy South* was negatively and significantly related to leverage, suggesting that for small and medium-sized firms the efficiency of local institutional context is important in determining capital-structure decisions. In the South of Italy, a macro-area with poor investor protection and low efficiency of the institutional context, small firms are less able to obtain external finance in the form of debt. The results reveal the existence of scale effects in the use of debt,

through a coefficient of the *size* variable as a significant determinant of leverage. The positive relationship between size and debt, also reported by Van der Wijst and Thurik (1993) and Chittenden et al. (1996), indicated that the larger the firm the higher the leverage ratio it is able to achieve and maintain. This finding provides evidence of the financial barriers faced by smaller firms. *Tangibility*, i.e., the ability to provide collateral for a loan, was positive and statistically significant. Consistently with the results of previous studies (Hall et. al. 1999, Michaelas et. al. 1999, Jordan et al. 1998, Chittenden et. al. 1996 and Van der Wijst and Thurik 1993), tangible assets supported credit requests, and higher fixed assets were associated with higher debt. The information asymmetry and agency problems of small businesses force them to obtain debt-type finance by offering collateral, in the form of fixed assets, to guarantee repayment of loans. By pursuing this strategy, more debt becomes available to small firms at lower cost. From the viewpoint of transaction cost economics, tangible assets usually have less specificity, which increases their use as collateral for debt (Williamson 1988). Firms with a high level of *ownership concentration* are supposed to have fewer opportunistic problems and, as a consequence, are showed to be less in need of debt to mitigate problems of free cash flow (de Miguel and Pindado 2001). In this view, owners do not need debt to increase management efficiency. Entrepreneurs who owns a substantial fraction of the firm shares may directly control their businesses, a feature that has an important effect on debt, since a highly concentrated ownership implies a higher commitment to the firm and a greater incentive to not lose control to the banks through bankruptcy. The relationship between growth opportunities and leverage was also positive and significant. Notice that our analysis considers book-value measure of growth opportunity based on past results, and did not include a measure for expected growth, such as the market-to book ratio, that is commonly used for listed firms.

The evidence resulted, from the last four columns in table 3, by considering different *industries* and different *institutional contexts* showed a different average stock of debt but a similar financial life-cycle. Start-up and young firms need an increasing amount of debt to sustain their growth, while they rebalance gradually their capital structure after a consolidation of the business. Therefore, the pecking order theory seems to do not apply for young firms, where debt seems to be at the first place; by contrast, this theory has a high magnitude for firms that have consolidated their business. The evidence resulted by considering two different *industries* are remarkable. As a general remark, industry specific features strictly affect capital structure determinants. In general, high-tech firms have less debt capacity compared to utility firms, that are allowed to largely use debt. High-tech firms are more sensitive to profitability and more interest to substitute internal resources to debt, compared to utility firms. This

kind of firms, mainly based on intangible asset and unpredictable cash flows, are penalized in obtaining financial resources by financial institutions in the South of Italy, where typically the financial system is more inefficient. Firm's size supports the access to credit and as relevant is an increase in the tangible assets. By contrast, utility firms, having more stable cash flow, less uncertainty for the future and less risk, can rely on high tangible assets that allow a higher debt capacity. The role of profitability is less relevant compared to high-tech firms. The specificity of this business avoids any significant role to be located in the South of the country. It is less relevant the contribution of firm's size and tangibility to obtain credit; it is the business per se that allows a better access to credit. To consider firms in different institutional contexts, firms operating in the South of the country have a lower availability of debt compared to firms operating in other areas. A different role of the capital structure determinants is shown mainly with regards to the variables profitability, size and tangibility, that are not significant in providing a better access to credit for firms operating in the South of the country. In particular, firms located in the South are less able to substitute debt with internally generated resources compared to firms located anywhere else; firms in the South are typically more financially constrained and, due to the fact that for them it is difficult to access the financial market and obtain credit, the availability to substitute debt with internally generated financial resources is lower. Therefore, consistent with Petersen and Rajan's (1995) argument, our results confirmed that small and medium-sized firms are penalized by a poorly developed institutional context.

