

# FINANCIAL POLICY OF ITALIAN SMEs: THE IMPACT OF MINI-BOND

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## Abstract

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Matter of interest is the financing policies adopted by Italian SMEs to sustain their business cycles and competitive strategies; more specifically, the paper attempts to verify the role played by the “mini-bond”, a financing instrument introduced in 2012 by the Italian government. So, this paper can be framed in the part of the wide financial literature that examines the financing decisions of SMEs. In this field, it provides a contribution in this field by analyzing the impacts on the financing policy and choices, generated by the introduction of new and alternative financial instruments. Therefore, focusing on the Italian context, the research analyses whether the mini-bonds have actually triggered variations in capital structure, solvency and profitability of Italian SMEs that have issued mini-bond. After having considered trends and statistics about the mini-bond market, the paper examines the effects of financial policies adopted by Italian companies that tapped the bond market in the last 7 years. The analysis is based on a dataset extracted from database AIDA; this dataset includes accounting data and financial ratios taken from financial statements of Italian SMEs that issued mini-bond between 2012-2016. The research covers a sample of 246 Italian companies and focuses on their accounting ratios related to financial leverage, solvency, and profitability. Considering the variation between the years before and after the issues for each of 12 considered ratios, we measured average, median and standard deviation of variations to analyze the financial behaviour of SMEs in the sample. This research framework is slightly different from previous researches because, to correctly interpret the average variations, we carried out a preliminary significance check using the Student distribution, and we observed the coherence between average and median, also considering if positive variations were less or more than negative ones. The main results we obtain are that mini-bonds have: an impact on the issuer’s capital structure, with clear impacts on the level and maturity of indebtedness; a positive influence on the short-term solvency level of the issuers.

**Keywords:** Leverage, Capital Structure, Mini-Bond, Financing Policy

## 1. INTRODUCTION

The recent financial crisis and its impacts on the real economy in European countries, provide an opportunity to contribute to the literature on financing policies and bond financing of Small and Medium-sized Enterprises (SMEs). SMEs are a very important part of the productive system in all economies, emerging, developing and mature, playing a crucial role in economic growth, job creation, social development, and accounting for a large share of employment and GDP. In the OECD

area, SMEs generate around 60% of total employment and 50% to 60% of value added on average (OECD, 2018); in EU area, more than 99% of all firms are SMEs, that account for the large majority of employment, with an average share of 66,9% for EU 28 countries, and peaks of up to 79,6% for Italy (Barba Navaretti et al., 2015). In Italy, however, the fragmentation of the production system is greater than the other major advanced economies. Companies with less than 250 employees account for about 76% of the total in terms of added value, about 10% more than the average of the EU

countries. In particular, micro-enterprises, with less than 10 employees, make a difference: in Italy, they are about 4.3 million and employ about 13 million people (47% of the total, 29% in the European average).

Finding external resources for small and medium companies is a common problem in all the economies around the world, access to finance is a critical prerequisite for the creation and development of SMEs (OECD, 2018). The critical issues of "Small Business Financing" seem to be related to informational asymmetries, transaction costs, incomplete contracts, lacks financial culture. Such issues contribute to the definition of a world far from the comforting theoretical models, available in the financial literature, which should provide, to entrepreneurs and managers, elegant (but frequently unuseful) guidance on the "optimal capital structure" of a firm.

This kind of problem is especially relevant in the Italian economic system, where non-financial corporations represent an interesting case study because of two reasons: during the crisis their investment suffered much more than the other main EU countries; despite a very recent deleveraging process, Italian economy is characterized by high leverage ratios, with the highest firm leverage in the main countries, being observed in Italy (Antonicchia & Ferrari, 2016). According to ISTAT, the liabilities of Italian companies are made up of just over 50% of equity, of about 30% of bank debt, and the remaining 30% of various kinds of financing sources (including trade payables). Compared to France, Germany, Spain, and the United Kingdom, it is the country with the lowest equity capital invested and the highest presence of bank loans (France: 65% equity, 10% bank debt, 25% other debts; Germany and Spain: 60% equity, 60,2% bank debt, 20% other debts, United Kingdom: 70% equity, 10% bank debt, 20% other debts).

The paper deals with the issue of financing policies adopted by Italian SMEs, especially those that undertook new financing opportunity to begin a path of growth and innovation, after the financial crisis. It is often difficult for SMEs to access financial markets to directly acquire capital resources. This is mainly due to problems of "burden" of funding, know-how, image, and distribution power. The introduction of mini-bonds at European level is an attempt to limit as much as possible these problems, and overcome the strong dependence of SMEs to intermediaries' circuits and to banking systems. For Italian SMEs, mini-bonds represent a relatively new funding way, introduced by Italian legislator as an intervention' instrument of economic and fiscal policy. They presuppose the opening up of debt capital to professional or institutional investors, leading changes not only in investment and financing policies but also in the structure and functioning of corporate governance.

## 2. LITERATURE REVIEW

Since the two fundamental articles of Modigliani and Miller (1958, 1963), financial literature has been discussing if capital structure choices affect the

firm's value, and how market imperfections (such as taxes, information asymmetries, cost of default) could affect financing policies and choices of companies, resulting in sub-optimal capital structure and no-maximized corporate value (Myers, 1984). Considering the financial debt as a positive ingredient of a well-managed corporation's capital structure (Donaldson, 1961), financial scholars and practitioners have tried to study and explain phenomenon of financial constraints, external financing premiums, lacks financing, and also debt overhang.

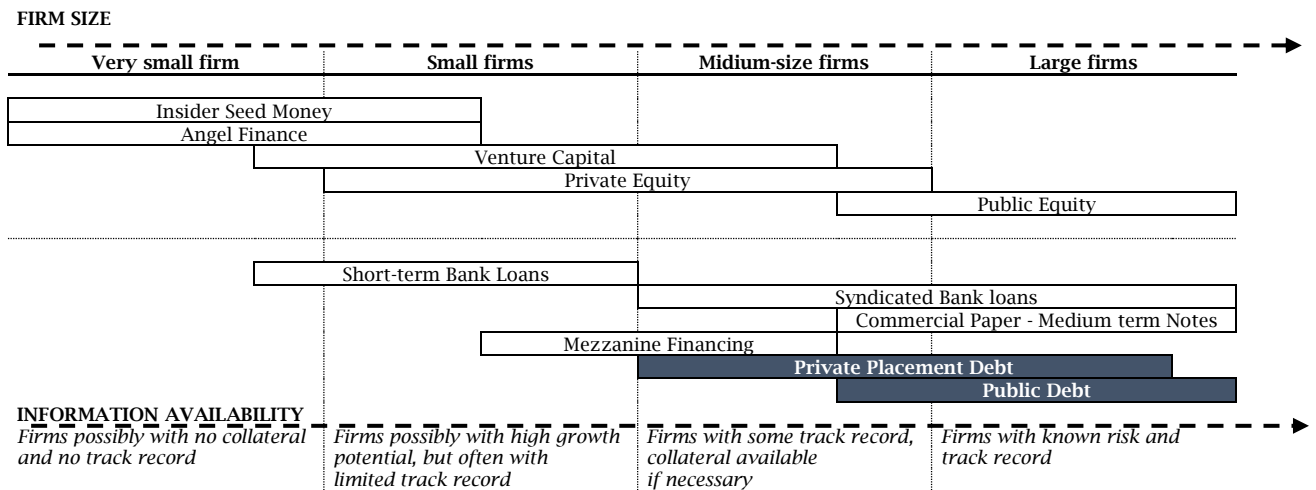
Financial studies paid specific attention to these kinds of issues when referring to SMEs. The issue of SME financing is well known and under a massive investigation from decades (Cressy & Olofsson, 1997; Beck & Demircuc-Kunt, 2006; Berger & Udell, 2006). There is no doubt that access to finance is of crucial importance for growth and profitability of SMEs, through its role in facilitating the creation of new businesses and nurturing the innovation process. Several studies have discussed that SMEs are financially more constrained than large firms and are less likely to have access to formal finance. There is a general consensus that financial markets do not function well when it comes to small and medium firms; the main reasons of market failures considered in financial literature are information asymmetries and external benefits (e.g. spillovers), that are more relevant for SMEs' than for large enterprises.

