



Master's Degree in Corporate Finance

Chair of M&A and Investment Banking

Blood is Thicker than Water, but is it Stronger than the Market? An Empirical Analysis of IPO Performance in Family and Non-Family Firms

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INTRODUCTION

In the first section of the present study, we will introduce the main topic chosen for the overall analysis: the IPO performance of family firms. Then, we will present the main research questions that the work addresses and investigates both using past literature as well as an empirical study; finally, we will emphasize the relevancy of the research and its contributions to the subject of reference.

Family-owned businesses are widely spread and prevalent in many economies and have been so for generations (Colli, Fernandez-Perez, & Rose, 2003). Scholars have repeatedly attempted to give a proper definition to the concept of family firms; for instance, Habbershon et al. offers a definition that represents the family firm as a commanding, assertive alliance that moulds the outlook of a company across generations (Habbershon & Williams, 1999). Across all the definitions given, two elements appear always to be relevant and reported: ownership and control by the family. Indeed, the controlling component of the definition should well be highlighted when distinguishing family firms from non-family firms. Moreover, we have reasons to believe that family firms present some distinguishing traits that make them a separate category in the firms' landscape. Those traits such as personalism, particularism and parsimony (Carney, 2005), lower risk aversion are the ones that made them peculiar. The second topic of interest in the present study is the performance of Initial Public Offers (IPO) undertaken by firms, representing the first time a company ("issuer") sells its stock to public investors (Rosenbaum & Pearl, 2022, Chapter 8 Initial Public Offerings section). We use two different measures to quantify the IPO performance, one more short-term oriented and one more long-term oriented. Namely, we refer to the underpricing and the three years post-IPO performance of the stock relative to the market index. The focus is indeed studying the relationship of family vis a vis non-family firms towards these two IPO performance measures and their sensitivities towards those factors that historically have been found to exert influence on those latter two. The overall study is made by: analysing past literature on the subject, evidencing previous gaps and formulating new hypotheses, taking as reference a sample of IPOs from the Italian stock market and running our statistical tests to gather new insights on the subject. Then, our results will be summarized, compared with past studies, and discussed. In the last part a discussion upon also the implications of those results will be offered highlighting the key insights that emerge from the statistical analysis.

The main research questions that the present research addresses are two:

- Are family firms subject to a higher or lower underpricing at IPO with respect to non-family firms?
- Do family firms display a significantly different stock performance in the three years after the IPO from non-family firms?

Moreover, apart from these two main questions, we will also investigate other sixteen hypothesis on the sensitivities of family and non-family firms to the factors influencing underpricing at IPO.

The relevancy of the research stems from the possibility of shedding additional light on the understanding of the factors related to IPO performance both in the short and long term and can help family firms address specific concerns related to getting listed on the Italian stock exchange. Moreover, it contributes to the literature of family firms and underpricing and addresses a specific gap in the previous studies by targeting the Italian IPO market which has not been historically analysed from this angle of relative comparison between family and non-family firms both in the short as well as in the long term.

CHAPTER 1: LITERATURE REVIEW

1.1 Initial Public Offering

In this introductory chapter, the concept of Initial Public Offering will be first defined and introduced to the reader; secondly along with the explanation of its main relevant aspects, particular attention will be given to its transformational character. Then, there will be an analysis of the possible reasons to undertake the IPO process with the consequent benefits and aims of companies going public; on the other hand, there will be also a careful consideration of the requirements and the potential drawbacks of getting listed, as a warning for firms to carefully evaluate the undertaking of the process and an evaluation of possible alternatives to it; in conclusion, the ideal candidate for the process will be highlighted with reference not only to the optimal traits it should possess prior to the process but also to the most favourable timing for the latter.

An initial public offering (IPO) represents the first time a company (“issuer”) sells its stock to public investors (Rosenbaum & Pearl, 2022, Chapter 8 Initial Public Offerings section). Most often, this transformational event is also referred to as “going public”, which indeed makes explicit reference to the public nature addressed by the transformation.

The company, that in this case assumes the name of “issuer”, is listed on an exchange such as the New York Stock Exchange (NYSE), the Stock Exchange of Hong Kong (SEHK) or the London Stock Exchange (LSE) in which its shares will start to be traded among public investors. Under its ticker symbol, which is an abbreviation useful to investors to identify the stock and the information related to it, the company’s stock will be traded on a daily basis and the mechanism of supply and demand between willing buyers and willing sellers will drive up or down its market value.

On the basis of the latter consideration, it is of primary importance for the listing company to constitute a profitable dialogue with external investors. There is the necessity to build up an entire new infrastructure able to comply both with the requirements imposed by legislation, as well as those ones implicit in the investors' questions. The new infrastructure should be able to address all the aspects related to the management of a public company, from the legal and regulatory side to the investor relations and the strategic one. In light of the creation of this entire new framework, it is very common to refer to the IPO process undertaken by a company, as an authentic transformation.

From a real economy point of view, the IPO process is not simply a change of setting for domestic firms, but its success might imply crucial influence on the country's wealth as well. The reasoning behind this proposition is that the success of an IPO determines the capacity of the company to raise additional capital that allows it to invest into positive net present value opportunities. Subsequently, for instance, that would imply the company needing additional employees, that might be then hired from the domestic active workforce. In turn, the logic would improve the unemployment rate of the country. It is also common to assume a circularity of cause-effect between the health of the economy in a given country and its level of initial public offerings. The effect of the health of the economy on providing good market conditions for the development of companies going public has already been documented by previous studies (Lowry, 2003). The IPO market is indeed cyclical (Kesten, 2018) and strongly correlated to the performance of the overall stock market (Rosenbaum & Pearl, 2022, Chapter 8 Initial Public Offerings section). A more thorough understanding of the cyclicity of the IPO market will be provided in the following section, while in the present one we limit ourselves to introduce the Initial Public Offering landscape.

