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*Chair of Corporate Finance*

**Financing Constraints: a Comparison between SMEs  
and Large Companies**

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*To my parents, Bruno and Sabrina,  
who have always believed in me and have let me the freedom to find my own way.*

*To my Italian family,  
for making me perceive every personal achievement as a collective success.*

*To my American family,  
that always reminds me to have someone to count on, on the other side of the world.*

*To Licia,  
for her unconditional support and for the positivity shared with me.*

*To my closest friends, Nicolò, Marco and Lorenzo,  
whose esteem has been always source of pride.*

*To my grandfather Arnaldo,  
who, despite the little time spent together, has been a role model for me.*

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## Introduction

A recent article published by Forbes argues that the old-fashioned management theory according to which the goal of a company is to make money, is being replaced by a more successful attitude characterized by the focus on the customer and human capital in general (Denning, 26<sup>th</sup> September, 2011). However, choosing an optimal capital structure to maximize a firm's value remains an issue of primary importance.

The discipline of corporate finance studies the methods used by managers to obtain funds through the cheapest and most efficient channels. Many articles concerning these choices have been written over the last sixty years, with many different theories arising. For example, some researchers have argued that under specific circumstances, a company's decision about issuing debt or equity is not relevant for the sake of value maximization (Modigliani and Miller, 1958; Stiglitz, 1974; Miller, 1977). Allowing for the possibility of bankruptcy, the "Tradeoff Theory" predicted the existence of a target debt ratio to which firms should adjust to balance the benefits of tax savings with the costs of financial distress (Kraus & Litzenberger, 1973; Bradley, Jarrell, & Kim, 1984; Myers, 1984). The "Pecking Order Theory" explained the financing mix with a hierarchy classifying different sources according to their Benefit-Cost ratio, starting from retained earnings as the cheapest channel followed by debt and finally by equity (Myers, 1984; Shyam-Sunder and Myers, 1999).

In practice, these arguments are not always applicable because of the different variables that drive corporate decisions. In this thesis, the main focus is on the constraints to an optimal choice of external funding determined by the combination of firm-specific characteristics and investors' capacity to extend credit. The latter is crucial to establishing more favorable conditions in terms of interest rates and availability of funds. Credit

rationing can indeed occur when lenders are not willing to extend credit even with higher interest rates.

Some companies may be more restricted than others, and usually a priori classifications are made according to size and age, which in turn are connected with the degree of information accessible to the market (Devereux & Schiantarelli, 1990; Berger & Udell, 1998).

Although in most European countries public markets are not exploited adequately, being publicly listed represents an additional opportunity to attract investments and to disclose proper information to third parties (Oliner & Rudebusch, 1992; European Commission, 2014). Informational asymmetries are indeed a factor that reduces the chance to acquire credit at convenient terms (Schiantarelli, 1995).

Periods of economic downturns are responsible for undermining the borrowing dynamics, as for example organizations that are more likely to default or have inadequate collateral to settle debt, are the most subject to credit rationing or higher interests (Bernanke & Gertler, 1989). Also, impaired financial markets can restrict the flows of funds to banks, which consecutively would be forced to cut the supply of credit to non-financial companies (Giovannini et al., 2015).

Generally, the literature supports the idea that small and medium-sized enterprises (SMEs) are the most constrained in the choice of external financing. However, some researchers have argued that banks find this segment very profitable and they have several services to overcome problems such as asymmetric information (Beck, Demirguc-Kunt, & Martínez Pería, 2008; De la Torre, Martínez Pería, & Schmukler, 2010).

This thesis aims at understanding the extent to which SMEs face greater difficulties in obtaining capital, which translates into a high cost of debt and small availability of external funds, especially in stages of economic slump. For this reason, the

ensuing analysis is taken from a general point of view to a more specific one, namely from a European perspective during the crisis to the Italian case in the same period.

Using data from the European Central Bank (ECB) Statistical Data Warehouse and Bank of Italy Statistical Database, I found that interest rates on loans to Italian SMEs are persistently higher than those for large-scale enterprises (LSEs). In particular, the spread between the two yields increased during the recent crisis, lending support to the hypothesis that economic downswings can exacerbate problems of informational opacity, possible costs of financial distress and the like.

With respect to credit standards, the results found are rather surprising. Indeed, in the ECB Bank Lending Survey (BLS) banks have stated that starting from 2008 lending conditions have been more restrictive for LSEs than for their counterparts. This result is in line with Giovannini et al. (2015) who showed the same outcome for European companies. Furthermore, it partially supports a study by De la Torre et al. (2010) in which it is argued that despite the increased attention to risk exposure, banks did not restrict the terms for extending credit to SMEs. Nonetheless, these results seem to be rather weak since in the Survey on the Access to Finance of Enterprises (SAFE) (European Commission, 2014) smaller firms reported a greater tightening of credit availability than what LSEs did. Also, the interpretation of data from BLS can be imprecise due to the difficulties in the measurement of credit standards.

This essay covers several aspects of corporate finance. The first chapter develops some of the most important theories of capital structure putting emphasis on elements such as adverse selection, asymmetric information and financial distress costs. The second chapter starts with a brief research on the most important financing channels for European enterprises and it investigates the main factors that limit companies, developing the juxtaposition between SMEs and LSEs. Finally, it concludes with the issue of a

financing gap, intended as the difference between the funds required by businesses and the supply of banks. For this purpose, supply and demand dynamics are studied both for Europe and for Italy. The third chapter is concerned with empirical data, in which interest rates and credit conditions are examined with a focus on the size of the borrowing parties.

Comparisons between Italy and Europe are made before concentrating solely on Italian firms.

# Chapter 1

## The main theories of capital structure

### *1.1 Introduction to financing decisions*

The capital structure set-up can be seen from two perspectives. The first is about maximizing the market value of the company while the second is about obtaining resources to pursue investment opportunities or to pay back liabilities.

The financing mix that every business can set up is made up of equity and debt. With equity, investors become part-owners of the corporation and have a claim on the company's future earnings. Debt investors are instead lenders, and after having made an agreement, a company has the duty to repay a sum equal to the borrowed amount plus an interest rate. The proportion of debt financing compared to equity is also referred to as leverage and it allows a firm to have more resources available beyond the contributed capital of shareholders. Generally, additional cash can be useful to exploit profitable projects, but at the same time it may be perceived as a risk: the higher its level the more demanding it is to meet the obligations with debtholders. Failure to comply with the covenants or to repay cash flows established in the contract may jeopardize the whole company, leading to financial distress and possibly to bankruptcy. Financial distress costs include, legal costs, opportunity cost of forgoing good projects and the loss of creditworthiness, among others. Also, when the financial situation of the borrowing company is extremely flawed, starting a bankruptcy procedure could be necessary, in which case debtors have priority over shareholders to be refunded (Doove, Gibcus, Kwaak, Smit, & Span, 2014).

In the next sections, the three main theories of capital structure are discussed, together with the main assumptions they are based on.



## 1.2 Modigliani and Miller and tax issues

One of the most influential theories about capital structure was developed by Modigliani and Miller (MM) (1958). Their model is based on specific assumptions meant to simplify the whole picture and to make the analysis possible. The first pillar claims that there are no tax advantages in using debt rather than equity. The second is about perfect capital markets, namely that individuals and companies can borrow and lend money at the same rate.

The first famous theory of Modigliani and Miller is also called “debt irrelevance proposition”. In other words, regardless of the proportion of debt and equity adopted by a firm, its market value does not change. Brealey, Myers, and Marcus (2012) showed the practical meaning of the first point of this theory. They describe a business in three scenarios: slump, normal and boom and they propose two possible capital structures for the same firm: one completely funded by equity and the other after restructuring with equal proportions of debt and equity. Table 1.1 and 1.2 allow a visualization of the two set-ups.

*Table 1.1: Business entirely equity-financed in three scenarios*

| <b>Data</b>            |             | <b>State of the Economy</b> |                         |             |
|------------------------|-------------|-----------------------------|-------------------------|-------------|
|                        |             | <b>Slump</b>                | <b>Normal</b>           | <b>Boom</b> |
| Number of shares       | 100,000     |                             |                         |             |
| Price per share        | \$10        |                             |                         |             |
| Market value of shares | \$1 million |                             |                         |             |
| Operating income       |             | \$75,000                    | 125,000                 | 175,000     |
| Return on shares       |             | 7.5%                        | 12.5%                   | 17.5%       |
|                        |             |                             | <b>Expected outcome</b> |             |

*Source: Brealey et al., 2012, pp. 447*

*Table 1.2: Business financed half by equity and half by debt in three scenarios*

| Data                   |                      |                             |         |
|------------------------|----------------------|-----------------------------|---------|
| Number of shares       | 50,000               |                             |         |
| Price per share        | \$10                 |                             |         |
| Market value of shares | \$500,000            |                             |         |
| Market value of debt   | \$500,000            |                             |         |
| Outcomes               |                      |                             |         |
|                        | State of the Economy |                             |         |
|                        | Slump                | Normal                      | Boom    |
| Operating income       | \$75,000             | 125,000                     | 175,000 |
| Interest               | \$50,000             | 50,000                      | 50,000  |
| Equity earnings        | \$25,000             | 75,000                      | 125,000 |
| Return on shares       | 5%                   | 15%                         | 25%     |
|                        |                      | <b>Expected<br/>outcome</b> |         |

*Source: Brealey et al., 2012, pp. 448*

In all three scenarios, the two arrangements get respectively the same operating income. However, the distribution is different, as for the levered organization there are interests to be paid out. Apparently, this type of firm has also higher earnings per share both in normal and boom scenarios. Nonetheless - according to MM - as long as an individual can borrow at the same rate of the company, there is no value added in investing in one company or the other. Indeed, investing in the non-levered organization with additional borrowed money yields the same rate of return expected from investing one's own money in the levered one.