The presence of these two market failures (informational issues and externalities) implies that the size and the number of SMEs tend to be not optimal, with respect to what would be an efficient market organization and a competitive firm's dimension in dynamic and innovative industries. Indeed, limited access of SMEs to the capital market could represent a serious impediment to their expansion strategies and investment (also in R&D) policies.

In the framework of market failures, financial literature deeply analyzed the factors that matter in the determination of the availability and the cost of capital resources, and of the financing policies of SMEs. A significant part of the literature has focused on the intrinsic characteristics of SMEs, such as size, age, ownership and governance structures, the management team (Abdulsaleh & Worthington, 2013). In this field, specific attention is paid to the role of age (Kieschnick & Moussawi, 2018), and to the dynamics of the determinants of SMEs capital structure across their lifecycle (Matias & Serrasueiro, 2017; Martinez Cillero et al., 2019).

Other studies have focused on the economic environment's impacts (Xia et al., 2019), searching for context elements able to conditioning financial decisions of SMEs, not only related to credit policies of banks or sector dynamics, but also to the supply-chain network (Song et al., 2016) and tax regulation. Relatively poor is the literature that considers the relationships between financial policies of SMEs and financial innovation; in this context, an interesting line of studies has investigated the impacts of securitization operations (Casey & O'Toole, 2014; Kaya & Masetti, 2019).

Figure 1. Sources of capital available for SMEs



**Bond market**

The theoretical framework has consolidated around the fundamental work of Myers (1977), whose “debt overhang” model enables predictions about firms’ choices that could also be applied to the decision to issue bonds: firms with greater growth opportunities tend to enter into comparatively less long-term debt (and not issue bonds) in order to avoid sharing the benefits of future growth options with debt-holders.

Economic theory holds that a firm’s reputation (in terms of project quality or financial soundness) is one of the main factors affecting the decision to enter the bond market. Diamond (1991) suggests that as bank financing involves a higher degree of monitoring by banks (informed lenders) than by (uninformed) bond investors, firms start issuing bonds after establishing a reputation for efficient use of resources that mitigates the effects of moral hazard. In equilibrium, riskier firms could also find it convenient to issue bonds because of the limited gains they obtain from bank monitoring. Chemmanur and Fulghieri (1994), Bolton and Freixas (2000) indicate that firms’ risk affects the decision to issue bonds, emphasizing the enormous difficulties involved in renegotiating debt with a large number of creditors; this could lead high-risk borrowers to use bond financing less often than bank financing because banks are better able to ensure efficient liquidation or continuation of the business in cases of distress. Similarly, Cantillo and Wright (2000) stress banks’ greater reorganization skills and predict that arm’s length borrowing is mainly chosen by large, profitable companies, with a high proportion of tangible assets.

Rajan (1992) shows that the superior monitoring ability of banks comes at a cost as banks gain bargaining power over firms’ profits, which negatively affect the efforts of entrepreneurs. Firms’ choice between the two forms of debt is the result of an attempt to circumscribe banks’ power: the model predicts that borrowers with projects of intermediate quality find it best to use bank loans, whereas for firms with projects of the highest and lowest quality the cost of bank monitoring could make it convenient to tap the bond market.

Only a few studies deal specifically with the decision to issue bonds in order to identify the main

characteristics of issuers. The most common and most salient result of this literature is the positive correlation between the probability of bond issuance and firm size, which is consistent with the high fixed costs of issuance and the high information asymmetries that could prevent smaller firms from tapping the market (Calomiris et al., 1995; Cantillo & Wright, 2000; Dennis & Mihov, 2003; Mizen & Tsoukas, 2013).

Financial conditions also affect the ability of firms to issue bonds. Some authors find a negative correlation between leverage and bond issuance, a result that is coherent with the hypothesis of more difficult access to the market for firms with a fragile financial structure (Cantor, 1990; Bourgeois et al., 2006). Other studies stress the fact that high leverage could be a signal of good credit standing and borrowing capacity (Dennis & Mihov, 2003).

Several studies find evidence for two typically important drivers of the decision to enter the bond market: the need to finance growth and the need to reduce maturity mismatches between assets and liabilities

In this theoretical framework, few studies have been carried out relating to the decisions of SMEs to use bond issues. Many contributions point out that there are several options for strengthening the role of the market in SMEs’ financing: reducing barriers to entry to the financial markets; reducing regulatory constraints to “securitization”; improving and expanding venture capital markets; developing alternative funding instruments; promote and regulate the crowdfunding (Barba Navaretti et al., 2015). Other studies focused on the impact of bond issuance on economic and financial performances (Feihle et al., 2019).

**3. PECULIARITIES OF ITALIAN SMEs**

In the last decade, a lot of studies by financial institutions (Consob, Bank of Italy, etc.) and research centers (Prometeia, R&S Mediobanca, etc.) focused on the financial policies and financing problems of Italian SMEs.

First of all, should be reminded that coexist different valuations on the Italian production system. Indeed, someone says that the high weight of the SMEs would be the outcome of the arrest of

the modernization process of the country that should be led by public and private large corporations (Berta, 2013). Some other have shown that Italian SMEs have combined, growth, flexibility, and innovation for decades, sometimes exploiting agglomeration economies and knowledge advantages by operating in the industrial districts (Crafts & Magnani, 2013). Both the thesis could have strength depending on the weight of the forces that determine the competition into a sector/industry: innovation, internationalization, intellectual capital, economies of scale/scope, transaction costs, the evolution of society, regulations, externalities, agglomeration economies, etc.

In the 90s, the Italian industrial system has faced relevant changes that shifted the balance between economies of scale, transaction costs, and agglomeration economies. Market globalization, ITC development, and the EU integration process have led to an increase in competitive pressure. The answer of the Italian firms is slow and weak, someone says because of the size of the production units. More recently, with the outbreak of the great global crisis, an important competitive factor becomes the membership to production and commercial networks globally organized. The search for competitiveness brings a rethinking of the firm value chain that should be mainly based on the ability to innovate, export, and connect to large international networks. These activities require advanced knowledge, the outcome of R&D and highly qualified human resources, and need of relevant capital investment.

Regarding the financial choices of Italian non-financial SMEs, several researches from Bank of Italy has outlined peculiarities of their financing policies and capital structures and effectiveness of public measures devoted to foster the access to financial markets (equity side or debit side).

Accornero et al. (2015), considering that difficulties in accessing the credit market during the financial crisis prompted firms to seek non-bank funds, have analyzed at the characteristics of Italian non-financial firms that accessed the bond market for the first time between 2002 and 2013. In order to estimate the potential success of the public measures introduced in Italy in 2012 to remove regulatory obstacles and to promote (by fiscal incentives) bond issuance by unlisted firms, Authors identified the characteristics of potential issuers considering, through a logit estimation, indicators of economic performance and financial choices referred to first-time issuers between 2002-2013. The analysis confirms that:

- reputational aspects and firms' transparency positively affect the probability of issuing a bond;
- the decision to enter the bond market is typically driven by the need to finance growth and the need to reduce maturity mismatches between assets and liabilities;
- while for large and medium-sized firms the most important factors are associated with the financial needs for investment and growth, for smaller firms are associated with their financial structure (leverage or maturity mismatch between assets and liabilities);
- only among smaller firms does the scarcity of internal sources of finance positively affect the probability of issuing bonds;

- the number of issuers tends to drop during an economic crisis due to the increase of risk aversion among market investors.