## **6. Capital Structure Determinants at Different Stage of Their Life Cycle: Cluster Analysis Results**

To verify the existence of different capital-structure determinants for firms at different stages of their life cycle, in this section the sample was sorted according to a cluster analysis approach. Instead of using a deterministic approach, for example, by identifying, alternatively, young firms as those less than 5, 10, or 15 years old, we applied an inductive criteria. The cluster analysis approach revealed whether there were structural differences arising within the sample, and allowing to sort it, independently of the arbitrary sorting criteria. The number of clusters leading to the greatest separation (distance) was not known *a priori* but was computed from the data. The goal was to minimize variability within the clusters and maximize variability between clusters. The two-step cluster analysis employed here is an exploratory tool designed to reveal natural groupings (or clusters) within a dataset that would otherwise not be apparent (He et al. 2005, Chiu et al. 2001). The algorithm had several desirable features that differentiated it from traditional clustering techniques. First of all, it allowed for the handling of continuous variables (by assuming variables to be independent, a joint multinomial-

normal distribution was applied to continuous variables) and automatically selecting the number of clusters (by comparing the values of a model-choice criterion across different clustering solutions, the procedure automatically determined the optimal number of clusters). Four clusters representing different features were automatically identified. Cluster 1 was not representative and was deleted, as it consisted of less than 1% of the firms in the entire sample. Cluster 2 represented about 14,5% of the entire sample and consisted of old firms with an average age of 58 years and a standard deviation of 13.2 (8.9% sales growth on average). Cluster 3 (about 39,7% of the whole sample) comprised mainly middle-aged firms (28 years old) with a standard deviation of 6.3 (10.2% sales growth on average). Cluster 4 (about 45,0% of the entire sample) represented young firms with an average age of 11 years and a standard deviation of 5 (17.7% sales growth on average). According to the characteristics of the clusters obtained, showed in table 4, clusters 4, 3 and 2, i.e., young, middle (growing), and old firms, were analyzed. Table 5 shows the main descriptive statistics for the three clusters.

*Table 5 – Descriptive statistics for the three cluster groups.*

	Cluster Analysis Sample									ANOVA test on differences (F test and p-value)
	Young Firms Cluster			Growing Firms Cluster			Old Firms Cluster			
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	
Leverage	0,456	0,509	0,324	0,457	0,496	0,300	0,416	0,442	0,297	36,84 (0,000)
Profitability	0,101	0,087	0,090	0,098	0,085	0,078	0,092	0,078	0,081	79,15 (0,000)
AGE	11	12	5	28	27	6	58	53	13	8813,7 (0,000)
LnAge	2,300	2,485	0,584	3,313	3,296	0,217	4,031	3,970	0,208	4003,4 (0,000)
Dummy South	0,162	0,175	0,08	0,108	0,124	0,06	0,073	0,090	0,05	268,7 (0,000)
Size	16,28	16,27	0,69	16,43	16,39	0,59	16,56	16,51	0,56	483,0 (0,000)
Tangibility	,224	0,183	0,187	0,239	0,192	0,158	0,242	0,203	0,164	33,14 (0,000)
Ownership	6,03	8,00	2,73	5,59	8,00	2,92	5,18	8,00	3,15	107,18 (0,000)
Sales Growth	0,177	0,087	0,545	0,122	0,058	0,442	0,090	0,032	0,501	2094,5 (0,000)
# of obs.	31354			27637			10102			

Before the characterization of the three relevant groups of firms produced by the cluster analysis, it was important to verify the statistical significance of the different variables' values among the three groups. This was done with a one-way ANOVA, which establishes the existence of significant differences between the means of groups sorted by the cluster analysis. The significance value of the *F* test in the ANOVA analysis was, for all variables, far below 0.01. Since the test yielded a good

significance value, it could be safely concluded that for all the variables the differences between groups were statistically relevant. Thus, the hypothesis that the average values of the variables are equal across groups was rejected. As showed in Table 5, there are relevant differences between young and old enterprises, while the value of the growing group are in between. The financial debt ratio of young firms was, on average, almost 4 percentage points higher than that of old firms. Overall, young businesses relied more than old firms on external debt as a source of finance. The distinction between young and old firms was even more striking with regard to the median value of financial debt; young firms had a median financial debt of 0.51, whereas that of old firms was 0.44. This suggests that firm age moderates the financial-debt capacity of firms. Moreover, as theoretical assumed, sales growth decreases moving from young, to growing and old firms. Furthermore, old firms are larger, have less intangibles, and tend to have less-concentrated ownership compared to young firms.

The descriptive findings on the three clusters revealed considerable differences in the financing patterns. However, since these simple descriptives do not control for the effects of other variables, the more-interesting findings were further examined through regression analyses, as discussed below. Therefore, table 6 shows the LSDV regression results.