*Table 1.3: Individual investor putting up \$10 of own money plus \$10 borrowed*

|                            | State of the Economy |                             |      |
|----------------------------|----------------------|-----------------------------|------|
|                            | Slump                | Normal                      | Boom |
| Earnings on two shares     | \$1.50               | 2.50                        | 3.50 |
| Less interest at 10%       | \$1.00               | 1.00                        | 1.00 |
| Net earnings on investment | \$ .50               | 1.50                        | 2.50 |
| Return on \$10 investment  | 5%                   | 15%                         | 25%  |
|                            |                      | <b>Expected<br/>outcome</b> |      |



Source: Brealey et al., 2012, pp. 449

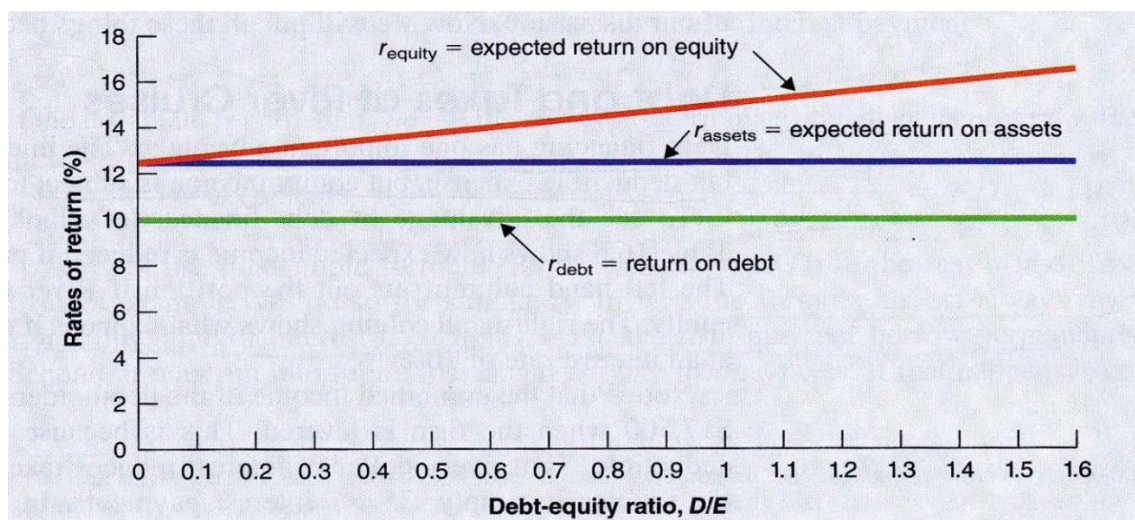
Changing the capital structure by issuing new debt does not add any business risk – defined as operating risk - but it adds financial risk as the firm becomes levered. Indeed, with the same operating income as before, the new risk is borne by less equity capital, making each share less safe.

To sum up, in proposition 1 Modigliani and Miller show how neither the value of the firm nor the operating income change through the “restructuring”. What changes in the company is the effect of the state of the economy on the return on shares.

The second MM hypothesis states that the required return on equity becomes higher as leverage increases. In fact, this is due to the costly financial risk added by borrowing. This proposition can be better understood through the following:

$$r_{equity} = r_{assets} + \frac{D}{E}(r_{assets} - r_{debt})$$

Graph 1.1: MM's proposition II with a fixed required return on debt



Source: Source: Brealey et al., 2012, pp. 453

Graph 1.1 shows a further result of the equation, namely the fact that independently from the source of financing, the weighted average cost of capital - which is return on assets – stays unchanged since any gains derived from an apparently cheaper debt would be offset by the linearly increasing cost of equity.

The model just shown is probably too simplistic by saying that in the end neither the overall firm value nor its return on assets can be enhanced. Indeed, the assumptions of perfect capital markets and the absence of taxes are too strong and Modigliani and Miller themselves made an adjustment about the presence of taxes (Modigliani & Miller, 1963). In reality, the non-negligible feature of debt financing is that interest is a tax-deductible expense while equity income is subject to corporate tax. Although there is a wide range of literature addressing interest tax shields, to simplify and better understand this concept, see an illustration from Brealey et al. (2012).

**Table 1.4: Combined debt-equity income before and after the restructuring**

|   | <b>Zero Debt</b> | <b>\$500,000 of Debt</b> |
|---|------------------|--------------------------|
| Expected operating income   | \$125,000        | \$125,000                |
| Debt interest at 10%  | 0                | 50,000                   |
| Before-tax income   | 125,000          | 75,000                   |
| Tax at 35%  | 43,750           | 26,250                   |
| After-tax income  | 81,250           | 48,750                   |
| Combined debt and equity income<br>(debt interest + after-tax income) | 81,250           | 98,750                   |

*Source: Source: Brealey et al., 2012, pp. 455*

In this case, it is assumed that debt is fixed over time and corporate income tax is at 35%. Again, the same firm is taken under two different structures, unlevered and levered. In the second situation, the combined debt and equity income is higher by as much as €17500. This amount is exactly the tax saving derived from interest, which in this model is calculated as the tax rate times interest expenses. Further, the value of the

two organizations is calculated and compared. Specifically, the first is derived from after tax income divided by shareholders' expected return<sup>1</sup>, that is  $81250/0.125 = \text{€ } 650000$ . The second instead, is determined as the present value of the tax shield - with debt being a perpetuity<sup>2</sup> - divided by the expected return on debt; the result is finally added to the value of the non-levered business, obtaining  $650000 + 175000 = \text{€ } 825000$ .

These computations taken from a straightforward example show that the value of an organization increases with the level of debt because of tax advantages. However, a possible flaw of the model could be the fact that firms do not always record the same profitability and they do not have an immutable tax rate; consequently, calculations about tax shields may be unreliable. Moreover, debt is hardly fixed and its level mostly depends on the amount periodically paid back and on the new obligations issued by a firm, determined by its capacity to obtain further credit (Myers, 2001). Also, some tax disadvantages to borrowing may arise, as bondholders usually pay high personal income taxes on interests received. For this reason they would not be willing to extend credit beyond a certain level, or they could even choose to invest in equity instead. As a matter of fact, the rates at which stockholders are taxed on dividends and capital gains are somewhat lower, with the latter having the additional benefit of not being taxed until the stock is sold (Brealey et al., 2012).

Miller (1977) took this argument a step further to bring the theory back to the irrelevance of debt. He theorized that as an increasing number of companies issue new debt, interest rates would soar attracting more and more high-tax bracket investors, which in turn would receive a larger portion of their income as interests rather than capital gains. However, demand for debt would eventually stop when the after-tax cost of debt becomes

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<sup>1</sup> Calculated as the expected operating income divided by the value of the firm with no taxes, equal to  $125000/1000000 = 12.5\%$

<sup>2</sup> PV tax shield =  $17500/0.10 = \text{€ } 175000$  where 0.10 represents the cost of debt.

so high that there are no tax advantages left on the table. At that point, firms would be forced to switch to equity again, also due to the presumed lack of investors willing to lend extra money without an increase in interest rates because of the high tax rate on their income composed predominantly of interests.

To sum up, investors' personal tax disadvantages combined with corporate demand adjustments would eventually restore the debt irrelevance proposition. However, some questions were raised thereafter concerning the accuracy of tax brackets considered by Miller (1977). Indeed, actual tax rates do not usually support the predicted equilibrium between debt and equity. In particular, in the leverage irrelevance study interest tax shields are argued to be less beneficial than what they actually are (Myers, 2001). In addition, non-debt tax shields can have a role in determining the optimal capital structure of a company. As a matter of fact, the opportunity to exploit depreciation deductions or investment tax credits - expected to be substitutes for interest tax shields - was found to have a negative influence on leverage (DeAngelo & Masulis, 1980).

Overall, a wide literature supports the view of tax advantages being a strong incentive to increase debt-equity ratios. However, beyond a certain threshold firms are likely to settle down their borrowing due to other costs. The possibility of financial distress is unquestionably one of the main causes why corporations do not seek new credit indefinitely; this issue is discussed in the next section as an introduction to the tradeoff theory of capital structure.

### ***1.3 Cost of financial distress: Tradeoff theory***

The costs involved with financial distress were summarized by Myers (1984) in two main points. The first is about the assumed risk of a borrowing firm, in which risk is defined as the variability of the market value of the firm's assets. The higher the

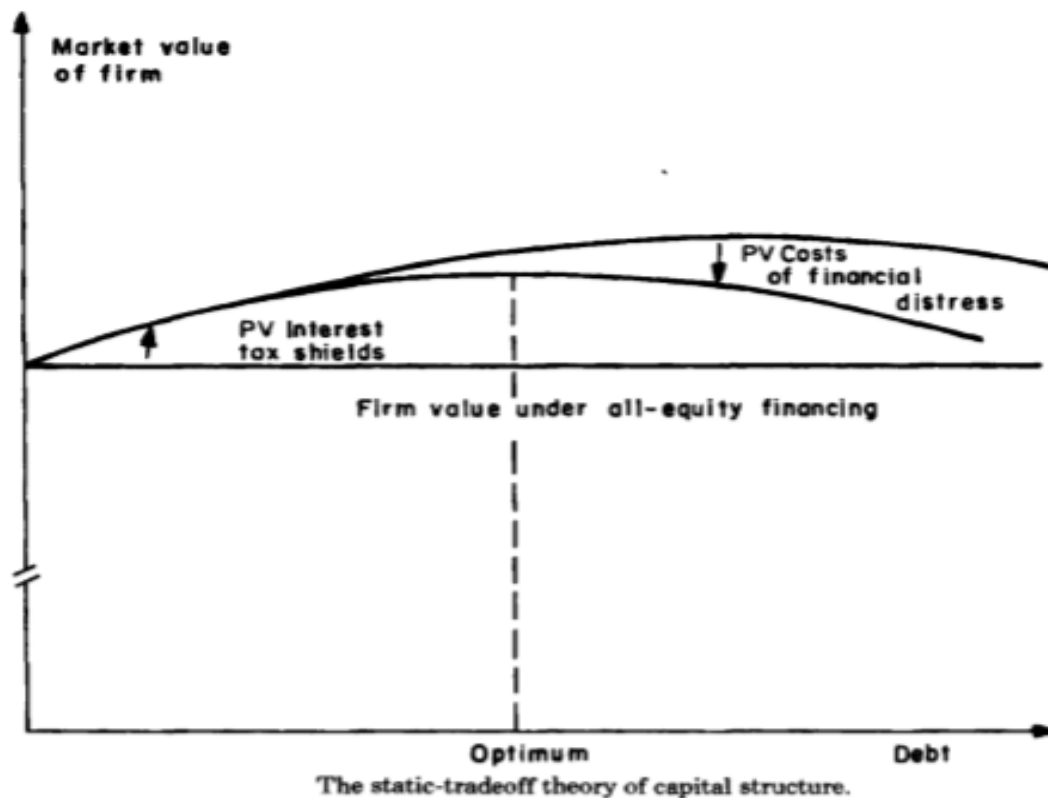
variability, the more likely the firm is to fail to meet its obligations. Therefore, high risk firms are assumed to be less prone to make extensive use of debt (Bradley et al., 1984). The second point is about the nature of the assets recorded in the balance sheet. Indeed, losses derived from financial distress should depend mainly on the value lost in such cases, but also on the probability of such problems arising. For this reason, it is sensible to expect high-growth firms with many intangible assets, to have lower debt-equity ratios. On the other hand, companies whose core business is driven primarily by fixed assets – such as buildings and plants and machineries - are more likely to rely on higher proportions of debt. In this case, the rationale behind different choices of leverage is that when bankruptcy occurs, creditors would find it much easier to cash in by the sale of tangible assets since intangible ones would be of dramatically lower value. As an example, in a study by Long and Malitz (1985) it was found that companies with high investments in intangibles such as R&D and advertising, were more limited in their choice of leveraging than those investing in tangible assets. The existence of a negative relation between R&D and advertising and leverage, was also supported by Bradley et al. (1984).