1.1.1. IPO Process

Firms aiming to go public will be most often supported by one or more investment banks. The IPO process can indeed be carried out entirely by a unique underwriter or by a team of underwriters to manage different tasks related to the overall process. Their job involves all the phases related to the IPO process, from the origination with the identification of the target company and the advices given to it for top positioning in light of the IPO, to the real pricing and settlement of the company's share capital, passing through the drafting of the required documentation and the roadshow presentation. The IPO process takes approximately six months to be completed but then its time span varies on a case-by-case basis depending also on the degree of preparation carried out prior to the IPO process. Moreover, to each phase of the IPO process, only specific departments of the investment bank are allowed to participate due to the private-public Chinese wall as well as the expertise in the given task. From a macro perspective the entire process can be indeed distinguished in two separate stages: a

private stage and a public stage. Summarizing up the phases of a traditional initial public offering we would have the following sequence: advisors and syndicate selection, preparation, analyst presentation & research, investor education, roadshow, pricing and allocation, settlement.

Usually a company seeking an IPO process is advised by one or more advisors to select the appropriate syndicate based on multiple parameters, such as reputation, industry expertise, quality of research, and track record. Upon receiving the so-called Request for Proposal (RfP), investment banks will present themselves to the company through what is commonly known as “Beauty parade”. Banks will then provide the commitment of creating a market in the stock and they will sign a declaration of no conflicts. The typical syndicate is usually composed by one or more Global Coordinators which are responsible for the overall management of the whole syndicate and the entire process and will lead the same. Then, there will be one or more Joint Bookrunners that will be involved in the marketing and bookbuilding activity related to the IPO. Finally, one or more lead managers hat although not involved in process and marketing will provide research coverage for the stock.

After having chosen the syndicate, the entire group formed by the Equity Capital Markets division and the Investment Banking division of the investment bank will start to structure a detailed timetable to organize the overall work and be able to get the most suitable timing. In the preparatory phase, first there will be the identification of the type of offer (primary, secondary, etc.) then, there will be a review of all the publicly available data of the Company; the latter will serve as starting point for the drafting of the prospectus, whose main content include a summary, a business description, the underwriting, main shareholders, use of proceeds, description of offer, and other additional elements which provide content for the overall offer. The review of these data is usually done on the basis of reports, press releases, company presentations or public announcements. The content will be subject to regulatory review process which is based on the country in which the company is being listed. Always in this phase, we have the due diligence and a preliminary valuation and benchmarking exercise, in addition to some initial considerations concerning key investor targets and marketing. The main metrics of reference for the comparison with the target peers are the growth forecast, EBITDA margin, Net Debt/EBITDA, dividend payout. It is important to notice these metrics from the beginning, since we will then come back to them in the present study for the empirical part.

On the ground built by the preparatory phase, in the analyst presentation and research phase, the management will have the chance to present the company to the syndicate’s analysts and to answer to the questions formulated by the latter. The analysts will then build up their valuation models and narratives starting from this presentation, whose content should totally be consistent with what is in the prospectus with the impossibility of adding anything that is not reported there. To avoid a

misalignment of information between the presentation and the prospectus, the consistency of the first with the second one will be carefully reviewed by both bankers and lawyers as well. The research analysts will then prepare a pre-deal research report which is independent of the IPO marketing activity and should serve as educational document for target investors towards a first familiarization with the company. The feedbacks from educated investors will then be used to set an indicative price range and start the roadshow phase.

Usually led by the CEO, CFO and Head of IR, management will have the chance to present itself directly to institutional investors and answer questions about concerns that may arise on the company. In this context the syndicate will help scheduling meetings, structuring presentations, and prepare the same management to answer questions effectively. In parallel with this phase, syndicate banks will collect the orders from the investors that will contribute to the building of the book of demand.

Finally, in the pricing phase, the book of demand closes and the bookrunners assess the waterfall of demand. On the basis of this assessment that investigates not only the demand's strength or the price sensitivity but also the investor allocation expectations and the equity market trends, the bookrunners will recommend a price deemed to maximize proceeds and foster a good aftermarket performance. Orders will then be filled with some defined criteria such as quality of the institution, size of the order, timing of the order, and type of investors. The overall process terminates with the settlement, most often 2 days after the allocation.

1.1.2 Benefits and drawbacks of going public

In this sub-section we will highlight the main reasons firms pursue IPOs and which advantages and considerations should be taken into account when companies decide whether to go public.

We draw from different scholars and professionals to gather together both first-hand benefits coming from an IPO as well as secondary ones that hide some additional considerations not always thoroughly considered in other papers. Jay B. Kesten in his 2018 research paper entitled "The law and economics of the going-public decision", affirms that the benefits of going public fall mainly into three categories: the proceeds from the offering, the expected value of future benefits to the firm, and the private benefits of the offering to insiders (Kesten, 2018). The first category makes reference to the additional capital raised through the initial public offering, i.e. through selling equity to public investors. Initially, outside investors would pay the offer price and the proceeds for the firm would then be equal to the product between the offer price and the number of shares sold on the market. The second category evidenced by Kesten refers to multiple considerations; for instance, included in this category, we find the possibility of the firm in investing in positive net present value projects or

