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M&A activity of Italian SMEs issuing minibonds

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Non è difficile comporre, ma è incredibilmente
difficile eliminare le note superflue.

JOHANNES BRAHMS

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Abstract

The literature lacks studies that analyse the strategic choices of small and medium enterprises behind their M&A activity. Minibonds as alternative finance instruments impact on issuers' future strategic choices. The aim of this work was to study M&A activity of Italian SMEs issuing minibonds. Therefore, this thesis aimed to confirm a correlation between minibond issuance and external growth and later to identify predictive factors of the number of acquisitions made by SMEs. The analysis was based on a deep critical review of existing literature. Particular attention was given to models which analyse SMEs' acquisition strategies. This was the basement for the next steps; through a propensity score matching technique, a sample of comparable companies was created and through a non-parametric test our first hypothesis has been tested, i.e. a positive correlation between minibond issuance and the choice to undertake external growth. Subsequently, through a count regression, a sample of minibond issuers has been analysed. Both proprietary and operative structures of the issuer were confirmed to be correlated with M&A activity: an increased M&A activity is linked to an increased delegating ability of the managers, is instead negatively linked to an increased presence of shareholders among the management team. A negative correlation also raised with the presence of long-term bank debt, this suggests that SMEs prefer financing external growth through minibond instead of bank debt. Evidence provided by this study grant SMEs' entrepreneurs new instruments for their strategic choices and suggest to institutional investors, in particular private equity funds, minibond as an interesting instrument able to boost external growth.

Abstract- Italian Version

In letteratura scarseggiano studi che analizzano le scelte strategiche delle piccole e medie imprese nell'ambito dell'attività di M&A. I minibond in quanto strumenti di finanza alternativa modificano le future scelte strategiche dell'emittente. Questo studio si è posto quindi l'obiettivo di studiare le attività di *mergers and acquisitions* delle PMI italiane che hanno emesso minibond. Lo scopo di questa tesi è stato quindi quello di verificare l'esistenza di una correlazione tra l'emissione di minibond e l'utilizzo della crescita esterna e successivamente individuare i fattori che prevedano il numero di acquisizioni effettuate da una PMI. L'analisi si fonda quindi su una profonda rilettura critica della letteratura esistente. Una particolare attenzione è stata posta ai modelli che analizzano le strategie di acquisizione implementate dalle PMI. Alla luce di questi risultati, tramite l'utilizzo delle tecniche di *propensity score matching* è stato creato un campione di PMI comparabili e testata la veridicità della nostra prima ipotesi attraverso un test non parametrico. Confermata l'ipotesi, ovvero una correlazione positiva tra l'emissione di minibond e la scelta strategica di condurre una crescita per vie esterne; attraverso una regressione *count* è stato analizzato il campione delle società emittenti di minibond. È emersa una correlazione sia con la struttura proprietaria sia con la struttura operativa dell'emittente: all'aumentare della capacità di delega dei managers corrisponde un aumento dell'attività di M&A, al contrario all'aumentare della presenza degli azionisti nel management questa viene inibita. Una correlazione negativa è emersa anche tra la presenza di debito bancario a lungo termite e l'attività di M&A, suggerendo quindi che i minibond siano preferiti dalle PMI al debito per finanziare la crescita esterna. Le conclusioni delineate da questo studio forniscono agli imprenditori nuovi strumenti per intraprendere le loro scelte strategiche e suggeriscono agli investitori istituzionali, in particolare agli operatori del *private equity*, l'utilizzo del minibond come interessante strumento capace di potenziare la crescita esterna.

Table of Contents

List of Figures

List of Tables

Introduction

Mergers and acquisitions represent two of the many tools available to companies for enabling growth processes and creating added value. Even if in the last decades they assumed an increasingly dominant position within corporate strategy, M&A activities still belong to extraordinary finance operations. External growth has increasingly become one of SMEs' strategic opportunities, nevertheless, literature concerning this topic is very poor, especially on Italian SMEs. Indeed, even if in Italy SMEs represent more than 98% of total companies, their strategic behaviour in M&A activity still lacks proper attention by scholars.

Alternative finance raised a lot of interest in the last years, especially among its instruments minibonds, proved to be significantly appreciated by SMEs, as confirmed by the growth of their market reported by Osservatorio Minibond of Politecnico di Milano.

This dissertation tries to place itself in the middle of these two topics with the aim to unveil the presence of a conjunction. To fulfil this aim, this work required an initial understanding of small and medium enterprises' environment, followed by a deep review of the existing literature on mergers and acquisitions. This structure is also followed by the dissertation's chapters. The last step before exploiting the empirical research was to show the peculiarities of the Italian minibond market.

This first section raised two questions: are M&A activity and minibond issuance bonded? And which are the predictive factors of issuers' M&A activity?

To answer the first question, a statistical test was implemented to compare M&A activity of minibond's issuers to M&A activity of comparable companies identified by a propensity score matching model. A more restricted hypotheses, where all the comparable companies raised capital through bank debt or equity, was tested too.

The last section of this work tries to answer the second question mentioned above. For this aim, a count regression model was developed to test some hypothesis. M&A activity of minibond issuers is expected to be correlated with financial structure and dimensions, minibond's characteristics, the ability of managers to delegate and the risk appetite of managers and shareholders.

The result of this work could give the way to studies on the behavioural impact of minibond issuance on Italian SMEs while giving new insights for entrepreneurs and institutional investors.

Chapter I

SMEs and M&A activity

1.1 SMEs

1.1.1 European definition

The problem of defining a company as **Small Medium Enterprise** (SME) was finally solved by the European Commission in 2003, when on the 6th of May through the Commission Recommendation[1] in the article 2 *"Staff headcount and financial ceilings determining enterprise categories"* stated the definition of SME:

"The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million."

The Commission gave the criteria of two subgroups that can be identified within these boundaries:

[1] Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (Text with EEA relevance) (notified under document number C (2003) 1422)

- **Small Enterprise:** an enterprise which employs fewer than 50 people and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million
- **Microenterprise:** an enterprise which employs fewer than 10 people and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million

Figure 1-Share percentage of enterprises/persons employed/value added by size class, EU-28, 2016

Source: Key figures on Europe – Statistics illustrated

Looking at the European Union enterprises, SMEs represent around 99% of all the enterprises and 94% of them are independent. Just 0.4% of the European SMEs are part of a group that is not an SME too. In 2016

according to Eurostat[2], an overwhelming majority (93.0 %) of enterprises in the EU-28's (United Kingdom left EU on 31st January 2020) non-financial business economy had less than 10 people employed and were therefore classified as micro enterprises. These employed over 29% of the EU working population and contributed for a fifth of the total value added of the union. Small and medium-sized enterprises contributed together for 37% of the employment and 35% of the value added, being respectively just 5.9% and 0.9% of the total number of enterprises. In Figure 2, we can find the number of SMEs in the non-financial business sectors, it varies markedly across the Member States even after taking into account the differences in the size of Member States' economies. For example, in 2018, the number of SMEs ranged from 29 per 1,000 inhabitants in Romania to 115 in the Czech Republic.

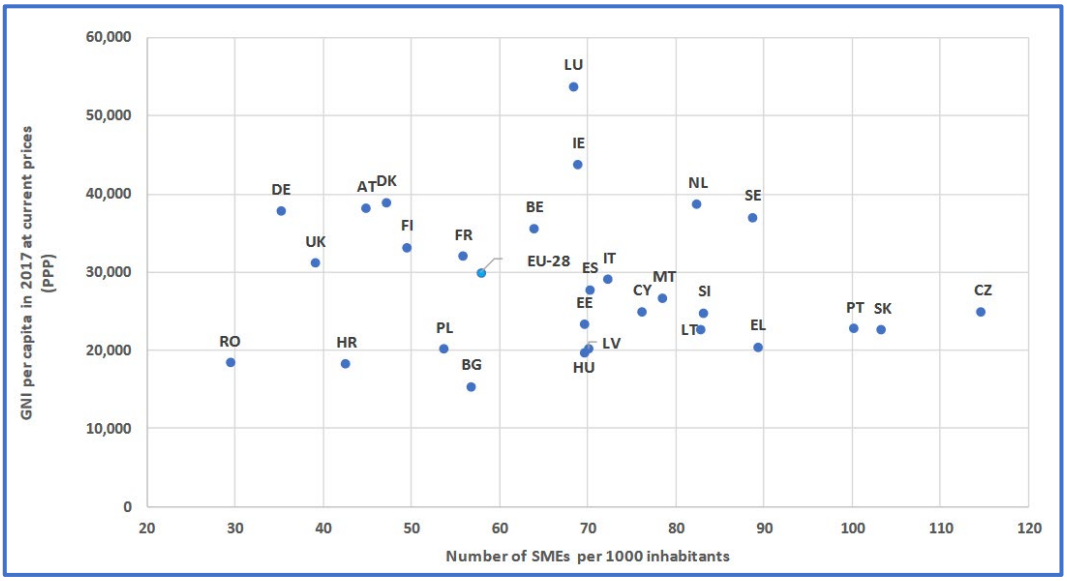

Figure 2-Number of SMEs in EU-28 Member States in 2018
Note: Inhabitants of 15 years or above. GNI = gross national income, PPP = purchasing power parity

Source: Eurostat, National Statistical Offices, DIW Econ

[2] Key figures on Europe – Statistics illustrated, ISBN 978-92-79-98680

Overall, in the EU-28, there were 58 SMEs per 1,000 inhabitants. However, distribution is uneven among the countries, in 7 Member States (Hungary, Romania, Austria, Germany, Denmark, Finland and Great Britain) there were fewer than 50 SMEs per 1,000 inhabitants and in 8 Member States (Czech Republic, Netherlands, Greece, Lithuania, Portugal, Sweden, Slovenia and Slovakia) there were more than 80 SMEs per 1,000 inhabitants. Italy, the region of interest for this work, lies in the average with 72 SMEs per 1,000 inhabitants.

It is important to point out that the number of SMEs per 1,000 inhabitants does not reflect nor is correlated with the level of capital income, but it encloses a variety of country factors.

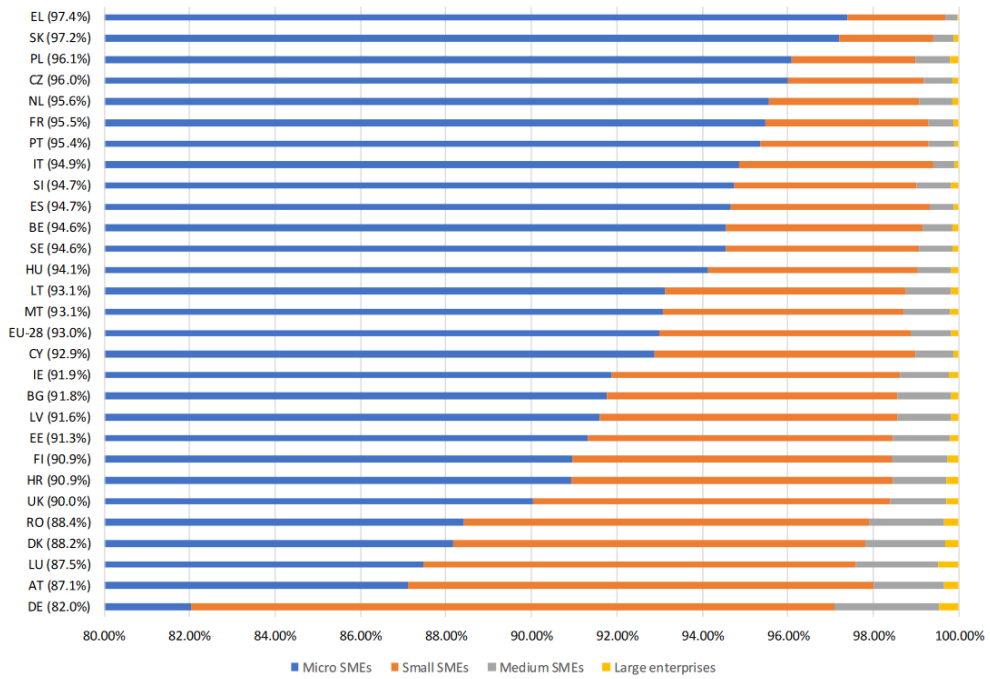

Figure 3-Share of micro, small and medium-sized SMEs in the EU-28 and Member States in 2018

Source: Eurostat, National Statistical Offices, DIW Econ

As emerges from Figure 3, Italy has, among EU-28 where the average is 93.0%, one of the highest ratios of Micro Enterprises over the total

number of enterprises (94.9%). However, Small SMEs account for more than 10% of all enterprises in the NFBS (non-financial business sectors) in only three Member States (Austria: 10.9% of all enterprises; Germany: 15.1%; and Luxemburg:10.1%) and medium-sized SMEs account for more than 1.5% of all NFBS enterprises in only five Member States (AT: 1.6% of all enterprises; Germany: 2.4%; Denmark and Luxemburg: 1.9%; and Romania: 1.8%)[3].

Finally, looking at the performance of European SMEs compared to their peers in Japan and US, the performance of EU SMEs was significantly stronger than Japanese and US's ones in terms of growth in employment and the number of enterprises. The picture is more varied in the case of value-added growth. The annual report on European SMEs from the European commission makes the comparative analysis focus on the performance in 2016 and 2017.

The number of EU-28 SMEs grew by 3.9% in 2016, while SME numbers declined by 2.5% in Japan and reduced marginally by 0.2% in the USA.

Despite the stronger performance of EU-28 SMEs in 2016 in terms of the number of enterprises, the value added generated by EU-28 SMEs increased by only 2.0% in 2016, compared to an increase of 11.8% in the case of Japanese SMEs. In contrast, US SMEs experienced a decline of 6.9% in value added. However, in 2017, the opposite occurred. EU-28 SMEs posted a 3.8% increase in value added, while Japanese SMEs recorded a 3.4% decline.

[3] ANNUAL REPORT ON EUROPEAN SMEs 2018/2019, European Commission, ISBN 978-92-9202-641-7

The employment performance of EU-28 SMEs in 2016 was significantly better than that of US and Japanese SMEs. Employment grew by 3.9%, compared to an increase of only 1.4% in the USA and a fall of 0.7% in Japan. Although EU-28 SME employment growth has slowed down to 1.7% in 2017, while EU-28 SMEs continued to outperform Japanese SMEs, which recorded a drop of 0.2% in employment[4].

1.1.2 Italian SMEs

Shifting the focus to the Italian Small Medium Enterprises market, it counts 159 thousand SMEs in 2019, among which 132 thousand are considered small enterprises and 27 thousand medium enterprises. They have a 1,054 billion € turnover and 232 billion € added value (13% of the GDP) and employ 4.2 million people.

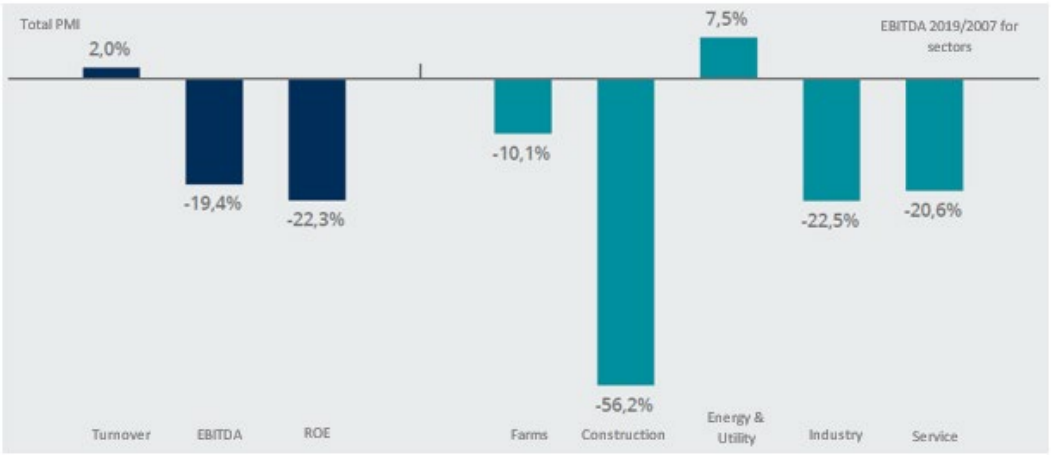

Figure 4-Rates of change in turnover and margins after the 2008-09 crisis

Source: Rapporto Cerved PMI 2020

The Cerved 2020 report on SMEs which investigates the evolution of small and medium-sized enterprises between 2007 and 2019, shows that after the subprime mortgage crisis in 2008 and the sovereign debt crisis in

[4] ANNUAL REPORT ON EUROPEAN SMEs 2018/2019, European Commission, ISBN 978-92-9202-641-7

2011, the recovery was slow and long. The Italian SMEs recovered in terms of turnover and now have returned above the levels of 2007 (+2%) but stayed away from the 2007 values in terms of marginality (-19.4%). Also, the profitability remains far behind with a gap to be filled still in double digits, indeed it is still 22.3 percentage points below the pre-crisis level.

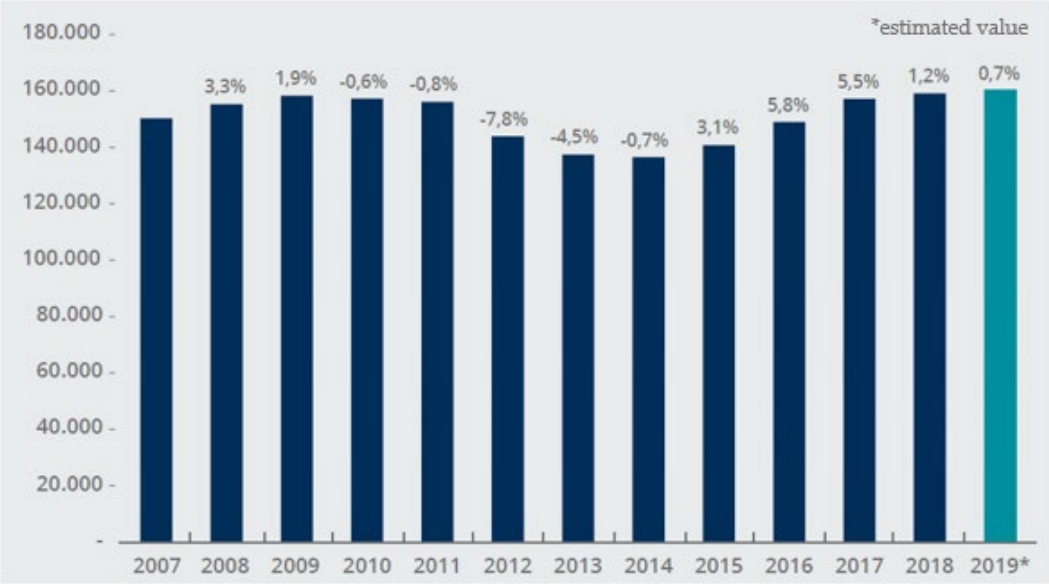

Figure 5-Number of SMEs (absolute values and growth rates)

Source: Rapporto Cerved PMI 2020

Another key indicator of the sector's health is demographics: how many new businesses are born and how many have gone out due to bankruptcies and voluntary liquidations. As shown in Figure 5, the demography has followed the first decline in the period 2009-2014 with a loss of 14 thousand small and medium firms, later there was a continuous growth supported by the light-limited liability companies (S.r.l. Semplificate), a legal form introduced in 2012 that allows new companies to be registered at very low costs. However, this novelty has exhausted its driving force in 2018, indeed the impulse given by this new

legal form started to run out and so the demography marked a first slowdown of growth followed by a subsequent one in 2019. The downturn is explained by the reduction in birth rate and the increase of the failures (+13% compared to 2018).

A positive data is an economic and financial soundness represented on one hand by the reduction of risky financial statement companies and on the other by an increase of safe financial statement companies. More specifically, the number of risky enterprises fells to 17 thousand in 2019 compared to 37 thousand in 2007, essentially the companies at risk of bankruptcy fell by half, while safe companies increased by 58%.

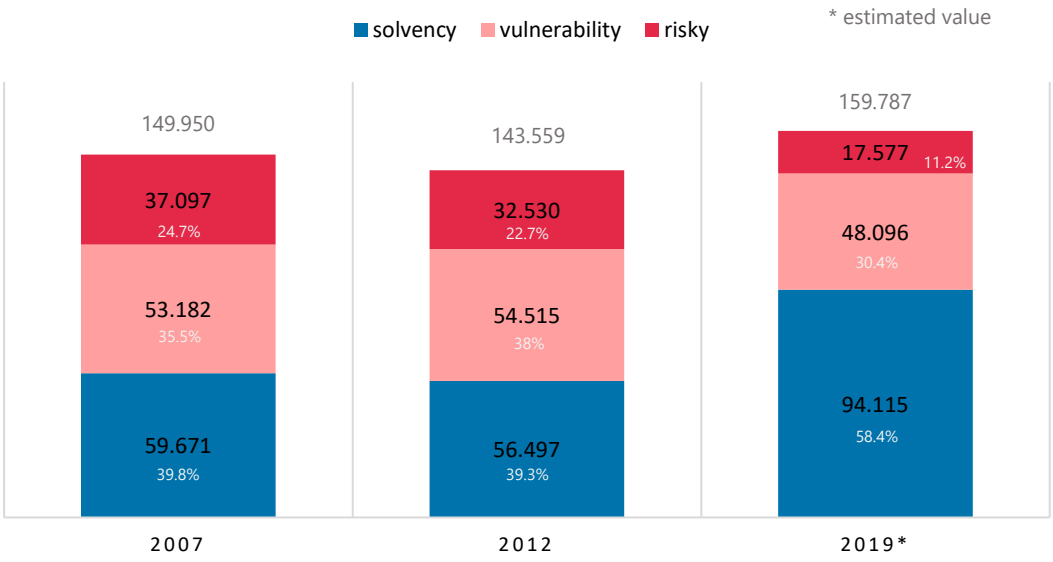

Figure 6-Number of active SMEs breakdown based on economic and financial score

Source: Rapporto Cerved PMI 2020

Despite the fact that in the last decade SMEs have been facing a credit crunch, a phenomenon in which low credit flowed to companies, entrepreneurs have never stopped to capitalize, also due to government interventions, making their own businesses become more solid.