The advantages of interest tax shields and the disadvantages of increasing financial distress due to excessive leverage can be combined to formulate a new hypothesis about the optimal capital structure. Kraus and Litzenberger (1973) designed a one-period model to calculate the market value of a levered firm as the sum of the unlevered market value and the present value of the interest tax shield, less the complement of the corporate tax rate times the present value of bankruptcy costs. Generally, optimal debt ratios are indeed negatively influenced by financial distress costs (Bradley et al., 1984).

All the papers indicated, constitute the basis of the tradeoff theory, according to which, debt levels are chosen to balance tax advantages of debt against the cost of

financial distress. These models are also referred to as “Static Tradeoff Theory” since they entail only one period, meaning that a firm can choose leverage only once, without any possibility of further adjustments. The maximization of the firm’s value is obtained at a specific target leverage. In graph 1.2 a visual support is given to explain the model.

*Graph 1.2: Static Tradeoff theory of capital structure*



*Source: Myers, 1984, pp. 577*

The existence of an optimum requires adjustment in case of deviation from it, which is solved through the introduction of the “Dynamic Tradeoff Theory”. Myers (1984) himself argued that if the tradeoff theory holds for a specific firm, the latter would adjust over time in order to reach a target debt-equity ratio. Consequently, adjustment costs are an additional cause of significant deviations from observed leverage. Yet, companies with different business models are likely to consider different target ratios.



To summarize, the Tradeoff theory recognizes that there are benefits associated with tax advantages of debt that, beyond a specific level, are offset by financial distress costs. For this reason, corporations aim at maximize their market value by setting an optimal debt ratio.

#### ***1.4 The Pecking Order Theory***

One important evidence that the tradeoff theory did not account for is that the most profitable firms generally borrow the least, contrary to what it would predict. Indeed, according to it, high profits would allow firms to have more capacity to obtain credit and in turn to attain more advantages in leveraging due to tax savings (Brealey et al., 2012).

Myers (1984) introduced an alternative approach to explain some of the flaws, the Pecking order theory. Although he claimed that some aspects had already been covered in previous papers, the author introduced the term “pecking order” to explain how firms prefer some types of financing rather than others. The hierarchy is described as follows:

- Firms prefer internal finance over external funding.
- They adapt the proportion of net income that is plowed back and that is paid out as dividends according to the investment opportunities. The adjustment is not immediate though.
- If internally generated cash is lower than required investment expenses, firms should respond drawing down their cash balance or their marketable securities portfolio.
- In case external finance is needed, the safest securities are the first to be issued. Thus, debt comes before equity as the latter is more affected by adverse selection problems.

In the pecking order there is no room for target debt-equity ratio since it strictly depends on the single firms' requirements for external financing. Retained earnings are the preferred way of financing projects and in case of a shortage of internal funds, debt is the best alternative left on the table. Thus, leverage ratios will differ according to profits realized (and consequently, accumulated cash) and investments made by a corporation over the years (Stiglitz, 1973).

The rationale behind the preference of internal over external financing cannot be found in costs that companies face by issuing new securities (Myers, 1984). Rather, the usual explanation of this theory is rooted in asymmetric information matters, e.g. the fact that managers have a deeper knowledge and understanding of the firm's real value than outside investors. Indeed, the issuance of new stock can be driven by managers' judgment about a possible market mispricing of a company's shares. Therefore, when the firm is overvalued, managers are assumed to issue new stock; on the other hand, when the company is undervalued, managers should avoid looking for new equity capital in the market. From an outside investors' point of view, knowing that such a situation could arise, they would expect that a new public offering is a signal of overvaluation of the firm. In turn, this would eventually lead to a drop in the shares' price making new equity a very costly option (Myers & Majluf, 1984). At this point, one would probably think that the same reasoning can be applied to new debt. Specifically, if internal information suggests a high risk of bankruptcy, managers would be more prone to borrow, pursuing risky and highly speculative investments (Stein, 2003). However, Myers (1984) and Myers and Majluf (1984) affirmed that equity price is more sensitive to managers' private information than debt, which is why the first option is alleged to be more expensive.

A solution to avoid the choice between asking for costly financing or passing up positive net present value projects, can be found in creating financial slack, namely

reserve cash or easy-to-sell securities. Hence, a firm may choose to issue new stock even when it is not in need of funds, “just to move the firm down the pecking order” (Myers, 1984, pp. 590). What Myers did not explain, is that this mechanism can be subject to the same problem of issuing new equity to finance projects, e.g. negative signal to investors. Furthermore, financial slack can potentially encourage managers to make less efficient decisions and not to act in the shareholders’ best interest (Brealey et al. 2012).

Obviously, neither the Pecking order model can fully capture all the aspects of financing strategies, nor can it be applicable to all the firms. Indeed, one would expect high growth companies to be more trustworthy to equity investors compared to mature firms, which on the contrary, would be regarded as sending pessimistic signals.

Adverse selection and asymmetric information involve many aspects of corporate finance, which does not always imply pecking order to hold (Frank & Goyal, 2007). Halov and Heider (2011) affirmed that in order for Myers intuition to hold, the underlying assumption must be either that debt is risk free (or at least equal for all firms) or that investors are not concerned with risk. Thus, they tested whether adverse selection cost of debt was effectively negligible or not and they found that when the market knows little about a firm, debt is usually avoided. However, when third-party ratings are acknowledged by investors, adverse selection cost of debt is irrelevant, suggesting that informational asymmetries to outside investors are smoothed. Finally, the authors found that “the pecking order works well when it should not, i.e. for large, mature firms that face little asymmetric information, and that it does not work well when it should, i.e. for small, young growth firms that face a lot of asymmetric information” (Halov and Heider, 2011, pp. 25).

In conclusion, the pecking order theory is not a panacea. Asymmetric information and adverse selection are not the only determinants that explain why the most profitable

firms usually borrow the least. Indeed, if information asymmetries were to explain the negative relationship between internally generated cash and demand for external finance, this connection would be stronger for the more opaque firms. On the contrary, Almeida and Campello (2010) found that such relation is significantly stronger for firms facing lower financing costs. Hence, an unconstrained firms' avoidance of external finance could be attributed to adjustment costs in issuance decisions. On the other hand, constrained firms' selection of external debt was considered to be driven by endogenous investment opportunities, opposite of the unconstrained firms whose investment spending should be exogenous to financing.

According to Cassar and Holmes (2003), the general theories underlying the capital structure set up and financing choices, apply to large firms as well as to SMEs. The only exception is constituted by theories about internal conflicts within a company, namely between owners and management. In fact, SMEs are generally managed by the owners themselves. Nonetheless, Lopez-Gracia and Sogorb-Mira (2008) found that small firms behave differently to large firms in financing concerns even if they do not clearly specify in which ways. However, they tested trade-off and pecking order theories for SMEs using econometric analysis on a sample of Spanish small enterprises covering 10 years, from 1995 to 2004. Their results are in line with both theories, though the trade-off approach appears to be the most robust.

All in all, the theories discussed thus far present some flaws and are not applicable to all types of firms in every possible scenario. In the next chapter I will discuss more thoroughly the fact that in order to set up an optimal capital structure, firms usually face several constraints.

## **Chapter 2**

### **Constraints to finance with an eye on Italy: the SMEs perspective**

#### ***2.1 A classification of enterprises***

Many theories have tried to estimate the main factors affecting the choice of an optimal capital structure. However, when going from theoretical to practical point of view, things may change significantly due to different external, and sometimes internal influences. Indeed, some firms have more limitations than others, and the state of the economy can have an important impact too.

In order to spot a priori which firms could be the most constrained, the literature proposes several methods. For example, Fazzari, Hubbard and Petersen (1988) grouped companies according to dividend payout ratios considering a positive relationship between dividends and internally generated revenues. On the other hand, Devereux and Schiantarelli (1990) argued that this kind of grouping is not always applicable and they sorted companies by size and age. Generally, larger organizations are more diversified and have a lower probability of default. Hence, banks are more prone to grant them credit, also due to the large amount of money involved in these transactions (Eriotis, Vasiliou, & Ventoura-Neokosmidi, 2007). Following the same line of reasoning, Beck, Demirguc-Kunt, Laeven, and Maksimovic (2006) found that some specific groupings are more efficient than others, especially age, size and ownership structure. In particular, old, large and foreign-owned companies face lower financing obstacles. Berger and Udell (1998) explained the type of external funds needed following an age/size/information continuum. The idea is that small businesses can be classified according to a financial growth cycle predicting that as they grow, informational opacity is reduced. Initially a firm is expected

to make a large use of insiders' finance, trade credit and angel finance; as it grows larger, it can extend its range of resources to venture capital on the equity side and to banks or other financial institutions' on the debt side. Eventually, in case the enterprise plans to keep on expanding its scope and its net worth, it could gain access to public equity and debt markets, being a major advantage of large companies over small ones. Yet, even if in 2014 large European corporations used proportionally twice the equity of SMEs, the share is still very low (European Commission, 2014)

For the purpose of studying financing constraints, it seems sensible to focus the analysis on small and medium sized enterprises. In the first place, this category of companies appears to be the most limited in their choice of capital structure. Still, it is important to bear in mind that funding problems are not the most pressing for European SMEs. In fact, according to one fifth of them the most severe concern lies in finding customers, followed respectively by detecting skilled staff and experienced managers, complying with strict regulations, facing tough competition, and finally accessing to finance (European Commission, 2014). Nonetheless, a lot of research has been carried out regarding financing this kind of companies, especially in recent times. The second reason for concentrating on SMEs is that they constitute the largest stake in the European corporate structure as they account for 99.8% of all companies, provide 67.4% of jobs and produce 58.1% of gross value added (Kraemer-Eis, Lang & Gvetadze, 2013; Wymenga, Spanikova, Barker, Konings, & Canton, 2012). Furthermore, in the period 2009-2012, countries with the highest proportion of SMEs faced more severe problems in output growth than countries with a lower proportion of them, *ceteris paribus* (Klein, 2014). Hence, the recent financial crisis is an additional opportunity to investigate the importance of credit channels and to understand the factors that limit the financing choices of companies.