investments thanks to the additional capital it has raised following the initial public offering. According to this perspective, these investments would generate additional cash flows to the firm and would represent for firm's shareholders an additional source of cashflow. On the other hand, there might also be other types of expected future benefits stemming from this category, such as an improvement in the visibility of the company that would grant firm's management the possibility to establish partnerships on the global scale with firms in other countries in order to place on the market alternative services or products. Most often, one might think at this category just from the point of view of raising capital to take positive net present value opportunities or de-levering, but it should also be witnessed how many benefits from the IPO comes as indirect, supplemental or consequent to the mere fact of being a public company. Finally, the third category, the private benefits of the offering to insiders, might include exit opportunities for pre-existent shareholders as well as different compensation schemes for management and key employees; the first case for instance, might resemble the case of a founder who wants to diversify its portfolio of investments and sells a stake of its company into the marketplace to outside investors (Colaco et al., 2009). Again, it might also be the case of a venture capitalist or business angel, who wants to take back her investment by monetizing it and gather a double-digit internal rate of return from it. Jean Tirole in his book entitled "Theory of corporate finance" confirms this view affirming that if the firm from the start-up stage has survived all the previous stages and will go public, the venture capitalist will sell part or all of her shares (Tirole, 2006). For what concerns instead the second case, one might think at the options compensation schemes for management and key employees; the latter, have also important implications in the expenses structure and reflect on the company's income statement and cash flow statement, other than allowing the firm's compensation committee with a higher flexibility of manoeuvre. Consistently with this view, Elson witnessed the importance of stock compensation not only as a tool to align managers' and shareholders' interests (Elson, 1996), but also as a potential consideration for acquisitions (Tirole, 2006). In addition to this first categorization done by Kesten, other scholars have repeatedly reported other potential advantages stemming from the going public decision. Among the latter, we find: an elevated reputation and visibility in the product market (Maksimovic & Pichler, 2001) and an aggrandized bargaining power with creditors that may lower the cost of capital (Rajan, 1992, Pagano et al., 1998). Ultimately, a last reflection may be done on the fact that many IPOs can also be seen as a method through which in the case of VC-backed startups, founders take back the control over their company. Indeed, as we have seen, IPOs can represent an exit option for venture capitalists; their exit would determine the extinguishment of the contractual terms related to control rights that were previously given by founder(s) to VC(s) in exchange of VC funding (Black & Gilson, 1998).

Despite all the benefits arising from the going public decision, companies should also be warned with some considerations that such decision may bring forward. In order to describe the disadvantages or costs of going public, a structure which is similar to the one above will be kept. First, there will be a brief description of the main costs and expenses related to get listed on an exchange; secondly, an analysis of the secondary implications of the going public decision will be presented. It would be useful to notice since the beginning that, despite calling them “secondary implications” they might nonetheless represent a real burden for the company. The main costs related to the going public decision regard the transaction costs, the mandatory reporting and the compliance with the laws imposed by regulators. Within the transaction costs are included all those costs that concern the underwriting, legal and advisory fees. Instead, in the second type of costs are included all those costs incurred to generate the relevant documentation and reporting control necessary to ensure compliance. Moreover, there are also the fees and expenses which are not related to the listing process but rather to maintaining the public company on the exchange of reference, called also “ongoing annual public company costs” which are estimated at \$1 to \$3 million on average (Rosenbaum & Pearl, 2022, Chapter 8 Initial Public Offerings section). Additional considerations may involve indirect consequences related to the going public decision. The latter, for instance, exposes the firm to the potential cost of revealing proprietary information (Bainbridge, 2002) to competitors in terms of corporate strategy, customers, capitalization, sales, profitability. If competitors exploit this information to improve their business model, they could potentially gain further market share at the expense of the company of reference. A supplemental issue may emerge when considering the exposure of a public firm to the possibility of an activist campaign. Activists may buy a portion of the stock and pressing for major corporate changes in the corporate strategy or in the company’s management or company’s board (Rosenbaum & Pearl, 2022, Chapter 8 Initial Public Offerings section). In the case of non-sufficient defensive strategies put in place well in advance, the company might even become the target for a take-over by another company. This would clearly represent an aggrandized concern for a company whose ownership structure is composed of shareholders that do not want to lose control over their company once it gets listed. Afterwards, a separate section will be dedicated to this specific aspect targeting a particular type of shareholders such as families, venture capitalists, private equity funds to investigate how different types might perceive an initial public offering for the company they have invested in and what their contribution to the performance of the same will be. Soderquist and Gabaldon further include in these considerations the possibility for a public company of having an aggrandized litigation risk in the form of securities class actions and breach of fiduciary duty claims (Soderquist & Gabaldon, 2006).

Having analysed the benefits and possible drawbacks that a company might be subject to when going public, we can make an overall reflection upon whether an initial public offering is always the optimal decision, which alternatives are available, and for whom such possibility is best suitable.

1.1.3 Alternatives to IPO: M&A and the Dual-track process

In this section the main interest is to identify the main alternatives available for a company that wants to go public. In particular, we will not only mention the name of these alternatives but also the main advantages, disadvantages and implications brought forward by them. This section will be voluntarily brief not to subtract space to the main focus of the entire dissertation while at the same time providing the reader with an overview of the alternative possibilities faced by a company. The main alternatives presented here are the sale process (M&A) and the dual-track process. The first possibility refers to selling to a third potential purchaser the stake in the company in the context of a mergers and acquisitions transaction. Broadly speaking there are two ways in which the exit through M&A can be achieved: private deal or auction process. In the first case, the prospective buyer of the target company will initially single out, either personally or with the help of some advisors, one or multiple individuals who may be open to negotiate the sale of their stakes. Then, discussions for the agreement will begin. Once a confidential accord has been agreed upon, the prospective buyer will be given access to additional information accessing the data room. Through the access to additional data, the buyer will be able to perform a more thorough analysis on the target company. This stage is most often referred to as due diligence. Subject to the positive completion of this phase, the buyer will present her binding offer to the seller. On the other hand, following the second possibility, there won't be a private dialogue with a single private buyer. Instead, multiple interested potential buyers will be assembled to compete against each other simultaneously. From a theoretical point of view, by maximizing the competitive character of the selling mechanism, higher offers might be achieved. After an initial screening of the most suitable candidates, these chosen contenders will be given access to a data room where they will have the possibly to gather more insightful information about the target company's financial status and legal record. The latter will be fundamental for them to carry out the process of due diligence on the target company. Afterwards, the remaining candidates will bring about a legally binding offer to the target company, and a decision will be taken by the latter upon the winning bid (Previti, 2018). Although some of the advantages of the choice of one over the other are intuitive, a brief presentation of the most general ones is presented below. From the perspective of the private deals, the target company might have the following benefits: speed, confidentiality, control, flexibility. Private deals are usually faster than auctions and involve a lower sharing of information which might preserve the confidentiality of information avoiding that competitors might

acquire knowledge of sensitive information of the business disguising themselves behind seemingly interested buyers. Moreover, this mechanism confers more control and flexibility over both the process and the terms of the deal which facilitates the meeting of their own peculiar needs in the transaction. On the other hand, a selling process via auction would provoke a competitive tension among the prospective buyers which might push up the final bidding price, although it might reduce a bit confidentiality as well in addition of being usually lengthier. M&A strategists might also engage first in private negotiations leveraging on the potential of starting an auction process in the case in which the counterpart does not meet the sufficient requirements for the sale asked by the target company.