De Socio and Russo (2016) found that in the run-up to the financial crisis Italian firms significantly increased their debt in absolute terms and in relation to equity and GDP. The positive gap in firms' leverage between Italy and other euro-area countries has widened in recent years, despite the outstanding debt of Italian firms has decreased since 2011. In this work, we document the magnitude of this gap using both aggregate macro data and firm-level information. We find that controlling for several firm-specific characteristics (i.e. age, profitability, asset tangibility, asset liquidity, turnover growth); the leverage of Italian firms is about 10% higher than in other euro area countries. Differences are systematically larger among micro and small firms, whereas they are small and weakly significant for firms with assets above 300 million euros.

In the period before the financial crisis, as a result of low-interest rates and abundant liquidity, Italian non-financial corporations increased their financial debt considerably, and particularly their debt levels with banks. This investment financing has positively influenced GDP growth and potential output. At the onset of the financial crisis, investment demand collapsed as a consequence of a dramatic drop in sales, higher interest rates, greater credit constraints and higher level of uncertainty.

#### 4. CHARACTERISTICS, ROLE, AND RELEVANCE OF MINI-BOND

Financial and institutional development helps alleviate SMEs' growth constraints and increase their access to external finance and thus levels the playing field between firms of different sizes. Specific financing tools such as leasing and factoring can be useful in facilitating greater access to finance even in the absence of well-developed institutions, as can systems of credit information sharing and a more competitive banking structure (Beck & Demircug-Kunt, 2006).

In this context, theoretical and contingent, the Italian Government has introduced in 2012 a new opportunity for business financing, the so-called mini-bond.

Efforts targeted at the SME sector are based on the premises that 1) SMEs are the engine of economic development, but 2) market and institutional failures impede their growth, thus justifying government interventions.

The mini-bonds appear as instruments that are also able to teach companies to relate with institutional investors, the capital market, consultants and rating agencies as well as finding alternative financial resources to bank credit. Instead of using short-term bank financing instruments, the mini-bond allows for differentiating sources of funding and increasing the duration of the sources themselves, through a long-term consolidation of financial sources.

The main purpose of these mini-bonds is to make the financing system of the SME less bank-centric; in fact, it is known that the credit crunch imposed by the crisis has meant that a large part of the SME can't access to bank credit. Through these new types of obligation is allowed to skip the level of intermediation of banks and enter directly in

contact with the market, reducing intermediation costs in this way compared to, for example, to the issue of traditional financing.

The companies that issue mini-bonds are generally sound businesses, characterized by a medium-small size, good profitability in recent years, sound financial management, the stability of cash flows and a specific growth plan. The ideal profile, in theory, should target investments in internationalization and possibly in a sector of excellence of the Italian productive fabric.

The objective requirements for issuing and quoting mini-bonds are dictated by the law and are:

- 1) the legal form of joint-stock companies, cooperative societies and mutual insurance companies other than banks and micro-enterprises;
- 2) absence of bankruptcy proceedings, prejudicial or public information on unpaid credits;
- 3) availability of the financial statements for the last financial year audited.

Start-ups or companies that face restructuring or turnaround processes, generally, are excluded because for this type of companies there is already available the Venture Capital and the so-called Distressed Debt funds. The lack of inclusion of these two particular categories was dictated by the decision not to include additional risk profiles to the already articulated case of the financing of a medium-small company. The risk premium requested in the Venture Capital and turnaround markets is on average higher than that associated with the traditional creditor (even in the medium to long-term) and it is no coincidence that for these types of investments the issue of equity participation in the company's risk capital target is predominant in the management model.

With mini-bond also investors are protected thanks to the fact that the rules of regulated markets require a higher level of transparency and ensure the opportunity to assume "informed risks". In particular, Borsa Italiana created in 2013 a new segment in ExtraMOT market that is called ExtraMOT PRO and is referred in particular to the trading of mini-bonds, accepting only professional investors, as suggested by the name.

#### **4.1. Regulatory and legal framework: issuing procedure, the role of main actors, potential investors**

Efforts targeted at the SME sector are based on the premises that 1) SMEs are the engine of economic development, but 2) market and institutional failures impede their growth, thus justifying government interventions.

In 2012 and 2013, the Italian Government issued four decrees<sup>25</sup> in order to improve the usage of the credit channels alternative to the bank financing for the non-listed companies (SMEs). The main innovations that the decrees brought to the Italian credit market are:

- 1) the removal of any limit related to the ratio between debt and capital owned through bonds for non-listed companies;
- 2) the introduction of a specific discipline for the issuing of bonds and similar financial

instruments by non-listed companies that include provisions of participation and subordination;

3) alignment of the fiscal regime applied on non-listed companies' bonds to the one, more favourable, applied on listed companies' and introduction of tax benefit for investments on those instruments;

4) the modification of the Law 130/1999, to include mini-bonds in the assets that are the object of securitization;

5) the possibility for the insurance company to invest the assets eligible for covering the technical reserves in mini-bonds and in shares of common funds that invest in mini-bonds;

6) the possibility for banks to structure covered bonds with mini-bonds as collateral;

7) the extension of the special privilege on non-fixed assets determined by the article 46 of TUB also to mini-bonds;

8) the introduction of fiscal facilitations for collaterals that are eligible to sustain the mini-bonds issuing.

For issue mini-bond need besides the principal character who is the Issuer Company, different kinds of actors, whose role has become fundamental: advisor, arranger, Legal Agencies, Rating Company, Investors, Registrar Agents, and the Custodian Banks.

Advisors are the first argument with which the company that intends to carry out the minibus missions is confronted. The notice is committed to guiding the strategy of the transaction, therefore timing, the value of securities, maturities, and any interest rates and also helps the company in regulatory compliance. The consultant is also responsible for collecting, managing and transferring all the information requested by investors using an internal control system.

Arrangers are securities and information on the investor market, presenting the project and collecting the information related to the liking.

Legal advisers consider compliance with minimum emission standards, therefore the correctness of procedures and contracts, also taking care of investor protection.

There are many different active Rating Agencies in the European system, but the most important ones are Standard & Poor's, Moody's and Fitch. At the same time, there is a lot of smaller Rating Agencies that are focused on national dimensions and often this is the case of the ones that take into consideration mini-bonds.

Although ratings are not mandatory for a mini-bond issue, they are often requested by issuer companies to provide the market with a further informative signal, but it is not so rare that the investors themselves are the applicants. In this last case, they are called "unsolicited ratings". Furthermore, ratings could be public or they could remain a private informative asset, distinguishing between "disclosed" and "undisclosed" ratings.

For what regards mini-bonds in Italy, the two leading Agencies are Cerved Rating Agency and Crif Rating Agency, which constantly monitor the issuer companies and adjust their opinion on the company itself and on the placed bonds.

With the new interest coming from private debt funds, which started in 2015, the rating trend has become stronger since this kind of investors often requires detailed information such as ratings,

<sup>25</sup> D.L. 83 of the 22nd June 2012 ("Decreto Sviluppo"), D.L. 179 of the 18th October 2012 ("Decreto Sviluppo Bis"), D.L. 145 of the 23rd December 2013 ("Decreto Destinazione Italia") and D.L. 91 of the 24th June 2014 ("Decreto Competitività")

although sometimes the same funds develop an internal rating system.

The normative determines that only “professional” investors can access to the mini-bond market, which means that this segment is referred to those who have the necessary experience, the knowledge, and the competencies to understand and value in a proper way the risks that they are going to undertake.

It is important to underline that the different laws have never refused access to the market to physical individuals, at least for mini-bonds issued by S.p.A. companies.

At the same time, for what regards S.r.l. companies, the investment is limited to “monitored” agents, who will be accounted for jointly about the bonds if it is sold to other kinds of subjects.