Giving a look at Figure 7, where the capital of Italian companies is compared to its pre-crisis level, shareholders' recapitalization of SMEs momentum has suffered a setback after the 2008 crisis with a stable trend up to 2014. The countertrend started in 2014, Figure 7 indeed shows an increasing trend in SMEs' equity abruptly interrupted by Covid-19 impact in 2020.

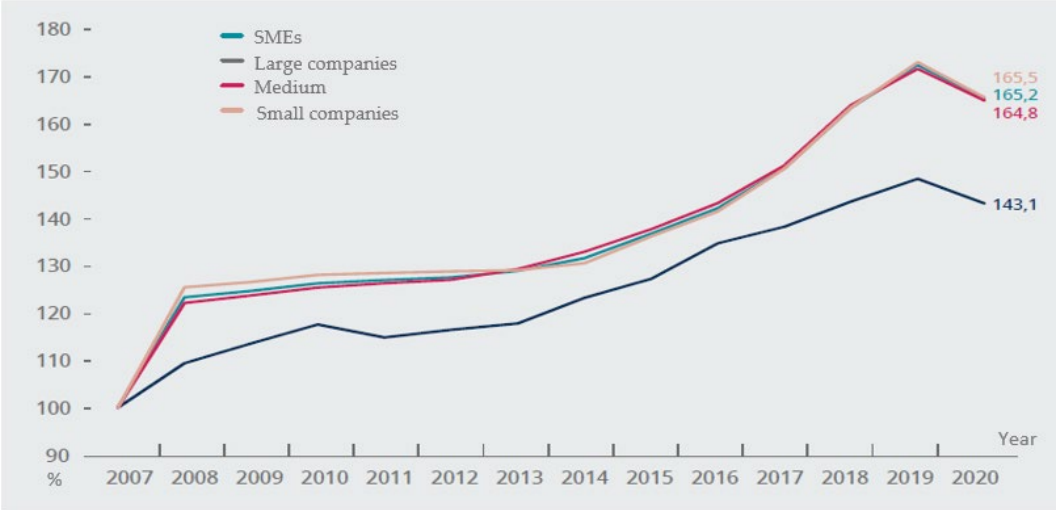

Figure 7-Equity trend for size compared to pre-crisis level

Figure 8-Financial debt trend for size compared to pre-crisis level

Source: Rapporto Cerved PMI 2020

Again, comparing the latest results with the pre-crisis level, Figure 8 shows Italian companies' indebtedness. An unstable but increasing long-term trend followed the financial crisis, starting from 2013-2014 a little flexion of the debt level started to happen. Nevertheless, starting from 2017-2018 financial debt started to grow at a rate never seen before.

Business solidity is also expressed by financial leverage, i.e. the ratio between financial debt and equity. It fell from 115% to 61% in the period 2007-2019 and if in 2007 the financial expenses on EBITDA weighted 23%, in 2019 weighted 13%, this also thanks to the monetary policy employed by ECB, the quantitative easing, which lowered the interest rate.

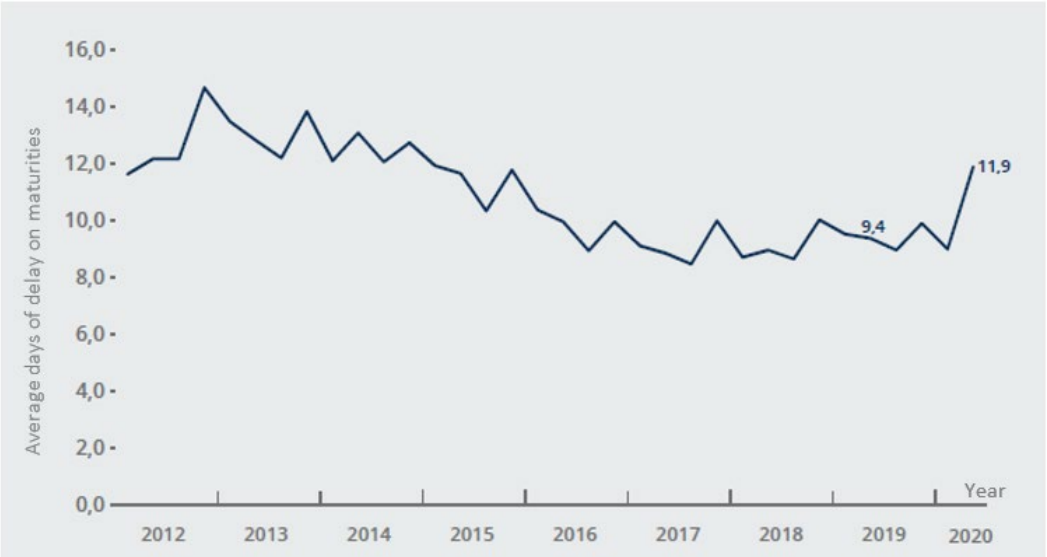

Figure 9-Average days of delay on maturities (SMEs)

Source: Rapporto Cerved PMI 2020

Finally, as far as regards the liquidity of the Italian SMEs system measured as average days of delay in paying its suppliers. Data comes from *Payline*, a database that collects information on payment habits of over 3 million Italian companies. Before the crisis, the average number of days of delay

for SMEs was 15. Figure 9 exhibits the trend in the period 2012-2020, during that time the average number of days of delay dropped reaching 9 in 2019. In the second quarter of 2020, the effects of the "lockdown" are instead evident: delays grow to 11.9 days, about 2.6 days more than the same period in 2019 (9.4), hitting the maximum of the past six years.

1.2 Mergers & Acquisitions

Before presenting our work of research, which will be the core of this dissertation, we would like to start with a description of the general topic of merger and acquisition.

The operation of merger and acquisition (M&A) is an extraordinary financial transaction performed by enterprises that modifies the ownership structure of two or more corporate entities.

In the case of a merger, the companies participating in the process cease their legal existence to merge their assets into a new company. Instead, the acquisition is a process through which the acquiring company obtains the majority stake in the acquired firm. In this case, the two firms remain separate, but the acquiring company controls the acquired one.

Companies will merge and acquire each other for a variety of reasons and according to the purposes they incur in different types of M&A: horizontal M&A, vertical M&A and conglomerate M&A.

With the horizontal merger and acquisition, the acquired firm is at the same level of the supply chain as the acquiring firm, usually a competitor. The main objectives of this operation are to increase the market size, develop economies of scale and scope, or acquire know-how.

In a vertical deal, the acquired firm is not at the same level in the supply chain, so it could be a supplier or a customer of the acquiring company. In this case, the process aims to hedge against the changing prices or not to lose the bargaining power.

Finally, a conglomerate deal is made between firms involved in different businesses and the reasons are purely financial or linked to some innovation advantage.

Sometimes target companies' desire is to avoid being acquired, in that case, they can implement one of the following strategies to create hurdles in acquisition operations for the bidder:

- *Poison pill*: measure taken by a target firm to avoid acquisition; for example, the right for existing shareholders to buy additional shares at an attractive price if a bidder acquires a large holding;
- *White knight*: friendly potential acquirer sought by a target company threatened by an unwelcome suitor;
- *Shark repellent*: amendments to a company charter made to forestall takeover attempts (e.g. the merger must be approved by 80% instead of 50% of shareholders).

1.2.1 Literature review on M&A

In order to provide a complete understanding of the topic, we will present a synthesis of the most important aspects that characterize the M&A activity, analysing and reviewing some previous studies that have been conducted on these themes.

In most instances, the rationale of the acquirer is based on the promise of increasing shareholders' wealth from a variety of sources, ranging from greater synergy from the combined organization to the replacement of underperforming managers. Regardless of the justification, the overriding argument put forward by managers is that takeovers result in greater corporate efficiency and, ultimately, in wealth increases for shareholders in the acquiring company. However, the promised gains to shareholders in acquiring companies are not easily identified (Touch et, al., 2007). Therefore, a lot of studies have been done by academics on these topics.

We will now introduce the state-of-the-art literature, divided into two main paragraphs: motives for mergers & acquisitions and performance of mergers & acquisitions.

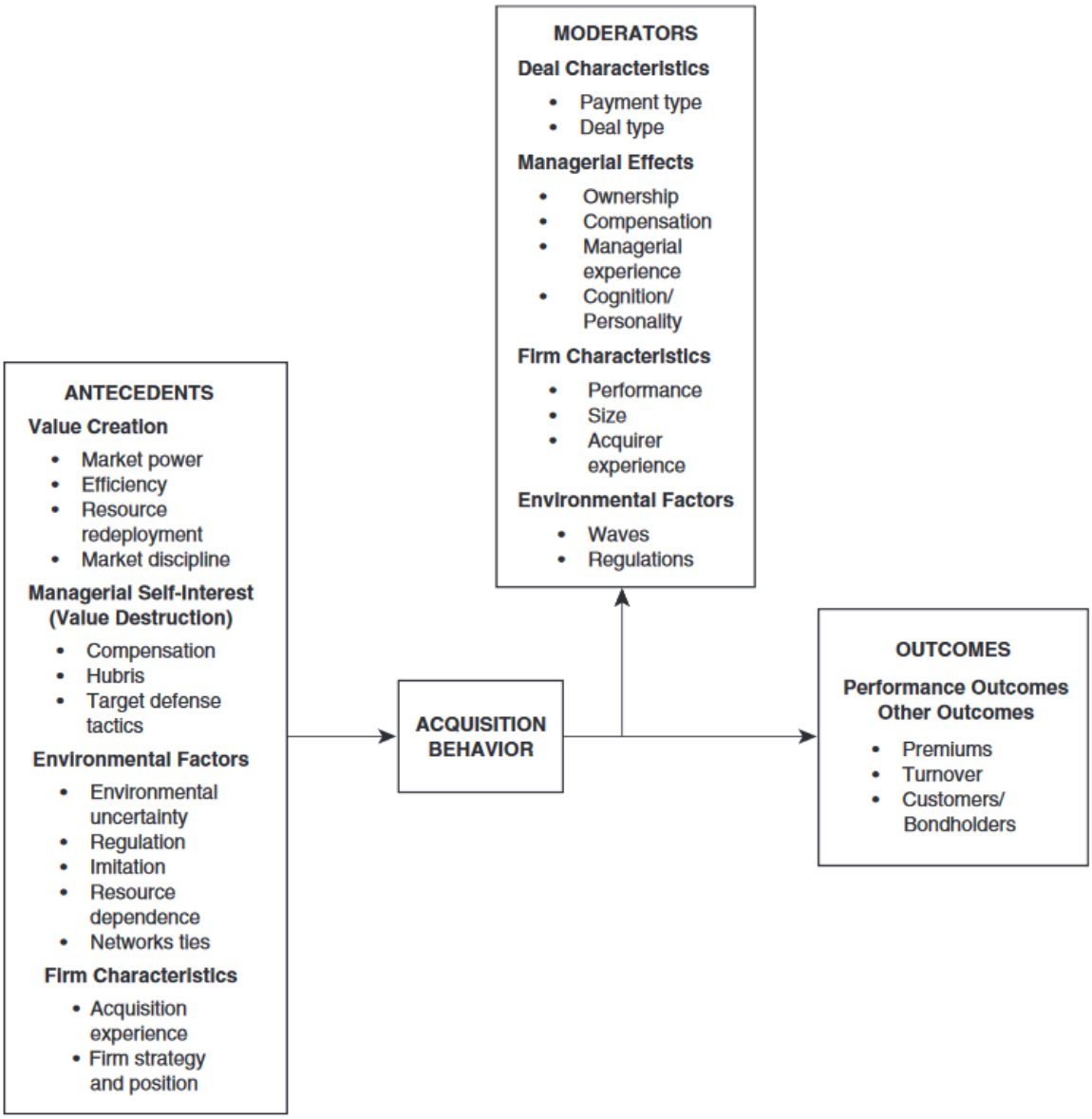

Figure 10-Acquisition behaviour scheme

1.2.1.1 Motives for M&A

The reasons behind the choice of small-medium business managers to acquire other companies are a lot and different. Haleblian, Devers, McNamara, Carpenter, and Davison (2009) provide a comprehensive list of examples for firms of any size, including the creation of value through increased market power, efficiency, resource redeployment, or market discipline as it relates to ineffective managers; managerial self-interest as it relates to compensation, hubris, or defence tactics; environmental factors such as uncertainty and regulation, imitation and resource dependence, and network ties; and firm characteristics like past experience with acquisitions activity.

Starting from market power, the idea is that horizontal mergers modify the industry competition in the way that the presence of fewer firms increases the firm-level pricing power. The hypothesis was proposed by B. Espen Eckbo (1983) testing a large sample of horizontal mergers (even those who violated antitrust legislation) in mining and manufacturing industries and a control group of vertical mergers in the same industries. In the same year, Robert Stillman proved that, without a government intervention, eleven horizontal mergers attempted between 1964 and 1972 would have brought to an increase in product prices. Some economists criticized the work by arguing that the samples included large and multiproduct companies with small revenues coming from the target industry analysed and the periods considered were subsequent to highly restrictive antitrust law.

Another paper in support of the market power motive reports a price increase on routes served by merged airline firms during 1985-1988 with

respect to a control group of routes not affected by mergers (E. Han Kim and Vijay Singal (1993). Before them, Prager (1992) found that railroad industry rivals' stock prices increased the week acquisitions were announced, suggesting support for the market power hypothesis.

A more recent study (Bruce A. Blonigen & Justin R. Pierce 2016) demonstrates that M&As are associated with increases in average mark-ups but find little evidence for effects on plant-level productivity.

The same author also examines the effect of M&As on efficiency through reallocation of production to more efficient plants or through reductions in administrative operations, but again finds little evidence for these channels, on average.

A different idea is suggested by Banerjee and Eckard (1998) which proposed efficiency motives for acquisitions during the great merger wave of 1897-1903. Additional support came from more recent samples documenting improvements in long-term plant productivity performances (McGuckin & Nguyen, 1995) and in public accounting industry productivity (Banker, Chang, & Cunningham, 2003).

Nevertheless, the evidence for conglomerate mergers is not strong enough to avoid other interpretations. More precisely, Jensen & Ruback (1983), Kaplan & Weisbach (1992) and P. Berger & Ofek (1995) suggested the presence of inefficiency in the 1960s conglomeration. In contrast, Klein (2001) found a diversification "discount" for the late period (1970 to 1974) conglomerates and a premium for late-1960s acquisitions, supporting the efficiency motive for unrelated business acquisitions.

Another reason pushing to acquire other firms is the creation of economies of scope through resource redeployment. In this perspective, the theory is supported by the studies done by Capron, Dussauge and Mitchell (1998). In strengthening, Karim and Mitchell (2000) found that acquisitions have a significant role in business reconfiguration since firms have the possibility to reallocate resources exploiting them.

In another perspective, Puranam and Srikanth (2007) proved that acquisition can be led by innovation, in this sense, the input stands in the existing knowledge of the acquired firm.

In sustain of market discipline antecedent, Jensen in 1986 and Jensen & Ruback in 1983 argued that M&A can help owners to protect from poor management. According to agency theory, indeed, when managers and owners' intentions are not aligned, shareholders try to substitute the management team and acquisition is a way through which operate. Notably, Agrawal & Walkling (1994) reported the dismission of the CEOs or the reduction of managers' compensation after a takeover.

Although the theory leads to think that companies with inefficient management and so low market values are often acquired by high market value companies, it is incompatible with the Rhodes-Kropf and Robinson's research in 2008 which verified that companies tend to acquire companies with similar asset value.

The works above mentioned justify M&A through a maximization of the shareholders' value, but other studies explain that this is not the only aim of M&A. Specifically when managers pursue their own interests, the shareholders' value will be gradually destroyed.

Agency theory suggests that the right compensation avoids some managerial opportunistic behaviours. Nevertheless, a big group of studies (Harford & Li, 2007; Bliss & Rosen, 2001; Grinstein & Hribar, 2004) determined that acquisitions originate from managers' desire to boost salary.

However, a moderation effect can be given by firm governance, indeed as reported by Kroll, Wright, Toombs, and Leavell (1997), in owner-controlled firm the CEOs' compensation is also related to shareholders' returns differently from manager-controlled firms where their wage is higher.

Other acquisitions find an answer within managerial hubris according to which excessive self-confidence causes managers to follow overvalued M&A (Roll, 1986). The same idea is disclosed by Malmendier and Tate (2008) which demonstrated that CEOs overestimate their own abilities in extraordinary operations.

Managers act in favour of their self-interest when they try to act defence tactics at the expense of the shareholder wealth. Hence, scholars investigated the relationship between defence tactics and acquisitions likelihood. Anyway, results were not always coherent, for example, Ambrose and Megginson (1992) and Field & Karpof (2002) suggest that defence tactics are negatively related to acquisitions likelihood. However, for example, Bates and Lemmon (2003) found in contrast that target payables fees do not deter the bidder but rather increase acquisitions likelihood and premiums. The overall result is that, even if self-interest behaviour leads to an increased likelihood of acquisitions, ineffective

governance, that may follow self-interested management, balances that effect with a market-discipline effect.

Going to analyse the environmental factors, some papers stated that the environment, in some cases, has an influence on the acquisition behaviour. More specifically, the determinants investigated are the uncertainty, the regulation, the network ties and resource dependence.

Starting from the uncertainty, the study done by Folta in 1998 referred to a new uncertain technology on the market and in particular, it was based on the idea that uncertainty increases the likelihood of collaboration over the acquisition of a firm already having that technology. Four years later Schilling and Steensma proved that uncertainty increases the likelihood of acquisition over licensing agreement.

Another variable with a strong influence on mergers is the regulation. Even if Matsusaka in 1996 found that antitrust laws did not obstruct the M&A activity, some more recent studies (Beneish, Jansen, Lewis, & Stuart, 2008) done on tobacco, alcohol and gaming industry explain that legislation has prompted firms in domestic expansion through diversifying acquisitions as a means of garnering the political clout to influence policies aimed at mitigating the costs of such regulation. Hence, in some cases, the external governance structure can be considered as an incentive to pursue acquisitions.

One more reason influencing the acquisitions is the network tie. This hypothesis is built on the fact that corporate behaviour is affected by director interlocks which promote the information exchange thereby influencing the strategy of the firms. Haunschild in 1993 argued this thesis

showing that managers imitate the acquisition activity of firms to which they are tied through directorship and some year later, Haunschild and Beckman demonstrated a positive correlation between the number of acquisitions executed by a firm and those executed by its interlock partners.

In addition, other environmental motives to be considered are imitation and resource dependence. Among different studies, one in particular highlights that mergers occur when firms become increasingly successful and their innovations are imitated throughout the business community (Stearns and Allan, 1996).

Furthermore, Pfeffer (1972) showed that firms managed resource dependencies by absorbing needed resources through mergers. In 2005 Casciaro and Piskorski showed that power imbalances between these same two firms acted as an obstacle to their combination even if mutual dependence between firms was a key driver of acquisition behaviour in inter-industry acquisitions.

Lastly, we present the main firm characteristic that leads to undertake an M&A, so the past experience of the firm with an acquisition. Given that in the firm's history acquisition events can occur several times, a previous merger can affect the other ones. In sustain of this thesis Haleblian, Kim and Rajagopalan in 2006 suggested that the prior acquisition experience, the recent acquisition performance and the interaction between the two are positively related to the likelihood of subsequent acquisitions.

In the literature there are also studies more detailed on the typology of acquisition (horizontal, vertical and conglomerate), indeed, Amburgey

and Mine argued that subsequent acquisitions are very likely to be of the same type as the previous ones while Yang and Hyland argued that acquisition experience of a particular type decreases the likelihood of acquisition of any different types. From these evidences, some acquisitions are justified by the previous ones.

The next step will be to deeply understand the performances of the M&A induced by these motivations above, and also for this we will base on the available literature.

1.2.1.2 Performance of M&A

The literature suggests that acquisitions do not enhance acquiring firm value, as measured by either short-term (Asquith, 1983; Dodd, 1980; Jarrell & Poulsen, 1989; Malatesta, 1983) or long-term performance measures (Agrawal, Jaffe, & Mandelker, 1992; Asquith, 1983; Loderer & Martin, 1992). More specifically, acquisitions were often found to erode acquiring firm value (Chatterjee, 1992; D. K. Datta, Pinches, & Narayanan, 1992; King, Dalton, Daily, & Covin, 2004; Moeller, Schlingemann, & Stulz, 2003; Seth, Song, & Pettit, 2002) and produce highly volatile market returns (Langetieg, Haugen, & Wichern, 1980; Pablo, Sitkin, & Jemison, 1996).

There are also some studies about the returns accrued by target firms. The acquirers generally pay premiums to acquire targets and so the final result is that target shareholders fared well, often experiencing significant positive returns (Asquith & Kim, 1982; D. K. Datta et al., 1992; Hansen & Lott, 1996; Malatesta, 1983).

Some studies explored the effects of acquisitions on combined bidder and target returns (Bradley, Desai, & Kim, 1988; Bruner, 1988; Carow, Heron, & Saxton, 2004; Healy, Palepu, & Ruback, 1992; Wright, Kroll, Lado, & van Ness, 2002) generally showing that acquisitions produce positive combined returns. Targets accounted for the majority of gains while the acquiring firm accounted for important losses, decomposition of these joint outcomes revealed that targets accounted for negative returns.

Deepening into deals outcome performances, scholars uncovered the conditions that moderate the relationship between acquisitions and performances. These conditions can be divided into four levels of analysis: deal characteristics, managerial effects, firm characteristics, and environmental factors.

Deal Characteristics

Payment type

Managers are expected to finance deals with cash when they perceive their firm to be undervalued and with stock when they perceive their firm to be overvalued (King et al., 2004), this made Loughran & Vijh, (1997) suggest that the market perceive stock-financed deals as a signal of bidder overvaluation.

Regardless of the motivations behind financing choice, it is interesting to note that there is not clear evidence that financing a deal with cash or stock is more beneficial, or at least less detrimental. Indeed, some studies (e.g. Carow et al., 2004; Huang &Walkling, 1987; Loughran & Vijh, 1997; Travlos,1987) showed a beneficial effect from cash financing, while others

(e.g. Healy et al.,1992; Heron and Lie, 2002) reported no effect of payment method on bidder accounting performance.