The sale through M&A is not the unique way through which shareholders can monetize their stake; an additional mechanism is offered by the dual-track process. The dual-track process involves a company filing for an initial public offering (IPO) while simultaneously negotiating a private acquisition with potential buyers on a confidential basis (Previti, 2018). There are two approaches to this process: private and public. In the private option, the company will halt the IPO process and be sold to the acquirer before going public. On the other hand, in the public option, the company will first complete the IPO and then be sold to the acquirer, who will have to go through the mandatory tender offer process. This process may affect the timing and cost of the overall deal. However, the advantage of the public option is that it provides greater flexibility and allows the company to disclose information to potential investors and acquirers, thus reducing the information asymmetry and potentially attracting new investors. The company can choose the optimal approach until the final moment. However, it should be noticed that executing both strategies in parallel, including filing all the necessary documentation, may prove to be very tough and costly. The latter consideration does not concern only the monetary expenses related to hiring legal and financial advisors, filing the documentation and meeting the requirements, but also the costs in terms of precious time subtracted to management. This process, if not appropriately managed could really reveal to be catastrophic for a company's operations and profitability. Related to this last consideration in the next section we will also evaluate the appropriate characteristics of a firm aiming to pursue the public option.

After having explained the two main alternatives to the initial public offer, a comparison in terms of exit options between IPO and M&A reflecting on what has been the contribution of the literature in previous years is reported below. Chaplinsky & Gupta-Mukherjee examined capital recovery in the VC industry using returns for 1,215 M&A and 1,401 IPO exits from U.S. based venture-backed companies during 1985 to 2008. The mean and median company-level returns from IPO exits were 209.5% and 108.8% compared with 99.5% and -32.1% for M&A exits (Chaplinsky & Gupta-

Mukherjee, 2013). On the other hand, scholars such as Gao et al. supports the view according to which in light of the advancement of technology small firms are required to scale up quickly. Such growth can better be achieved as part of a big and consolidated firm that can exploit economies of scope to foster its growth; therefore, they advocate small firms' exits in favour of M&A exits in contraposition to IPOs (Gao, Ritter, & Zhu, 2013). Although, there might be a certain appeal for M&A exits, entrepreneurs would generally lose control choosing this alternative. These benefits of control other than being significant (Black & Gilson, 1998) constitute an important aspect that drives the choice of the entrepreneur towards IPOs (Schwienbacher, 2008). The latter will be one of the propositions from which we will depart in the building up of our reflections on the family firms' section of the dissertation that will follow after the present introduction on the IPOs and the consequent presentation of the Italian IPO Market and ideal IPO candidate.

1.2 The Italian IPO market

In the present section, a presentation of the Italian IPO market will be offered and will serve as the foundational basis of our statistical study on the performance of family firms in IPOs. The Italian IPO market will be dissected into three main relevant aspects: its history, its regulations, its trends. Moreover, some considerations over the ideal IPO candidate will be made, with great attention put in the perspective of a potential investor identifying a newly listed company to invest in. Concerning this last point, a reflection upon the attractive characteristics of a target company aiming to go public will be proposed.

The Italian Stock Exchange was established as we know it today in 1998, however, its roots extend much further back in history. In 1808, the first organized securities market in Italy was set up in Milan, called the "Borsa di Commercio di Milano". Throughout the years, other exchanges were established in various parts of Italy, and in 1998, these exchanges were combined to form the Borsa Italiana that we know today. Although the current version of the exchange was created in 1998, its history can be traced back to 1808.

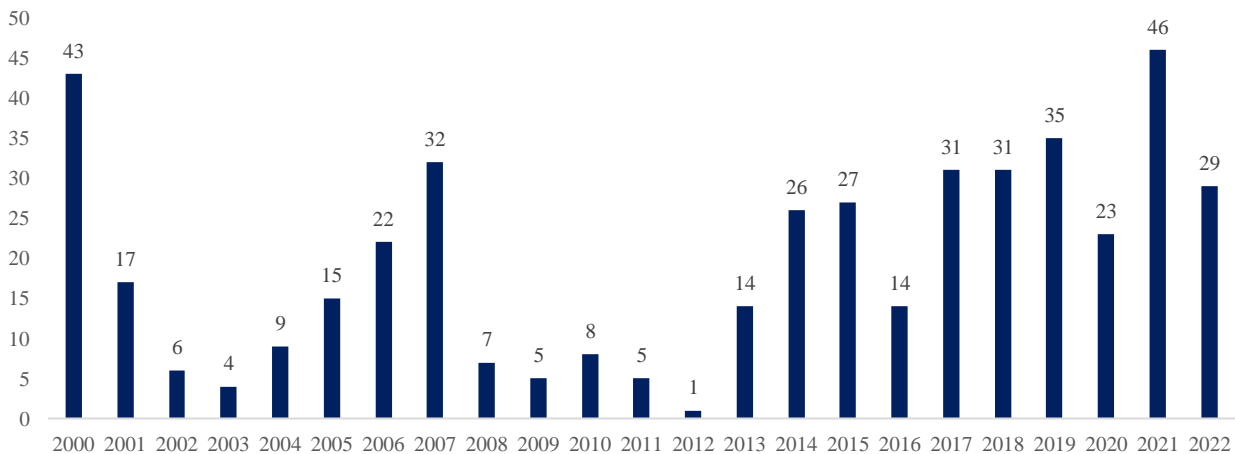
The Italian stock exchange is run by Borsa Italiana S.p.a., which encompasses both regulated and unregulated markets. The regulated markets consist of the Mercato Telematico Azionario (MTA) and the Mercato Telematico degli Investment Vehicles (MIV). Within the MTA, there are three types of stocks: blue chip, star, and standard (Teti & Montefusco, 2022). The unregulated markets include the Multilateral Trading Facilities (MTF), which encompasses the Global Equity Market (GEM), Trading After Hours (TAH), and the Mercato Alternativo Dei Capitali, also known as the Alternative Capital Market (AIM). The AIM is specifically designated for small to medium-sized enterprises with high growth potential.