The most common investors are represented by the OICR (“Organismi di Investimento Collettivo del Risparmio”), which are open-end and closed-end funds, speculative funds, and pension funds. Moreover, banks, insurance companies, SIM, social security funds, regional financial companies, and foundations often trade on the mini-bond market, thanks to the high flexibility of these instruments that guarantees a good level of adaptability to all the different types of investors.

The former is not necessarily represented by a bank and offers an assistance role for the companies in all the bond dematerialization procedures, with as counterpart Monte Titoli, or during the attribution of the ISIN code, in collaboration with Banca d'Italia.

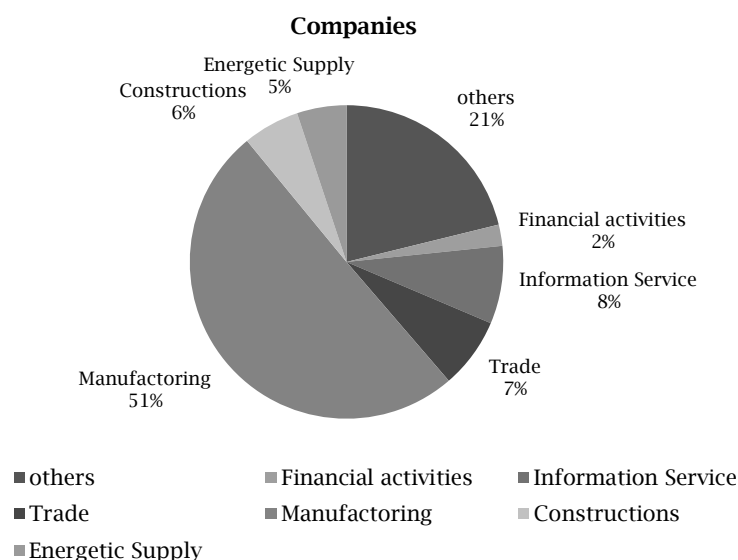
In the end, Custodian Banks represent an important agent in the mini-bond market, since they

safeguard the titles in the moment in which they should be dematerialized, which is a mandatory process if the mini-bonds are going to be placed on the Stock Exchange (ExtraMOT PRO market).

#### 4.2. The Italian mini-bond market: dimension and industries of issuers

The Italian mini-bond market recorded in 2017 a gradual growth in bond's collection reaching 5.5 bln/€ in terms of face value (+ 2 bln/€ compared to 2016). This increase is due to the positive performance of the financial markets, which were characterized by 1) an exchange rate euro/dollar favorable for exports, 2) low or negative interest rates, 3) industrial production growth. In Italy, 137 of the 170 issuer companies have addressed capital markets to realize a placement of mini-bonds; 23 companies have issued securities with different characteristics, or placed in other moments. The 103 new issuers, compared to 2016, bring out the will of Italian entrepreneurs towards new forms of capital rising. The issuers of 2017 are equally divided between non-SMEs and SMEs (definition European Recommendation 2003/361/EC) and are located mainly in the North (71,2%), with a concentration in Lombardia, Veneto and Emilia Romagna. About the legal form, issuers are composed of 108 S.p.A., 26 S.r.l., 3 Cooperative companies. Considering the ATECO code to identify the sector, in 2017 most the issuers operate in the manufacturing sector and a relevant part in ICT services or in wholesale/retail trade.

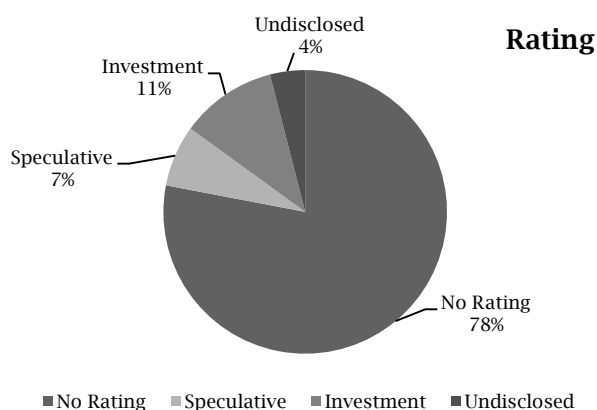
Figure 2. Break-down (in %) of issuing companies in 2017 by sector



The funds rose through mini-bonds issues were mainly used to encourage the internal growth of companies (63%), to the restructuring of corporate liabilities (21%), to improve the external growth through M&A (11 %), to cover working capital needs (5%). For issuing companies, having a credit rating is not mandatory; in 2017 just 37 issuers had a rating that could be associated with 2 main levels of judgment:

- 1) Investment, whose judgment is equal or equivalent to BBB- in the Standard & Poor's scale;
- 2) Speculative, whose judgment is lower than the indicated threshold.

For most companies, the rating was undisclosed, so the credit judgment is kept confidential.

**Figure 3.** Break-down (in %) of issuing companies in 2017 by rating

The last quarter of 2017 was characterized by a significant increase in emissions of less than € 50 million, which registered the record of the last three years.

Also, 2018 turns out to be a year of market growth and the issue of mini-bonds remain in line with 2017, these have been possible thanks to low-interest rates and transactions such as the ELITE Basket Bond, which is a simultaneous issue of ten-year bonds involving 10 Italian ELITE companies.

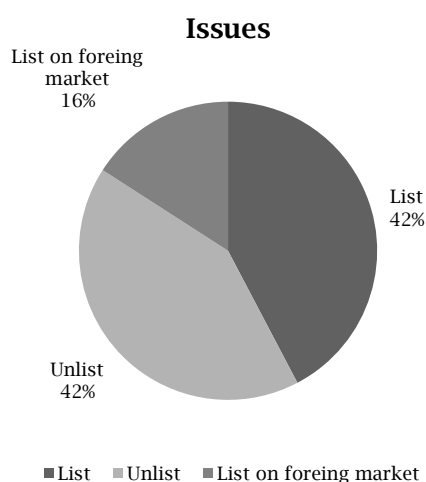
#### 4.3. The mini-bond market in Italy (descriptive statistics): numbers, dimension, and prices of bond

In 2017, 170 mini-bond issues were made; it is opportune to introduce, for a complete understanding of the phenomenon, a further distinction of the issuers according to the size of the

placement. The issuers of mini-bonds can be distinguished, depending on the size of the placement, in companies with a cut in the transaction of less than euro 50 million and in companies with a cut in the transaction exceeding euro 50 million. The first group constitutes 85,2% of the issuers while the second group the remaining 14,8%. Of the 170 mini-bond issues, 147 are shorter than 50 million euros; this type of issue increased by 21,7% compared to 2016.

Since 2012, there have been 467 placements of Italian companies, of which 398 are less than 50 million euros; there was a decline in SME emissions of 0,3%, from 59,1% in 2016 to 58,8% in 2017.

It could be done a distinction between listed or not listed mini-bonds; in 2017 there was an increase in of not listed issues and a consequent reduction of traded issues on Extra MOT PRO.

**Figure 4.** Overview of listed and not listed mini-bonds issued in 2017

The trend, already verified in 2016, of a decrease in the propensity to share the stock, has been confirmed in 2017; in addition, 27 stocks were listed on foreign markets.

Mini-bonds, like all securities, have a maturity that varies from one year to more than seven years, what emerges from the analysis of data is a dispersion of maturities over the indicated time

frame. The choice of maturity can be analyzed by distinguishing the issuers in SMEs and large companies. In the first case, the average maturity is 5.1 years; while for large companies the average maturity is 5.8 years, and in this case, there are no mini-bonds with a maturity of fewer than 4 years. The absence of mini-bonds with a short-term maturity is due to the fact that large companies

have, in the short term, greater access to bank borrowing, while in the medium-long term they prefer to issue mini-bonds as they allow greater autonomy and control of companies.

Mini-bonds, like all securities, entitled to a remuneration dictated by both the issue price and the coupon. The issue price in almost all cases is equal to the nominal value, i.e. 100 euro, except for rare exceptions where the security is listed below par. The periodic coupon is defined as a percentage of the nominal value; it can take on different characteristics depending on the rules set by the issuer.