Examining the research results on the perspective dealing with payment methods scholars found that entirely bank-financed deals resulted in high positive announcement result, this suggests that bank debt served as a signal of certification and monitoring for bidding firms (Bharadwaj and Shivdasani, 2003). They also demonstrated that bidders audited by non–Big 4 accounting firms experienced higher abnormal announcement returns than those audited by Big 4 firms (Louis, 2005).

Deal type

Looking at deal types research has suggested that acquisitions outperform mergers (e.g., Agrawal et al., 1992), especially if cash financed. However, in a more in-depth examination, it is reported that the managers of low book-to-market firms might make poorer acquisition decisions than managers of other firms, suggesting the importance of prior performance on acquisition returns (Rau and Vermaelen, 1998).

Managerial Effects

Ownership and compensation

Driven by agency theories scholars investigated the influence of various ownership and compensation schemes on the acquisition–performance relationship. Evidence that returns are highest at moderate levels of ownership drove Hubbard and Palia (1995) to suggest that under these conditions managers' interests are more aligned with those of shareholders, resulting in lower bidder premium. This, however, mean they suggest that, at high and low levels of ownership, managers' interests are misaligned with shareholders', and consequently they overpay for

acquisitions, affecting negatively the returns. Results from Wright et al. (2002) are supporting this thesis, indeed, they found a nonlinear relationship between ownership and acquisition announcement returns, such that under moderate levels of CEO ownership, combined bidder and target announcement returns were positive (Haleblian et al., 2009).

Nevertheless, the results of other studies challenged these results. Some studies showed that higher stock holdings translate into better positive acquisition announcement returns, while stock ownership is not related to acquisition performance, suggesting that performance begets ownership rather than vice versa (Loderer, et al., 1997).

In the end, research examining the effects of equity holdings and incentive pay on M&A operations performances returned results pointing to different directions. However, recent studies (Devers, et al.,2007) suggest that managers may engage in opportunistic behaviors to achieve personal gain.

Managerial experience and cognition/personality

The characteristics of managers had also been tested and showed influences on acquisition decisions and acquisition performance. Indeed, the expertise and knowledge held by key target executives appear to be valued by the market. Scholars proved that their post-acquisition departures negatively affect both acquisition performance and bidding firm satisfaction with acquisition decisions (Saxton, et al., 2004).

Cognitive influence figure into acquisition performance. Managers' acquisition judgments and acquisition performance are influenced by CEOs' hubris (perceptions of invulnerability) (Hayward, et al., 1997) and by perceptions of task, cultural, and political characteristics (Pablo, 1994).

Other research has shown that, if top managers' perceive cultural differences between bidders and targets, this negatively affects both bidder announcement returns (Chatterjee, Lubatkin, Schweiger, & Weber, 1992) and managers' perceptions of post-merger performance (Very, Lubatkin, Calori, &Veiga, 1997).

This desire for fit managers and firms' characteristics is consistent with research showing that strategic similarity (Ramaswamy, 1997) and alliance experience between bidders and targets (Porrini, 2004), enhance synergy realization during integration and positively influence long-term post-acquisition accounting returns.

Firm Characteristics

Historical performance

Scholars have paid particular attention to the role of historical operating performance in acquisition events. Heron and Lie (2002) showed that, when bidders with higher market-to-book ratios acquire targets with low market-to-book ratios, acquirers experience stronger operating performance after acquisitions and post-acquisition performance is increased.

Tobin's Q of bidders and targets has also been in the interest of scholars. Results showed that high Tobin's *Q* bidders gained more than low Tobin's *Q* bidders and, additionally, low Tobin's *Q* targets benefited more from takeovers than high Tobin's *Q* targets (Lang, et al., 1989). Testing Jensen's (1986) free cash flow hypothesis (managers endowed with free cash flow will invest it in negative net present value projects rather than pay it out to shareholders), researchers found that bidder announcement returns were negatively related to cash flow for low Tobin's *Q* bidders but not related

to cash flow for high Tobin's *Q* bidders (Lang, et al., 1991). Low Tobin's Q ratios are, indeed, linked to agency problem and this appeared to influence managers into investing in negative net present value projects, in our case into acquisitions. Low-performing targets are associated with upside restructuring value, which has been shown to offer the greatest opportunity for value creation in takeovers (Chatterjee, 1992). Therefore, increased acquisition performances are expected when high-performing firms pair with low-performing targets. When a high-performing firm acquires a low-performing target has to successfully bring it outside the low-performing zone. This is far from granted, thus acquiring deeply troubled targets is not always the best choice, especially if the bidder lacks managerial skills to bring the target out of distress.

Firm size

Scholars have also argued that firm size affects the performance of acquisitions, obtaining results not perfectly aligned. Some authors link increased asset productivity (Healy et al., 1992) and enhanced customer attraction, employee productivity, and asset growth (Cornett & Tehranian, 1992) of large mergers to positive post acquisition accounting performance. While others, like S. B. Moeller, Schlingemann, and Stulz (2004), showed significant announcement losses for large acquires and positive announcement gains for small acquirers. These latter findings highlight that the hubris of large firms' managers lead them to complete negotiations and that large firms offer larger acquisition premiums. Deepening in the research Fuller et al. (2002) partitioned the returns to acquirers on the relative size of the target as compared to the bidder. Their results show that for public targets higher relative size of the target

means returns more positive for cash offers, more negative for stock offers and substantially no difference for combination offers. Instead, for private acquisitions, they found that higher relative size of the target means greater returns for stock-financing bidders than for cash-financing bidders. Mixed results for the influence of firm size in acquisition returns illustrate that the way this effect manifests is still not clear. Thus, research in this field is far from being over, lot has still to be developed.

Acquirer experience

Acquisition scholars have also examined the role of acquirers' experience on acquisition performance. Although it seems intuitive that acquisition experience should positively affect the performance of subsequent acquisitions, the results of these studies are mixed, suggesting moderating influences.

The relationship between acquisition experience and acquisition performance was found not to be positively linear but U Shaped by Haleblian and Finkelstein (1999). They concluded that inexperienced acquirers inappropriately applied experience garnered from first acquisitions to following dissimilar acquisitions, whereas highly experienced acquirers were able to avoid these missteps. Later, Zollo and Singh (2004) found that prior M&A experience alone does not positively influence acquisition performance, whereas explicit knowledge codification of experience does.

Scholars also examined the role that transfer effects played in multiple acquisitions. Finkelstein and Haleblian (2002) suggest that routines and practices transfer from prior to new situations, whereas positive transfer is dependent on similarity. This was suggested by their results, they found

that bidder-to-target similarity increased announcement returns and that firms' first acquisitions outperformed their second acquisitions, especially ones made in dissimilar industries. This evidence suggests that the similarity return ratio for learning, at higher levels, may diminish even if the similarity is an important factor. The learning by doing approach seems to be effective also looking at others' acquisitions, the managers can exploit the knowledge of their peer mistakes.

Environmental Factors

Waves

Several scholars have investigated the relationships that temporal and episodic effects have on market responses to acquisitions. This intuition is linked to the waves of acquisition, periods of time in which many more acquisitions were made. Scholars found significant value creation for bidder and targets in the first great merger wave period (Banerjee and Eckard,1998), and that in the 1920s wave targets gained from being acquired while bidding firms neither gained nor lost (Leeth and Borg, 2000). During the 1960s merger wave, acquiring firms accrued negative returns from related acquisitions but received positive returns from diversifying acquisitions (Matsusaka, 1993). These results relate the acquiring firm returns with the strategic focus of the acquisitions, although they are mixed.

Research on the consequence of moving between or within wave periods has been made too, differently from the above-cited work which was focused on single waves. Investor sentiment toward diversification changed over time, Matsusaka (1993) suggest that it may owe to first-mover effects, regulations, exogenous shocks or changes in fads and

fashions regarding acquisitions. S. B. Moeller et al. (2004) demonstrated, in more a recent study, noted that, during the 1998-2001 wave, losses were mainly due to a few extremely large loss deals, while this does not apply for the 1980s wave, suggesting that higher attention should be given to the outliers.

Finally, other scholars have examined the effects of acquiring at different stages within acquisition waves. Carow et al. (2004) found moving early in acquisition waves resulted in higher combined target-bidder abnormal returns. McNamara, Haleblian, and Dykes (2008) revealed that, on average, firms that acquired early within an industry acquisition wave achieved positive returns, whereas the market punished later acquirers. Returns began to improve for firms acquiring at the farthest point of the wave, suggesting that the worst returns might have resulted from the acquires who tried to imitate. While acquiring at the far end of waves may gain benefits from learning by observing and for reduced bandwagon pressure, firms seeing all others acquiring start to be under pressure if they do not acquire.

Regulations

Scholars have also shown that regulatory events can influence the attractiveness of acquiring and shift the bidder–target power relationship. Specifically, evidence has suggested that regulatory reforms have been detrimental to bidder returns (Asquith, Bruner, & Mullins, 1983; Malatesta & Thompson, 1993; Schipper & Thompson, 1983) yet beneficial to target returns (Bradley et al., 1988). Similarly, recent strategic risk-taking research has found that regulatory changes have influenced CEOs' strategic decisions (Devers, McNamara, Wiseman, & Arrfelt, 2008).

1.2.2 SMEs M&A Literature

This work has its focus on SMEs, we have therefore explored the state of the art of the literature on M&A operations made by SMEs. The theory of mergers and acquisitions has been developed almost only from studies made on large deals. This is mainly due to the fact that SMEs are not publicly quoted, reason why obtaining reliable data on their activity and evaluating their performances is more difficult than large enterprises. Anyway, we reported here above the main theories on SMEs M&A activity. Due to the existence of some empirical findings, which suggest that mergers under-perform the market, this literature review has been divided into two broad schools: the value-increasing, efficient market school, and the value decreasing agency school.

In order to discover reasons why SMEs go for M&A activity we have to say that according to the value increasing school, mergers occur, broadly, because mergers generate 'synergies' between the acquirer and the target, and synergies, in turn, increases the value of the firm (Hitt et al., 2001).

While according to the Value-Destroying Theories, the impact of mergers and acquisitions on the performance of the acquiring firm remains, however, at best, "inconclusive" and, at worst, "systematic[ally] detrimental" (Dickerson et al., 1997). Value-destroying theories give two reasoning behind M&A activities: the first assumes that the bidder's management is 'boundedly rational', and thus makes mistakes and incurs losses due to informational constraints despite what are generally value-increasing intentions. The second assumes rational but self-serving

managers, who maximize a private utility function, which at least fails to positively affect firm value (Weitzel, et al., 2011).

Linking these theories to the SMEs environment, Weitzel et al. (2011), firstly, suggest that, because the manager is often also the owner in the case of an SME, many of the value-destroying theories discussed above will simply not apply. Most of the value-destroying theories arose out of agency problems that occur with the separation of ownership and control. In the case of owner-mangers, however, principle-agent costs are removed, and so the theories of entrenchment and empire-building are unlikely to play a part in SME M&As.

Secondly, suggest that the information asymmetries, which facilitate self-interested behavior, will be reduced in the case of SMEs. Larger firms have deeper hierarchies, more dispersed responsibilities and more complex systems of accountability than their smaller peers, and this obstructs transparency and information symmetries. Suggesting that the level of information asymmetry suffered by the firm is inversely related to its size and that smaller firms will allow self-interested managers fewer opportunities to act in a self-interested way. Thus, the likelihood that agency motives will play a role in bringing SMEs into M&A activity is significantly reduced. The hereabove theories show that SME M&As are more often made in the interests of the owners.

According to Weitzel et al. (2011), indeed, only hubris and the problems of overvaluation remain as potential sources of value destruction. Anyway, according to Moeller et al. (2004), these too should be less of a problem in SMEs. Managers in smaller firms, they suggest, are as likely to make the same boundedly rational mistakes as their colleagues in larger

firms, but because the interests of managers in small firms are more closely aligned with the owners, the managers in small firms are more likely to withdraw from a deal once they realise their mistakes (for instance, in a due-diligence prior to consummation). Evidence and therefore confirmation of this latter theory were found by Weitzel in 2011. Although very little literature has been written and no studies have been made on the performance of SMEs M&A, some studies from Carline et al. (2002) and Moeller et al (2004-2005) lead to the suggestion that that smaller firms, making smaller deals, make better acquisitions. Smaller deals are indeed proved to be more profitable than larger ones.

Regarding the financing of the M&A operations for the SMEs, the usual "pecking order hypothesis" proposed by Myers and Majluf (1984) does not fully apply as for bigger firms. Weitzel et al. (2011) point out that "SMEs are unlikely to have the necessary liquid resources to cover the cost of an acquisition, and cognizant of the importance of retaining a cushion of liquidity' (Cyert and March, 1963), they are to overutilize their internal options".

Even if outside the "usual framework" of M&A literature, one of the most interesting results in the SMEs M&A literature, even for this works comes from Compagno et al. (2006), in their paper called: "*Le operazioni di fusione e acquisizione come strategia di crescita delle PMI. Implicazioni per la politica industriale.*". From their work, the link between the determinants of success of external growth and abilities of the first-line management to deal with organizational aspects and of operations' strategic planning. SMEs' acquisitions performances are indeed very linked with investments made into program and control systems,

employee training, formalization of new functions and roles, and more than all into the development of new managerial skills. Managerial factors are for SMEs even more central in undergoing acquisitions or mergers than financial factors and negotiation difficulties. Finally, Compagno et al. (2006) suggest that Italian SMEs do not grow and internationalize as expected for the lack of know-how and managerial skills, not for the lack of financial coverage.

Chapter II

Minibond

In this chapter, we will deal with minibonds starting from the regulatory framework and then analysing the Italian market.

2.1 Regulatory framework

The issue of bonds is historically known to be limited to companies listed on the Stock Exchange, but the financial crisis in 2008 and the subsequent one in 2011, combined with the restriction of the bank credit and the opportunity to provide Italian SMEs with alternative financing channels, pushed the Italian legislator to broaden the audience of possible issuers of debt securities to smaller companies.

The minibond industry was born in Italy thanks to a series of innovations in the regulatory framework, that between 2012 and 2013 'liberalized' the possibility of raising capital on the market through these instruments, which so far in practice was only reserved for listed companies. The birth of this market aimed to provide SMEs an additional funding channel for growth, given the lower availability of bank credit of those years.

The purpose of the following sections is to explain briefly the main law issued after the two crises: Decreto Sviluppo, Decreto Sviluppo bis, Decreto Destinazione Italia, Decreto Competitività, Legge di Bilancio 2019, Legge di Bilancio 2020 and Decreto Fiscale 2020.

2.1.1 Decreto Sviluppo and Decreto Sviluppo bis

In 2012 the Decreto Sviluppo[5] and Decreto Sviluppo bis[6] removed from the unlisted companies (different from banks and micro-enterprises) the prohibition - established by art. 23412 c.c.- of issuing bond exceeding the double of the sum of share capital, legal reserve and available reserves values, resulting from the latest approved financial statements. Anyway, this first ordinance has been referred only to those instruments listed on regulated markets or on Multilateral Trading Facilities (MTFs). This constraint, which did not exist for the listed companies, in practice blocked the possibility for SMEs to use the placement of bonds as leverage for development and investment plans.

In this perspective, Borsa Italiana has set up a platform called ExtraMOT PRO totally dedicated to the listing and exchange of minibonds and has provided for them a very streamlined listing regulation, for instance, the exemption from the obligation to publish a listing prospectus.

Before the entry into force of the facilitating rules, the issuance of bonds by SMEs was subject to a particularly unfavourable tax regime that prevented their spread and use. Previously to the reform, the fiscal discipline provided for the deduction of the interest expenses only if at the time of issue, the effective return rate on the securities was lower or equal to:

[5] Decreto Legge 22 giugno 2012, n. 83

[6] Decreto Legge 18 ottobre 2012, n. 179

- twice the official reference rate fixed by the Italian Government for bonds traded on regulated markets or placed through a public offering;
- the official reference rate increased by two-thirds for all the other securities.

In these circumstances, Decreto Sviluppo favoured the bond's fiscal regime with the possibility to unlisted companies to deduct interest expenses up to 30% of gross profit for IRES purposes (art. 96 TUIR).

The facility on interest expenses referred in its entirety to minibonds listed on regulated markets or exchanged in MTF of EU member States but presented some restriction for issuers of minibonds not listed on a regulated market. For this type of tools, the interest expense is deductible only if:

- The income recipients are resident in Italy or in another country of the White List;
- Securities are subscribed by professional and qualified investors which do not own more than 2% of the issuer's stock.

The following additions and amendments made to the Decreto Sviluppo concerned some tax benefits, thus on one side, took place the exemption from withholding tax on proceeds from listed securities multilateral trading facilities of EU member states or countries in "White List"; on the other side, arose the possibility to deduct all the fees related to the emission – e.g. advisory fees, placement fees, rating fees, etc. – in the same year in which they were incurred.

2.1.2 Decreto Destinazione Italia

During the following years, subsequent decrees were introduced with the aim to promote and facilitate even more access to debt capital markets for SMEs and thus increasing their possibility to raise funds through minibonds. One of these was the Decreto Destinazione Italia[7] enacted in 2013 which introduced the substitute tax equal to 0.25% of the amount of the secure minibonds up to that time exclusively reserved to long- and medium-term bank debts (art. 15 DPR 601/73). The Decree included also a particular warrant – Privilegio Speciale – for those minibonds with a maturity higher than 18 months and directed to institutional investors.

The main aim of this decree was the simplification of the securitization process and the improvement of the investors' protection in order to allow growth in the minibond demand.

Indeed, the growth of Private Debt funds specialized in minibonds was a consequence of the removal of the withholding tax of 20% on interest expenses and incomes deriving from minibonds subscribed by funds, whose shares are held by professional investors and which capital is dedicated only to investments in minibonds.

Other innovations were about the possibility of insurance companies to consider minibonds as assets to cover technical reserves and the extension of Central Guarantee Fund's activity also to funds for investments in single issues and portfolios.

[7] Decreto Legge 23 dicembre 2013, n. 145

2.1.3 Decreto Competitività

The Decreto Competitività[8] led to a wider diffusion of this instrument thanks to the opening of the Italian minibond market to foreign investors and a more beneficial tax regime on interest and income.

In particular, the statute allowed foreign insurance companies, securitization companies and investment funds to provide direct credit to businesses and eliminated the withholding tax on medium-long term loans granted by them.

Secondly, concerning the fiscal area, it removed the 26% withholding tax on interest expenses and incomes of bonds for those securities not listed on Multilateral Trading Facilities – such as Extra MOT PRO – as long as they are placed by institutional investors, and extended the substitute tax to the transfer of guaranteed receivables.

2.1.4 Individual Saving Plan - PIR

A subsequent law (Legge di Bilancio 2017[9]) also included a new form of medium-long term investment called PIR ("Piani Individuali di Risparmio") which intends to convey savings towards businesses. This measure designed by the Italian Government aimed to converge investments towards shares and bonds of Italian SMEs and guarantee a great tax advantage to those who subscribe to them. Specifically, PIR are dedicated to small retail investors which, to benefit from tax exemption on capital gain and inheritance tax, have to fulfil these subsequent conditions:

[8] Decreto Legge 24 giugno 2014, n. 91

[9] Decreto Legge 11 dicembre 2016, n. 232

- the investment is held for at least five years;
- the investment is composed by, at least, 70% of securities of Italian enterprises or with prevalent business activity in Italy;
- at least 30% of the previous 70% should consist of securities not listed in the FTSE MIB index.

2.1.5 Legge di Bilancio 2019, Legge di Bilancio 2020 and Decreto Fiscale 2020

The Law n. 145/2018[10] was introduced to modify the regulations on PIR – Piani Individuali di Risparmio – announcing the minimum restrictions on investments in financial instruments issued by small companies and medium-sized companies and listed on multilateral trading facilities (such as AIM Italia and ExtraMOT PRO) and in shares or units of venture capital funds, in order to enjoy the tax exemption on income for savers. These constraints led to the interruption of the collection.

To rescue the minibond market, Decreto Fiscale 2020 (Law 157/2019) and the Legge di Bilancio 2020[11] (Law 160/2019) intervened eliminating the most problematic constraints. In practice, these new reforms introduced the duty for PIR operators to invest in small cap companies, by turning to a universe of companies listed on regulated (MTA or STAR) or non-regulated markets (AIM Italia) with a capitalization of less than € 500 million.

The second innovation proposed by the Legge di Bilancio 2019 was the opportunity for equity crowdfunding platforms authorized by Consob to

[10] Decreto Legge 30 dicembre 2018, n. 145

[11] Decreto Legge 27 dicembre 2019, n. 160

place Minibonds issued by SMEs to professional investors and other particular investors in a dedicated section. Thanks to this implementation, the new investors' categories which can subscribe minibonds are:

- those who hold a financial instruments portfolio exceeding € 250,000;
- those who invest at least € 100,000 in offered securities, declaring to be aware of the investment risk;
- retail investors, in the context of portfolio management or advisory services in investment matters.

This reform confirms a substantial step forward in the legislation governing the direct online collection of capital which offers a new alternative way of accessing credit and facilitates the meeting between SMEs and direct investors.