## ***2.2 Financing channels: evidence from the “Survey on the Access to Finance of Enterprises (SAFE)”***

The study of corporate finance also involves understanding how firms acquire funds in order to accomplish various tasks such as financing new projects, acquiring new machineries or simply making day-to-day operations work properly. As already mentioned in chapter 1, businesses have three main options to get funding, that is, internally generated revenues, and the twofold aspect of external finance, namely equity and debt.

In order to understand whether firms may face possible constraints in their choice of capital structure, some data from the “Survey on the Access to Finance of Enterprises” (SAFE) (European Commission, 2014) are retrieved to make a comparison between a representative measure for the desired use of different sources of funds and what actually was obtained. The lack of specific questions about the targeted external finance made necessary the use of data about “relevance” attached by firms to different sources, used as a proxy. “Relevance” is meant to indicate whether a firm has adopted them in the past or has considered using them in the future. Data about the real usage come from a report written for the European Commission by Doove et al. (2014) who retrieved the information from SAFE 2013-2014. I assume the data to be comparable as the time difference is less than one year. Even if the proxy reduces the accuracy of the study, the estimation is arguably a good premise to understand that limitations in the optimal choice of financing can exist.

### 2.2.1 Internal funds

This section concerns the importance attached to internal resources - intended as retained earnings or sale of assets - by companies and their real use.

In the table below are summarized the differences between the relevance of internal funds and the real use of them among the average European SMEs, large-scale enterprises (LSEs) and Italian, British and German SMEs.

**Table 2.1: Internal funds**

|                                       | <i>SMEs</i> | <i>LSEs</i> | <i>Italy</i> | <i>UK</i> | <i>Germany</i> |
|---------------------------------------|-------------|-------------|--------------|-----------|----------------|
| <i>Relevance of internal funds</i>    | 25%         | 43%         | 25%          | 29%       | 24%            |
| <i>Actual usage of internal funds</i> | 14%         | 33%         | 15%          | 20%       | 15%            |

**Source: European Commission, 2014, Survey on the Access to Finance of Enterprises (SAFE)**

As can be seen, the differences are quite homogeneous among the groups although European LSEs' use of internal funds is remarkably higher than the average use by SMEs. Concerning country-specific data, British SMEs rely more on internal funds than the German and Italian counterparts.

A deep analysis of the limitations on internal funding is beyond the scope of this dissertation. Thus, the only significant information to be extracted from the above table is that on average larger firms can count on a larger fraction of internal resources compared with SMEs.



### *2.2.2 External funds*

Internal funds are not always sufficient to meet a firm's requirements and for this reason external funds are used extensively in the corporate world. Sometimes, businesses can decide to issue new debt to accumulate liquidity even if not needed. Therefore, predicting a real financing hierarchy could be a difficult task since debt can take on different forms and the theory does not cover a sufficiently in-depth analysis about various types of debt. For this reason, an investigation of the specific sources of funds for European firms is considered necessary.

The first peculiarity of the European corporate structure is the far greater importance attached by companies to debt financing compared with equity capital. This is true for both large and smaller firms, even though the phenomenon is more emphasized for the latter. In the specific, 86% of SMEs deem debt an important supply of funds while only 16% of them mention equity. With regard to LSEs the proportions are 92% against 24%. It is noteworthy that only 6% of Italian SMEs consider equity as a solution, well below the European average. When considering the actual use, the numbers fall significantly, especially for small firms. In particular, 54% of European SMEs have used debt financing and only 3% of them have used equity against LSEs with respectively 80% for debt and 6% for equity. The numbers signal in some way the larger asymmetry that arises for SMEs between the measure of what is needed and what was used in the end.

These considerations must be taken a step further with a more thorough study of different debt sources of which only the most relevant are considered.

Bank loans are definitely the most important origin of financial resources for SMEs and the second for LSEs, after leasing or hire-purchase. The second factor considered by SMEs is bank overdraft or credit line, followed respectively by trade credit, grants and subsidized loans. The same hierarchy is shared by larger firms.

The following table represents data about the most important channels for both SMEs and LSEs, but due to lack of information, percentages about the real use are reported only for the first category.

**Table 2.2: External funds**

|   | <i>Relevance<br/>(SMEs)</i> | <i>Actual<br/>(SMEs)</i> | <i>Use<br/>Relevance<br/>(LSEs)</i> |
|---|-----------------------------|--------------------------|-------------------------------------|
| <i>Bank loan</i>                          | 57%                         | 13%                      | 62%                                 |
| <i>Bank overdraft or credit<br/>line</i>  | 53%                         | 37%                      | 59%                                 |
| <i>Leasing or hire-purchase</i>           | 47%                         | 29%                      | 63%                                 |
| <i>Trade credit</i>                       | 33%                         | 9%                       | 42%                                 |
| <i>Grants or subsidized bank<br/>loan</i> | 32%                         | 9%                       | 33%                                 |

**Source: European Commission, 2014, Survey on the Access to Finance of Enterprises (SAFE)**

An examination of the data reveals that actual use is always lower than what firms wished to adopt. Specifically, a striking difference arises for bank loans used only by the 13% of small firms in the period 2013-2014, while almost 60% stated this was an important source. Finally, it is worth mentioning that the most widely used source of financing for European SMEs in 2013-2014 was bank overdraft or credit line (37%).

### ***2.3 Constraints connected with financing***

Although there are considerable differences between the desired level of debt and what is actually acquired, it is also important to stress asymmetries in the choices made by different types of companies. Beck et al. (2008) showed that controlling for different variables, smaller firms use external finance in a lower proportion with respect to larger ones, even due to a lower use of bank finance. Moreover, they pointed out that when financially constrained, large firms are more able than SMEs to expand external financing. According to Fazzari et al. (1988), the key to understanding the restraints to external finance lies in transaction costs, agency costs, cost of financial distress and asymmetric information, among others. Following a similar path, Schiantarelli (1995) claimed that costly monitoring, contract enforcement, asymmetries in incentives and information, are all factors that raise the cost of debt above the risk-free rate of interest.

When dealing with financing constraints, one has to take into account the differences that arise between listed and unlisted firms. Even if many countries in Continental Europe have underdeveloped public capital markets, large companies still make use of this source of funds twice as much as SMEs. Nonetheless, some stock market segments have been designed specifically for smaller companies, allowing for reduced expenses when they remain quoted. Among them it is possible to list the Alternative Investment Market (AIM) set up in the London Stock Exchange in 1995, but also the Italian Mercato Alternativo del Capitale (MAC) and AIM Italia, founded respectively in 2007 and 2008; which were merged in 2012 (Caccavaio, Carmassi, Di Giorgio, & Spallone, 2012; Borsa Italiana).

The advantage of being listed is often twofold. On the one hand, it allows financial managers to issue new securities to be sold on the market; on the other, listed firms are usually charged a lower interest rate on loans. However, it is not clear whether this effect

stems from the enhanced publicly accessible information about the company or from the improved bargaining position of the firm towards the banks (Pagano, Panetta, & Zingales, 1995).

Arguably, transaction costs – i.e. registration fees, legal and accounting costs, taxes, due diligence and distribution - are one of the main factors that prevent companies from going public.

Many of these costs are usually fixed and ergo larger firms can more easily exploit economies of scale to set up the most suitable financial structure (Wald, 1999). Instead, smaller firms are most of the time prevented from being publicly supported due to the low economies of scale and to the high degree of informational opacity (Berger & Udell, 1998). A different perspective is given by Oliner and Rusebusch (1992) who found that on average transaction costs are not a significant determinant of the financial structure of a firm.

In summation, it is not clear the extent to which transaction costs are a considerable constraint in the choice of going public. Nonetheless, empirical evidence confirms that small and medium sized enterprises generally prefer not to be publicly listed, which can have disadvantages.

Borrower-specific characteristics are also a major concern for lenders when a relationship between these two parties arises. In particular, banks can decide to charge higher interest rates to less reliable firms but also to reject applicants for loans if the required standards are not fulfilled. Further, credit rationing can occur when lenders refuse to extend credit regardless of the interest rate.

The peculiarities of firms also determine the degree of informational opacity in the corporate context. For example, if a firm has never been publicly traded, the market has never had the chance to acquire information to make a correct assessment of the

business. Indeed, more information is available about older listed firms due to the reporting requirements of stock exchanges (Oliner & Rudebusch, 1992). Hence, being listed has a twofold advantage, that is being known on the market and having equity as an additional resource. In general, the higher the informational asymmetries, the stronger will be the reasons for investors to be more cautious. As a matter of fact, lenders are likely to charge higher interest rates to more opaque firms. Basing the study on rating agencies methods to establish the creditworthiness of a firm, Sengupta (1998) investigated the link between the corporate disclosure quality and the cost of debt. Specifically, he studied listed corporations with publicly traded bonds and he found that the higher the firms' overall disclosure quality, the lower the interest rate on their bonds, *ceteris paribus*. It seems reasonable to conclude that this result can be extended to a comparison between SMEs and LSEs. The literature confirms that small and young firms involve a higher degree of opacity than bigger and older firms; this difference is even sharper where the latter are listed.

In some cases, informational asymmetries are deemed to be crucial for the existence of a financing hierarchy. Indeed, long-term credit relationships give lenders the possibility of assessing the creditworthiness of a borrower, allowing for a lower cost of debt in such cases. Also, multi-period contracts give more incentives for debtors to stick to the terms of the loan, and to be more reliable (Gertler, 1988; Stiglitz & Weiss, 1981).

In conclusion, it is expected that due to informational opacity, on average SMEs have to pay higher interests on debt.

Another element influencing the acquisition of external finance is represented by agency costs, derived from the separation of ownership and control. In the case of highly fragmented holdings, lenders have more incentive to design strict covenants or to monitor the firms through costly procedures, incorporating these costs in higher interest rates.

Generally, SMEs should have fewer troubles in these concerns since most of the time they are run by owners-managers. On the contrary, LSEs are more likely to face agency problems as they are usually controlled by many weak proprietors. Even if this type of costs seems to be smoothed for smaller firms, one has to bear in mind that many SMEs are not run by experienced and professional managers and this may represent a concern for stakeholders. Indeed, by not pursuing optimal investments due to lack of foresight, a manager could prevent an enterprise from growing (Berger & Udell, 1998). On the contrary, it may happen that entrepreneurs self-select to run the type of businesses that best matches their areas of expertise (Wiklund, Delmar, & Sjoberg, 2004). Finally, some researchers argued that agency costs of debt are not the most important factor to understanding the capital structure of firms (Parrino & Weisbach, 1999).