The primary venues for Italian Initial Public Offerings (IPOs) are the MTA and the AIM. Companies seeking to list on the MTA must have a minimum capitalization of 40 million euros and provide a minimum free float of 25%. In addition, they must have been in operation for at least 3 years and must abide by the regulations of the Italian Financial Act. To be listed, they must also submit a prospectus, which contains information such as audited financial information from the past three years. The prospectus will be evaluated by the Italian authorities. Companies listing on the AIM are required to provide a minimum free float of 10% and must submit an admission document, which is less comprehensive compared to a prospectus. The admission document will be reviewed by a designated adviser who is responsible for ensuring compliance with the requirements.

The entities responsible for overseeing the Italian stock market are the Italian Securities and Exchange Commission (Consob) and Borsa Italiana S.p.a. Borsa Italiana manages the Italian Stock Exchange by determining the procedures that companies must follow to go public and by granting or denying their listing on the exchange. Meanwhile, Consob is an autonomous regulatory body whose mission is to protect investors and maintain the transparency and efficiency of Italy's financial markets. To fulfil this mission, Consob also oversees the entire IPO process, including the review of the prospectus. From October 25th 2021, the equity markets managed by Borsa Italiana have changed denomination. The Mercato Telematico Azionario (MTA) has become Euronext Milan (EXM); The STAR segment (STAR) has become Euronext STAR Milan (STAR); The AIM market (AIM) has become Euronext Growth Milan (EGM); The MIV market (MIV) has become Euronext MIV Milan (MIV). The listed companies' total capitalisation on 30 December 2022 in Borsa Italiana was 625,689.36 million euro, splitted between 1.69% in the Euronext Growth Milan and 98.31% in the Euronext Milan (Borsa Italiana, 2022). By looking at the historical data on IPOs we can also study the number of IPOs occurred in the last few years. In particular, we identify the following number of initial public offerings for the years 2000-2021 including both the AIM and the MTA (*Source: Dealogic 2023, Exchange Nationality equals Italy*).

IPOs in the Italian Market across 2000-2022

(Source Dealogic 2023)



The year 2021 was a record year for IPOs with a sensible increase with respect to the average number of IPOs of the previous five years. From a bird's eye view, the year 2021 was a record year for IPOs worldwide. According to a study published by Ernst & Young (EY) the number of initial public offerings worldwide in 2021 increased 64% YoY to 2,388, while the global IPO issue volume went up 67% to \$453 billion (Business Standard, 2021). With a closer look, we can also highlight the IPO market in US in 2021 by looking at the main stock exchanges. In an article published on the Nasdaq website Phil Mackintosh reports the number of new listings on the NYSE ARCA, BATS, NYSE AMEX, NYSE, Nasdaq being equal to 1,033 (Nasdaq, 2021). The record was supported not only by the number of listings but also by the size of the total capital raised through this initial offerings. The results are confirmed by the data publicized by J. Ritter (Ritter, 2023). An additional element that can be noticed in the case of the Italian IPO market, apart from being consistent with the record registered worldwide in 2021, is its cyclical character.

Cyclicity in the IPO market is a characteristic that has been repeatedly discussed by several scholars, and it will be necessarily included in the present analysis too, within the parameters of the IPO performance function, both in the short run as well as in the long run. In this introduction on the IPO market we will present the meaning of cyclicity in the IPO market and its understanding will then be necessary to initiate the discussion of the present IPO performance study. According to this IPO cycles we move from "hot phases" with a high volume of IPO activity and relatively high valuations, to "cold phases" in which both the frequency as well as the relative valuation of IPOs goes down (see Ibbotson & Jaffe, 1975; Hoffmann-Buchardi, 2001). These IPO waves can be determined by a multitude of factors which are deemed to be not mutually exclusive one with the other and can determine a heightened or decreased IPO activity in a given country. According to literature, there are four elements that determine the emergence of these cycles: changing economic or business

conditions, the effect of asymmetry of information between insiders and public external investors, political uncertainty and investors' current sentiment (Kesten, 2018). These factors might also contribute to extend these phases longer in time or to decrease their duration. For instance, according to the interview released by the partner and head of IPO and Listing Services for EY Germany Martin Steinbach, 2021 was a record year for the IPO market because despite the Covid-19 pandemic, "investor sentiment worldwide was very positive, volatility was contained and there were no new economic downturns" (Business Standard, 2021). Just by looking at the graph highlighted above, one may suddenly recognize the cycles occurring in the IPO market even in the Italian case, despite the fact of being a market which still has much to do in terms of development with respect to other more experienced markets such as the US ones. In the IPO performance section, we will also compare this peculiar trait to other variables such as IPO underpricing and we will present more in depth some of the explanatory theories for those cycles which have been offered by previous literature.

After having discussed the Italian IPO market and having evidenced some of the characteristics of the market in terms of regulation, trends and characteristics we can now move to the following section where an overview of the family firms with reference to the corporate governance structure and examples drawn directly from the Italian experience will be offered to the reader.

1.3 Family Firms

In the present section, the focus will be on companies that can be included in the broad category of family firms. Family firms distinguish themselves primarily for their ownership structure; the latter has then implications on the corporate governance and the performance of the same. The aim is threefold: introduce the main characteristics of this type of firms, provide some examples fully drawn by the Italian landscape, reflect on the potential implications of the attributes of family firms. In parallel, a constant comparative reference will be made to external sources, past literature, and contemporary scholars that have discussed some of the aspects investigated in the present paper.