2017 has confirmed the decrease in the cost of capital, the average coupon for the second consecutive is less than 5% and 32,4% (55 securities out of 170) of the securities has a coupon  $\leq 4\%$ .

The repayment of the mini-bonds can take place in two ways: bullet or depreciation. The bullet mode provides that the maturity coincides with the repayment of the capital; this mode is typically used for government bonds. In the case of mini-bonds, this first type of reimbursement is used: 1) by listed companies, 2) by finance companies, 3) if the security has a short maturity. The amortization repayment in 2017 was used by 53% of the issuers; this repayment method is aimed at reducing the duration, distributing the financial commitment over several businesses. The amortization is mostly used: 1) by SMEs, 2) when the issue is <50 million euro, 3) when the security is long-term.

## 5. METHODOLOGY AND DATA

As already stated in the abstract and introduction, the purpose of this paper is to verify whether the use of bonds, specifically of the mini-bonds, generated impacts on the financial policies and effects (positive or negative) on solvency and profitability of the issuing companies. The analysis here proposed addresses the following questions:

- Did the use of the mini-bond entail a change in the issuer's capital structure?
- Has the recourse to the mini-bond influenced the solvency level of the issuers and therefore their financial equilibrium?
- Are capital structure changes (particularly if accompanied by greater recourse to debt) consistent with variations in profitability?

From the reports edited by the "Osseatorio Mini-Bond" (created by the "Politecnico di Milano" School of Management - SoM)<sup>26</sup> we have took the list of the 246 Italian companies that made, between 2012 and 2016, the 285 mini-bonds' issues, of which 245 under 50 mln/€ of value (Osservatorio Mini-Bond, 2018)<sup>27</sup>. For each company included in that

list, we collected from the database AIDA (Bureau Van Dick)<sup>28</sup> the accounting data and the financial ratios covering a period of 6 fiscal years (from 2011 to 2016, last available year in the database). Using this dataset, we have observed the variations of indicators of capital structure (financial leverage, debt/equity ratio, short-term debt ratio; long-term debt ratio), solvency (cash ratio, current ratio, coverage ratios), and profitability (ROS, ROA, ROD). These ratios are calculated as illustrated below in Table 1.

For each ratio and for each year included in the observing period, we have identified the "outliers" on the basis of the score calculated as:

$$score = \frac{x_i^t - x_{avg}^t}{sd_x^t} \quad (1)$$

Where:

- $x_i^t$  is the observed ratio of the company  $i$  in year  $t$ ;
- $x_{avg}^t$  is the average of the ratio calculated considering the year  $t$ ;
- $sd_x^t$  is the standard deviation calculated considering the year  $t$ .

When the absolute value of the score was above 1, the observed ratio has been considered an outlier and excluded from the dataset; in this way, we've collected a dataset of accounting data that allows examining the effect of a mini-bond' issue on the three main aspects we considered (capital structure, solvency, and performance). Therefore, for each ratio, we got 1 main sample of issuers, and 5 sub-samples by dividing the issuers by year of emission. Overall, considering that 12 accounting ratios were analyzed, we obtained 12 main samples and 60 sub-samples, whose size varies according to the normalization of outliers.

Cleaned the dataset as explained above, for each ratio and each company, we calculated the variation between the year after the bond' issue and the year before.

Considering the main samples, for each ratio, we measured average, median and standard deviation of recorded variations, and a number of positive or negative variations. To correctly interpret the average variations observed on a sample basis:

- we analyzed the form of frequency distributions of each ratio' variation;
- we carried out a preliminary significance check using the Student distribution;
- we observed the coherence between average and median, also considering if positive variations were less or more than negative ones;
- we verified the results obtained considering the sub-samples per years of emission.

<sup>26</sup> The "Mini-Bond Observatory" is dedicated to the analysis and monitoring of debt securities issues, done by small and medium-sized enterprises to finance themselves. This Observatory is run by a research group named "Entrepreneurship & Finance", activated by the School of Management of the "Politecnico" University of Milan in 2014, the research group studies all the issues related to entrepreneurship and corporate finance, paying particular attention to innovation and competitiveness: mini-bonds, crowd-Investing, IPOs, management of non-performing loans. The activity of the Observatory is supported by private Partners and sponsored by prestigious institutional Partners.

<sup>27</sup> The annual reports edited by the Observatory aim to analyze and interpret the dynamics of the Italian mini-bond market, studying in particular: characteristics of the issues, listed and not listed; characteristics of the issuers, distinguishing if listed or not; main players (companies, advisors, financial intermediaries, investment funds); institutional and regulatory framework; investment and financing choices of the issuing companies. Each report therefore offers an exhaustive mapping of the mini-bond market, which is updated annually. We considered all the "Italian Report on Mini-Bond",

released on February 2015, February 2016, February 2017 and February 2018; more information about the "Osservatorio Mini-Bond" and "Politecnico di Milano" are available on the websites: <http://www.osservatoriocrowdfunding.it/portal/minibond/osservatorio-mini-bond>; <http://www.som.polimi.it/>.

<sup>28</sup> The data base AIDA is part of the Bureau van Dick solutions thought for several type of organizations (also Academic institutions) that need accounting, governance and operating information about companies and financial institutions. Specifically, Aida contains comprehensive information on Italian companies, with up to ten years of history, with reference to: accounting data from financial statements, debt and credit detail, financial ratios and operating indicators, rating, activity codes and description (ATECO; SIC, NACE), employees, local units, share values for listed companies, shareholders and equity investments, etc.



**Table 1.** Financial ratios considered in empirical analysis

Questions	Ratios	Formulas
a) Capital Structure	Short-term debt to capital ratio	$\frac{\text{current debt}}{\text{total liabilities}}$
	Long-term debt to capital ratio	$\frac{\text{non current debt}}{\text{total liabilities}}$
	Debt to equity ratio	$\frac{\text{current debt} + \text{non current debt}}{\text{shareholders' equity}}$
	Financial leverage	$\frac{\text{financial debt}}{\text{shareholders' equity}}$
b) Solvency	Cash ratio	$\frac{\text{cash and cash equivalent}}{\text{current liabilities}}$
	Current ratio	$\frac{\text{current assets}}{\text{current liabilities}}$
	Interest Coverage Ratio	$\frac{\text{current liabilities}}{\text{financial expenses}}$
	Debt Coverage Ratio	$\frac{\text{free cash flow}}{\text{financial debt}}$
c) Profitability	Return on Sales (ROS)	$\frac{\text{ebitda}}{\text{revenues}}$
	EBITDA on Sales	$\frac{\text{ebitda}}{\text{revenues}}$
	Return on Net Assets (RONA)	$\frac{\text{ebit}}{\text{Net Assets}}$
	Cost of Debt (COD)	$\frac{\text{financial expenses}}{\text{financial debt}}$

**Figure 5.** Fiscal years considered and specific periods for variations' analysis

Issuers		Coverage period of analysis					
Year	N.	2016	2015	2014	2013	2012	2011
2012	2				t+1	t	t-1
2013	24			t+1	t	t-1	
2014	61		t+1	t	t-1		
2015	59	t+1	t	t-1			
2016	89	t	t-1				
<b>Tot.</b>	<b>235</b>						

Note	t	Year of mini-bond issue
	t-1, t+1	Financial statements considered for variation measurements

## 6. CAPITAL STRUCTURE, SOLVENCY, AND PROFITABILITY OF ISSUERS: EMPIRICAL RESULTS

Hereafter, it has shown if and how mini-bond emissions affected leverage, solvency, and profitability of a sample of Italian SMEs that issued bonds between 2012 and 2016.