In the overall, it is not clear whether agency costs are actually translated into higher interest rates on loans.

Van Binsbergen, Graham, and Yang (2010) tried to estimate firm-specific cost of debt - although without making a distinction between cost of debt perceived by managers and the actual cost of debt - using as distinctive factors collateral, size and book-to-market ratio. They found that the major influence is the cost of default, which accounts for nearly half of the rate. Connected with financial distress are liquidation costs, a subset of bankruptcy costs. They represent how much value is lost during the sale of a firm's assets and they drive the cost of external finance up in case they are non-negligible (Cassar & Holmes, 2003). Consequently, if a lender perceives that a firm will lose significant value during liquidation, it may include this risk in the interest rate charged. In chapter 1, it is reported that many firms dealing with intangible assets, in high growth industries, are expected to have a lower leverage. In fact, intangible assets and human capital cannot be easily resold. Instead, firms with a high number of fixed assets can sell them to pay back

creditors in case of bankruptcy. Additionally, it may happen that firms' owners pledge their own wealth in order to be in the position of negotiating better credit conditions. Indeed, even if personal commitment can be very costly to the borrower - especially when the risk of default is high – it signals a higher creditworthiness and possibly, it allows cheaper terms and a lower interest rate on debt (Avery, Bostic, & Samolyk, 1998).

In the case of imminent financial distress, operating risk can intensify, induced by lower customers confidence. For example, if they perceive that a company may not meet its warranty obligations, clients would be less inclined to buy its products or services. Further, suppliers could be more reluctant to extend trade credit.

High bankruptcy costs may represent an obstacle to acquiring external finance either due to the higher cost of debt or to the willingness of lenders to extend credit at all. However, if a firm can offer significant collateral it is possible to decrease the burden of such loans, making the transaction less risky for the lender. Arguably, the collateral may be represented both by tangible assets and by the expected value of future cash flows (Schiantarelli, 1995). For this reason, small businesses are more likely to have major problems in this concern. Along with the argument of collateral, the economic scenario in which firms operate plays an important role in defining the easiness of gathering external funds. In case of economic downturns, the net worth of a company can be significantly reduced, making asymmetric information more influential for the overall cost of debt (Bernanke & Gertler, 1989). The balance sheet channel is indeed a possible way through which a negative shock in the economy can trigger a decrease in the value of collateral and in the internally generated funds, undermining the creditworthiness of a borrower (Braun & Larrain, 2005). Related to economic slump is the so-called bank lending channel. It is proven that during a crisis banks can be seriously damaged - either from a deteriorating balance sheet or from an impaired interbank market - and compelled

to reduce the flow of funds to enterprises. Thus, the direct consequence of such actions could be devastating on companies that heavily rely on bank finance (Stein, 1998). The difference between the balance sheet and the bank lending channel becomes blurred when banks are the main sources of external finance or when there is a significantly positive correlation between need of external finance and need for bank loans (Braun & Larrain, 2005).

The extent to which a financing gap exists for small firms is strictly connected with the development of a country's financial and legal systems. Indeed, by cause of informational asymmetries, smaller firms are only partially able to substitute banking finance with subsidized loans from the government or with sources that rely on other types of relation, as for example trade credit or informal finance. Even if smaller organizations use significantly more informal finance than LSEs, they do not use much higher levels of trade credit, leasing or government subsidized loans; all these factors being conditional on the development of a country's institutions: the lower the quality, the lower the ability of a firm to overcome the financing gap (Beck et al., 2008). Country-specific effects are explored by the literature, which on average seems to show that countries with better legal systems should have a negative correlation with external financing obstacles. Also, it is claimed that institutions driving financial and economic development are the most important differential factors to understand cross-country easiness in obtaining funds (Demirguc-Kunt & Maksimovic, 1998; Beck et al., 2006).

To sum up, adverse financial conditions are reflected in high cost of debt and in tight lending standards, which in turn affect more heavily companies that mostly rely on external funds for their going concern and for new investments (Klein, 2014). This chain of reactions is expected to occur when the relationship between borrowers and lenders is subject to asymmetric information, i.e. when capital markets are imperfect. The lower the



degree of transparency of a borrower, the higher will be these frictions. Furthermore, together with collateral and moral hazard matters, they should be the link between the borrowing capacity of a firm and the strength of its balance sheet. Finally, the development of economic and political institutions is an important determinant of the lending conditions for firms operating in specific countries.

Altogether, what explained thus far appears favorable to the hypothesis of smaller firms being more limited in the set-up of an optimal capital structure. However, there is another branch of literature that explores the topic from a different perspective, reaching other conclusions. Beck et al. (2008) studied the finance of SMEs from the supply side, namely the banks' point of view, through the use of a survey. They found that regardless of the advancement of financial institutions, banks in several countries find the SMEs segment very attractive. Indeed, they claim not only to provide these firms with credit, but to offer them parallel services, too. Most importantly, even if a greater share of bank loans flows to larger firms, the authors did not find significant differences between pricing, interest rates and ratio of secured loans across the size of businesses. Rather, the greatest differences were found between developed and developing countries.

In accordance with this path, Vos, Yeh, Carter, and Tagg (2007), studying a sample of US and UK firms, claimed that SMEs do not perceive significant problems in acquiring external funds. Although Doove et al. (2014) reported that European SMEs do not consider financing problems as one of their major concerns, it is not clear to what extent these data are actually comparable.

De la Torre et al. (2010), studying a survey of 48 banks in 12 countries found that contrary to the general belief that banks are not favorable to SMEs lending, they are truly interested in this segment and they find it profitable. Also, they argued that relationship lending is not the only way in which banks can overcome problems of informational

asymmetries, as for example information gathered by credit bureaus is useful in assessing creditworthiness. Further, new technologies have allowed credit institutions to develop predictive models based on statistical properties to assess credit risk. Finally, they claimed that even if the financial crisis has made banks more careful about risk exposure, neither they restricted access to credit nor they charged higher lending rates to SMEs.

## ***2.4 Financing gap***

During the global financial crisis that hit Europe and that successively became a sovereign debt crisis, fixed capital investment in the EU has experienced an unprecedented collapse, also due to the widespread atmosphere of uncertainty. The cutback of available financial resources consequent to the stricter capital requirements for banks has had an amplifying effect of the shock on the whole economy. During the first phase of the crisis, the changes in credit availability have been quite homogeneous across the Euro area. Moreover, the market has experienced contraction of economic transactions, sharp decline in borrowers' creditworthiness and increasing risk aversion by financial institutions. As the sovereign debt crisis struck, the credit shrinkage has been significantly more severe in countries whose sovereign debt level was relatively higher. Banks' credit tightening pushed many listed companies to issue new corporate bonds and secondary equity. On the other hand, initial public offerings remained very low since the crises. Thus, long-term finance has not appeared to be severely hampered by the economic downturn, but this has been only true for firms that had access to public markets.

In this scenario, both demand and supply of credit have played an important role to the creation of a financing gap. As already discussed, small and medium sized enterprises strongly rely on banks to acquire funds and in most of the cases their use of public markets is curbed by transaction costs or informational opacity. In this respect, the

introduction of more severe bank regulations has worsened the situation. In fact, the new requirements compelled banks to calculate risk in their balance sheets according to weights attached to different kinds of assets, where loans to smaller firms were regarded as riskier.

The lower amount of funds flowing to riskier enterprises could have been determined by a higher cost of debt but also by a more severe credit rationing, witnessed by tighter standards for loan applications adopted by Eurozone banks. This in turn may be attributed to unsound borrowers positions or to an impairment of banks' balance sheets. Simultaneously, demand for loans dropped remarkably (Kolev, Tanayama, and Wagenvoort, 2013; Del Giovane, Nobili, and Signoretti, 2013; Giovannini et al., 2015).

The conclusion derived from this picture is not whether financing problems have actually arisen, but rather it seems that the important issue is to understand the roles played by demand and supply of credit.

#### *2.4.1 Demand vs. Supply*

Because of the high degree of interconnectedness between demand and supply, it is quite difficult to assess which of the two parties has had a more considerable role in the drop of finance to businesses. In order to distinguish between the two effects, it will be followed Giovannini et al. (2015) specification of three possible channels at work. The first is attributable to a demand-side shock, mainly driven by a lower request for firms' output. The second relates to both demand and supply and concerns the change in value of collaterals due to variation in interest rates or in real estates' prices. Finally, the third is linked with a supply-side shock reflected in modified banks' lending policies.

With regard to demand, the theory tells that in periods of economic shocks, consumers reduce their consumption and start saving more. In the first phase of the crisis,

households had to face a drop in the value of their houses, which in turn led to a decrease in expenditures (Mian & Sufi, 2012). The fall in demand was likely to have an adverse effect on the level of investments undertaken by firms, as growth opportunities were not as many as before. Furthermore, in periods of uncertainty and low confidence in the market, firms usually scale back their investment plans (Bloom, 2009). Further, the demand slump weakened the net worth of companies, which were judged riskier. As a consequence, they had to face more stringent terms on loans. Therefore, the losses incurred by firms were probably one of the reasons of their struggle to comply with the terms of existing debt and to obtain new credit in case of need (Kahle & Stulz, 2013).

The second type of shock is the drop in the value of assets that can be pledged, which makes it more difficult for firms to access credit. This is the already mentioned balance sheet channel or collateral channel, explored by Bernanke and Gertler (1989) who underlined the importance of asymmetric information and agency costs when collaterals' value decreases. In such cases, lenders have fewer guarantees acquiring funds becomes much more onerous. For this reason, a damaged economy is likely to enter into a vicious circle of more disinvestments, which can reduce asset prices even further ending up in a recession (Giovannini et al., 2015). The collateral channel can also propagate the effect of a bankruptcy on the actors operating in the same industry, pushing down asset prices. In turn, this mechanism could increase the cost of debt for firms in the impaired sector, making the general recovery more difficult (Benmelech & Bergman, 2011). Finally, since real estate represent a significant portion of fixed assets held by companies, some investigations have been made about their correlation with the level of investments. Chaney, Sraer, Thesmar (2012) found that over the period 1993-2007, when firms-owned real estate appreciated by \$1, the average growth of investment was 6%. Furthermore,

they stressed the fact that the impact of shocks in collaterals value is usually of greater magnitude for more constrained firms.