1.3.1 Main characteristics of family firms

Family-owned business are widely spread and prevalent in many economies and have been so for generations (Colli, Fernandez-Perez, & Rose, 2003). With the passage of time, scholars have identified multiple definitions for family firms, but it appears to be very hard to give a unique definition that is able to apply everywhere and at any time. To better explain the issue concerning a unique definition for family firms and to provide context for the latter we will report some of the definitions that have been given. Habbershon et al. offers a definition that represents the family firm as a commanding, assertive alliance that moulds the outlook of a company across generations

(Habbershon & Williams, 1999). Already in this description many of the characteristic elements of a family firm are highlighted: its trans-generational character and its power to exert dominance on the firm's fate and strategy. The generational character of family firms is evidenced also in the definition provided by Colli et al. but the latter makes explicit more detailed components of a family firm: "[...] a family member is chief executive, there are at least two generations of family control, a minimum of 5 percent of voting stock is held by the family or trust interest associated with it" (Colli, Fernandez-Perez, & Rose, 2003). In this last description of family firm, additional attention is focused on the controlling character exerted by the family members; the latter is typically exercised through the Board (BoD) and/ or the Chief Executive Officer (CEO). Indeed, according to Miller et al. the definition would then be: "one (a firm) in which a family has enough ownership to determine the composition of the board, where the CEO and at least one other executive is a family member, and where the intent is to pass the firm on to the next generation" (Miller & Le Breton-Miller, 2003). More generally, the definition of "family controlled business" would entail one in which "due to their ownership, family members enjoy certain control rights over the firm's assets and use these rights to exert influence over decision-making processes in the business" (Carney, 2005). Each of the reported definitions adds an element or emphasize an aspect more than the other; they are all correct and properly defining the concept of family firm. There is no definition that should be cut off the sample because of imprecisions. However, what should be noticed is that depending on the society under analysis, namely the institutional context composed of the reference legislation, actors and productive workforce, the elements building up the overall definition are then declined in different manners. Most research have studied family firms gathering attention around the relationship between ownership and control and their closeness to each other. However, when analysing family firms, the most important trait is not the mere ownership or percentage stake a family group has in a business, rather its ability to effectively exert control on the same. As accurately reported by Claessens et al.: "Control is often enhanced beyond ownership stakes through pyramid structures and cross-holdings among firms, and sometimes through dual-class shares, with the divergence between cash-flow rights and control rights most pronounced in family-controlled firms" (Claessens, Djankov, Fan, & Lang, 2002). Briefly recalling the meaning of pyramid structures and cross holdings, we refer to the first one in the case the ownership of a firm is achieved through a sequence of different level-ownerships of intermediate corporations; instead, we refer to the second when there are connections both vertical as well as horizontal among corporations that build up the overall control of the ultimate shareholder. Finally, dual class shares refer to a structure of shares that includes shares with different voting rights with respect to the other shares. This differentiation contributes heavily to the creation of a pronounced difference between control rights and cash flow rights. According to Michael Carney,

family firms are notably shaped by three distinctive traits: parsimony, personalism, and particularism (Carney, 2005). The first trait refers to the inclination of family firms towards an attentive savings of the resources both in terms of maintenance as well as in terms of allocation of the same. This tendency stems from the fact that since the resources correspond directly most often to the same family's wealth the owner-manager will be affected by a more risk-averse behaviour in their management. The second aspect, namely "personalism" refers instead, to the joined ownership and control held in the hands of the figure of the owner-manager or family, who will be the leading agent of the vision enshrined in the family for its own firm. Finally, particularism makes explicit reference to all those practices which are typical of a family firm and that distinguish it from other types of corporate governance models. Practices affected by such particularism may regard the selection criteria of the CEO, employees, financiers, etc. Usually, these practices are not necessarily led by rational decision-making criteria that are based on historical information, performance data, or reviewed projections. They are based on the perception of the business as a personal belonging. Examples of those behaviours put in place might be altruism or nepotism. This last trait, although very common in family firms, can severely alter the dynamics and efficiency of a firm's business. The alteration may impact directly the first two characteristics, namely personalism and parsimony. Investigating additional aspects singularizing family firms from non-family firms, Thomas M. Zellweger et al. introduces into the overall discussion an additional aspect which is deemed to be fundamental for the analysis of family firms: socioemotional wealth (Zellweger, Kellermanns, Chrisman, & Chua, 2012). It has been witnessed how family firms are involved not only in the pursuit of financial targets, but also of non-financial ones which consist in family-centered non-economic goals; the latter according to Astrachan et al. would produce emotional value (Astrachan & Jaskiewicz, 2008) or, equivalently, socioemotional wealth (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). This wealth, invisible in the eyes of outsiders, can be interpreted as an added value the family-owners of the firm attribute to the firm for the mere fact of possessing the firm, generated from the emotional links that connect the family with the firm itself. Family-owners become attached to the firm as if the latter was not anymore, a financial object, but something deeper which represent a source of socioemotional wealth for them. Some scholars have also tried to identify, quantify and single out the main drivers of this phenomenon achieving interesting results. Namely, Zellweger et al. identified three drivers for this phenomenon: control, duration of control, and transgenerational control intentions (Zellweger, Kellermanns, Chrisman, & Chua, 2012). The first driver, which is deemed to be *conditio sine qua non*, is implicit in the definition of family firm, i.e. the necessity of being in control of the firm. The second driver instead, theorizes that the longer the duration of such control the higher the attachment provoked in the controllers, i.e. the family-owner. Such proposition is based

on the works of Boyce et al. on the self-attribution mechanism (Boyce, Brown, McClelland, Peterson, & Schulze, 1992). That sense of possession to which the author refers is also corroborated in the works of Belk (Belk, 1992). Finally, the third driver instead, makes reference to the willingness of the family to transmit the control of the firm to the next generation. This is the driver which emphasizes the socioemotional wealth the most, i.e. the highest premium family owners identify by controlling the firm.