*Table 6 – Determinants of capital structure decisions for the three cluster groups.*

Variables	Cluster Analysis Sample					
	Young Firms Cluster		Growing Firms Cluster		Old Firms Cluster	
	Coeff	VIF	Coeff	VIF	Coeff	VIF
Constant	0,340***		0,188***		0,141***	
Profitability	-0,411***	1,067	-0,762***	1,107	-0,915***	1,15
Dummy South	-0,181***	1,075	-0,150***	1,075	-0,074**	1,06
Size	0,059***	1,228	0,040***	1,192	0,022***	1,19
Tangibility	0,239***	1,204	0,167***	1,194	0,053***	1,27
Ownership	-0,011***	1,017	-0,006***	1,015	-0,011***	1,03
Growth opp.: SalesGrowth	0,022**	1,016	0,004*	1,028	0,006	1,02
Number of observations	31354		27637		10102	
Adj. R <sup>2</sup>	0,141		0,161		0,193	
F test (p-value)	105,81 (0,000)		187,22 (0,000)		204,85 (0,000)	
Durbin-Watson	1,987		1,990		2,011	

*Notes:* (\*), (\*\*) and (\*\*\*) indicates that coefficients are significant at 10, 5 and 1 percent level, respectively, according to the t-test. Industry and time dummies were included in the model.



The regression coefficients of the cluster analysis sub-samples were statistically significant, considering heteroskedasticity-consistent standard errors, except two variables (growth opportunities and local financial development indicator) in the cluster of old firms. The regression coefficients obtained from the cluster analysis sub-samples retained the same sign as in the entire sample regression but differed in intensity, with different financial behaviors occurring across a firm's life cycle. The Chow test was applied to determine whether the coefficients in the regression model were the same in the separate sub-samples and, specifically, to verify whether the coefficients of the three groups were statistically different, testing the group coefficients against 0. Using this approach, we verified that the coefficients were not the equal and, as a consequence, economic differences in the parameters were established.

Especially in a country like Italy, where the private equity market is poor and the financial system is bank-based, the role of debt is fundamental. After the early stage, as a firm starts to show increased profitability and a capacity to internally generate resources, it slowly rebalances its capital structure. Young firms are mainly externally financed through debt, exhibiting higher leverage ratios than older firms. The latter, even with minor profitability, finance their operations using accumulated internal resources and rebalancing their capital structure. As illustrated in Table 6, profitability was negatively related to leverage in line with the pecking-order theory. Specifically, there is an increasing intensity in the negative effect of profitability on leverage resulted moving from young firms to growing firms and, finally, to old firms. This means that young firms are less able to support growth without debt because investments consume internally generated resources such that more finance, typically from debt-holders, is required. In the maturity stage, all internally generated resource can be mainly used to rebalance capital structure, thereby reducing debt. Therefore, considering profitability, it seems that the pecking-order theory is more effective in explaining capital structure decision for old firms with a consolidated business. The negative and significant effect of the dummy south variable on leverage suggested that for small and medium-sized firms the efficiency of local financial systems is important in determining capital-structure decisions. In particular, inefficiency in the institutional context causes problems and difficulty in the access to credit, probably generating financial constraint especially for young firms. Since mature firms can seek credit away from the local environment or can have access to alternative funds, they can distance themselves from local inefficiencies in the credit market in order to operate within a better financial arena. The positive coefficient of the variable size in all the three group revealed the existence of scale effects in the use of debt. However, the intensity of this relation varied. The effect of size on leverage was greater for young small firms than for older, larger ones. This

supports the suggestion that the ability of young firms to use debt depends on their size. While the results showed, as expected, that tangibility has a positive relationship with debt, its intensity varied across a firm's life cycle. Young firms have less-tangible assets in the form of stock, which makes them more reliant on collateral assets to secure debt and obtain credit under better terms. This effect decreases, but is still relevant, in growing and mature stages. As also highlighted by Berger and Udell (1995), young firms, with generally shorter banking relationships, pay higher interest rates and are more likely to be required to pledge collateral; older firms, with closer and longer banking relationships, do not have to rely on collateral to obtain external capital. Growth opportunities were not statistically significant for old firms, in contrast to the situation for young and growing firms, as also reported by other authors (Chittenden *et al.* 1996, Jordan *et al.* 1998). The high leverage ratios of young and growing firms were consistent with the pecking-order theory. Start-ups and rapidly growing small firms are likely to have insufficient earnings to finance all of their growth internally. Given the reluctance of small-business owners to issue equity, due to asymmetric information problems and control considerations, young and growing firms are likely to have more debt. The lack of statistical significance for this variable for mature firms may have been due to the measure used, since the percentage change in sales reflected only previous growth opportunities rather than future growth possibilities<sup>17</sup>.