The third view is concerned with an explanation of lower investment driven by a deep cut in the supply of credit. With the start of the financial crisis, uncertainty pushed investors to direct their investments towards the safest securities, reducing supply and making credit more expensive. Therefore, larger firms that had access to financial markets were damaged. With regard to bank-dependent firms, the smaller availability of funds was caused by different elements. One is represented by flawed financial markets that made it more difficult for banks themselves to be sufficiently liquid (Giovannini et al., 2015). Another is represented by the balance sheet channel that has been detrimental for the soundness of the banking system. In particular, due to the large losses caused by toxic assets, the most levered banks had to cut the supply of new loans in order to restore their target leverage (Hempell & Sørensen, 2010). Brunnermeier (2009) assumed that independently of which of these channels played more relevant roles, banks significantly tightened their lending standards, supplying credit only to the safest and most transparent firms. In fact, data have shown that from 2009 there has been an increase in the collateral requirements and a shortening of loan maturities. Also, quite curiously, banks affirmed to have toughened the standards more for LSEs than for SMEs. However, enterprises perceived the situation differently as smaller ones reported the most severe credit rationing (European Commission, 2014).

Finally, in the view of Hempel and Sørensen (2010) the bank lending supply shock was considered to fit quite well several effects of the financial crisis. On the contrary, Kahle and Stulz (2013) hypothesized that the most impaired banks could have dealt with the situation differently than cutting credit to firms. Also, they pointed out that companies could have switched to other sources of financing beside bank loans.

All in all, the literature makes clear that despite the difficulties in assessing responsibilities about the collapse in credit markets, it is possible to affirm that both demand and supply dynamics have been crucial in the European context.

### ***2.5 The Italian case***

In this section, the analysis is narrowed down to Italy, a country that has been severely damaged by the sovereign debt crisis and where SMEs have always been crucial for the economy. Specifically, it is investigated the extent to which the crisis has made it more difficult for firms to borrow.

During normal periods, the Italian credit market works under conditions of imperfect competition. Therefore, issues of asymmetric information, bankruptcy costs and all the factors that make a company less attractive for a lender also apply to the Italian market.

With respect to periods of crisis, the supply of liquidity becomes price-inelastic, meaning that banks apply credit rationing. In other words, lenders may not be willing to extend credit even to firms that could pay higher interest rates (Del Giovane et al., 2013).

Del Giovane, Eramo, and Nobili (2010) found that both supply and demand have had a role in Italian credit developments during the downturn. In a study by Panetta and Signoretti (2010) it was pointed out that the drop in the amount of loans to businesses has been mainly driven by a decreased demand. The causes reported by the authors are in line with the already cited fall in consumption, fewer investment opportunities, and the reduction in real estates' prices. Concerning the supply of credit, it was found that the contraction has been driven by the expanded risk involved with new loans. Besides that, banks have suffered from deteriorated balance sheets and decreased capacity of acquiring liquidity.

In order to understand the dynamics of credit supply, it is crucial to find out the channels through which Italian banks acquire funds. The great dependence on interbank markets had a particular adverse effect on the flow of funds to businesses. Specifically, after 2008 the impairment of this channel was translated into a cut of several relations with firms and a higher probability of rejection to loans applications. Banks with higher capital resulted more resilient to shocks in funding markets (Bonaccorsi di Patti & Sette, 2012). This finding is supported by Albertazzi and Marchetti (2010) who investigated the relation between bank capitalization and their risk-aversion. For the first years of the crisis they documented a flight to quality of large less-capitalized banks towards safer borrowers, shortening many funds to risky firms. Yet, this shift did not occur for small less-capitalized banks. Besides that, borrowers did not have room for switching from less-capitalized banks to others in better conditions to avoid the restrictions imposed. Therefore, evidence in favor of a shrinkage of credit supply does exist and it is not negligible.

As the financial crisis evolved into a sovereign debt crisis, further developments occurred in the credit market. As Albertazzi, Ropele, Sene, and Signoretti (2012) estimated, the increased BTP-Bund spread had a role in affecting the interest rate charged on new loans to companies. For this reason, in periods of prolonged high spread, higher interest rates could have pushed down demand for credit even further. Bofondi, Carpinelli, and Sette (2013) scrutinized the difference between Italian banks and foreign banks in Italy over this period. The authors found that Italian banks downsized credit and increased interest rates more than foreign banks, despite having the same capital position and funding structure. Finally, they confirmed that firms could not sufficiently substitute Italian, more expensive banks with foreign, cheaper lenders.

## Chapter 3

### Some empirical evidence: interest rates and credit standards

#### *3.1 A brief review of the hypotheses to test*

The literature presented in the previous chapter makes clear that financing difficulties do exist and represent a concern for firms in general. Despite some controversial points of view, the main fashion seems to go towards the assumption of small and medium sized firms being more constrained than large companies. One of the reasons is that usually accessing public markets is not an option available to all the actors in the market. Furthermore, lenders usually seem more reluctant to extend credit to SMEs due to several issues that altogether increase their risk. As already pointed out, constrained borrowers are more likely to be charged higher interest rates but also to face tighter lending standards. In the specific, these conditions are expected to be exacerbated in periods of downturns.

In this chapter I will test these hypotheses analyzing first the level of lending rates for SMEs compared with LSEs, and then the extent to which credit conditions have been generally stricter for smaller firms.

The comparison between the two categories of companies is made for the specific purpose of stressing their differences in constraints, but also to rule out the effects of macroeconomic factors and ECB's policies. Arguably, one would expect interest rates to move together according to the state of the economy and to monetary policies.

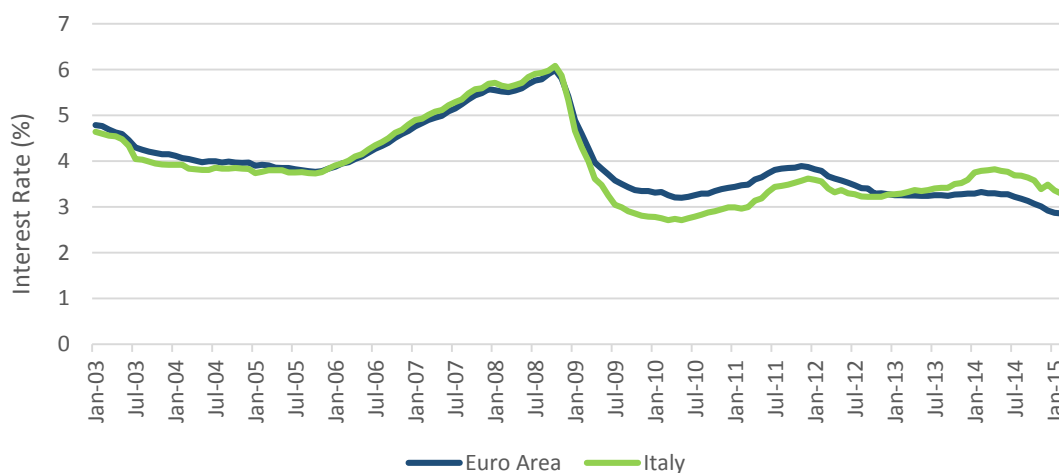


### 3.2 Cost of debt: An Italian perspective

Many researchers have repeatedly pointed out that in countries with more developed institutions, companies usually face lower obstacles in acquiring credit. For this reason it is important to undertake the analysis in a specific country, which in this case will be Italy.

Obviously, obstacles to credit are not only lending rates, but they are definitely the most visible factor. The first step is to understand whether Italian firms face a higher cost of debt than the European average. Since economic situation is a relevant factor in this investigation, a time series is taken from 2003 to 2015. The following graph represents annualized monthly interest rates on loans to non-financial corporations with maturity between 1 and 5 years.

**Graph 3.1 : Annualized monthly interest rates on loans to non-financial corporations with maturity between 1 and 5 years**



**Source: ECB Statistical Data Warehouse, bank interest rates on loans to non-financial corporations**

Apparently, Italian rates follow quite precisely the trend of the Euro Area. More specifically, in the period that goes from the end of 2008 until January 2013 they were generally lower whereas after that date they became higher by less than one percentage point. Hence, Italian firms seem to face nearly the same cost of debt of European companies.

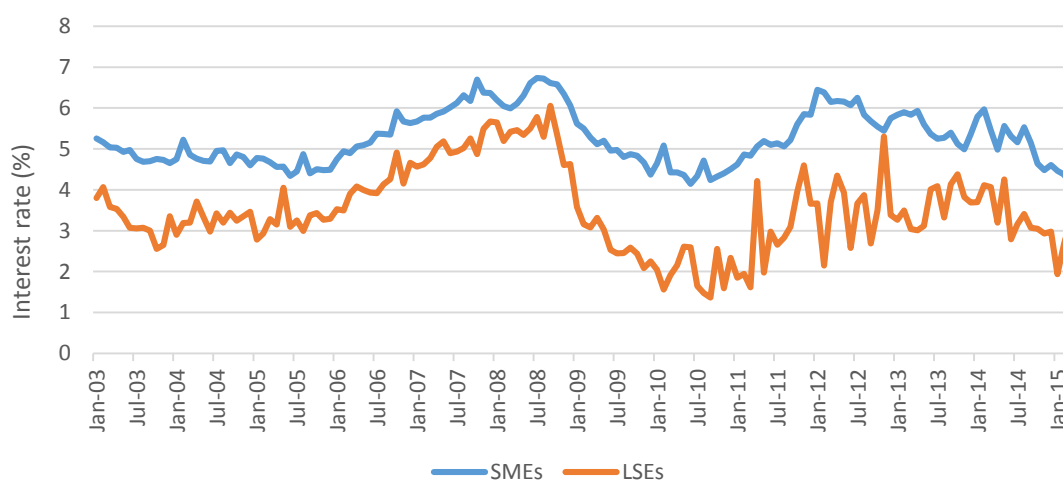
In chapter 2 I reported several papers arguing that problems as opacity of lenders, agency costs and low value of collaterals should increase firm-specific debt burden. Moreover, in periods of financial crisis these issues should become more severe and make the borrowing more difficult. However, as can be noticed from the graph, after a period of sharp increase in interest rates, they peaked at the end of 2008 and experienced a significant drop thereafter. Without going into details, the trends could have been driven by monetary policy and by demand and supply dynamics. For this reason, it is quite imprecise to say that during downturns, firms unilaterally experience a higher cost of debt than before the crisis. Rather, even if the general level of bank rates decrease, more constrained firms should be charged higher interests on loans and this difference is supposed to be even more remarkable during financial crises, *ceteris paribus*.