Decree	Main innovations
D.L. 83/2012 'Sviluppo' and D.L.179/2012 'Sviluppo-bis'	Abolition of the maximum quantitative limits provided for by art. 2412 of the Code Civil for bonds
	Extension to unlisted companies of the deductibility of interest expense, for securities listed on multilateral trading facilities and subscribed by qualified investors who do not hold more than 2% of the share capital
	Deductibility of issue costs for unlisted companies
	Exemption from withholding tax on proceeds from listed securities multilateral trading facilities of EU member states or countries in "White List"
D.L.145/2013 'Destinazione Italia'	Simplification of securitization procedures and greater investor protection
	Bonds, securitized securities, eligible minibond fund units as assets to cover the insurance technical reserves
	Possible guarantee of collateralised securities issued by banks, including corporate securities and loans to SMEs
	Extension of the activity of the Central Guarantee Fund also to funds for investments in single issues and portfolios
D.L. 91/2014 'Competitività'	Direct credit to businesses by insurance companies and companies securitization
	Elimination of withholding tax on medium-long term loans term granted by foreign funds and insurance companies
	Elimination of withholding tax on interest and income from bonds also not listed in multilateral systems, as long as they are placed by institutional investors
	Extension of the substitute tax to the assignment of secured credits
Legge 145/2018 ('Legge di Bilancio 2019')	Amendment of the PIR legislation
	Amendment of Law 130/99 on securitisations
	Faculty for equity crowdfunding platforms authorized by Consob to place minibonds to professional investors in a dedicated section
Legge 157/2019 ('Decreto Fiscale 2020') and Legge 160/2019 ('Legge di Bilancio 2020')	Further changes to the PIR legislation

Table 1-Sum up of Minibonds' regulatory framework

2.2 Minibond

This research is based on the definition of minibonds adopted by Osservatorio Minibond of Politecnico di Milano's school of management. According to the latest definition of the Osservatorio Minibond, the minibonds are debt securities (bonds and commercial papers) issued by Italian non-financial companies, listed or unlisted on Stock Exchange and subscribed by professional and qualified investors (banks, investment firms, SGR, etc.). Specifically, the database of Politecnico of Milano takes into account issues by joint-stock companies, limited liability companies or cooperatives having their own operations (excluding banks, insurance companies and financial companies) for an amount of less than € 50 million. The choice to concentrate the analysis on this type of issues comes from, on one hand, the need to focus on the 'real economy' that is the production of non-financial goods and services, and on the other hand, the continuous growth of smaller size emissions and the maturity reached by the market segment of higher than € 50 million emissions not listed on a regulated market.

To summarize, the database directs its attention to bonds and commercial papers' placements that meet all the following requirements:

- the issuer is a limited liability company or cooperative resident in Italy, or in any case, part of a group with activities concentrated in Italy, which is not is in liquidation or under other insolvency proceedings;
- the issuer is not a banking or insurance company, a SIM or an SGR, an intermediary financial company (Article 106 TUB), a financial company

(code K in the classification ATECO) and in any case, is not part of a banking group subject to the supervision of Bank of Italy;

- the issuer is not a vehicle set up ad hoc with the sole objective of financing an acquisition or a securitization or other financial transaction;
- the issue is characterized by a value of less than € 50 million (considered cumulative for different issues occurring in the same close period) and is not offered in option primarily to company shareholders;
- the security does not provide for complex conversion mechanisms into shares and is not listed on a regulated stock market, open to retail investors.

2.3 Italian Minibond Market

2.3.1 Minibond issuances' characteristics

The data belonging to the "6° Report Italiano sui Minibond" shown a steady growth of the Italian Minibond industry in the period between November 2012 and December 2019 as represented in Figures 11 and 12. During this time window, the sample exhibited by the report counts 801 issues with a total face value exceeding € 5.5 billion (€ 1.97 billion considering only the emissions made by SME).

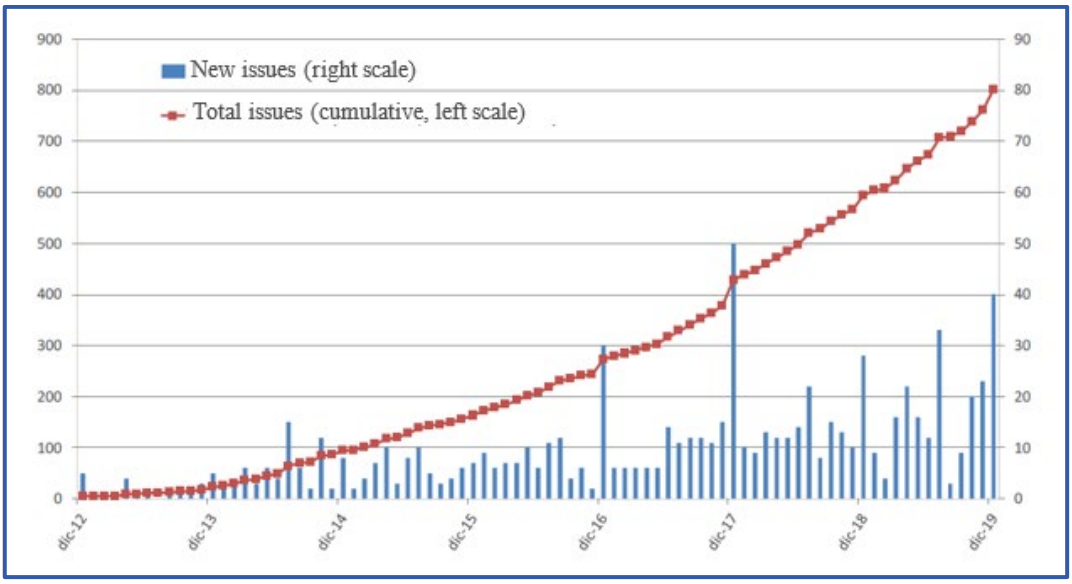

Figure 11-Time flow of minibond issues from 2012 to 2019

Source: 6° Report Italiano sui minibond

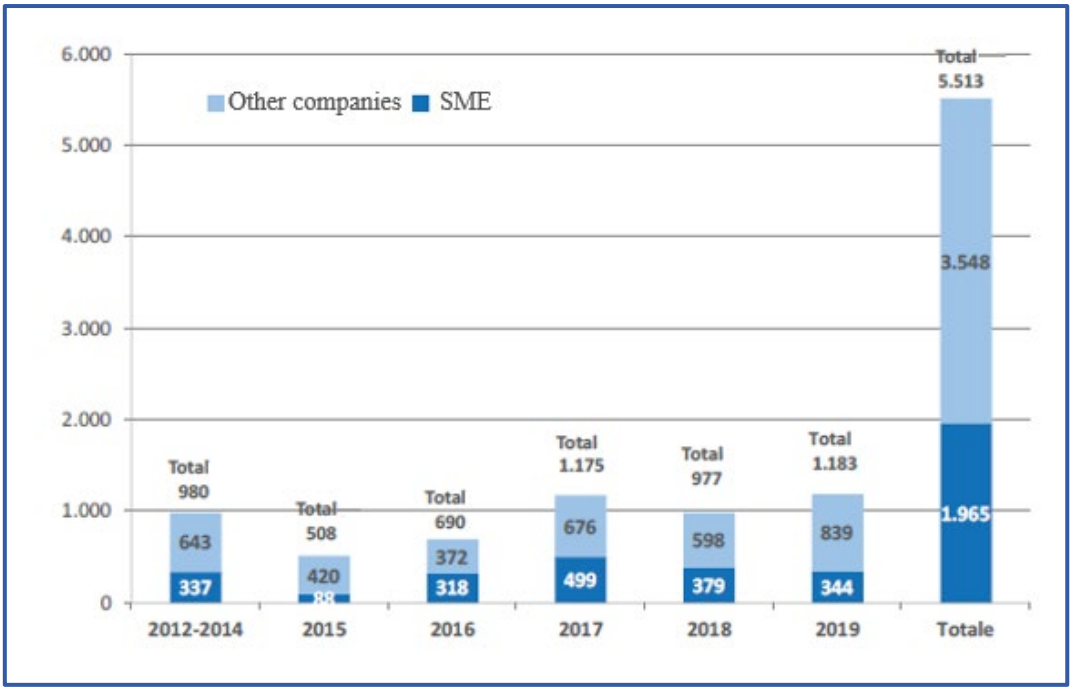

Figure 12-Time flow of minibond face value

Source: 6° Report Italiano sui minibond

Considering 2019 alone it contributed € 1.18 billion from 207 issues bringing the minibond market achieving two historical records:

+ 21.1% in the capital collection and + 24.7% in the number of issues compared to 2018, but the gathering made by SMEs has dropped (€ 344 million compared to € 379 million in 2018).

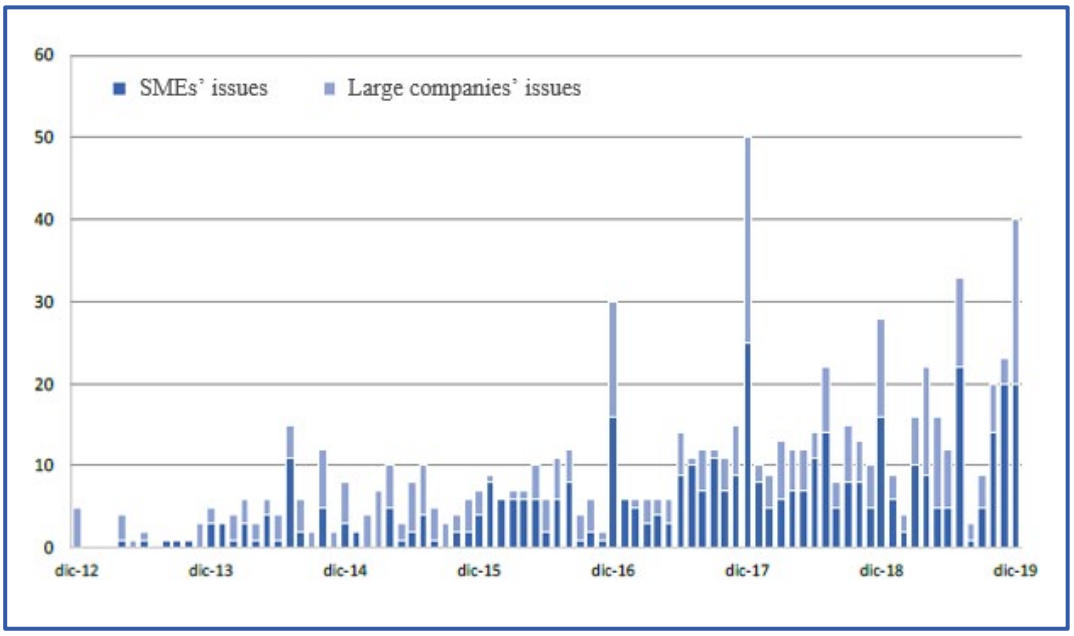

Figure 13-Time flow of minibond issues comparing SMEs and large companies

Source: 6° Report Italiano sui minibond

Focusing on the issuers' size, Figure 13 highlights differences in emissions between small medium enterprises and large companies. Specifically, 451 (56.3%) are total issues by SMEs against 350 by large companies (equal to 43.7%). In 2019 the fraction of emissions conducted by SMEs was 57.5% against 60.2% in 2018.

In Figure 14 the average value for a semester of minibond shows that in the last six months of 2019 the average issue size reached the record low (€ 4,66 million). Looking at the percentages, 63% of issues are below the € 5 million threshold (considering the total sample) and in 2019 percentage rises to nearly 68%.

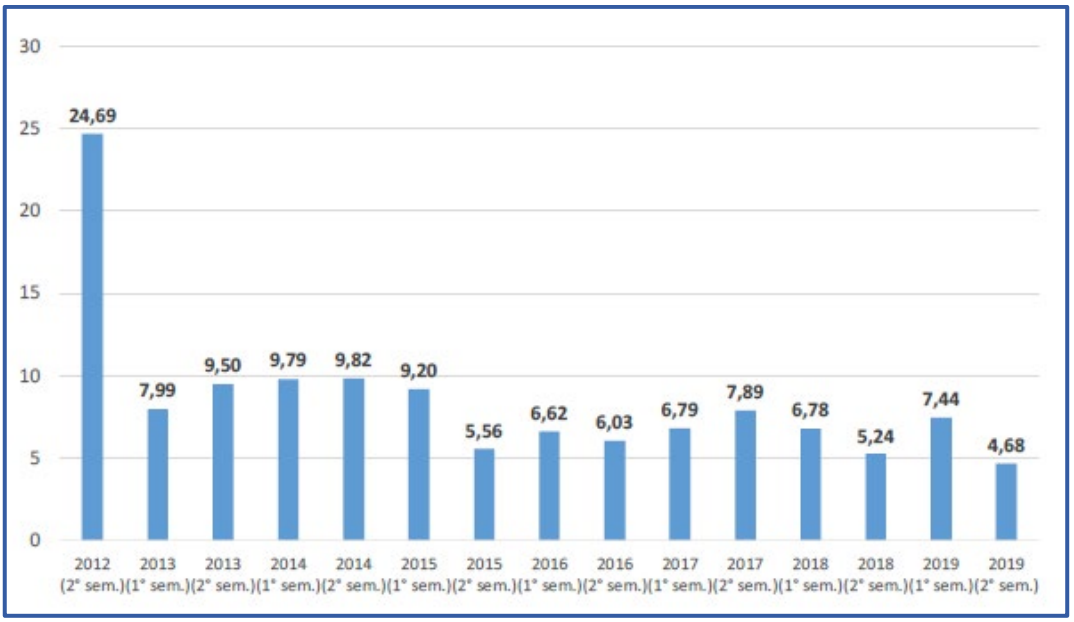

Figure 14-Average minibond size by semester (values in € million)

Source: 6° Report Italiano sui minibond

On one hand, the hypothesis backed by Osservatorio minibond is that this instrument is considered a first step to approach the minibond market since the tendency to place fewer amounts is in conflict with the increase of the issuers' size. On the other hand, the explanation could be allocated to the maturity of the market. Indeed, the maturation of the sector could bring the cutting of fixed placement cost boosting the arrangement of securities with smaller value.

Other statistical notes concern issues and issuers' listing on a Stock Market. Starting from the first, 427 of 801 issues were not listed (equal to 53%) while 302 (38%) were listed by Borsa Italiana on the ExtraMOT PRO segment or on ExtraMOTPRO from while 72 (9%) were listed on other foreign markets (usually Austria, Luxembourg, Ireland). Considering issues conducted by listed companies, they are 76 placements (9.5% of

the sample) of which 16 in 2019, while the majority of the minibonds were issued by unlisted companies (725 cases, equal to 90.5%).

Minibond's maturity is another peculiar characteristic that ranges among few months and several years. Large companies prefer long-term debts as shown in Figure 15. Especially, the majority of large companies' issuance (to be precise 73%) have a maturity higher than 5 years: 92 issuances between 5 and 6 years, 66 between 6 and 7 years and 98 exceed 7 years. In contrast, SMEs' issuances are more equally distributed among long and short term, indeed even if the highest number of their issuances has a maturity of 5-6 years, maturity exceeding 7 years or shorter than 1 year counted respectively 87 and 86 issues. Therefore, maturity's mean for SMEs is lowered by about 1 year compared to those for large companies which is 5.6 years.

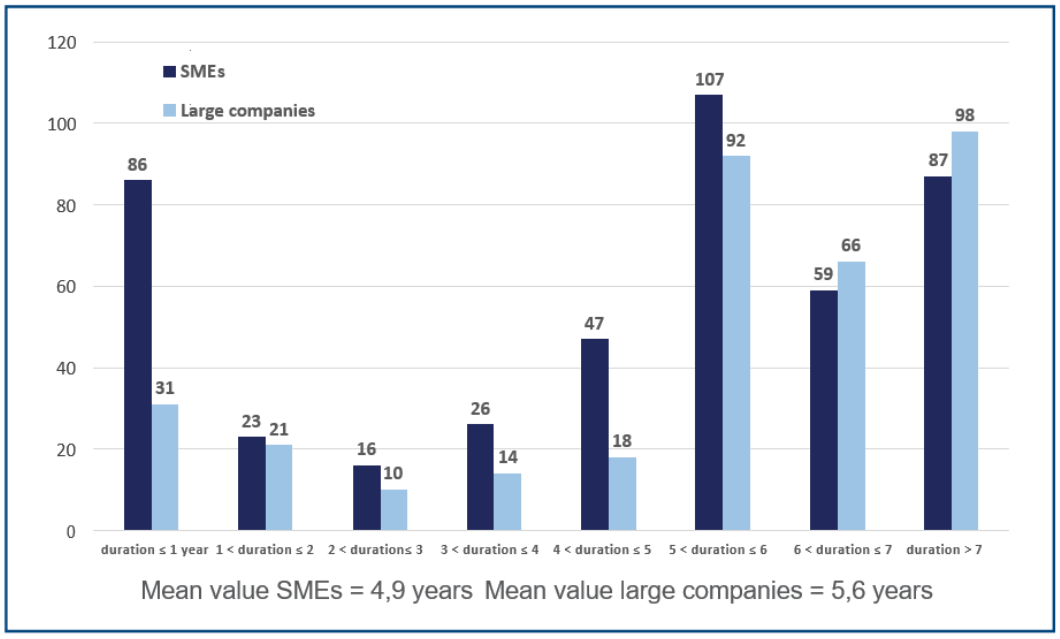

Figure 15-Minibonds' maturity

Source: 6° Report Italiano sui minibond

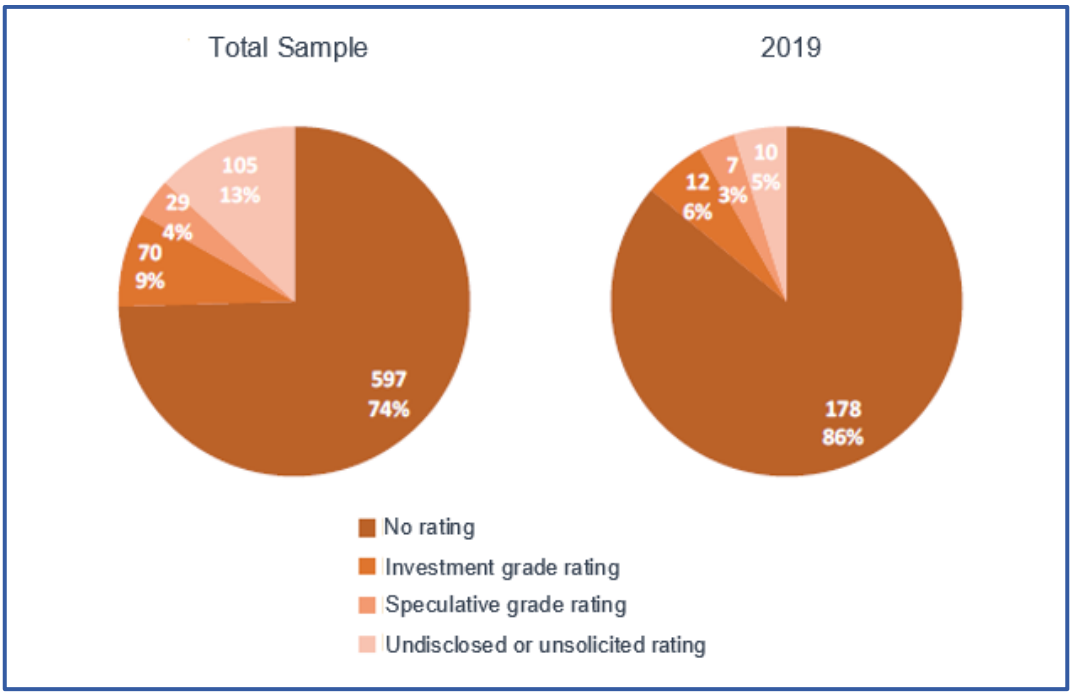

Figure 16-Issuances' rating presence

Source: 6° Report Italiano sui minibond

The main information available on market for issuer's insolvency risk is the rating. It is an assessment of the credit risk issued by an authorized agency rating. These institutions, through the evaluation of patrimonial soundness, the degree of indebtedness, the liquidity situation and the ability to generate cash, investigate the ability of issuers to comply with the commitments regarding remuneration and capital repayment. Ratings are not mandatory, indeed at the time of issue, 74% of the total sample are not assessed by rating agencies. This data increased for 2019 issuances reaching 86%. Credit risk evaluation can be asked by the firm itself (solicited) or by investors (unsolicited), usually, in the first case the rating is disclosed to the public and in the second case, it is kept confidential. Figure 16 exhibits that 13% of total issuances presents an undisclosed or unsolicited rating and the same percentage presents disclosed ratings, among which 9% shows an investment grade rating

(i.e. equal at least to BBB- in Standard & Poor's rating scale) and the remaining 4% a speculative-grade rating. Typically, public rating concerns large quoted companies' issuances or long-term issuances and less frequently it concerns SMEs' and short-term issuances. Two possible explanations could be, on one hand, that possible SMEs' benefits coming from rating are lower than its cost, and on other hand, that investors interesting in SMEs' emission evaluate by themselves SMEs' financial situation.

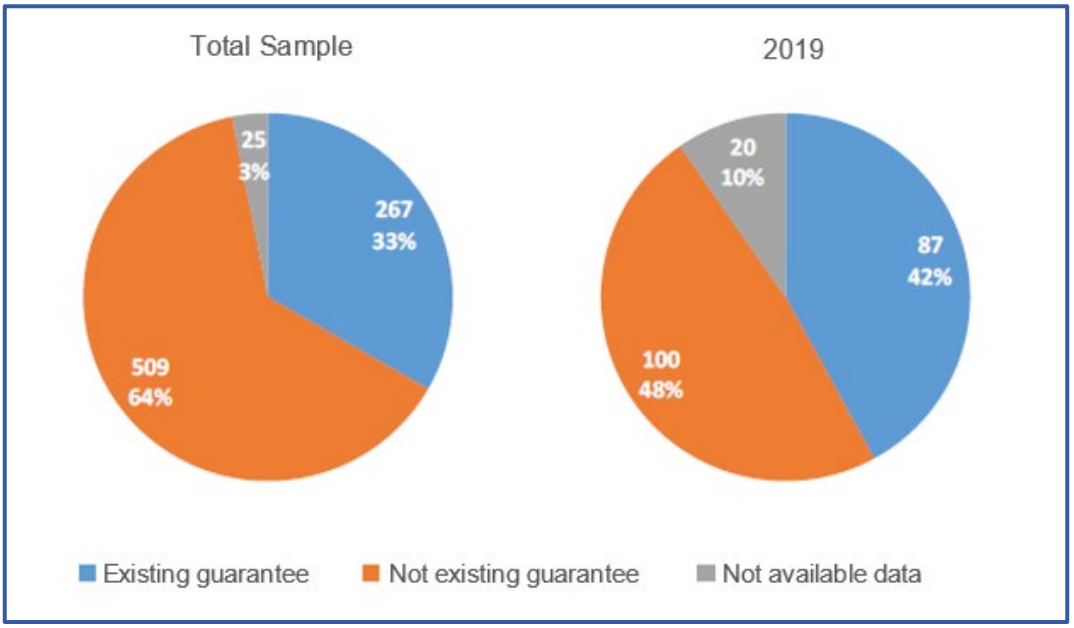

Figure 17-Issuances' guarantee presence

Source: 6° Report Italiano sui minibond

Lastly, we focus attention on the guarantee allowing investors to be protected against issuers' insolvency. Generally, these guarantees concern mortgages on assets, pledges on issuer's shares, sureties provided by third parties and privileges on warehouse or stock. Minibonds which include collaterals are called secured, the others instead unsecured. Total or partial collaterals are therefore able to lower the issuers' cost of capital. Looking at statistics, in the sample composed of

801 emissions, the guarantee's presence appears in 267 cases, equal to 33%. The increasing involvement of National and European public actors in the structuring of minibonds brought an increased guarantee's presence in 2019. Guarantees are less frequent for SMEs' rather than large companies' issuances for the same reasons explained for ratings.