After having identified the main characteristics of a family firm, and its most peculiar traits that distinguish this type of firm from the others, a reflection upon those traits is presented below. The discussion will be mainly conducted on the discussion over the prevailing advantages and disadvantages of family firms. In the literature, we find two factions: scholars who advocate for the advantages and benefits related to being a family firm (e.g. see Carney, M. 2005, Whyte, 1996), and scholars that highlight the disadvantages or drawbacks of family firms (e.g. see Chandler, 1990, Demsetz & Lehn, 1985, Schulze, Lubatkin, Dino, & Buchholtz, 2001). Among the advantages it is noticeable the positive effect that might have parsimony in scarce environments (Staw & Sz wajkowski, 1975). The fact of being conservative might be meaning that resources are allocated with a high level of attention in activities which are deemed to be value-creating. Therefore, family firms will be much careful in the expenditures related to the business especially in periods of crisis as it also witnesses the resilience of Italian family SMEs during the Covid-19 crisis. On the other hand, such conservatism might impede the firm to invest in high value creating opportunities because deemed not to be in line with the risk profile embraced by the family firm, which according to this analysis appear to be relatively lower than the average. Risk-aversion might indeed be more pronounced for family firms, but this is a trait for which an entire sub-section will be dedicated soon after. A by-product of the personalism and particularism described by Carney, is social capital (Carney, M. 2005). Social capital involves all those benefits related to be part of a network of relations which can grant immediate access to people, insights, connections, customers. According to Gulati, social capital represents a source of value for the firm allowing the latter to sensibly decrease all those expenses related to market research, screening of opportunities, contract enforcement (Gulati, 1998). On the other hand, social capital might also be exploited inappropriately as an inefficient and sub-optimal choice although less expensive that might drive down the quality of the business management. Therefore, having such a possibility represents a double-edged sword for a family firm. Most often, family firms are led by the figure of the owner-manager as we have presented at the beginning of this section. This peculiarity might speed up the decision-making process of the management in the case in which the owner-managers evaluate the investment decision using some mental accounting processes as shortcut (Redding, 1990). In certain industries characterized by fast-

paced environments it might be imperative to use these shortcuts. Nonetheless, if on the one hand, speed and flexibility of decision-making process can allow the firm to enter more rapidly than others in innovative sectors, or to catch immediately attractive opportunities, it should also be noticed that those shortcuts may bring about negative consequences as well. Indeed, it has been widely discussed that mental accounting leads to poor decision-making process, especially in the presence of sunk costs (see e.g. Fennema & Perkins, 2008). A biased decision-making process could bring about huge losses for the firm and its owners. An additional element that can be considered within the trait of “particularism” (Carney, 2005) is that while it might allow a greater flexibility in many tasks related to the management of the firm, on the other hand, if utilized as a shortcut in the name of closer contacts, friendships, parental relations it might lead to the appointment of sub-optimal executive or operating staff. Such a choice would hinder the performance of the firm leading it to a sub-optimal result with respect to its real potential. The quality of managers would be at stake if chosen on the basis of particularism as main guide of selection (only in the case such particularism develops not in the form of meritocracy expressed as historical record of the manager’s activities but as nepotism, family ties, relationship of other types of non-meritocratically objective selection criteria). A last consideration can be made on the aspect of socioemotional wealth and the implications that it might have for the giving up of the overall or just a portion of the equity of the firm. As we have described above, socioemotional wealth can determine a real attachment of the owners to the firm. This might imply for them seeing an added value on top of the objective valuation of the firm which might determine a misalignment of considerations between those ones external to the firm and those ones internal to the firm. If not smoothed, this misalignment of valuations might impair the firm’s capability to raise additional capital in order to grow. The higher is this attachment, the higher would be the gap between external and internal investors, and namely the harder will be to come to a compromise in the negotiations. Fortunately, we can also leverage on the previous highlighted characteristics to smooth this gap or to gain an aggrandized bargaining power when dealing with family firms; this reflection might be well-helpful in the case of an M&A deal or even in the case in which an investment bank is pitching the family firm for an IPO.

1.3.2 Italian Family Firms

In the present section, our study will expand further on the presentation of Italian family firms. This specification made ad hoc on Italian family firms will be necessary to improve the context of the present study, namely highlighting the specific peculiarities of the context from which the sample for the empirical part of the study will be taken. The section is also intended as complementary to the previous one, helping the reader giving context to the traits highlighted above.

Historically speaking, family businesses have constituted a fundamental role in the economic context of Europe; Family ownership is very popular in the Italian context due to a combination of institutional and cultural factors (Franks, Mayer, Volpin, & Wagner, 2012). Indeed, in Italy, this phenomenon is even more aggrandized, representing about 85% of businesses and 70% of occupancies (KPMG, 2021). Concerning some data on Italian family businesses, the survey carried out by KPMG in collaboration with European Family Businesses (EFB) in 2019 (KPMG, 2019), showed that:

- 59% of interviewers appeared optimistic (below the European average).
- 11% of interviewers was planning the succession of the property of the business in the hands of the next generation.
- 43% of interviewers planned the succession of the management responsibility to the next generation.

What's most interesting in this report is that the majority of interviewers (62%) has planned to appoint as chairman or director general a family member, but such percentage falls at 52% in the case of family firms with more than 1,000 employees (KPMG, 2019). This might well signal the stepping back of the bad dynamics related to particularism described in the previous section concerning the appointment of people close to the family in the case of key leading roles for the firm as the firm gets bigger and bigger. All of that might be required as the size of the firm gets bigger because competition gets higher and tougher, strategy becomes fundamental in order to survive, and therefore more professionalism in the key roles is paramount. For instance, the latter might be found in an external manager with a successful historical record of previous roles. An additional element emerging from the report should be discussed; It appears that in Italy 44% of interviewers affirmed to have registered an increase in the business at the international level; this data might well be helpful in the understanding of the precious needs for financing of those Italian family firms willing to expand and scale up at the international level too. In this context, equity capital markets could well be of help for those family businesses, granting them access to the resources they need to embrace the growth they pursue in the international context.