In a study conducted by Prometeia, SMEs in Italy have been found more constrained in acquisition of credit than large firms. In fact, during the period considered, they have been systematically charged higher interests due to their lower contractual power and sharper financial fragility (Romeo, 17<sup>th</sup> June, 2013). In order to conduct this study, loans smaller than € 1 million have been used as a proxy to identify SMEs debts; on the other hand, loans larger than that amount have been used for LSEs. This approximation is quite common in the literature to make this type of comparisons (Infelise, 2014; Kaya, 2014). This method is also applicable to Italy, as in 2014 92% of loans required by Italian SMEs have been of a sum lower than € 1 million. With respect

to large firms the approximation is somewhat weaker, as in 2014 74% of the bank lending to large firms was higher than the threshold (Doove et al., 2014). Nonetheless, these proxies are necessary as in the few publicly accessible databases, there is not a clear distinction about the entity of borrowers. In fact, the only distinction that exists in this matter is about the amount of money borrowed.

The spread between interest rates on SMEs and on LSEs analyzed in the study of Prometeia was only represented from 2008 to 2013. For the purpose of detecting whether the crisis has worsened the gap between the alleged constrained and unconstrained firms, the data to be scrutinized should at least cover a ten year span. As before, loans with maturity between 1 and 5 years are taken.

**Graph 3.2: Annualized monthly interest rates on loans to Italian non-financial corporations with maturity between 1 and 5 years**



**Source: Bank of Italy Statistical Database, bank interest rates on loans to non-financial corporations**

As can be noticed, small firms face on average a higher cost of debt and the spread between the two rates is sustained over the whole period. However, several considerations

must be made. The first is that the cost of debt for SMEs seems to be less volatile, as also demonstrated by its variance calculated over the period, which is 0.43%. On the contrary, the variance of the yields of LSEs loans is more than double, 1.05%. The second is that in some specific points in time, the difference between the two rates is almost zero; but this could be a bias of the approximations used. Nevertheless, the most evident cases occurred both during the crisis and before, as for example in January 2013, but also in March 2005.

It is interesting to notice that although both interest rates followed the same macroeconomic trends, starting from September 2008 the spread between the two yields increased significantly and remained large until the early months of 2011. This could be attributable to the higher precautions taken by banks towards smaller firms, which in periods of downturns are more likely to suffer from informational opacity, possible costs of financial distress and the like. Specifically, assuming that during normal times lenders are not particularly risk averse, as soon as a shock hits the economy a lower number of them would be willing to bear unnecessary risk. Consequently, the supply of credit to more opaque firms - claimed in the second chapter to be smaller businesses - would be cut down and lending rates would diverge from those of more transparent firms. On the contrary, in the graph is not possible to consider disparities between listed and unlisted organizations. Indeed, publicly traded companies allow investors to have more knowledge and to gap possible informational imbalances. Thus, being listed may represent an opportunity to face lower cost of debt. The only way to consider this factor as a justification for part of the spread would be to know the weights of public companies in the calculation of loans' interest rates. Unfortunately this datum is not available and therefore it is not possible to draw any conclusion of this kind.

In periods of markets unpredictability, lenders are also worried by the enhanced operating risk of firms. Some of them might indeed incur in lower revenues due to customers decreased demand driven by skepticism about the business' future compliance with warranty obligations. Even if trade creditors are the most concerned about this issue, banks interests may be at stake as well. It seems sensible to hypothesize that larger firms are the most reliable thanks to both their size - too big to fail – and the reputation built over the years. Indeed, in a study by Berger and Udell (1998) organizations were supposed to follow a path of growth according to their age. However, Italy represents an exception and this reasoning may not apply to its corporate world. In fact, Italian political and institutional scenarios have always discouraged businesses from growing beyond a certain threshold. Further, firms' owners have persistently refused to open towards the market, preferring a family-oriented management. Therefore, in Italy many SMEs can happen to be mature firms that have built strong customer relationships over the years; ruling out the increased distrust in periods of crisis. In conclusion, when Italian corporate setting is studied, it can be deceiving to think of smaller firms as the most subject to an increased operating risk because of a downturn.

Other explanations must be found to justify the sharpened spread in the three-year term of the early crisis. In the previous chapter, it was reported that businesses with large liquidation costs would be charged on average higher interest rates. Possibly, during the crisis, these costs became more of a concern for investors, who raised the cost of credit to firms perceived to have major problems in selling off. Assuming smaller firms have proportionally fewer fixed assets to convert into cash, it is possible to contemplate liquidation costs as another factor with an impact on the broadened difference in yields.

A possible way to signal creditworthiness to investors lies in stipulating contracts that imply some collateral or other guarantees to the requested loan. However, if on the

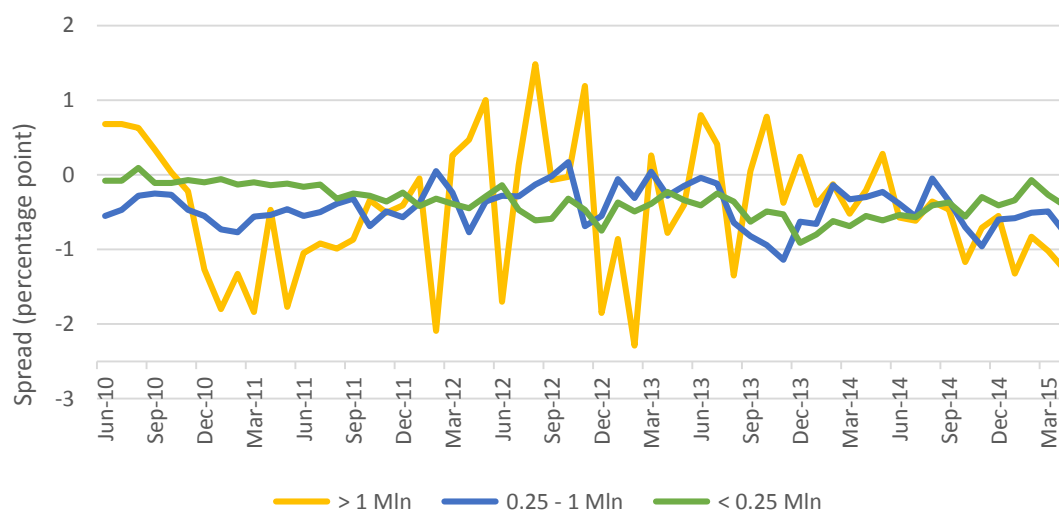
one hand this may support negotiations on more favorable terms and possibly lower borrowing costs, on the other, in periods of crisis it may not really help. Indeed, more severe covenants requiring higher value of collateral, together with the shock in real estate market may compromise the advantage of this type of contract. Therefore, even if collateral is supposed to mitigate asymmetric information problems, it is to be tested whether in periods of crisis this solution actually helps firms to pay lower interests despite the tightening of credit standards.

The following graph presents the spread in interest rates between uncollateralized and collateralized or guaranteed loans<sup>3</sup> with maturity over 1 year to Italian enterprises; divided in three categories by amount borrowed. Unfortunately, due to lack of publicly accessible data, it was not possible to retrieve any information on collateralized contracts before June 2010. Thus, the analysis does not allow for testing the differences involved with the use of collateral before and during the crisis; only the latter case is indeed covered. Finally, more attention must be paid to the entity of borrowing companies; indeed the distinction made before between SMEs and LSEs is no longer allowed, as the groups “< 0.25 Mln” and “0.25 – 1 Mln” cannot be combined.

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<sup>3</sup> Calculated as yields on uncollateralized loans minus yields on collateralized loans.

**Graph 3.3: Spread in interest rates between uncollateralized and collateralized or guaranteed loans with maturity over 1 year to Italian enterprises**



**Source: ECB Statistical Data Warehouse, bank interest rates on loans to non-financial corporations**

What the graph shows is somewhat surprising as rates on collateralized loans seem to be always higher than the counterparts; in other words the spread is persistently negative but for very short-term exceptions. Fluctuations in spreads are sharper as the amount borrowed is larger; more specifically, differences in yields for loans larger than €1 million can reach either +1.48 percentage points or - 2.29. Still, it appears that even borrowing large sums of money is more convenient through unguaranteed loans.

Apparently, this finding goes against the theory reported thus far, according to which the pledge of assets should mitigate problems of informational asymmetries especially during downturns, when banks aim at extending credit only if risk is minimized. One possible explanation is found in the paper of John, Lynch, and Puri (2003), in which the authors studied the differences in yields between collateralized and uncollateralized debt for US companies. As a matter of fact, they found positive spreads, contrary to what graph 3.3 shows. However, they constructed an econometric model that allows to control for credit rating, a factor that is not considered here. Even if the study

was made over the period 1993-1995 and the comparability of results may be questionable, the rationale behind controlling for the riskiness of firms is likewise applicable in this case.

Diversifying only with respect to the amount borrowed does not imply that within the same category there are firms with same risks. In the specific, among companies belonging to the same segment there could be the least reliable stipulating collateralized contracts and the safest ones without the need of pledging any collateral. The resulting cost of debt would be higher in the first case and lower in the second, explaining a negative spread. For this reason, this study does not grant any explanation to differences in yields on loans to SMEs and LSEs through the collateral channel.

To sum up, lending rates applied to smaller firms are systematically higher than those applied to large companies. Even if it is not tested by means of regression analysis, it seems sensible to conclude that this spread is mostly driven by problems such as informational opacity and liquidation costs, among others. Also, these burdens are expected to become heavier during downturns, and to be responsible for the incremented difference in yields during the crisis.

Three factors have a controversial role in the analysis: operating risk, the fact of being listed or unlisted and the pledge of collateral

In the first case, due to the presence of many old family-owned businesses, customers may have created relationships of trust over the years so that during time of economic difficulty, such companies may still be able to meet their obligations and continue to market their products or services.

Secondly, it is not possible to infer the impact of being listed on interest rates. In fact, the Italian stock market has a marginal role in the financing of firms and listed companies may have only minimal influence on the calculations of lending rates. Still,



the opposite may be true if quoted firms take a large proportion of loans to non-financial corporations.

Finally, the issue of collateral is probably the most confused as it is not clear which organizations make a larger use of this type of contract and even if it is actually convenient, as it is reasonable to assume.