2.3.2 Issuers' characteristics

According to the definition adopted by Osservatorio Minibond, minibond's issuers are 536 up to December 2019, of these 314 (58.6%) are SMEs. During 2019 Italian companies placing the instrument were 183 (of which 129 were facing on the market for the first time), record historical for both values since the launch of the industry in 2012.

2019 sample is made up of 127 joint-stock companies S.p.A. (equal to 69.4% of the total), 52 limited liability companies S.r.l. (28.4% of the total) and 4 cooperatives (equal to 2.2%). As regards the total sample, 74.8% are joint-stock companies, 23.1% are limited liability companies, 1.9% are cooperative companies, 0.2% are foreign vehicles of permanent organizations in Italy.

As preliminary analysis, it is possible to see the composition of the issuer's distribution based on their ATECO group. Figure 18 highlights that 46% of firms belong to the C – manufacturing activity class, following from the 'Professional activities' group (code M) with 43 companies and 'Wholesale and Retail Trade' (code G).

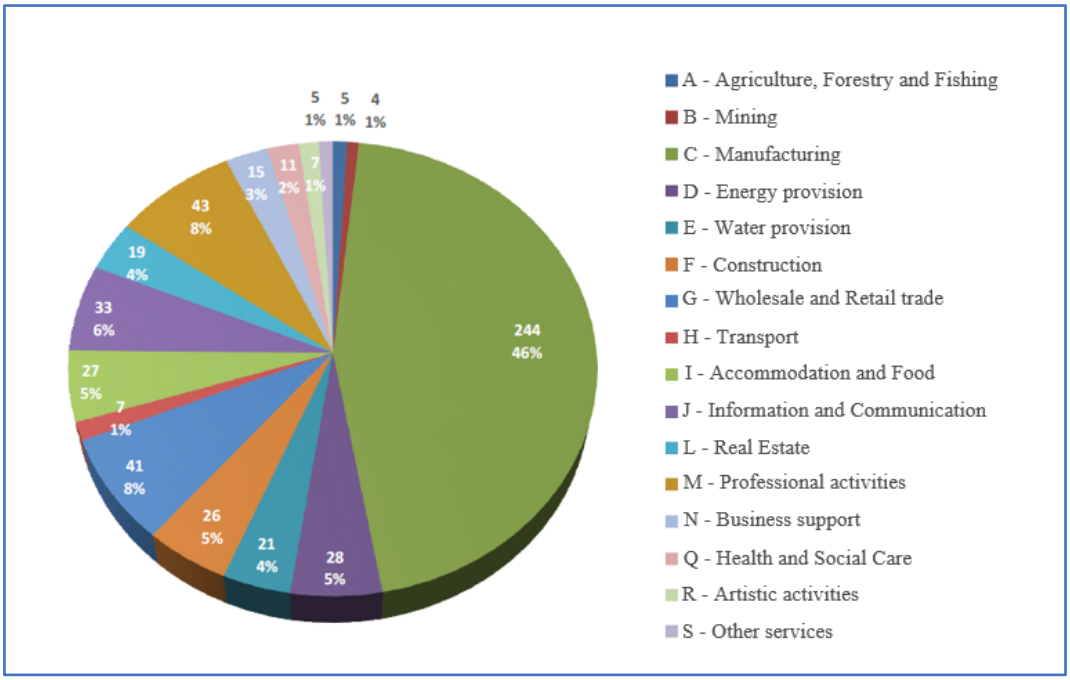

Figure 18-Number of issuances according to ATECO categorization

Source: 6° Report Italiano sui minibond

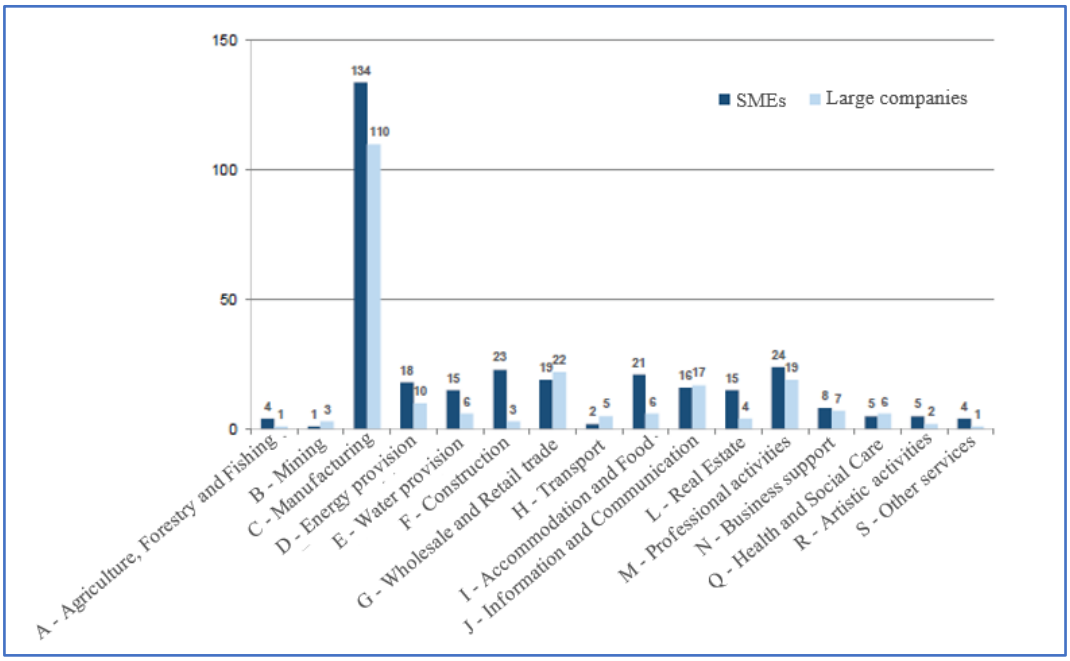

Figure 19-Number of issuers according to size and ATECO categorization

Source: 6° Report Italiano sui minibond

Going to analyse the distinction between SMEs and large enterprises (see Figure 19), there are some sector specificities. Issuing SMEs are relatively more represented in these sectors: construction, accommodation and catering services and real estate activities. The large companies, on the other hand, prevail in mining, trade, transport, information services and health.

Turning now to examine the geographical location of 536 issuers, the majority of them are located in the Northern regions (72.6%) where they are concentrated in Lombardia and Veneto. In the second position we find firms sited in central Italy (15.9%) followed by southern ones (11.4%).

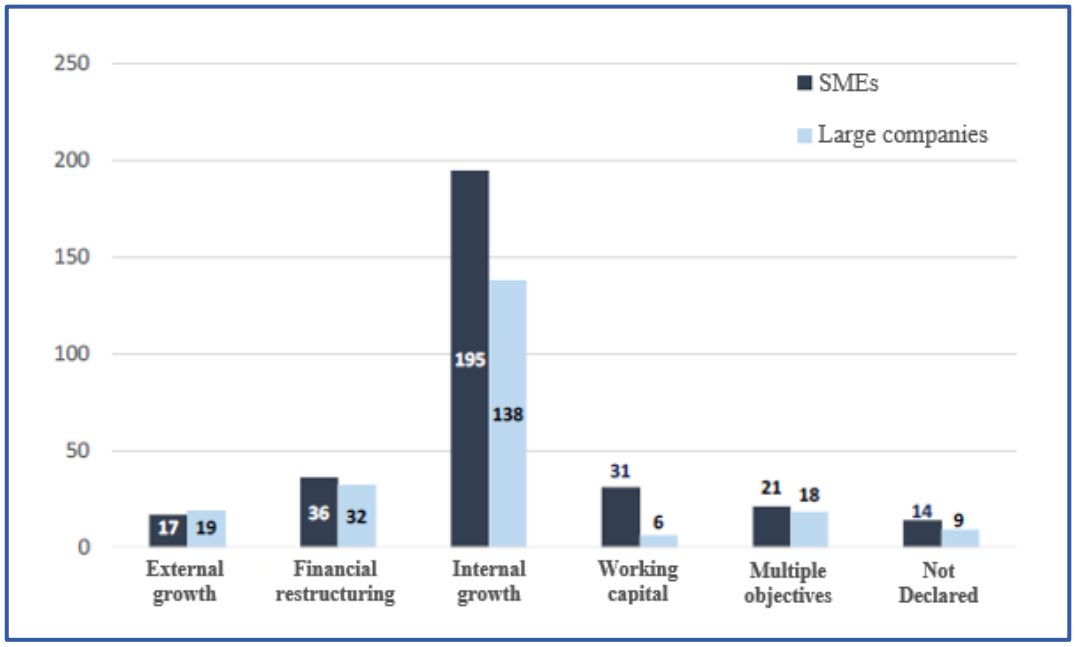

Figure 20-Stated purposes of the issuances

Source: 6° Report Italiano sui minibond

It is also interesting to understand what are the reasons that push companies to issue these alternative financial instruments. Figure 20 shows the purposes stated by SMEs and large companies. Precisely, for both firm sizes the larger part of issuers declares an internal growth as

final scope (62.1%) followed by the goal of restructuring liabilities (12.7%), to raise capital from working capital (6.9%) and to finance future external acquisitions (6.7%).

The literature proved that going public is a moment of great discontinuity for the companies, deeply different *governance* systems are indeed implemented. This does not happen only for the IPO, which itself requires a change in the ownership structure, but also in the condition of quoted bond debt.

A joint research, made by the School of Management of Politecnico di Milano and the Italian stock exchange, investigated the changes made into governance by the issuer after the quotation of their minibond on ExtraMOT or ExtraMOT[3]. The analysis has been made among 90 companies comparing their ownership structure before and after the issue. Results show that minimum change happened in the ownership structure. The majority of companies (59 %) are still under the direct or indirect control of a family or an individual. This confirms that issuing a bond is a way to access capital markets keeping stability in the ownership structure.

Succession among different generations happened prior to the quotation of the issue for 16% of the issuers. Consequently, a correlation can be imagined existing between succession in the management and the decision to raise capital through alterative from the bank channel.

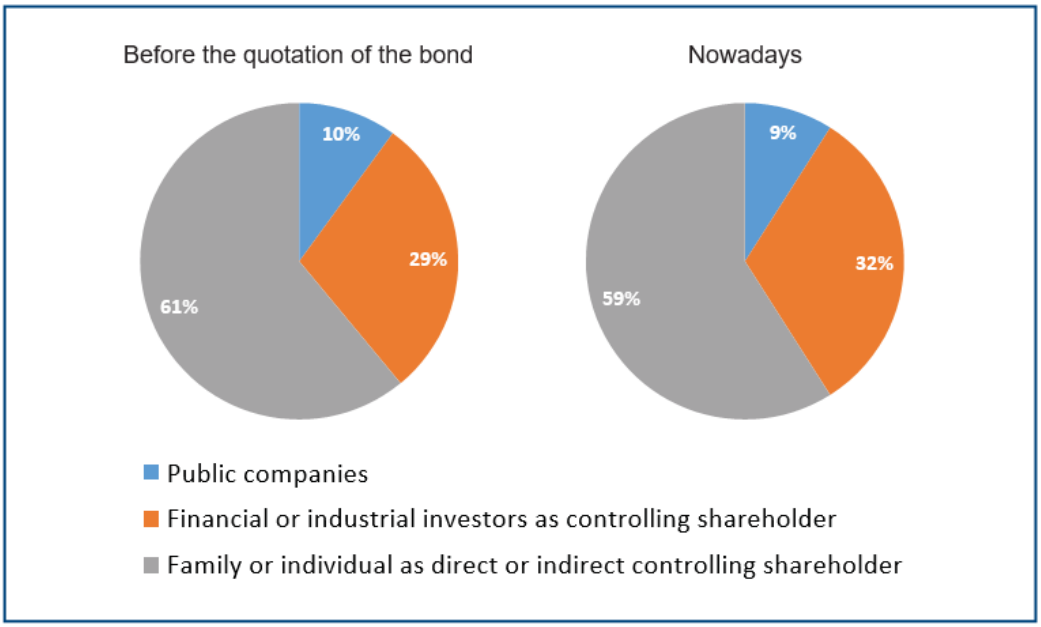

Figure 21-Ownership structure comparison previous and post bond quotation on ExtraMOT PRO

Source: 6° Report Italiano sui minibond

Evidence that can be found from that study is that quoting a bond on ExtraMOT PRO leads companies to close the "gap" with governance structures typical of companies who open risk capital to institutional investors. After the quotation the apex of the company goes for a higher managerialization; actually chairman of the board of directors is an external manager in 19% and an internal manager in 10% of the companies.

Other evidences linked to the quotation on ExtraMOT PRO are linked to the board. Boards are indeed enlarged (mean number of components increased), risk management procedures were developed both for finance and operations, and the presence of experts in different fields from finance. This last point deserves attention, indeed, experts were linked to strategic competitive factors for SMEs like internationalization and technology.

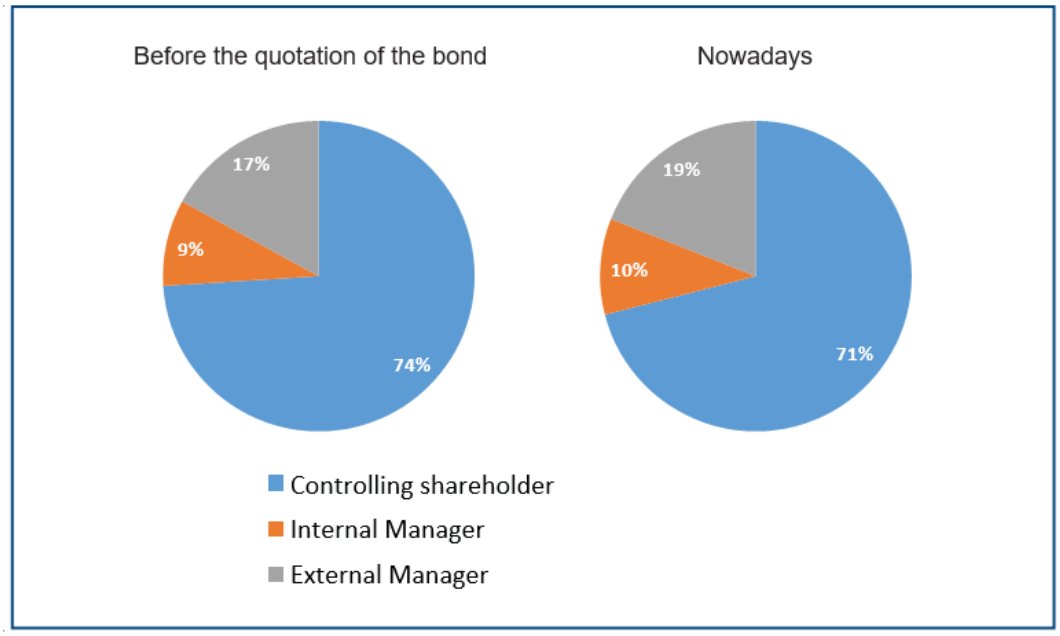

Figure 22-BoD chairman extraction comparison previous and post bond quotation on ExtraMOT PRO

Source: 6° Report Italiano sui minibond

Finally, to evaluate the financial impact of the minibond issue and its future sustainability on the issuers some financial data were studied. Results show that 39 SMEs (among which 10 issued in 2018) had a negative EBITDA at the issue; 18 SMEs had a ratio between future financial expenses and EBITDA over 50% while for the majority of them (148) it was under 50%. This prospect makes legit ask if the issue will be sustainable or not in the future.

Table 2 resumes the main accounting index of the issuer SMEs, values are both mean and median, but the mean is very influenced by each case, so the median is more representative. Results are divided for issue year where year 0 is the year of the issue of minibond.

Profitability indexes, *return on assets* (ROA) and *return on equity* (ROE), show a little but general improvement after the issue, anyway no trend can be found so these results are mainly linked to the macro-economic

cycle. Operative margin has been studied with the ratio between EBITDA and sales, median suggests a slight increase of marginality before the issue.

Looking instead at liquidity index (*quick* ratio) data suggest that issuers are not in financial distress at the moment of emission, this is consistent with the alternative and complementary role of minibond towards other sources for liquidity to "test" in order to acquire expertise on capital markets.

The financial structure of the issuers helps in understanding insolvency risk and patrimonial strength; *leverage,* i.e. ratio between financial debts and equity, was taken into consideration for this purpose. Values are stable or slightly decreasing toward the issue, this confirms that the minibond does not add 'weight' to already stressful situations but instead replaces, at least partially, pre-existing debt.

Issuers 2013-2016	Year -3	Year -2	Year -1	Year 0	Year 1
ROE	3,9% (2,8%)	9,9% (4,3%)	5,7% (4,0%)	1,7% (3,7%)	-0,9% (3,8%)
ROA	0,1% (2,2%)	2,9% (2,8%)	1,7% (3,6%)	1,7% (3,0%)	2,2% (2,4%)
EBITDA / Sales	-3,7% (10,2%)	10,4% (9,8%)	2,2% (11,0%)	14,8% (11,2%)	13,2% (10,0%)
Quick ratio	0,94 (0,72)	1,03 (0,80)	0,88 (0,77)	1,23 (0,98)	1,34 (0,94)
Leverage	2,72 (1,38)	1,95 (1,38)	1,99 (1,36)	1,67 (0,92)	3,58 (0,74)
Issuers 2017	Year -3	Year -2	Year -1	Year 0	Year 1
ROE	5,3% (5,9%)	4,1% (7,2%)	9,1% (8,1%)	10,3% (8,5%)	8,6% (11,0%)
ROA	3,5% (3,6%)	4,5% (4,5%)	4,8% (4,4%)	-6,6% (3,9%)	3,3% (4,4%)
EBITDA / Sales	8,8% (8,1%)	11,9% (11,0%)	16,0% (10,8%)	19,2% (12,2%)	-17,1% (10,4%)
Quick ratio	0,95 (0,80)	0,91 (0,76)	1,11 (0,74)	1,33 (1,05)	1,15 (0,96)
Leverage	1,57 (1,16)	1,75 (1,56)	1,85 (1,71)	1,63 (1,23)	1.60 (0,81)
Issuers 2018	Year -3	Year -2	Year -1	Year 0	Year 1
ROE	9,8% (5,0%)	9,4% (7,6%)	12,3% (9,3%)	9,6% (6,1%)	-
ROA	2,1% (3,3%)	2,9% (3,5%)	5,0% (3,8%)	2,0% (3,2%)	-
EBITDA / Sales	8,0% (7,1%)	12,0% (7,3%)	-1,2% (7,8%)	12,1% (6,7%)	-
Quick ratio	0,99 (0,75)	0,87 (0,77)	1,06 (0,91)	0,97 (0,78)	-
Leverage	2,11 (1,66)	1,97 (1,37)	1,66 (1,07)	1,70 (1,14)	-
Issuers 2019	Year -3	Year -2	Year -1	Year 0	Year 1
ROE	5,1% (5,6%)	9,5% (6,4%)	7,7% (6,7%)	-	-
ROA	2,7% (3,0%)	3,1% (2,8%)	3,0% (2,7%)	-	-
EBITDA / Sales	-3,5% (8,7%)	0,6% (9,7%)	4,0% (8,7%)	-	-
Quick ratio	1,05 (0,74)	0,98 (0,78)	0,81 (0,73)	-	-
Leverage	1,54 (1,44)	2,16 (1,67)	2,01 (1,39)	-	-
Whole sample	Year -3	Year -2	Year -1	Year 0	Year 1
ROE	5,7% (4,7%)	8,6% (6,0%)	8,2% (6,0%)	-	-
ROA	1,8% (3,0%)	3,3% (3,4%)	3,3% (3,5%)	-	-
EBITDA / Sales	0,9% (8,1%)	8,3% (9,5%)	4,7% (9,3%)	-	-
Quick ratio	0,98 (0,74)	0,96 (0,78)	0,94 (0,77)	-	-
Leverage	2,08 (1,40)	3,04 (1,50)	2,95 (1,36)	-	-

Table 2-Financials of the issuers before and after the issue

Source: AIDA-BVD

Chapter III

Empirical Research

3.1 Research questions

SMEs have a peculiar approach to strategy, very different from large companies. The scope of this work is to analyse the mergers and acquisitions (M&A) strategies of the minibond issuer SMEs. More in dept, minibond issues are sometimes done with the declared scope of financing external growth but a minibond issue can be a discontinuity point in the strategy of the SME issuer. Therefore, this work looks at analysing the M&A of the issuer in order to understand if a relationship between minibond and M&A activity exists beyond the scope of the issue.

Before going deeper into the issuers' M&A activity, the priority is to confirm a relationship between minibond issue and M&A activity, here raises the first research question of this work:

- *Do minibond issuers perform more acquisitions than their comparables?* (this will be referred to as research question 1.a)
- *And in particular minibond issuers perform more acquisition than their comparables which have raised comparable capital?* (this will be referred to as research question 1.b)

Then deepening into issuers' M&A activity, this work aims to answer why some issuers made more acquisitions than the others and which factors

moderate their appetite for acquisitions. Here raises our second research question:

- *Which are the factors that are correlated with issuers' M&A activity?*

To answer these two questions properly, two different samples were needed, and two different statistical approaches were needed. The first question is an observational experiment to test the correlation between treatment, issue of a minibond, and an effect, presence of M&A activity. To perform that test a propensity score matching technique was required to create the proper sample and then a non-parametric test was performed. The second question instead is based on several regressions aimed to find factors with a statistically significant correlation. This regression did not require a matching since there was no treatment, all the SMEs in the sample are issuers.