### 6.1. Variations in capital structure

Figures in Table 2 show that, after the issue of mini-bonds, the companies have slightly reduced their debt/equity ratio (that decreases on average by 1,16%), but have significantly increased their financial leverage (that increases on average by 15,62%); moreover, there was a slight consolidation

of debt maturity (the long-term debt ratio increased by 0,11%, and the long-term debt ratio decreased secularly). The average variations of all ratios are accompanied by high standard deviation, which gives rise to doubts on their significance, in particular for financial leverage. Therefore, for each ratio, after evaluating the form of the distribution of the individual variations, using a Student distribution and assuming a 95% confidence level we determined the expected range of average variation for all the issuers. The estimated confidence ranges say that the average variations observed on the main samples are representative of the behaviours of all the companies issuing mini-bonds; this with the exception of the variation in financial leverage.

**Table 2.** Variations on capital structure of issuers (no outliers)

Variations in capital structure ratios	Debt/Equity ratio	Financial leverage	Short-term debt ratio	Long-term debt ratio
<b>Descriptive statistics</b>				
Observations	105	158	107	107
Mean	-1,16%	15,62%	-0,11%	0,11%
Standard Deviation	4,16%	132,65%	0,11%	0,11%
Coefficient of variation	-359,88%	849,36%	-106,23%	106,23%
First quartile	-2,70%	-37,54%	-0,18%	0,03%
Third quartile	1,21%	24,25%	-0,03%	0,18%
Range inter-quartile	3,91%	61,78%	0,15%	0,15%
<b>Shape of distribution</b>				
Skewness	left-skewed	right-skewed	left-skewed	right-skewed
Kurtosis	platykurtic	leptokurtic	platykurtic	platykurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	0,81%	20,84%	0,02%	0,02%
Expected Lower-value of mean	-2,0%	-5,2%	-0,1%	0,1%
Expected Higher-value of mean	-0,4%	36,5%	-0,1%	0,1%

In order to consider whether the size of the company is relevant to analyze the impacts of mini-bonds, large companies (identified by turnover) were excluded from the sample. Data in Table 3 shows how the capital structure of SMEs has changed after

the emissions: the trends already highlighted on above are confirmed, although the variability of the data increases significantly with regard to changes in the composition of the financial structure.

**Table 3.** Variations on capital structure of issuers (only SMEs)

Variations in capital structure ratios	Debt/Equity ratio	Financial leverage	Short-term debt ratio	Long-term debt ratio
<b>Descriptive statistics</b>				
Observations	48	76	51	51
Mean	-0,43%	17,80%	-0,12%	0,12%
Standard Deviation	3,68%	163,01%	0,13%	0,13%
Coefficient of variation	-852,00%	915,55%	-109,98%	109,98%
First quartile	-2,26%	-41,79%	-0,20%	0,04%
Third quartile	1,60%	16,58%	-0,04%	0,20%
Range inter-quartile	3,86%	58,38%	0,16%	0,16%
<b>Shape of distribution</b>				
Skewness	right-skewed	right-skewed	left-skewed	right-skewed
Kurtosis	platykurtic	leptokurtic	platykurtic	platykurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	1,07%	37,25%	0,04%	0,04%
Expected Lower-value of mean	-1,5%	-19,4%	-0,2%	0,1%
Expected Higher-value of mean	0,6%	55,1%	-0,1%	0,2%

Considering the observed high variability, the average variations are (Table 4 and 5):

- compared with the median variations and interpreted in light of the number of increases and decreases recorded;
- analyzed observing the behavior of the ratios in the sub-samples.

It is found that:

- the median variation always confirms the average variation, with the exception of the financial

leverage ratio; in this case, the median value of the variation indicates a significant reduction, justified by the fact that most companies (60%) of the sample reduced their leverage;

- again with regard to variations in financial leverage, the companies that issued mini-bonds in 2012 and 2014 show diverging dynamics with respect to the main sample.

**Table 4.** Variations on the leverage of issuers (break-down by year of emission and median analysis) (Part 1)

	Variations in Capital Structure						
	Year of issue	2012	2013	2014	2015	2016	All
N. of Issuers		2	24	61	59	89	235
<b>Debt/Equity ratio</b>							
N. Observations		2	8	30	19	41	105
Average variation		-0,85%	-1,43%	-1,16%	-0,92%	-0,60%	-1,16%
Variability index		-12,32	-2,22	-3,17	-3,64	-5,56	-3,60
Median variation		-0,85%	-1,54%	-1,31%	-0,23%	-0,21%	-0,93%
N. of increases in observed ratio		1	4	10	8	20	42
in % of observations		50,00%	50,00%	33,33%	42,11%	48,78%	40,00%
N. of decreases in observed ratio		1	4	20	11	21	63
in % of observations		50,00%	50,00%	66,67%	57,89%	51,22%	60,00%

**Table 4.** Variations on the leverage of issuers (break-down by year of emission and median analysis) (Part 2)

		<b>Variations in capital structure</b>						
<b>Year of issue</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>All</b>	
<b>LEVERAGE</b>	N. of Issuers	2	24	61	59	89	235	
	<b>Financial leverage</b>							
	N. Observations	2	14	44	27	57	158	
	Average variation	-72,75%	102,37%	-12,97%	23,23%	12,56%	15,62%	
	Variability index	-0,04	3,27	-4,70	3,53	7,49	8,49	
	Median variation	-72,75%	-13,00%	-20,82%	8,00%	-9,41%	-11,85%	
	N. of increases in observed ratio	0	5	14	15	23	62	
	in % of observations	0,00%	35,71%	31,82%	55,56%	40,35%	39,24%	
	N. of decreases in observed ratio	2	9	30	12	34	96	
	in % of observations	100,00%	64,29%	68,18%	44,44%	59,65%	60,76%	

**Table 5.** Variations on the duration of Issuers (break-down by year of emission and median analysis)

		<b>Variations in capital structure</b>						
<b>Year of issue</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>All</b>	
<b>DURATION</b>	N. of Issuers	2	24	61	59	89	235	
	<b>Short-term debt to capital ratio</b>							
	N. Observations	2	11	26	26	44	107	
	Average variation	-0,09%	-0,16%	-0,12%	-0,09%	-0,12%	-0,11%	
	Variability index	-0,76	-0,94	-0,96	-0,83	-1,00	-1,06	
	Median variation	-0,09%	-0,16%	-0,11%	-0,10%	-0,10%	-0,10%	
	N. of increases in observed ratio	0	2	4	4	6	20	
	in % of observations	0,00%	18,18%	15,38%	15,38%	13,64%	18,69%	
	N. of decreases in observed ratio	2	9	22	22	38	87	
	in % of observations	100,00%	81,82%	84,62%	84,62%	86,36%	81,31%	
	<b>Long-term debt to capital ratio</b>							
	N. Observations	2	11	26	26	44	107	
	Average variation	0,09%	0,16%	0,12%	0,09%	0,12%	0,11%	
	Variability index	0,76	0,94	0,96	0,83	1,00	1,06	
	Median variation	0,09%	0,16%	0,11%	0,10%	0,10%	0,10%	
	N. of increases in observed ratio	2	9	23	23	38	90	
	in % of observations	100,00%	81,82%	88,46%	88,46%	86,36%	84,11%	
	N. of decreases in observed ratio	0	2	3	3	6	17	
	in % of observations	0,00%	18,18%	11,54%	11,54%	13,64%	15,89%	

## 6.2. Variations in solvency

Figures in Table 6 show that companies of the main samples have significantly increased their level of liquidity (cash ratio and current ratio increase on average by more than 20%), and this trend appears significant in light of the confidence range determined on the basis of a Student's distribution with a confidence level of 95%. With regard to the coverage degree of financial debt, the empirical

evidence is contrasting: the coverage of the interest was reduced, while the coverage of outstanding debt was increased. Both trends, despite the high variability of the observed data, seem to be confirmed by the confidence interval of estimated average variations referred to all the issuers. Summing up, the confidence intervals indicate that the behaviours observed on the main samples about solvency ratios discover common trends for all issuing companies.