### ***3.3 Lending standards***

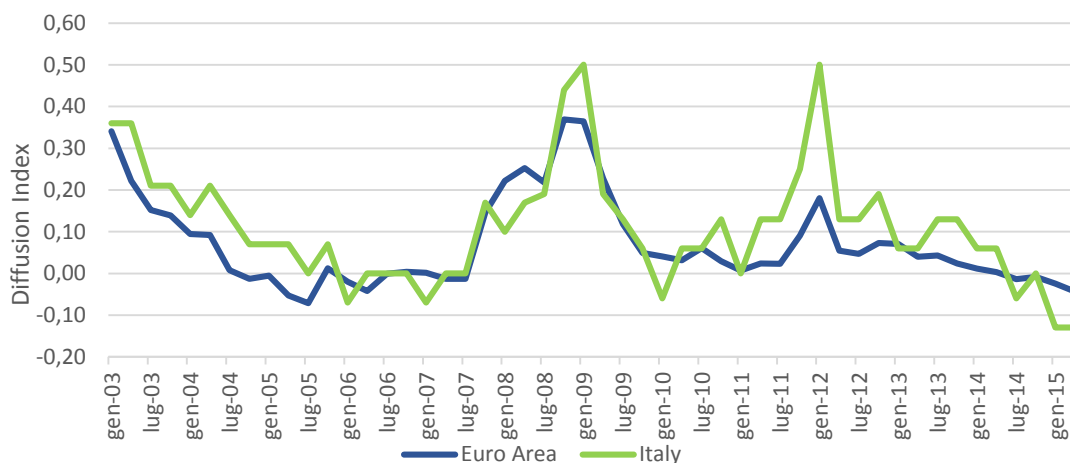
Constrained firms may not only face a higher cost of debt, but they have also a higher probability of rejection when applying for loans. As already stated, credit rationing is a situation in which borrowers, in this case banks, are not prone to extend credit even to those willing to pay more.

Tight lending standards can be imposed when banks fear financial troubles and their balance sheet position does not allow to sustain borrowers' default on debt. According to the examined literature, one would expect banks to require small and medium sized enterprises to be forced to comply with higher standards.

As a first step, a comparison is made between Euro Area and Italy with respect to the strictness of negotiated terms, without making any distinction among different types of non-financial firms. More precisely, data from the Bank Lending Survey (BLS) are taken in a time series from 2003 to 2015. To measure the extent to which credit standards have been tightened or loosened, a diffusion index is used, following the approach of Giovannini et al. (2015). This represents how banks changed their policies in this respect over the three months preceding the recording date. For this reason, it is not possible to infer the level of standards' strictness from this index, as this piece of information is not measurable. Rather, it is only possible to understand by how much it has changed from the previous period, either positively or negatively.

The measure ranges from -1 to 1 where the closer to 1, the tighter the standards required from borrowers.

**Graph 3.4: Variation in lending criteria applied to loans to non-financial enterprises: Italy vs. Euro Area (1 = Considerably tightened; -1 = Considerably loosened)**

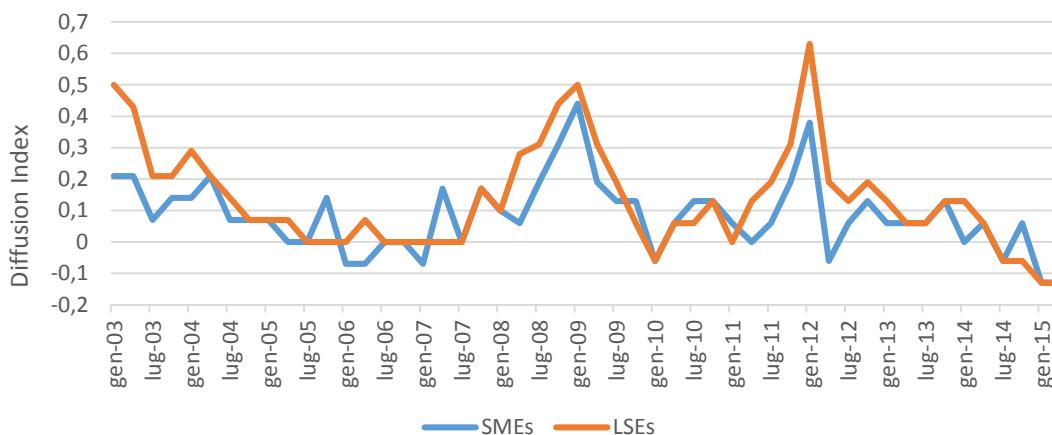


**Source: ECB Bank Lending Survey (BLS), bank supply to enterprises**

The graph shows that lending standards applied in Italy and in the Euro Area moved together with only a few exceptions. On average, Italian banks seem to be more risk averse than European ones, as in periods in which standards are loosened they relax the terms and conditions at a slower pace. On the contrary, both at the start of the global financial crisis and during the sovereign debt crisis, Italian banks have rushed to stricter and stricter terms more acutely than what the European counterparts did.

Let us now turn to Italy, with a comparison between different class of borrowers, represented in the graph below.

**Graph 3.5: Variation in lending criteria applied to loans to non-financial enterprises: SMEs vs. LSEs** (1 = Considerably tightened; -1 = Considerably loosened)



**Source: ECB Bank Lending Survey (BLS), bank supply to enterprises**

What is to be tested is the assumption according to which on average SMEs should be subject to tighter lending standards, especially during periods of crisis. However, neither this graph contradicts the hypothesis, nor it confirms it. As stated before, the diffusion index does not represent the level of credit standards, but only the change from the previous period. Therefore, the only conclusion that can be drawn is twofold. The first is that before the crisis, standards were loosened more rapidly for larger firms. The second concerns the fact that when the sovereign debt crisis hit the country, banks tightened the lending criteria more acutely for LSEs. Although the second observation is surprising, it is in line with Giovannini et al. (2015) who found the same result for the average European companies.

The explanatory power of these data is however limited. In fact, they are retrieved from bank employees' personal answers to questions of the Bank Lending Survey (BLS). The opposite opinion is given by businesses in SAFE, where SMEs reported a greater narrowing of credit availability than LSEs (European Commission, 2014). Moreover, the

argument is focused on changes in standards, not on their absolute level. For this reason, the smaller restriction in standards for SMEs during the sovereign debt crisis could be explained by the fact that if the terms had always been high, there would have been a low margin for banks to restrict them further. Yet, there is no empirical evidence about this.

It is important to remember that beside theories of more severe credit rationing for smaller companies, some researchers have found opposite results. For example, it was observed that banks consider the small business segment very attractive and they did not cut the supply disproportionately with respect to larger firms (Beck et al., 2008; De la Torre et al., 2010). Indeed, it was also claimed that regardless of the impairment in their balance sheets, banks could have solved the situation differently than reducing funds to small organizations (Kahle & Stulz, 2013).

In conclusion, this section investigated the second channel through which companies are forced to scale back their financing objectives, namely the restriction of credit standards. In particular, it is found out that the conventional wisdom on SMEs being subject to tighter criteria may not always be correct. In fact, banks reported to have restricted terms and conditions more severely for LSEs during the crisis. Nevertheless, this result is relatively weak and it is contrasted by smaller firms, which on the contrary witnessed stricter conditions on loans. Moreover, the interpretation of data is not straightforward due to the difficulties in measurement of lending criteria.

## Conclusion

The choice of an optimal capital structure has always been the subject of active debate. In fact, a vast amount of literature has been developed over the years to explain the financing intricacies of many companies. In addition to the main theories, one should take into account the existence of firm-specific constraints in the acquisition of external funds. For this reason, the factors that most often determine the conditions for borrowing are exposed in this essay, with Central Banks or Government policies left aside. In particular, the determinants discussed are assumed to act through two channels, namely interest rates and lending standards. Debt financing is covered more extensively than equity since the latter is not significantly used by most European corporations.

The aim of this thesis is to investigate whether small and medium sized enterprises are more limited in obtaining credit than larger firms and to understand the role of the recent crisis in this respect. In order to give a more specific perspective, the analysis has been focused on the case of Italy.

Using data from the ECB Statistical Data Warehouse and Bank of Italy Statistical Database, loans of less than €1 million have been used to identify the borrowing of smaller firms and those greater than €1 million to denote loans to large companies. It has been found that lending rates applied to Italian SMEs are persistently higher than those applied to LSEs. Particularly, the spread between the two yields was most pronounced during the crisis, which signals a worsening in the degree of restriction for smaller organizations.

It seems reasonable to conclude that the disparities are probably driven by issues of informational opacity and liquidation costs, among others. Indeed, an extreme lack of

transparency has been also witnessed by the difficulties in finding publicly accessible data on Italian SMEs for this essay.

Differently, assessing the contribution of operating risk, the fact of being listed or unlisted and the pledge of collateral is more challenging.

The first factor is indeed questionable for a country like Italy where the prevalence of old family-owned businesses might have mitigated issues of customers distrust when such companies incur in financial difficulties. With respect to being publicly quoted, one must be careful in considering by how much listed corporations contribute to the calculations of interest rates on loans because of their small share in the Italian corporate scenario. Ultimately, in order to identify the effect of pledging collateral to a debt obligation, the difference in interest rates between collateralized and uncollateralized loans has been calculated. It has turned out that the second type of contract has systematically higher interest rates, which contradicts both the literature and common sense. The weakness of this result lies in not controlling for credit rating of the borrowing companies (John et al., 2003), which could be solved by means of regression analysis. Indeed, if riskier firms are usually compelled to guarantee collateral while safer ones are allowed to borrow without a pledge, the ensuing analysis can be biased as in this case.

The discussion about the possible factors assumed to raise lending rates for SMEs is solely theoretical and it is based primarily on a review of the literature within the second chapter. As a matter of fact, a strong limitation of this essay is the lack of econometric analysis, which would provide a fundamental numerical support.

With regard to lending criteria, the results are equally surprising. According to what Italian banks stated in the BLS, during the recent financial crisis, credit conditions were tightened more significantly to large firms than to SMEs. Giovannini et al. (2015) found the same unforeseen outcome when studying credit standards applied to European

corporations. Also, this conclusion is backed up by some research arguing that regardless of the impaired state of the economy, banks could have reacted differently than reducing funds to small organizations (De la Torre et al., 2010; Kahle & Stulz, 2013). Nonetheless, this finding has some flaws. In the first place, in the Survey on the Access to Finance of Enterprises, SMEs reported a more severe narrowing of credit availability than LSEs (European Commission, 2014). Secondly, due to the difficulties in measuring this parameter, it is only possible to observe changes from previous periods rather than its absolute level. Hence, if credit standards had always been strict for SMEs, there would have been small room for banks to tighten them further, explaining the alleged lower tightening during the crisis.

Besides the lack of regression analysis, this dissertation reveals additional limitations. The imprecise measurement of credit standards does not allow us to determine whether SMEs are actually obligated to meet more stringent requirements. Moreover, political and economic institutions influences were purposely left out of the study to narrow down the focus, despite their obvious relevance in the topic.

Further research is necessary – especially with the support of econometric techniques – to understand factor-specific contribution to the larger difficulties encountered by small and medium sized enterprises in obtaining credit. Furthermore, once the contributing elements are identified, it will be crucial to design the proper policy responses to avert future difficulties.

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