3.2 Sample overview

This work is based on elaborations and analyses made on more than one sample. Anyway, the database of the "Osservatorio Minibond" of Politecnico of Milano, reporting all the issues of Minibonds in Italy since the "Decreto Sviluppo" of 2012, had a fundamental role due to the fact that the other database we have created for this work were linked to it. We have mainly created two samples, one for each research question.

The database of the "Osservatorio Minibond" has been uploaded from us in the past year gaining data from media, internal operators of the market and the documents available on Telemaco-Infocamere from every issuer. This database traces every issue of bonds under 50 € million in Italy. This

database has 72 columns meaning 72 information for each issue; the majority of them were manually inserted while a minority was calculated by the database itself. These information are both on the issue itself and on the issuer. The main data collected on the issue are: the amount, the date of the issue and the maturity, the interest rate and the kind of interest rate (bullet or amortizing), ISIN code, listing on ExtraMOT3, call or put options availability, price at the issue, arranger, advisor and subscribers. The main data collected on the issuer company are instead: name, VAT number, ATECO, region where it comes from, listed or not, financial data of the year previous to the issue, number of employee and rating. We extracted from this database the SMEs who had issued in Italy since 2012. Starting from this extraction we were able to create both the samples for research questions one and two.

3.3 Research question 1

As described before research question 1 was approached with a pre-processing of the sample made by PSM (propensity score matching) and then a Chi-square test. In the following paragraphs, all the steps made through the results are explained and the results are exposed.

3.3.1 Sample for research question 1.a

The first research question of this work required a sample of companies who have issued a Minibond in their life and companies who have never issued one. In order to create a sample without distortions, this has been created using the propensity score matching technique. Before being able to apply that technique, we had to create some subsamples. First of all, we had to identify the variables of the matching. We explored the

literature on M&A looking for drivers leading companies to make acquisitions. We summed the results of this research (Petrova, et al., 2013) with the result of the M&A literature review of the chapter I to obtain 3 characteristics of firms synthesized by 8 financials.

In order to take into consideration firm size, we used variables:

- Total Assets at the end of the year previous to the issue
- Employees of the year previous to the issue
- Total Revenues of the year previous to the issue
- Equity at the end of the year previous to the issue

In order to take into consideration profitability as well:

- EBITDA/Sales for the year previous to the issue
- To look at the ability of the companies of acquiring some others we took into consideration:
- Cash in the balance sheet at the end of the year previous to the issue
- DEBT/Equity Ratio of the year previous to the issue
- Current Ratio for the year previous to the issue

Subsequently, in order to make the comparison between treated and not treated companies we needed to select a proxy for acquisitions made by the SMEs. There are no public data on SMEs M&A activity, therefore we assumed that all the holdings in the books of the SMEs are the result of an acquisition or a merger, this gave us the possibility to proxy M&A activity.

We ended up with this procedure: we selected all the companies in which the SMEs are participating and then we took the date of the first appearance of these participations in the books as a proxy for the acquisition date. Possible distance between the real date of acquisition and the appearance on the books can occur but with a constant distribution during the year, therefore it will not affect our results.

Considering acquisitions that appear in books helped us to avoid taking into consideration acquisitions where the acquirer has no effective power over the acquired. AIDA database was not precise enough to set a precise threshold on percentage acquired. For the same reason, our selection criteria excluded the companies which are *consorzio*. In Italy, this kind of legal entity is commonly present to achieve mutual goals among companies. For example, to enter a call for tenders of public administration. This does not represent an acquisition of power into another SME, but mainly an agreement with another one.

The treatment in our case is represented by the issue of minibonds. As we have free access to the database of "Osservatorio Minibond", described above, containing all the emissions and the emitting companies from 2012. The data concerning the emissions of our interest have been extracted from this database. Such interest is aligned with the one of the observatories, therefore we worked taking into consideration just emission under 50 million € made by SMEs that are not working in the financial sector (ATECO K). Moreover, the observatory does not track the minibond issued as convertible, indeed in the majority of these situations, bonds are completely bought by shareholders. For this reason, such a process becomes similar to an increase in capital.

We took the first emission of the history of the company as a reference. The first emission is indeed the moment in which the company enters the debt market, and thus the moment in which our hypothesis starts to exist. A further emission will not be considered in this study because the conditions we are looking at will never change again.

By filtering only the first emissions and applying the abovementioned conditions, we obtained information on:

- Business name
- VAT code
- Headquarter region
- Employees of the year before the issue
- Equity at the end of the year before the issue

At this point, we have created a sample of treated companies' basic information. As we are looking at relative years with respect to the emission 0, +1 and +2 we filtered the companies which have been issued till 2018, excluding issues of 2019 and 2020.

We needed much detailed information on our treated and control companies, so we needed to extract them from AIDA, an online digital database where financial data from Italian companies are available. AIDA gives the possibility of extracting in *csv* or *xls* format columns of data you decide in the response to the names and VAT codes given as input. We obtained the data needed in this way for all the treated companies. Obtaining in this way a sample for treated companies for each year:

- For 2014 33 companies treated
- For 2015 20 companies treated

- For 2016 54 companies treated
- For 2017 63 companies treated
- For 2018 62 companies treated

In total we have 232 companies treated. Note that we excluded the data from 2013, the first year in which minibonds were issuable in Italy. Indeed, at that time, no issuance occurred since minibonds were still unknown instruments for the SMEs.

To be performed, propensity score matching requires control companies' data for the year previous to the issue of relative treated company. To gain data efficiently from a remarkable number of companies, we exploited AIDA again. We looked at the boundaries of the Italian SMEs currently active which did not work in the financial sector (ATECO K). AIDA returned us more than 600,000 results and clearly that control was too big. To avoid any deviation of the sample, we decided to randomly choose 10,000 of them for each year of issue and extract data for them as comma-separated values (*csv*) due to the export constraints from AIDA in other formats. We ended with 5 independent samples resulting in a total of 50,000 potential control companies.

3.3.1.1 Pre-processing

We recollected in the same sample the data from the control companies and the treated ones for each year by using Excel. At that moment we also added the dummy variable TREAT. This variable is equal to 1 for the companies that have made their first issue in that year and 0 for the others. Companies for which this variable is 1 are called the treated companies, the others the control companies.

We also deleted the empty spaces resulted from replacing them with 'n.a.'. However, the program in R language we are using for the propensity score matching, and in particular the matching function would give probability of match found equal to 1 or 0 if some of the treated showed one 'n.a.' column between the matching properties. For example, if we tried to match a treated company with 'n.a.' in the column of employee the function gave as result any random company for the number of employees. The function recognized all the control companies similar to the treated one independently from the number of employees. This was clearly not consistent with our research.

Consequently, we deleted the full row of the treated company with some 'n.a.' among the data, this was the best way to avoid introducing any bias in the results. We obtained the number of companies showed above deleting the raw if just one of the data between revenues and employee was equal to 'n.a.'. The total number of companies deleting all the rows with 'n.a.' went from 232 to 197.

Thus, we have both treated and control companies for different years, propensity score matching technique had to be applied once for every single year and only later results were put together in the same sample. The common final sample was based on relative years as explained above.

3.3.1.2 Propensity score matching

The comparable companies obtained from the AIDA database are completely random SMEs, testing our hypothesis needed to have comparable companies with similar characteristics. These characteristics

are the ones mentioned above in this chapter. The technique suggested by the literature for these cases in point is propensity score matching (Ho, et al., 2007), this technique especially helps researchers to evaluate and even define statistical properties like unbiasedness or mean squared error when no unique model or estimator even exists. Simply comparing treated units with comparable ones may provide biased results, factors may predict treatment instead of treatment effect.

The main benefit of randomized experiments for estimating causal effect is that the treated and control groups are guaranteed to be only randomly different one from another on all background covariates, both observed and unobserved. Instead, observational (nonrandomized) tests, like the one of this work, require matching methods to replicate this as much as possible for observed covariates (Stuart, 2010). This can be often achieved by choosing well-matched samples of the starting treated and control groups, having the desired effect of reducing bias due to the covariates.

Broadly any method that aims to equate (or "balance") the distribution of covariates in the treated and control groups can be defined as "matching". This may involve 1:1 matching, weighting, or subclassification. The use of matching methods is in the broader context the careful design of non-experimental studies (Rosenbaum, 1999, 2002; Rubin, 2007). As reported by Stuart (2010), design for non-experimental studies has to be even more careful than for an experimental study. Indeed, non-experimental studies are mainly composed of two phases: design and outcome analysis. While matching is generally used to estimate causal effects, it is also sometimes used for non-causal

questions, for example, to investigate racial disparities (Schneider et al., 2004).

Matching methods are commonly used in two types of settings. The first one is when all the data of outcomes values are not available yet and matching is used to choose the subjects for the follow-up. The second one, like in the case of this work, is when all the outcome data are already available, consequently, the goal of matching is to reduce bias in the estimation of the treatment effect. In matching a common feature is that outcome values are not used for matching, e.g. number of acquisitions was not a matching variable for the purpose of this work.

Matching methods are divided into two main steps, "design" and "analysis", the first takes into account the first three steps, the latter takes into account the final one:

1. Defining "closeness": the distance measure used to determine whether an individual is a good match for another,
2. Implementing a matching method, given that measure of closeness,
3. Assessing the quality of the resulting matched samples, and perhaps iterating with Steps (1) and (2) until well-matched samples result, and
4. Analysis of the outcome and estimation of the treatment effect, given the matching done in Step (3) (Stuart, 2010)

As suggested form Ho, Imai, King and Stuart (2007) we employed a package for R called MatchIT to perform propensity score matching and to obtain from it the names of the matched companies. MatchIT package

was developed internally at Harvard and is commonly used by many researchers. After having processed and obtained data from the package, we were able to use every software or package to perform the other analyses.

MatchIT is designed for causal inference with a dichotomous treatment variable and a set of pretreatment control variables. Any number or type of dependent variables can be used. Overview of the statistics involved in the package and so on propensity score matching follows.

We adopt the same notation as in Ho, Imai, King, and Stuart (2007). Unless otherwise noted, let i index the n units in the data set, n_1 denotes the number of treated units, n_0 denote the number of control units (such that $n = n_0 + n_1$), and x_i indicate a vector of pretreatment (or control) variables for unit i. Let $t_i = 1$ when unit i is assigned treatment, and $t_i = 0$ when unit i is assigned control. (The labels "treatment" and "control" and values 1 and 0 respectively are arbitrary and can be switched for convenience) Denote $y_i(1)$ as the potential outcome of unit i under treatment – the value the outcome variable would take if t_i were equal to 1, whether or not t_i, in fact, is 0 or 1 – and $y_i(0)$ the potential outcome of unit i under control – the value the outcome variable would take if t_i were equal to 0, regardless of its value in fact. The variables $y_i(1)$ and $y_i(0)$ are jointly unobservable, and for each i, we observe one $y_i = t_i\, y_i(1) + (1 - t_i)\, y_i(0)$, and not the other. Also denote a fixed vector of exogenous, pretreatment measured confounders as x_i. These variables are defined in the hope or under the assumption that conditioning on them appropriately will make inferences ignorable. Measures of balance should be computed with respect to all of x, even if some methods of

matching only use some components. If t_i and x_i were independent, we would not need to control for x_i, and any parametric analysis would effectively reduce to a difference in means of y for the treated and control groups. The goal of matching is to preprocess the data prior to the parametric analysis so that the actual relationship between t_i and x_i is eliminated or reduced without introducing bias and or increasing inefficiency too much. When matching we select, duplicate, or selectively drop observations from our data, and we do so without inducing bias as long as we use a rule that is a function only of t_i and x_i and does not depend on the outcome variable y_i(Ho, et al., 2007).

We used a matching algorithm called Nearest Neighbor Matching which is different from the simplest matching algorithm which is the Exact Matching. Indeed, the latter matches each treated with a control unit that has the exact same values in the variables matched. But this technique can lead to biased estimates of the ATT if many treated units have to be discarded because no matches are available. In our kind of data is quite easy to find two companies with, for example, the same number of employees but it is hard to find many companies with the same exact value for financials. For this reason, we went for the Nearest Neighbor Matching, this technique matches the controls which have the shorter distance measure, in our case logit distance. Matches are chosen for each treated unit one at a time and each step is done choosing the control unit that is not yet matched but is closest to the treated unit on the distance measure.

As our yearly divided sub-samples of treated were quite small, the matching ratio of $1:5$ has to been implemented. This means that the

algorithm gave us for each treated company 5 similar ones. Matching with higher ratios has the advantage to preserve more information, while without any restrictions, $1{:}\,k$, matching can lead to some poor matches if for example, there are no control individuals with propensity scores similar to a given treated individual.

3.3.1.3 Make sample ready for outcome analysis

The propensity score matching technique provided us 5 different samples, one for each year of issuance. Our work is structured to test the outcome of the treatment effect, the issuance of a minibond, on all the years taken into consideration for this work. To fulfill this goal, the sample for the first research question was created basing matching on relative years. We are exploring the effect of the issue of a minibond in the two years subsequent to the issue on the M&A activity of the issuing SME. Each issuer's year -1 data were used to match comparable companies. Using all the matching variables together would have created a big loss in information. Many 'n.a.' in a lot of treated companies' data would have meant to delete the majority of the rows. For this reason, we ended up using these variables to match, in order to preserve the criteria of matching for dimension, profitability and cash available to make extraordinary expenses:

- Revenues from sales
- Total assets
- EBITDA/sales
- Cash available

The propensity score matching technique provided us five different samples, one for each year 0 from issue. These five samples were merged together in one final sample. That sample contained these data: name of the companies, VAT code of the companies, number of M&A operations made from year 0 to year 2, "Acquisition" variable and "TREAT" variable. Both "Acquisition" and "TREAT" are two dummy variables. The variable "Acquisition" is equal to zero if the company has not made any M&A operation from year 0 to year 2, is equal to one instead when the number of M&A operations between year 0 and 2 are one or more. "TREAT" is equal to one when the company is a minibond issuer and equal to zero when not.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Mergers.and.acquisitions	1182	0	69	,96	2,864
TREAT	1182	0	1	,17	,373
Valid N (listwise)	1182				

Table 3-Research question 1.a sample descriptive statistics

Acquiring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	805	68,1	68,1	68,1
	1,00	377	31,9	31,9	100,0
	Total	1182	100,0	100,0	

Table 4-Research question 1.a sample- Acquisition frequencies

This resulted in a sample with 1182 companies for the first research question and another sample with the same dimension for the second part of the research question one. As stated in Table 1, 17% of the companies were "treated", i.e. issued a minibond, while the mean of the

M&A activities is 0.96 operations per company. The company which made the highest number of M&A operations did a quite impressive number of 69, the second one did only 19. Analyzing the frequency of "Acquisition" dummy variable resulted that 68,1% of the 1182 companies did not make any acquisition, meaning that just 377 made at least one acquisition.

3.3.2 Sample for research question 1.b

For the second part of research question one, we need to test comparable companies who had raised capital in the year previous to the issue of the treated ones of the same year.

Sample for this research question has been created with the exact same method as the one described above for research question 1.a with the exception of different criteria for comparable companies' extraction from AIDA.

At the moment of the extraction from AIDA of the random comparable companies, we added a constraint the companies should respect in order to be considered acceptable as comparable. We added one constraint built on the fulfilment of at least one of these two conditions:

- Long term financial debt with banks increased at least by 500,000€ between year 0 and year 1;
- Total equity value subtracted by net profit retained increased at least by 500,000€ between year 0 and year 1.

With this constraint, we aimed to reach just the companies which have raised capital through banks or capital increase during year 0, exactly when treated companies raised capital through minibonds.

We then did exactly the same operations explained above for question 1.a from that point on. With this methodology a sample of 1182 companies was obtained, 197 treated and the other comparable companies.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Mergers.and.acquisitions	1182	0	44	1,01	2,544
TREAT	1182	0	1	,17	,373
Valid N (listwise)	1182				

Table 5-Research question 1.b sample descriptive statistics

Acquiring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	793	67,1	67,1	67,1
	1	389	32,9	32,9	100,0
	Total	1182	100,0	100,0	

Table 6-Research question 1.b sample- Acquisition frequencies

Looking instead at the descriptive statistics for the sample made for research question 1.b, which are shown in Table 3 and Table 4. The percentage of "treated" companies is obviously the same because the treated companies are the same, i.e. 17%. The mean of M&A operations activities done by companies is a bit higher at 1.01 with respect to the research question 1.a sample 0.96. This is consistent with the fact that this second sample is made up of comparable companies that raised capital in the last year. Indeed, we expected some of these companies to have used this raised capital to go for some M&A activity. Therefore, also the company who made the highest number of acquisitions changed and

now is 44, the second company who made more acquisitions, in this case, made 22.

Among these companies only 389 companies made at least one M&A operation, meaning that 67,1% did any operation. Also, this result is consistent with our expectation of having a higher number of acquisitions among the comparable companies of this sample due to the capital raised.

3.3.3 Chi-square test

This paragraph will briefly cover the theoretical description of the statistical model used for the research question 1 analysis. The model chosen is a non-parametric test, specifically a chi-square test.

As for any statistical test, there are requirements for its appropriate use. More specifically, non-parametric tests are used when data follows any one of the following conditions (McHugh, 2013):

- The level of measurement of all the variables is nominal or ordinal;
- The sample sizes of the study groups are unequal; for the chi-square test, the groups may be of equal size or unequal size whereas some parametric tests require groups of equal or approximately equal size;
- The original data were measured at an interval or ratio level, but violate one of the following assumptions of a parametric test:
    - The distribution of the data was seriously skewed or kurtotic (parametric tests assume an approximately normal distribution of the dependent variable), and thus the

researcher must use a distribution-free statistic rather than a parametric statistic.

- The data violate the assumptions of equal variance or homoscedasticity.
- For any of a number of reasons, the continuous data were collapsed into a small number of categories, and thus the data are no longer interval or ratio.

The main reason bringing to the choice of a non-parametric test is the particular distribution of the variable "acquisition". Indeed, it derives from another variable called "M/A" that cannot be associated with a normal distribution but rather with a Poisson distribution.

Going in deep, the chi-square (χ^2) (Pearson, 1900) test (also known Chi-square test of independence or Pearson Chi-square test) is a statistical inference technique based on the chi-square statistic and on the relative probability distribution. It can be used considering a sample characterized by two or more dichotomous/nominal variables. For two variables, the statistic χ^2 is used to verify the null hypothesis:

H_0: variable 1 depends on variable 2

Against the alternative:

H_1: variable 1 does not depend on variable 2

It is possible to arrange a 2x2 contingency table with the frequencies of occurrence of all combinations of their levels, considering a sample size equal to N.

In the 2x2 contingency table, Pearson's χ^2 statistic is used to test the association between the variables, so the main purpose of this statistic is to verify the differences between observed values ($O_{i,j}$) and values theoretical ($E_{i,j}$), generally called "expected", and to make an inference on the degree of deviation between the two.

		Variable 2	
		0	1
Variable 1	0	$O_{1,1}$	$O_{1,2}$
	1	$O_{2,1}$	$O_{2,2}$

The expected values are defined for any cell such as:

$$E_{i,j} = \frac{r_i c_j}{N} \qquad i,j = 1,2$$

where i and j indicate the row and column index respectively.

This simple calculation formula corresponds to the theoretical probability that two independent events occur simultaneously, in other words, the probability of appearance of one of the two does not affect the probability of the second and vice versa. From the study of probability, this value is given by the product of the probabilities of single events.

The formula to compute Pearson's statistic is described by Pearson K. (1900):

$$\chi^2 = \sum_{i=1}^{2} \sum_{j=1}^{2} \frac{(O_{i,j} - E_{i,j})^2}{E_{i,j}}$$

The chi-square statistic was used to establish up to which point we could accept the frequencies obtained as *analogous*, *similar* or *close* to the

theoretical ones. The higher the value found, the more unlikely it was that this distance was accidental.

At this point, we must carry out a statistical inference procedure.

Once the final value of a chi-square has been calculated, the mechanism of the significance level is applied, referring to the chi-square distribution and the degrees of freedom involved.

The significance value found indicates the probability that a given chi-square value is random. To know if the chi-square value we found is significant, it is necessary to consult the relative tables of the chi-square distribution.

The chi-square distribution tables generally report the critical chi-square values for the various degrees of freedom and for different values α.

	.05	.01	.001
gl=1	3.841	6.635	10.828
2	5.991	9.210	13.816
3	7.815	11.341	16.266
4	9.488	13.277	18.467
5	11.070	15.086	20.515

Table 7-Significative levels related to Chi-Square and degrees of freedom

The general formula is:

$$df = (r-1)(c-1)$$

where r represents the number of rows and c represents the number of columns.

According to the degree of freedom, if χ^2 is higher than the values reported in Table 7 means that the Person's statistic is very significant, which means that there is less than a 1 on 10,000 chance that our data is so different between them by pure chance.

Using the χ^2 distribution to interpret Pearson's statistic, requires to assume that the discrete probability of observed binomial frequencies of the 2x2 contingency table can be approximated by the continuous χ^2 distribution. This assumption is not entirely correct and introduces some error. To reduce the approximation error, many authors introduced a continuity correction or variants of Pearson's χ^2 test.

Yates F. (1934) suggested a correction for continuity that adjusts the formula for Pearson's χ^2 by subtracting the value 0.5, from the difference between each observed value and its expected value for 2x2 contingency table. This correction reduces the χ^2 value obtained and consequently increases its p-value.

The formula to compute Yates's χ^2statistic in a 2x2 contingency table is:

$$\chi^2 = \sum_{i=1}^{2}\sum_{j=1}^{2} \frac{(|O_{i,j} - E_{i,j}| - 0.5)^2}{E_{i,j}}$$

Since the χ^2 is a significance test, it should always be coupled with an appropriate test of strength. Usually, it is represented by coefficients that can be helpful in interpreting the relationship between two variables once statistical significance has been established.

To conclude our analysis, we perform two tests of strength: Phi and Cramer's V.