**Table 6.** Variations on solvency of issuers (no outliers)

<b>Variations in solvency ratios</b>	<b>Cash ratio</b>	<b>Current ratio</b>	<b>Interest coverage ratio</b>	<b>Debt/EBITDA ratio</b>
<b>Descriptive statistics</b>				
Observations	140	138	143	178
Average	25,40%	21,91%	-0,63%	-1,08%
Standard Deviation	54,70%	35,38%	3,50%	7,15%
Coefficient of variation	215,33%	161,48%	-558,04%	-662,96%
First quartile	-3,66%	0,81%	-1,59%	-1,25%
Third quartile	36,17%	33,53%	1,09%	0,70%
Range inter-quartile	39,83%	32,72%	2,68%	1,95%
<b>Shape of distribution</b>				
Skewness	right-skewed	right-skewed	left-skewed	left-skewed
Kurtosis	leptokurtic	leptokurtic	leptokurtic	leptokurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	9,14%	5,96%	0,58%	1,06%
Expected Lower-value of mean	16,3%	16,0%	-1,2%	-2,1%
Expected Higher-value of mean	34,5%	27,9%	0,0%	0,0%

Even excluding large companies (identified by turnover), the trends already seen above are confirmed with the exception of the debt coverage

ratio, although the variability of data increases significantly (Table 7).

Table 7. Variations on solvency of issuers (only SMEs)

Variations in solvency ratios	Cash ratio	Current ratio	Interest coverage ratio	Debt/EBITDA ratio
<b>Descriptive statistics</b>				
Observations	62	61	67	92
Average	25,94%	20,51%	-0,97%	-0,12%
Standard Deviation	62,21%	32,68%	4,04%	5,48%
Coefficient of variation	239,81%	159,32%	-416,62%	-4748,67%
First quartile	-8,10%	-1,75%	-1,74%	-1,12%
Third quartile	32,60%	38,30%	1,05%	1,04%
Range inter-quartile	40,70%	40,05%	2,79%	2,16%
<b>Shape of distribution</b>				
Skewness	right-skewed	right-skewed	left-skewed	left-skewed
Kurtosis	leptokurtic	platykurtic	leptokurtic	leptokurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	15,80%	8,37%	0,98%	1,14%
Expected Lower-value of mean	10,1%	12,1%	-2,0%	-1,3%
Expected Higher-value of mean	41,7%	28,9%	0,0%	1,0%

Also, in this case, the average dynamics are interpreted first considering the median variations and then dividing the issuers by year of issue (Table 8 and 9). It is found that:

- referring to the main samples, the median variations always confirm the average variations;

- referring to the sub-samples, there are contrasting trends because medians do not confirm the averages, and they change the sign from year to year.

Table 8. Variations on the liquidity of issuers (break-down by year of emission and median analysis)

		Variations in solvency ratios					
Year of issue		2012	2013	2014	2015	2016	All
N. of Issuers		2	24	61	59	89	235
LIQUIDITY	<b>Cash ratio</b>						
	N. Observations	2	10	36	34	56	140
	Average variation	16,13%	20,66%	29,91%	7,68%	44,93%	25,40%
	Variability index	2,06	2,12	1,44	3,28	1,96	2,15
	Median variation	16,13%	9,65%	18,32%	5,89%	13,59%	11,60%
	N. of increases in observed ratio	1	7	29	23	39	100
	in % of observations	50,00%	70,00%	80,56%	67,65%	69,64%	71,43%
	N. of decreases in observed ratio	1	3	7	11	17	40
	in % of observations	50,00%	30,00%	19,44%	32,35%	30,36%	28,57%
	<b>Current ratio</b>						
	N. Observations	2	9	36	32	52	138
	Average variation	14,32%	23,26%	23,73%	11,55%	24,56%	21,91%
	Variability index	2,14	1,87	1,34	1,82	1,36	1,61
	Median variation	14,32%	9,33%	18,01%	8,63%	12,08%	11,33%
N. of increases in observed ratio	1	5	30	27	44	111	
in % of observations	50,00%	55,56%	83,33%	84,38%	84,62%	80,43%	
N. of decreases in observed ratio	1	4	6	5	8	27	
in % of observations	50,00%	44,44%	16,67%	15,63%	15,38%	19,57%	

Table 9. Variations on coverage of issuers (break-down by year of emission and median analysis)

		Variations in solvency ratios					
Year of issue		2012	2013	2014	2015	2016	All
N. of Issuers		2	24	61	59	89	235
COVERAGE	<b>Interest coverage ratio</b>						
	N. Observations	2	12	37	24	54	143
	Average variation	-1,53%	-3,40%	-1,19%	1,50%	-0,52%	-0,63%
	Variability index	-1,21	-1,38	-3,00	1,90	-4,57	-5,58
	Median variation	-1,53%	-1,58%	-0,23%	1,13%	-0,24%	-0,24%
	N. of increases in observed ratio	1	1	18	15	21	61
	in % of observations	50,00%	8,33%	48,65%	62,50%	38,89%	42,66%
	N. of decreases in observed ratio	1	11	19	9	33	82
	in % of observations	50,00%	91,67%	51,35%	37,50%	61,11%	57,34%
	<b>Debt on EBITDA ratio</b>						
	N. Observations	2	13	46	29	68	178
	Average variation	-67,03%	21,50%	-9,52%	27,11%	9,66%	-1,08%
	Variability index	-0,43	5,97	-28,50	5,14	7,41	-6,63
	Median variation	-67,03%	-0,79%	-23,42%	-6,96%	-1,89%	-0,04%
N. of increases in observed ratio	0	6	18	14	31	85	
in % of observations	0,00%	46,15%	39,13%	48,28%	45,59%	47,75%	
N. of decreases in observed ratio	2	7	28	15	37	93	
in % of observations	100,00%	53,85%	60,87%	51,72%	54,41%	52,25%	

### 6.3. Variations in profitability

Figures in Table 10 show that, after the issue of mini-bonds, the companies of the main samples have slightly decreased their operating margins (ROS decreases about of 0,3%, EBITDA margin decreased by 0,4%) and operating returns (ROA decreases about of 0,5%). Unfortunately, these trends do not seem to be significant in light of the confidence range determined on the basis of a Student's distribution with a 95% confidence level; the

significance test reflects the high variability of the observed data. With regard to the cost of debt, an issue of mini-bond seems to be contextual to an increase in financial expenses; this trend is confirmed by the significance test with the Student's distribution. We have verified that the changes in the debt' burden have a positive but almost zero correlation with the changes in debt coverage (+ 1,81%), very weak but negative correlation with changes in financial leverage (-13,38%) and debt/equity ratio (-19,36%).

**Table 10.** Variations on profitability of issuers (no outliers)

<i>Variations in return ratios</i>	<i>Return on Sales (ROS)</i>	<i>EBITDA/Revenues</i>	<i>Return on Assets (ROA)</i>	<i>Cost of Debt (ROD)</i>
<b>Descriptive statistics</b>				
Observations	120	155	154	87
Average	-0,29%	-0,40%	-0,52%	0,80%
Standard Deviation	3,53%	8,68%	3,37%	2,07%
Coefficient of variation	-1228,35%	-2162,35%	-643,77%	259,70%
First quartile	-1,59%	-2,02%	-1,96%	-0,48%
Third quartile	1,44%	1,70%	1,12%	2,33%
Range inter-quartile	3,03%	3,72%	3,07%	2,80%
<b>Shape of distribution</b>				
Skewness	left-skewed	right-skewed	left-skewed	right-skewed
Kurtosis	leptokurtic	leptokurtic	leptokurtic	platykurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	0,64%	1,38%	0,54%	0,44%
Expected Lower-value of mean	-0,9%	-1,8%	-1,1%	0,4%
Expected Higher-value of mean	0,4%	1,0%	0,0%	1,2%

Even excluding large companies (by turnover), the trends already seen above are confirmed, although

the variability of data increases significantly (Table 11).