## 7. Conclusions

The present study analysed the strategic financing choices of small businesses through the lens of the business life cycle, verifying the existence of a growth pattern and whether this pattern is homogeneous over time and for different industries and institutional contexts. The growth of small and medium-sized firms, i.e., those most vulnerable to information and incentive problems, is often constrained by the lack of access to external finances. Understanding the financial features of small and medium-sized firms at different stages of the business life cycle allows managers and policy-making institutions to correctly support firm growth. Our empirical analysis revealed several interesting findings. As hypothesized by Berger and Udell (1998), we found that the degree of informational opacity is a key determinant of a firm's financing behavior, even more considering the various stages of its life cycle. Different sensitivities to information asymmetries modify the hierarchy of financial decision-making according to the changing economic conditions that characterize firms at different

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<sup>17</sup> Our analysis did not include a measure for expected growth, such as the market-to book ratio, that is commonly used for listed firms.

phases of their business life cycle. In general, higher profitability allows managers to be less dependent on creditors for financial resources. In the present study, this was particularly true for mature and growing firms, while young firms were more dependent on external finance (debt) to growth<sup>18</sup>. Despite the high cost of debt for start-up and growing Italian firms, the support conferred by debt is essential to the early stages of a firm's life. Internal resources are not enough to finance growth and the lack of a private equity market increases the role of banks in providing financial support. Therefore, start-up and young firms need an increasing amount of debt to sustain their growth, while they rebalance gradually their capital structure after a consolidation of the business. Thus, the pecking order theory seems to do not apply for young firms, where debt seems to be at the first place; by contrast, this theory has a high magnitude for firms that have consolidated their business.

This financial growth pattern for small and medium-sized firms seems to be homogeneous along different industries and institutional contexts. It has the same magnitude for firms operating in high-tech industry and in utility industry as well as comparing firms located in the South of Italy, where the financial system is more inefficient and the investor protection poorer, with firms located in other macro-areas of Italy.

The existence of a financial growth pattern is showed to be particularly relevant and sticky over time; this pattern seems to dominate across different industry affiliation and institutional contexts. Nevertheless small and medium-sized firms showed different average leverage across industries and institutional contexts, the financial growth pattern resulted is similar. From a political point of view, this result showed that: 1) young firms have a relevant need to external resources to growth, independently of the industry affiliation and of the place where this young firm is located; start-ups and growing firms need external finance to support their investments; 2) in Italy, a typical bank-based country, due to the lack of venture capital and private equity market, it is crucial the role of debt to sustain the growth of small and medium-sized firms; 3) due to the fact that debt it is not a suitable source of finance for start-ups and growing firms, policy makers should foster a development of the financial system that should be able to sustain with "patient" capital in the form of equity finance small and medium-sized firms.

While the existence of a financial growth pattern is relevant and robust over time and across industries and institutional contexts, there are systematical differences across the firm's life cycle in the capital structure determinants. If the financial growth pattern is similar across industries and

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<sup>18</sup> Nevertheless, young firms do not have as many tangible assets that can be easily evaluated or pledged as collateral, and have little repayment history or record of profitability upon which external suppliers of funds can rely.

institutional contexts, it is not the average debt level as well as it is different the role of the various capital structure determinants. Controversy in the empirical literature on the determinants of financial decision-making can be based on a failure to take into account the different degrees of information opacity, and, consequently, firms' characteristics and needs at specific stages of their life cycles.

In summary, contrary to conventional wisdom, debt is fundamental to the growth of Italian firms in the early stage of their business life cycle, while mature firms rebalance their capital structure by substituting debt for internal capital. Indeed, Giannetti (2003) found that this is especially true in countries where the financial market is not well developed and not highly efficient. This issue is highly consequential for research on capital structure and deserves more detailed investigations that, at the same time, consider the stages that make up the business life cycle. If firms can raise more of their capital with equity, they will be better able to make longer-term investments. This suggests directions for future research that focus on the relationship between investment horizons and institutional factors.

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