3.3.3.1 Phi

Phi coefficient is only used on 2x2 contingency tables and it is the Chi-Square-based measure of association. The chi-square coefficient depends on the strength of the relationship and the sample size. Phi eliminates sample size by dividing chi-square by n, the sample size, and taking the square root.

$$Phi = \sqrt{\frac{\chi 2}{n}}$$

3.3.3.2 Cramer's V

According to McHugh, M.L, the Cramer's V is the most common strength test used to test the data when a significant Chi-square result has been obtained. Advantages of the Chi-square include its robustness with respect to the distribution of the data, its ease of computation, the detailed information that can be derived from the test, its use in studies for which parametric assumptions cannot be met, and its flexibility in handling data from both two group and multiple group studies. Limitations include its sample size requirements, the difficulty of interpretation when there are large numbers of categories (20 or more) in the independent or dependent variables, and the tendency of the Cramer's V to produce relatively low correlation measures, even for highly significant results.

The formula for Cramer's V is:

$$Cramer's\ V = \sqrt{\frac{\chi 2}{n(k-1)}}$$

where k is the minimum between the number of rows and number of columns.

In our specific case, the Cramer's V coefficient converges into the Phi coefficient since the contingency table is composed of 2 columns and 2 rows ($k - 1 \rightarrow 1$).

To evaluate these coefficients, we need to refer them to some tables based on different studies. The interpretation of correlation coefficients differs significantly among scientific research areas and there are no absolute rules for the interpretation of their strength. So, we decided to compare our results with the table proposed by Haldun Akoglu (Table 8).

Interpretation of Phi and Cramer's V.

Phi and Cramer's V	Interpretation
> 0.25	Very strong
> 0.15	Strong
> 0.10	Moderate
> 0.05	Weak
> 0	No or very weak

Table 8-Interpretation of Phi and Cramer's V

Source: User's guide to correlation coefficients, Haldun Akoglu

3.4 Result for the first research question

Using IBM SPSS Statistic, we performed the Chi-square test starting to prove the correlation expected to answer the research question 1.a: "Do *minibond issuers perform more acquisitions than their comparable?* ". The results are summarized in the tables below.

TREAT * Acqusition Crosstabulation

			Acqusition		
			,00	1,00	Total
TREAT	0	Count	730	255	985
		Expected Count	670,8	314,2	985,0
	1	Count	75	122	197
		Expected Count	134,2	62,8	197,0
Total		Count	805	377	1182
		Expected Count	805,0	377,0	1182,0

Table 9-Crosstabulation - Treat and Acquisition (1.a)

Table 9 represents the contingency table, which is composed of two variables: treat and acquisition. Both are dummy variables, the first one defines if the sample is the treated group (expressed by 1) or the control one (expressed by 0); where the treated group is represented by all the SMEs who issued a minibond in the period of interest for the test. While the control group includes the comparable companies, which have not pursued the issuance of a minibond. The second variable, "Acquisition", divides the sample into companies that undertake the acquisition of at least one company (expressed by 1) or not (expressed by 0).

To better explain, the first cell [treat equal to 0 and acquisition equal to 0] contains the number of SMEs who neither issued a minibond or acquired

a target, the second one [treat equal to 0 and acquisition equal to 1] counts the SMEs that had not issued minibond but, however, undertook an M&A operation, the third cell [treat equal to 1 and acquisition equal to 0] represents the SMEs who have issued minibond and initiated any acquisition process, while the fourth cell [treat equal to 1 and acquisition equal to 1] counts the SMEs who both issued minibond and acquired at least another company during the two subsequent years following the issuance.

The values in every single cell are two, one tells us the observed value (Count) and the second one tells us the expected value (Expected Count). The effective number of companies that did not issue minibond and did not acquire anyone is more than the expected one. The same result was achieved by SMEs issuing minibond and acquiring another company. On the contrary, the expected values are higher than the observed ones for the other two cases.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	98,167[a]	1	,000
Continuity Correction[b]	96,515	1	,000
N of Valid Cases	1182		

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 62,83.

b. Computed only for a 2x2 table

Table 10-Chi-Square Test (1.a)

The final result given by the Person Chi-square test is shown in Table 10: Pearson Chi-Square value is 98.167. The coefficient is valid and highly statistically significant since the significance is 0,000. Therefore, the probability that the observation made is the result of chance is null. In the second row of Table 10, we can find the continuity correction proposed by Yates, this confirms the result and its statistical significance.

χ^2		Acquisition	
		0	1
TREAT	0	5.22	11.15
	1	26.12	55.81

Table 11-Partition of χ^2 (1.a)

By breaking down the Pearson Chi-square into four cells. The largest cell χ^2 value of 55.81 occurs in cell 4. This result is because the observed value is 122 while only 62.8 was expected. Therefore, this cell has a much larger number of observed cases than the one expected by chance. Cell 1 reflects the number of minibond issuing companies that undertaken M&A. This means that the number of minibond issuing companies that undertaken M&A are significantly greater than expected. The second largest cell χ2 value of 26.12 is located in cell 3. However, in this cell, we discover that the number of observed cases was much lower than expected (Observed = 75, Expected = 134.2). This means that there are a significantly lower number of minibond issuing SMEs which do not undertake M&A than would be expected. The distance between the observed and expected values is lower if we consider the remaining two

cells. To be precise, above 10% of the Chi-square coefficient derives from the difference between the observed and expected value of the second cell and 5% from the first one.

Through this non-parametric test, we can conclude that there is a correlation between the issuance of minibond and the post M&A activity, nevertheless, it is necessary to understand the strength of the correlation.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	,288	,000
	Cramer's V	,288	,000
N of Valid Cases		1182	

Table 12-Measure of association (1.a)

Going to gauge the strength of the relationship between the two variables: issuance of minibonds and the acquisition activity, we evaluate the Phi and Cramer's V coefficient. In both cases, the result is 0.288 with a significance of 0.000. According to Haldun Akoglu table, the correlation can be considered very strong.

To answer the research question 1.b: "*And in particular minibond issuers perform more acquisition than their comparable which have raised comparable capital?",* we performed the same overmentioned non-parametric test to understand if the previously identified correlation holds even if now the comparable companies raised debt and/or equity capital.

TREAT * Acquisisce Crosstabulation

			Acquisisce		
			0	1	Total
TREAT	0	Count	718	267	985
		Expected Count	660,8	324,2	985,0
	1	Count	75	122	197
		Expected Count	132,2	64,8	197,0
Total		Count	793	389	1182
		Expected Count	793,0	389,0	1182,0

Table 13-Crosstabulation - Treat and Acquisition (1.b)

The contingency table (Table 13) shows only a little difference in comparison with Table 9. The number of companies that did not issue minibond is divided into 267 acquiring companies and 718 not acquiring companies while before they are respectively 255 and 730.

Also in this case, the cell with the largest Chi-square is represented by minibond issuing companies that pursue M&A activity as shown in Table 14.

χ^2		Acquisition	
		0	1
TREAT	0	4.95	10.09
	1	24.75	50.49

Table 14-Partition of χ^2 (1.b)

Looking at Table 15, the Person Chi-square is very high (90.160) here too, despite the fact that it is slightly reduced than the Chi-square of the

previous analysis. The significance continues to make the test valid. The same small reduction is found in the strength of the correlation (Table 16).

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	90,160[a]	1	,000
Continuity Correction[b]	88,590	1	,000
N of Valid Cases	1182		

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 64,83.

b. Computed only for a 2x2 table

Table 15-Chi-Square Test (1.b)

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	,276	,000
	Cramer's V	,276	,000
N of Valid Cases		1182	

Table 16-Measure of association (1.b)

It is possible to conclude that even comparing the issuing SMEs with ones who raised comparable capital through bank debt or through capital increase, the issuing SMEs made more M&A operations than their comparables. The bond between the issuance and the M&A activity is slightly less powerful than the one resulting from research question 1.a but is still very strong.

3.5 Research question 2

The methodology applied to answer the second research question was the following one: sample with data of the issuer and their first issue was created. That sample contained both financial and non-financial data, ranging from the EBITDA to the number of managers per employee in the company. Starting from the hints that literature resumed previously, we then made regressions in order to confirm or deny the correlation between factors in the sample and the minibond issuers' M&A activity.

3.5.1 Variables for research question 2

The literature reviewed in Chapter I has been the starting point to develop a possible answer to research question 2. We made some hypotheses based on that; these hypotheses will be tested later with a regression model to be confirmed. In these sections, our hypotheses will be explained.

Italian SME environment has its own peculiarities, this environment is very challenging for small excellence to exploit all their potential but is not pushing companies to external growth. Usually, in the daily operations and strategic choices, Italian SMEs are driven almost only by a single entrepreneur. This is often symptomatic of a struggle in delegating, as state indeed by Compagno et al. (2006) a limiting factor for the M&A activity of the Italian SME is the ability to control another company simultaneously. Following this reasoning companies with just a few managers controlling many employees are less likely to make acquisitions. Moreover, companies with more managers are proving the ability of the entrepreneur to delegate. To test this reasoning, we decided

to use the proxy of the number of managers per employee expecting to find a positive correlation.

SMEs are frequently managed by the entrepreneurs themselves; this not only is linked to the reasoning we have done before but when a shareholder is at the same time also a manager other factors have to be taken into consideration. Indeed, according to agency theories, when a manager is also a shareholder, objectives between the shareholder and the managers are consequently aligned. This alignment is likely to make manager choice wiser. M&A activities are known to be risky operations, even because literature does not agree on the fact that they produce value in the long term. This could result in fewer negotiations for M&A started by managers who are also shareholders. Furthermore, managers with aligned objectives with the shareholders are likely to interrupt negotiations if they understood the acquisition or merger will not generate the expected results, because they are less pushed by their hubris. This is why we expect a negative correlation between the presence of shareholders who are also managers and the number of acquisitions made.

The same reasoning made for managers who are also shareholders apply to the family business. Family businesses, moreover, are expected to make fewer acquisitions because the family wants full control of the entities. Indeed, they are less likely to make acquisitions with a control percentage below 100%. This effect could, in our opinion, be mitigated in the family of more than one generation. Business is required to grow as the family grows and external growth is a feasible option. Heirs of the first generation may want to keep control of their "own" company,

therefore the family could buy them other companies to exploit their entrepreneurial desires. Consequently, we expect that being a family business has a slightly negative correlation with M&A activity.

We expect then a negative correlation with the SMEs' years of activity. A strong and expert first line management team is indeed essential to operate an acquisition, this due to the knowledge required to follow a due diligence and to drive and an acquired company to guarantee the expected synergies and results. Even if we expect younger SMEs to be less structured their management is likely to be more financial expert because in Italy the financial knowledge raised a lot in the last years. In parallel, a new company is more likely to be led by someone with some managerial background which helps to solve the operational problems which are limiting the SMEs' acquisitions. Moreover, we expect a younger company to be more flexible, an essential characteristic to purse the control of a newly acquired entity. Finally, younger companies who seek to grow very fast have in external growth the easiest solution. The mitigation effect could raise when elder companies want to expand into their consolidated business or into new business.

Trying to apply the agency theories concepts we have also analysed some characteristics of the issue. We expect secured minibonds to be negative correlated with the M&A activity due to this. A secured minibond issuer is usually controlled by the entity who places that guarantee, this should avoid misalignment between the creditors and the issuing SMEs. As said for the managers who are also shareholders, M&A activities are considered risky operations and therefore are not easily approved by the creditors. Secured minibonds could in our opinion linked to a more

careful behaviour of managers, and therefore reduce the impact of their hubris on new M&A operations.

A more careful behaviour in our opinion could be also associated with the minibond issues which are quoted on the ExtraMOT market of Borsa Italiana. Issuers of these minibonds public traded are indeed obviously giving attention to the price at which their bonds are traded. This, in our opinion, reduces the misalignment between creditors and the managers. For the same reasoning said before we expect a negative correlation also with the issuers who have quoted their minibond on ExtraMOT and the M&A activity.

If M&A outcome performances are not certain in the long term, they are even more uncertain in the short term. Short term outcome of the M&A activities is usually associated with the literature to announce price raises, these are interesting just for public companies while the vast majority of Italia SME is private. In this context, our opinion is that a short-term financing operation is not aligned with the need for an M&A activity. Indeed, we expect a positive correlation between the maturity of the minibond issue and the activity of M&A. Longer term financing could create the conditions to take into consideration more likely operations which give positive outcome in the long term, like M&A.

Finally, looking for the variables we expect to have a correlation with the M&A activity of minibond issuers, we have to remember that in the literature scholars believe that companies need a “cushion” in order to enter M&A activity. Indeed, M&A activity could drain a lot of financial resources, especially in the first period. We, therefore, expect that companies with a higher value for total assets will be positive correlated

with the M&A activity. Larger assets could provide the security needed to approach M&A negotiations. Cash available indeed is important but could be drained fast by the transaction costs so the real "cushion" could be provided by the assets of the company. We expect therefore also a negative correlation with leverage, better financial structure is indeed essential to have enough margin to ask for more debt if needed in order to boost an acquisition that is not working in the first period. We expect a negative correlation with the value of long-term bank loans for the same reason. But, if the answer to our first research question will reveal to be positive, we expect a negative correlation also because we believe M&A to be financed more with the issue of minibond and not with bank debt. Bank debt that could provide instead the capital need to the company to pursue the synergies with the target, here closes the circle with the negative correlation expected with leverage.

3.5.2 Sample for research question 2

Research question 2 required a sample which linked several characteristics to a precise issuer, the smartest way to create it was to have a row for every single issuer and characteristics of the issuer and of their first issue on the columns. We took two columns to identify the SMEs, one for the name and the other one for the VAT code. VAT code has been essential to avoid errors, indeed among our sample, there are some companies who are not the only ones to have that name. VAT code is unique and therefore it guaranteed corrected searches and extractions of data from the other databases.

As for the sample for research question 1, names and VAT codes of the issuers are extracted easily from the "Osservatorio Minibond" database. These gave us our base sample of 224 SMEs who issued between 2012 and 2018. This number is different from the one of the research question 1 sample because firstly, here we had no need to avoid 'n.a.' between data, and secondly, some companies' data were not accessible on AIDA-BVD.

Once the base sample of companies was created the following essential step was to gather the data to proxy the M&A activity. The number of acquisitions made in the relative year to issue 0, +1 and +2 was used as a proxy like for research question 1, consequently the same reason of the choice of the proxy applies here. Different instead was the source of the data for the number of acquisitions. The number of companies to extract data was much lower in this case, just 224 instead of almost 100,000 for research question 1. For this reason, we manually checked each company's holdings on Telemaco-Infocamere. This method gave us the possibility to have more precise data on the exact date on which the acquisition was pursued and on the percentage of control. Indeed, for this sample, we have excluded *consorzi* for the same reason explained for research question 1 and we have excluded also the acquisitions in which the percentage of control is below 20%. This choice was made to consider only the acquisitions in which the acquirer has effective power into the target control. With these data, we were able to create the first column of our sample, i.e. the dependent variable of our regression.

Once have gathered all the data for the number of acquisitions which is our dependent variable, we had to gather the data for the several independent variables of our regressions.

We obtained the data on the issuers from AIDA-BVD and the data regarding the issue from the "Osservatorio Minibond" database. The name of the company and VAT code were used to match the companies of our sample with the correct data. Data are always referred to the last available balance sheet and income statement before the issue, exceptions are specified when presenting descriptive statistics of the variable. This choice has been made to peer companies before the minibond impacted into their finances, having this way the possibility to evaluate which characteristics the acquires have independently from the minibond impact and the characteristics of the minibond issue that are linked with a higher or lower M&A activity.

The column family business is the only one whose source is not either AIDA-BVD or "Osservatorio Minibond" database. Indeed, the definition of a family business is not unique in the literature and there is no analytical method to understand if a company is a family business. In this work we applied the definition used by the PoliMi Family Business Research group, this is a theoretical definition, which obviously differs from the operational one. It was obviously impossible to go to each company of the sample and check their daily operations, for this reason, we opted for the theoretical one. The theoretical definition of family business has been formalized by Chua, Chrisman, and Sharma (1999):

"A business governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled

by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families".

This work required a dummy variable equal to 1 if the company in the sample is a family business and 0 if the company is not a family business. In light of the requirement of this work and the theoretical definition of family business, we made a research for every company among the public information available in order to understand if a company complies with the theoretical definition. Some family businesses disclose directly on their website their status or their belonging to a family. The majority instead need deeper research on the names of the shareholders coordinated with newspapers or companies and shareholders' social networks to confirm or deny the status of family business.

As far as regards the other columns, we extracted these data directly from AIDA-BVD:

- Total Assets
- Long Term Bank Debt
- SME age
- Leverage

We extracted instead the following data directly from the "Osservatorio Minibond"'s database:

- Minibond secured
- Minibond quoted on ExtraMOT PRO
- Maturity of the minibond

Finally, two variables are the expression of elaborations made onto data from AIDA-BVD: shareholder is also a manager, made by the comparison of managers and shareholders at the time of the issue, and the ratio between managers and employees, made by dividing the number of managers by the number of the employee.

We have to mention that continuous variables were log transformed prior to the log-linear Poisson and negative binomial models implementation. This was possible because we had few and negligible negative values that were ignored. Null values were substituted with value 1 that log transformed gave 0 as result.

3.5.3 Descriptive statistics of variables

In this section, descriptive statistics of each variable are presented and analysed. Variables will be presented as follows: non-financial variables first, financial variables then and finally the issues' variables.

Statistics

SME age

N	Valid	224
	Missing	0
Mean		19,96
Median		15,50
Mode		8
Std. Deviation		16,981
Minimum		0
Maximum		112
Percentiles	25	7,00
	50	15,50
	75	31,75
	90	43,00

Table 17-SMEs age statistics

Statistics

Managers/100Employee

N	Valid	186
	Missing	38
Mean		51,91852
Median		12,42978
Mode		,000
Std. Deviation		139,561688
Minimum		,000
Maximum		900,000
Percentiles	25	6,29934
	50	12,42978
	75	28,57143
	90	83,52273

Table 18-Manager/100 Employee statistics

The first non-financial variable at our attention is the SME age (Table 17). This variable explains since how many years a company has been working, the average age for our sample's SMEs is around 20 years, this was quite expected because it's quite rare a new company has the credibility to finance itself with bonds. The oldest company in our sample has been working for 112 years, more than a century, but the majority, 90% of them, have been active for less than 45 years. This means that few companies were born during the 50s/60s post-war period and the majority born after the First Oil Shock (1973). It's also interesting to note that just a quarter of the sample has less than 7 years, i.e. it was born after the debt crisis that impacted Europe into the first 10s of this century.

The second variable under investigation is the number of managers per 100 employees (Table 18). This value is showed as the number of managers per 100 employees instead of the number of managers per employee in order to make it easier to understand and link to real life. Indeed, for example, having 0.20 managers per employee is very complicated to understand. For this value mean is very influenced by some very large values, the maximum is 900 and is due to the math of showing it per 100 employees; the median is more representative and shows around 12 managers per 100 employees. It is interesting to point out that just the 25th percentile has more than 15 employees per manager. Mode equal to 0 is due to the fact that the variable is continue and therefore there are not even two companies with the same exact value for this variable.

SH is Manager

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	128	57,1	57,1	57,1
	1	96	42,9	42,9	100,0
	Total	224	100,0	100,0	

Table 19-Shareholder is Manager statistics

Looking at the companies from the non-financial eye, another one of our variables was related to corporate governance. From this basis the first variable considered is "shareholder is manager (SH is Manager)" which takes into account if companies present at least one shareholder within the board of directors. As shown in Table 19, for 57.1% of the SMEs the management team has no connection with shareholders' body. It is often thought that small and medium enterprises are managed by the main shareholders, but contrary to belief, the sample tells us that is true for a smaller group of companies (42.9%).

Family Business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	139	62,1	63,2	63,2
	1	81	36,2	36,8	100,0
	Total	220	98,2	100,0	
Missing	System	4	1,8		
Total		224	100,0		

Table 20-Family Business statistics

Another variable always linked to the governance field is "Family Business". Even in this case, the analysis is based on the number of SMEs considered family business according to the definition presented above. On the total sample composed of 224 SMEs, the data is missing for four

of them, despite this, 62.1% of the reduced sample is not compliant with the family business's characteristics.

Statistics

Total Assets

N	Valid	213
	Missing	11
Mean		39622.84889
Median		21918.95900
Mode		11.9720000[a]
Std. Deviation		77633.67333
Minimum		11.97200000
Maximum		869009.7210
Percentiles	25	10238.75500
	50	21918.95900
	75	39213.66150
	90	81864.22320

a. Multiple modes exist. The smallest value is shown

Table 21 - Total Assets statistics

By switching to financial variables, those analysed are three: "Total Assets", "Long-term bank debt" and "Leverage". Starting from the first, "Total Assets" are used as a proxy for companies' size. AIDA-BVD does not report data for eleven SMEs of the sample. Considering the data coming from 213 companies, the average total assets is €39.6 million. The minimum stated is €11 thousand while the maximum reaches €869 million, far above the maximum limit allowed to be defined SMEs (€43 million), nevertheless the companies continue to fall within SMEs since their turnover does not exceed €50 million. Taking a look at percentiles, 75% of SMEs hold less than €43 million as total assets in its financial statement and 90% of the sample hold less than €82 million meaning that the maximum value found is an exception. Additionally, mode indicates

that the most frequently appearing value is €11 million, just above the limit required to belong to the small businesses category.

Statistics

LT Bank Debt

N	Valid	204
	Missing	20
Mean		4387.558931
Median		1644.018500
Mode		.0000000000
Std. Deviation		9712.408800
Minimum		.0000000000
Maximum		90661.00000
Percentiles	25	35.67175000
	50	1644.018500
	75	4380.126000
	90	9950.749500

Table 22-Long-term bank debt statistics

The second financial variable concerns companies' liabilities, in detail, the debts that companies hold with banks for more than 12 months. Without considering the missing values, the bank debt ranges from €0 to €91 million, but due to the fact that the 90th percentile is €10 million, the maximum is probably an exception. The third quartile is €4 million consistent with the mean.