**Table 11.** Variations on profitability of issuers (only SMEs)

<i>Variations in return ratios</i>	<i>Return on Sales (ROS)</i>	<i>EBITDA/Revenues</i>	<i>Return on Assets (ROA)</i>	<i>Cost of Debt (ROD)</i>
<b>Descriptive statistics</b>				
Observations	56	69	81	44
Average	-0,46%	-1,25%	-0,82%	1,10%
Standard Deviation	4,01%	8,69%	3,68%	1,93%
Coefficient of variation	-881,12%	-695,58%	-450,78%	175,61%
First quartile	-1,43%	-2,03%	-2,25%	-0,16%
Third quartile	1,27%	1,67%	0,33%	2,39%
Range inter-quartile	2,70%	3,70%	2,58%	2,55%
<b>Shape of distribution</b>				
Skewness	left-skewed	left-skewed	left-skewed	right-skewed
Kurtosis	leptokurtic	leptokurtic	leptokurtic	platykurtic
<b>Confidence test</b>				
<i>(using Student's distribution)</i>				
Confidence level	95,0%	95,0%	95,0%	95,0%
Confidence range (+/-)	1,07%	2,09%	0,81%	0,59%
Expected Lower-value of mean	-1,5%	-3,3%	-1,6%	0,5%
Expected Higher-value of mean	0,6%	0,8%	0,0%	1,7%

Also, in this case, the average dynamics are interpreted first considering the median variations and then dividing the issuers in sub-samples by year of issue (Table 12 and 13). It is found that:

- referring to the main samples, the median variations always confirm the average variations;

- referring to the sub-samples, with the exception of variation in the cost of debt, there are contrasting trends because medians do not confirm always the averages, and they change the sign from year to year.

**Table 12.** Variations on operating profitability of issuers (break-down by year of emission and median analysis)

		<i>Variations in return ratios</i>					
<i>Year of issue</i>		<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>All</i>
N. of Issuers		2	24	61	59	89	235
<b>ASSET</b>	<b>Return on Sales (ROS)</b>						
	<i>N. Observations</i>	2	9	34	31	46	120
	<i>Average variation</i>	3,55%	1,11%	-0,53%	-0,38%	-0,12%	-0,29%
	<i>Variability index</i>	1,68	0,03	0,04	-12,01	-19,68	-12,28
	<i>Median variation</i>	3,55%	0,44%	-0,39%	0,46%	-0,21%	-0,01%
	<i>N. of increases in observed ratio</i>	1	6	15	20	21	60
	<i>in % of observations</i>	50,00%	66,67%	44,12%	64,52%	45,65%	50,00%
	<i>N. of decreases in observed ratio</i>	1	3	19	11	25	60
	<i>in % of observations</i>	50,00%	33,33%	55,88%	35,48%	54,35%	50,00%
	<b>EBITDA on Sales</b>						
	<i>N. Observations</i>	2	12	40	33	64	155
	<i>Average variation</i>	3,08%	-1,83%	2,04%	0,47%	-2,11%	-0,40%
	<i>Variability index</i>	1,36	0,07	0,12	12,60	-3,51	-21,62
	<i>Median variation</i>	3,08%	0,42%	0,34%	1,06%	-0,61%	-0,06%
	<i>N. of increases in observed ratio</i>	1	7	21	22	24	77
	<i>in % of observations</i>	50,00%	58,33%	52,50%	66,67%	37,50%	49,68%
<i>N. of decreases in observed ratio</i>	1	5	19	11	40	78	
<i>in % of observations</i>	50,00%	41,67%	47,50%	33,33%	62,50%	50,32%	

**Table 13.** Variations on the spread of issuers (break-down by year of emission and median analysis)

		<i>Variations in return</i>					
<i>Year of issue</i>		<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>All</i>
N. of Issuers		2	24	61	59	89	235
<b>EQUITY</b>	<b>Return on Assets (ROA)</b>						
	<i>N. Observations</i>	2	12	42	37	64	154
	<i>Average variation</i>	-0,98%	-0,09%	-0,36%	-0,29%	-0,66%	-0,52%
	<i>Variability index</i>	-2,99	0,02	0,04	0,04	-3,62	-6,44
	<i>Median variation</i>	-0,98%	-0,13%	0,01%	0,08%	-0,61%	-0,37%
	<i>N. of increases in observed ratio</i>	1	5	21	19	22	65
	<i>in % of observations</i>	50,00%	41,67%	50,00%	51,35%	34,38%	42,21%
	<i>N. of decreases in observed ratio</i>	1	7	21	18	42	89
	<i>in % of observations</i>	50,00%	58,33%	50,00%	48,65%	65,63%	57,79%
	<b>Cost of Financial Debt</b>						
	<i>N. Observations</i>	0	4	27	20	37	87
	<i>Average variation</i>	n.a.	0,63%	1,57%	-0,14%	0,54%	0,80%
	<i>Variability index</i>	n.a.	0,03	0,02	0,02	3,15	2,60
	<i>Median variation</i>	n.a.	1,60%	1,65%	-0,07%	0,46%	0,70%
	<i>N. of increases in observed ratio</i>	0	3	21	10	25	59
	<i>in % of observations</i>	n.a.	75,00%	77,78%	50,00%	67,57%	67,82%
<i>N. of decreases in observed ratio</i>	0	1	6	10	12	28	
<i>in % of observations</i>	n.a.	25,00%	22,22%	50,00%	32,43%	32,18%	

## 7. CONCLUSIONS

The aim of this paper is to evaluate whether emissions of mini-bond influenced financial equilibrium and returns of Italian SMEs. Distinguishing the issuers by dimension and year of emission, we find that:

- the use of mini-bonds entails a change in the issuer's capital structure, with clear impacts on the level of indebtedness (debt/equity ratio reduces) and on the maturity of debt (the long-term debt ratio increases); financial leverage shows contrasting behaviours that don't allow generalizations;

- the recourse to mini-bond influences positively the short-term solvency level of the issuers (substantial increases in cash ratio and current ratio), and therefore their financial equilibrium; about the coverage capacity contrasting behaviours of indexes do not allow generalizations (slight decrease in interest coverage ratio and reduction in debt/EBITDA ratio);

- capital structure changes are accompanied by generalized reductions in the margins and operating profitability of the issuing companies; very interesting appears the contraction of the spread

between the profitability of assets (ROA) and the cost of debt (ROD), which reduces the economic convenience of leverage.

These research findings reflect the limitations inherent the country-focused dataset, the unavailability of financial statement of 2017, and a number of companies included in the samples that did not allow refining the inferential tests. Furthermore, we are aware that other factors, both specific (eg. changes in governance) or context (eg. monetary policies and banking relationships) may have influenced the financing policies of Italian SMEs, in addition to the use of mini-bonds. For these reasons, in our vision, the findings above represent just the first step in the analysis of the use of mini-bonds by Italian SMEs and their impacts; the analysis will be completed with:

- the extension of the analysis' sample to companies that issued mini-bonds in 2017;

- the creation of sub-samples that make possible to distinguish listed companies from private companies, high-leveraged companies from low-leveraged, listed emissions from non-listed in regulated markets;

- the inclusion in the analysis of some control variables to consider factors that could have

influenced financial structure decisions and their impact in terms of financial ratios.

However, considering that the topic of our research is quite specific, in order to make the analysis more interesting and useful for other researchers, and to make a more relevant contribution to the studies on SME's financing

policies, we plan to extend the research further by including comparisons at a European level. In fact, other EU Countries have recently introduced financing instruments similar to mini-bonds, and it will be interesting to see if and how foreign companies have exploited this new financing possibility.

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