Statistics

Leverage

N	Valid	200
	Missing	24
Mean		1.753350000
Median		1.110000000
Mode		.0000000000
Std. Deviation		2.261073316
Minimum		-.770000000
Maximum		15.94000000
Percentiles	25	.1950000000
	50	1.110000000
	75	2.415000000
	90	3.803000000

Table 23-Leverage statistics

Leverage is the last indicator analyzed for financial data. Specifically, it is computed by dividing a company's total liabilities by its shareholder equity. So, leverage measures the degree to which a company is financing its operations through debt versus the company's own funds, or in other words, it reflects the ability of shareholder equity to cover all outstanding debts in bankruptcy events. To better evaluate the D/E ratio we should divide the values according to the companies' industry because different industries require different capital needs (for example, capital-intensive industries such as manufacturing ones tend to have leverage over 1, while with tech firms the ratio goes down to 0.5), nevertheless in Table 23 are shown statistics of the entire sample since more than 50% of companies belong to manufacturing business and few of them to the tech industry. The average of the sample is 1.7, this means SMEs rely a lot on external capital. The highest value is 16 and it means that debt is 16 times the shareholder capital, quite rare if we consider non-financial businesses. It

can be considered an exception since 90% of the sample has 4 as ratio between debt and equity.

Turning to minibond's characteristics, our study focused on a quantitative continuous variable, "Maturity First (of) issue", and 2 dummy variables, "Secured Bond" and "ExtraMOT".

Statistics

Maturty First issue

N	Valid	224
	Missing	0
Mean		6,40
Median		6,00
Mode		6
Std. Deviation		3,911
Minimum		1
Maximum		21
Percentiles	25	4,00
	50	6,00
	75	7,00
	90	10,00

Table 24-Maturity first issue statistics

The first issue's maturity measures the period between minibond's issuance and its expiration. Most bullet issues' maturity is less than two years while amortizing ones' is much longer, can exceed even thirty years. SMEs' issuances of our sample reach a maximum of 21 years and a minimum of 1 year. As shown in the *minibond issuances' characteristics* chapter, most SMEs' issuances have a duration between five and six years, followed equally by those with a duration of less than one year and those more than seven years. Sample's mean and median reflect consequently data exposed by Osservatorio Politecnico di Milano. The percentiles are

other interesting data, indeed only 25% of issuances have a duration lower than 4 years and over 7 years.

Secured

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	146	65,2	65,2	65,2
	1	78	34,8	34,8	100,0
	Total	224	100,0	100,0	

Table 25-Secured issues statistics

ExtraMOT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	117	52,2	52,2	52,2
	1	107	47,8	47,8	100,0
	Total	224	100,0	100,0	

Table 26-ExtraMOT issues statistics

"Secured" and "ExtraMOT" are the last two minibond's characteristics to analyse. Both dummy variables, the first one takes account if issuances are at least partly guaranteed by third parties and the second one if they are listed on the stock exchange, in particular on ExtraMOT PRO, a professional segment dedicated to bonds' listing. Deepening statistics, the number of secured minibond is almost a quarter in comparison to unsecured bonds. Considering instead listed and unlisted minibonds, it can be said that they are evenly distributed, where unlisted issues have an undetectable dominant position.

To conclude, we show statistics about SMEs' M&A activity in Table 27. Both minimum number of acquisition and mode present as result 0, this

means the majority of thee sample does not pursue an external growth. More specifically, not acquiring SMEs are 71.4% of the total sample (160 over 224), while only 28.6% are SMEs who undertake at least one acquisition. The maximum number of acquisitions is 8, despite this 90th percentile shows two acquisitions and the mean is very low, less than one acquisition.

Statistics

M/A

N	Valid	224
	Missing	0
Mean		,63
Median		,00
Mode		0
Std. Deviation		1,340
Minimum		0
Maximum		8
Percentiles	25	,00
	50	,00
	75	1,00
	90	2,00

Table 27-M&A activity statistics

3.5.4 Log-Linear and Negative Binomial regressions

Our analysis is based on log-linear and negative binomial regression, both belonging to generalized linear models.

Before talking about the generalized linear models, a brief introduction to linear regression is necessary. The linear regression describes the

relationship that link a set of linearly independent covariates to a variable expressed as:

$$Response\ variable\ = f\ (independent\ variables)\ +\ error$$

These models (as generalized ones) are useful in order to understand the relationships between data about different variables taken from the same sample.

Considering a dependent variable (response variable) y_i, a group of covariates (independent variables) $x_{i,j}$ and given that the observations y_i are a realization of the random variable Y_i, where $Y_i \sim N(\mu_i, \sigma^2)$ with $\mu_i = \beta_0 + \beta_0 x_{i1} + \cdots + \beta_0 x_{ip}$ (in matrix form $\mu_i = X\beta$ with X matrix of covariates x_{ij}, and consequently $Y_i \sim N(X\beta, \sigma^2)$), the relation $Y_i = X\beta + \varepsilon$ is defined as a normal linear regression model, with $\varepsilon = N(0, \sigma^2 I_n)$.

In these models, the three main components are: the random component $Y_i \sim N(\mu_i, \sigma^2)$, the systematic component $\eta_i = X\beta$ where η_i is a linear predictor with $\eta_i = \mu_i$ and an error component $\varepsilon = N(0, \sigma^2 I_n)$.

However, the use of these models is limited. Indeed, they cannot be applied to all the different data (e.g. dichotomous variables, qualitative variables and discrete variables) and they cannot be applied if Y_i has a discrete distribution different from the normal one (e.g. Poisson, Gamma or Binomial) or if the relationship between η_i and μ_i is not linear.

To solve these problems, the analysis is executed using generalized linear models (GLMs). They are an extension of the models described above and as well they are used to explain the relationship between the

response variables and covariates but unlike the previous ones, they are more adaptable to data.

In GLMs, the random component can range between all distributions of the exponential family that includes Poisson, binomial, gamma, exponential distributions.

Our analysis is based on two types of regression model, the first one is a log-linear regression followed by a negative binomial regression.

The log-linear regression (also called Poisson regression) is recommended when the response variable is a counting data as in our specific case. Indeed, the dependent variable is the number of acquisitions undertaken by SMEs, a discrete variable aligned with the model proposed.

Poisson regression assumes that the response variable Y has a Poisson distribution, and assumes that the logarithm of its expected value can be modeled by a linear combination of unknown parameters.

Sometimes, though, the Poisson regression model is usually too restrictive for count data, leading to alternative models. One of these models is the negative binomial regression which can be used for over-dispersed count data, that is when the conditional variance exceeds the conditional mean. It can be considered as a generalization of Poisson regression since it has the same mean structure as Poisson regression and it has an extra parameter to model the over-dispersion. If the conditional distribution of the outcome variable is over-dispersed, the confidence intervals for the negative binomial regression are likely to be narrower as compared to those from a Poisson regression model.

Descriptive Statistics

	Mean	Variance
SME age	19,96	288,353
Total Assets	39622.84889	6026987235
LT Bank Debt	4387.558931	94330884.70
Maturty First issue	6,40	15,300
Secured	,35	,228
SH is Manager	,43	,246
Leverage	1.753350000	5,112
Family Business	,37	,234
ExtraMOT	,48	,251
Managers/100Employee	51.91851704	19477,465

Table 28-Covariates' mean and variance

In Table 28, we explore the form of the mean-variance relationship of the different covariates included in the regression. Dummy variables are the only ones with variance lower than mean, while for all the other variables we investigate the relationship by plotting the variance versus the mean (Figure 23). For convenience, we used a log-log scale.

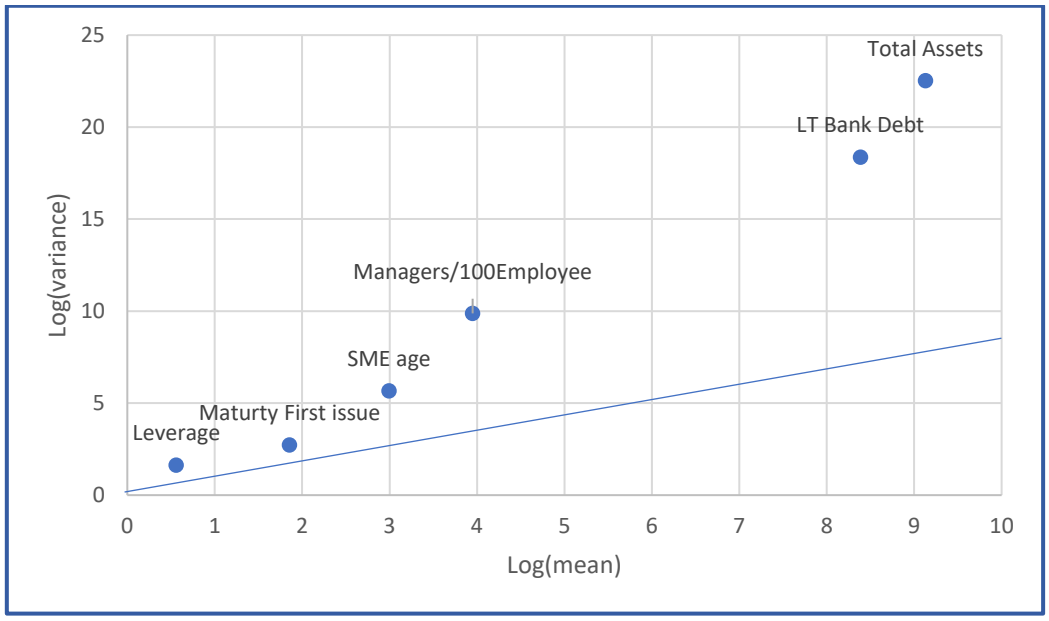

Figure 23-Covariates' log(mean) and log(variance)

All the 6 independent variables have variance higher than mean, specifically, the three variables that show the greater deviation are "Total Asset", "LT Bank Debt" and the ratio between the number of managers and 100 employees. These variables bring us to perform a second model (negative binomial regression) to overcome the problem of over-dispersion and to increase the robustness of our dissertation.

Referring to Eisenhauer (2003) and the conditions provided in that paper we created both the regression models passing through the origin. Indeed, the number of acquisitions could be also zero. The conditions required were: the value of the dependent variable could be 0, the intercept in the model is not statistically significant and standard errors of parameters in the model passing through zero are smaller than the ones in the model with an intercept. Therefore, we had not taken the intercept into our models.

3.6 Result for the second research question

We performed for the reason explained above both the log-linear Poisson and the negative binomial regressions. Now we will present the results of these regressions starting from Poisson's one. Before presenting the results of the parameters' values it is worth to look at the test comparison against the null model, this is done to be sure that the model we have used provides a statistically significant model. For the log-linear Poisson regression, the significance level was above 99.9% which means that the model in more than 99.9% of the cases provides a better fitting to the results respect the null model.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
95,986	10	,000

Dependent Variable: M/A
Model: Managers/Employee, SH is Manager, Family Business, SME Age, Total Assets, LT Bank Debt, Leverage, Secured, ExtraMOT, Maturty First issue

a. Compares the fitted model against the null model.

Table 29-Omnibus test for the log-linear Poisson model

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Managers/Employee	,239	,0789	,084	,394	9,168	1	,002	1,270	1,088	1,483
SH is Manager	-,740	,2270	-1,185	-,295	10,633	1	,001	,477	,306	,744
Family Business	,336	,2419	-,138	,810	1,932	1	,165	1,400	,871	2,249
SME Age	-,041	,1433	-,322	,240	,082	1	,775	,960	,725	1,271
Total Assets	,116	,0515	,015	,217	5,092	1	,024	1,123	1,015	1,242
LT Bank Debt	-,144	,0347	-,212	-,076	17,189	1	,000	,866	,809	,927
Leverage	,159	,0847	-,007	,325	3,515	1	,061	1,172	,993	1,384
Secured	-,530	,2480	-1,016	-,044	4,574	1	,032	,588	,362	,957
ExtraMOT	,139	,2353	-,322	,600	,349	1	,554	1,149	,725	1,823
Maturty First issue	-,095	,1578	-,404	,215	,361	1	,548	,910	,668	1,239
(Scale)	1[a]									

Dependent Variable: M/A
Model: Managers/Employee, SH is Manager, Family Business, SME Age, Total Assets, LT Bank Debt, Leverage, Secured, ExtraMOT, Maturty First issue

a. Fixed at the displayed value.

Table 30-Parameter estimation for the log-linear Poisson model

Table 30 presents the parameter estimates for the log-linear Poisson model. The first column, called B shows the β value for each parameter, this was not a full linear model so to understand the proper magnitude of the effect made by the parameter we have to look at the exponential value of β, which can be seen in the third column from the right. When the

exponential value is equal to one if the parameter raises by one you have the same probability that the company made acquisitions. While if it is higher, when the parameter increases by one the probability of the company to make an acquisition raises by the percentage associated. For example, if the exponential β is equal to 1,300, you will have 30% probability of having a higher number of acquisitions for that company. Obviously same but with opposite probability if this value is below 1. It is due to remember that the parameters here are natural logarithm of the continuous variables, so the increase of one for the continuous variable is not equal to the increase of one in the logarithmic scale.

Among the ten parameters five resulted to be statistically significant.

"Managers per employee" resulted significant (**), with the exponential value of β equal to 1.270 so a positive correlation as expected, and quite strong (27% more likely to acquire when the parameter increases by one). Also, the confidence interval is fully positive meaning that the correlation is for sure positive.

"Shareholder is a manager" also resulted in a significant correlation (**) but in this case the correlation is strongly negative, the confidence interval is indeed fully negative. The exponential value of β is equal to 0.477, meaning that a company with a manager who is also a shareholder is almost 53% less likely to make an acquisition more.

Results showed then two financial parameters that are statistically significant: "Total Asset" (*) and "Long-Term Bank Debt" (***). The first with a positive correlation (exponential β equal to 1,123) and the latter

with a negative correlation, very significant but not so strong (13% less likely to make acquisitions) even if the confidence interval is fully negative.

Finally, a minibond characteristic, “Secured" resulted to be statistically significant (*) with a strong negative correlation, 41% less likely to make an acquisition and the confidence interval fully negative.

One of the overdispersion effects is to boost the significance level of parameters, for this reason in order to guarantee robustness to our work we implemented also the negative binomial model. Its results are presented here. As for the log-linear Poisson model the omnibus test, the model is statistically significant (***).

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
51,584	10	,000

Dependent Variable: M/A
Model: Managers/Employee, SH is Manager, Family Business, SME Age, Total Assets, LT Bank Debt, Leverage, Secured, ExtraMOT, Maturty First issue

a. Compares the fitted model against the null model.

Table 31-Omnibus Test for the negative binomial model

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Managers/Employee	,237	,1077	,026	,448	4,826	1	,028	1,267	1,026	1,565
SH is Manager	-,723	,2886	-1,289	-,157	6,272	1	,012	,485	,276	,855
Family Business	,118	,3089	-,488	,723	,146	1	,703	1,125	,614	2,061
SME Age	,024	,1963	-,361	,409	,015	1	,903	1,024	,697	1,505
Total Assets	,117	,0736	-,027	,262	2,544	1	,111	1,125	,973	1,299
LT Bank Debt	-,138	,0498	-,235	-,040	7,638	1	,006	,872	,791	,961
Leverage	,145	,1235	-,098	,387	1,370	1	,242	1,155	,907	1,472
Secured	-,467	,3182	-1,091	,157	2,154	1	,142	,627	,336	1,170
ExtraMOT	,154	,2999	-,434	,741	,262	1	,609	1,166	,648	2,099
Maturty First issue	-,195	,2383	-,662	,272	,671	1	,413	,823	,516	1,312
(Scale)	1[a]									
(Negative binomial)	1[a]									

Dependent Variable: M/A
Model: Managers/Employee, SH is Manager, Family Business, SME Age, Total Assets, LT Bank Debt, Leverage, Secured, ExtraMOT, Maturty First issue

a. Fixed at the displayed value.

Table 32-Parameter Estimates for the negative binomial model

Differently from the log-linear Poisson model, with this model, only three variables are statistically significant. The β estimations gave the same results for the sign of the correlations and the exponential values of βs have differences below the 2% consequently magnitude of the effects estimated is the same as for the previous model. "Managers per employee" is statistically significant also with this model (*) but at a lower level. "Shareholder is a manager" is also statistically significant at a lower level with this model (*). The same happens for "Long-Term Bank Debt" which level of significance is **, i.e. 99.6% confidence level.

The two parameters which are statistically significant with the log-linear Poisson model but not with the negative binomial model are "Secured" and "Total Asset". They are not far from a statistically significant level, respectively their confidence level is 86% and 89%. These two parameters in the log-linear Poisson model are affected by the overdispersion boost of the significance levels.

We, therefore, consider the statistically significant parameters “Managers per Employee”, “Shareholder is a Manager” and “Long-Term Bank Debt”; first with a positive correlation the other two with a negative one.

Chapter IV

Conclusions

In this chapter conclusions, based on the empirical evidence of the previous chapters, will be presented and related to the opportunities they unveil for the entrepreneurs and the investors in the SMEs' environment. Recommendations for future researchers are then presented in light of the limitations induced in this work by the creation of empirical models.

The aim of this work is to contribute with novelty to the limited literature on both the topics of Italian SMEs' M&A activity and minibond issued by Italian SMEs, trying to understand if M&A activity and minibond are somehow linked and to better understand behavioral consequences of minibonds. This led us to two research questions:

- *Do minibond issuers perform more acquisitions than their comparables? And in particular minibond issuers perform more acquisition than their comparables which have raised comparable capital?*
- *Which are the factors that are correlated with issuers' M&A activity?*

The first step to understand if there was a link between M&A activity and minibond was to test the correlation with the Chi-square test. The sample was made of SMEs minibond issuers and comparable companies obtained through PSM. This test confirmed the positive correlation; therefore, we performed the Cramer's V test to test its strength. Cramer's

V test allowed us to define it as a very strong correlation. This result was then confirmed by a second Chi-square test made on a different sample. That sample contained as control group just SMEs who raised a comparable amount of capital. This second test confirmed the positive correlation and another Cramer's V test confirmed it as very strong. This enabled us to add to literature the presence of a positive bond between M&A activity and minibond.

To answer the second research question, we deepened our focus on Italian SMEs issuing minibonds. Literature suggested to us some factors that could be correlated with M&A activity. Among these, there were financial characteristics of the issuers, non-financial characteristics of the issuers and characteristics of the minibond issuance. We made a log-linear model regression to understand which factors were correlated with statistical significance. To increase the robustness, we performed also a negative binomial regression. With these two models, we confirmed three of our initial hypotheses on the factors correlated to the M&A activity. We were able to confirm also for SMEs issuing minibonds the, already present in the literature for large companies, hypothesis of strong negative correlation between M&A activity and managers who are also shareholders. We also confirmed two hypotheses that are new for the M&A literature, especially for SMEs M&A literature: the first, a strong positive correlation between managers' ability to delegate and M&A activity of Italian SMEs issuing minibond; the second, a negative correlation between the long-term bank debt and M&A activity of Italian SMEs issuing minibond. The latter suggested the hypothesis that bank debt is less attractive for SMEs that are approaching M&A activity.

Results presented one by one here above are now analysed comprehensively and together with the literature to provide a more complete understanding.

The empirical evidence relative to the first research question presented in this paper unveils a link between the issuance of a minibond and an enhanced M&A activity. In our opinion, this result should be analyzed together with the outcome of the regression made for the second research question. These two results together indeed suggest that M&A activity is more likely to be financed by capital raised through minibond instead of bank debt. This suggestion is strengthened by the evidence provided by the results regarding the research question 1.b, this result indeed shows how comparable capital raised through equity capital increase or new bank debt is not likely to be funneled into M&A activity. While capital raised through minibond issuance is more likely to be funneled into external growth.

We have to remember that the cost of capital raised through minibond is on average higher than its comparables. Therefore, we believe that the M&A activity for the Italian SMEs is the result of a particular environment which has been developed into the bidder company. This is suggested by the evidence of the correlation of more M&A activity in the SMEs where delegation by the top management team is higher and where managers are not shareholders. In our opinion minibond is strongly bonded with this different environment in SMEs. These SMEs are lead in a more managerial and less entrepreneurial way, they have a dynamic and structured first line of management. This work is indeed suggesting that peculiarities can be found in the managerial structure of the SMEs that go

for a minibond issue or acquisition. The literature points out how Italian SMEs are deeply affected in their path to external growth by their lack of ability to manage properly also the target. In light of our results, we expect that minibond issuers have improved their managerial ability which helps them in managing the acquired company.

We, therefore, suggest that the link between the issuance of minibond and the M&A activity is not financial. But worth mentioning is the fact that even if usually more costly than capital raised through bank debt, capital raised through minibonds comes at almost the same price as the one raised through bank debt when it is used to finance an LBO operation. In these situations, minibond inherent marketing power makes it a very interesting option for SMEs. Minibond is also very easy to be replicated and may be used to finance several consecutive LBOs. Not mentioning the possibility to avoid detailed due diligence of the M&A operation by the bank which could drain a lot of energy to the SMEs' management.

We believe therefore that minibonds could become a very interesting instrument for the PE funds in 2021 when they are expected to perform numerous acquisitions of financial distressed companies due to the Covid-19 crisis. Finally, we expect that minibonds will start to have signaling function of companies with more dynamic and structured management due to the results of this work.

4.1 Limitations and recommendations for future researchers

The models used in this dissertation are statistically robust, even if the M&A activity was proxied by the number holding of the SMEs checked. This required the assumption that all the holdings are the result of an

acquisition or of a merger. In the future to confirm the results given by the model used to answer the first research question, a difference in difference model could be implemented by other researchers, this kind of model indeed compare the effect of a treatment in different periods of time, therefore the period previous to the issuance could be compared with the one after. Another interesting future development is suggested by the results of the first research question. Indeed, there emerged the hypothesis that the raise of capital through equity is not likely to finance M&A activity, deepening to confirm this hypothesis could result in interesting future studies.

This work made the first steps into analyzing the M&A activity of Italian SMEs issuing minibonds, proved that issuing a minibond is linked with a higher M&A activity but has not analyzed the outcome of these operations. Is the management of issuers able to gain better performances in mergers and acquisitions than their comparables? This question undoubtedly has an answer that could be very interesting for proving that issuing minibond is linked to better performing management of the company. Better performance of the company that could be investigated deeply, due to the nature of this work we investigated characteristics of management but without focusing on the characteristics of the managers themselves, like experience or the business school attended. For example, managers who had experience in the consulting companies could have learned how to deal with M&A operations and bring this expertise inside the SMEs. This dissertation started to investigate the M&A activity of Italian SMEs issuing minibond, this opened questions about the implications of minibond issue for the

corporate strategy that could be interesting to investigate in future studies. We hope that this dissertation will be a starting point for studies on the behavioral effects of minibond on the issuing SMEs.

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