The impact of family ownership in businesses is not homogeneous across countries, and family businesses may be characterized by more or less pronounced benefits stemming from the family ties. While analysing the impact of those family ties on Italian family firms, an interesting study offered by Amore, Pelucco, and Quarato investigated the reaction of family firms to the Covid-19 pandemic with respect to non-family firms (Amore, Pelucco, & Quarato, 2022). The analysis shows that family firms significantly outperformed non-family firms throughout the pandemic year of 2020; family

firms appeared to show higher returns not only when they did not have large minority investors but also when more family members were involved in the firm's ownership. Such outperformance was greatly witnessed in labour-intensive industries. In addition family firms were also found to generate more revenues relative to their asset base and higher revenues growth rates with respect to the non-family counterparts (Amore, Pelucco, & Quarato, 2022). Possibly, family ties have deeply helped family firms managing their relationships with firm's key stakeholders, allowing for more flexibility in such a period of turbulence. In this case, family firms' particularism may have been well beneficial for the overall performance of the firm, allowing for faster decisions, more flexible employee relationships and higher productivity of employees received in exchange for the long-term orientation of the firm.

Finally, the rootedness of the tradition of family firms in Italy is also reflected in the study of the life cycle of family ownership. According to previous literature, firms are usually subjects in constant transformation, transitioning from family-owned enterprises into corporations which are widely held and managed by a professional manager (see e.g., Berle & Means, 1932; Chandler, 1977). This transition would entail the outsourcing of the management of the company towards a non-family member which is indeed an expert, a widely recognized professional with a proven track record. In a comparative study, executed at the international level, Franks, J., Mayer, C., Volpin, P., & Wagner, H. F. (2013) studied the life cycle of family ownership in four different countries: France, Germany, Italy and United Kingdom (Franks, Mayer, Volpin, , & Wagner, 2013). The evidence found is fully consistent with all the traits of family firms and Italian family firms we have discussed up to this point. While the above-mentioned scholars found a strong negative correlation between family control and firm age in the UK, meaning that the older gets a firm, the more likely it is to be non-family controlled, in Italy and in the other two countries sampled such evidence is absent. From a practical standpoint, it appears to be much more likely for Italian family firms to remain family controlled with respect to their UK counterparts (Franks, Mayer, Volpin, , & Wagner, 2013). As it appears from all the relevant studies presented above, family firms not only constitute a predominant and fundamental type of firms in the Italian landscape, but they present some peculiar characteristics and a strong rootedness too.

1.4 IPO valuation and performance

In the present section we will expand further on the event of an initial public offering from different standpoints. First of all, we will discuss the main methods of valuation of a firm aiming to go public; then, we will consider the performance of firms in IPOs and what "success" effectively means for those firms. Lastly, we will decline the assessment of the performance of firms gone public into two

main perspectives, one based on the immediate after-going public event, and one instead based on a more longer-term view. As for the other sections, also in the present one we will also investigate past research and we will build up our knowledge of this specific event.

1.4.1 Valuation of a firm at IPO

In the present section the aim is to identify the theoretical value per share of the firm willing to go public. We will also link some aspects to the offer price that will be needed in the next section to compare the theoretical value of the firm to its post-IPO market capitalization, measured as the product of offer price and number of shares outstanding after the issue is done. Before delving into the analysis, it might be beneficial to notice, for the sake of understanding of the overall analysis, that the theoretical value per share determined pre-IPO might be then different from the price at which shares will be offered out to investors, i.e. the offer price. As we will see, the latter might be affected by additional considerations that may make it unequal to the originally estimated theoretical value per share of the firm. The valuation of the theoretical value per share in the pre-IPO context can be seen as a prelude to setting the offering price in an IPO (Damodaran, 2017). Indeed, we find ourselves in the context of giving a valuation on a private firm transitioning from the private to the public dimension. According to Damodaran (Damodaran, 2017), this type of valuation is peculiar in that potential investors in the company are assumed to be diversified. Therefore, when considering risk in the valuation we can look just at the part that cannot be diversified further, e.g. the market risk or systematic risk (Berk & DeMarzo, 2019). In order to perform an initial valuation on the firm, we can first streamline our valuation based on two separate but both helpful approaches: the discounted DCF and the multiples method. The first one will provide us with an intrinsic view on the value of the private firm, while the second one will give a relative view based on the current conditions of the market, the sector and the specific comparable companies used in the overall analysis. Starting with the estimation of the beta of our company, noticing that the firm is still private at the moment of the performance of the valuation, it should be immediately noticed the necessity to estimate the beta of the company using the Hamada's formula (Alam, 2022). Professionals might indeed use a bottom-up approach consisting in the following process; firstly, the business model of the company is identified, together with its sector of reference, the competitors, the broad industry, its risk sources both in terms of those ones related to the revenue generation as well as to the costs. Then, after having appropriately selected a panel of comparable companies for the target company, we can de-lever each beta of the comparables and compute for each one of them their unlevered betas. One should notice that those betas are market betas, reflecting the systematic risk of those companies with the market. Since, in accordance with Damodaran, this type of valuation is done on a company aiming to go public and

investors are assumed to be diversified or equivalently to have such possibility, we do not need to involve in the calculation of the beta other sources of risk, considered to be non-systematic or company-specific (Damodaran, 2017). Just for comparison purposes, in the case of a private-to-private transaction, we would have had to compute for each comparable firm their total beta as being equal to the ratio between their market beta and the square root of the R-squared of the regression made on the excess market return of the excess return of the listed comparable companies. This would have been done to comprehend in the betas also the other sources of risk not considered to be systematic that would have affected the investor unable to diversify her portfolio. Being that not the present case, we limit ourselves to take the median or mean of the unlevered betas of the comparable companies and to re-lever it using Hamada's formula (Vulpiani, 2014). Following the Damodaran's reasoning, at this stage of the process, namely in the re-levering phase we are in front of two alternatives; in the re-levering process we should use the target capital structure which might be assumed to be proxied by the average D/E ratio of the industry; on the other hand, we might use the current capital structure of the company, however we would incur in a circularity issue, due to the fact that we are needing the cost of capital to get the values and the values to get the cost of capital (Damodaran, 2017). Thus, we can compute the re-levering process and compute the levered beta of the target company. Once done that we can proceed with the estimation of the cost of equity capital for the firm, by summing the risk-free rate to the equity risk premium weighted by the levered beta of the target company. For what concerns the estimation of the debt cost of capital, we can sum the risk-free rate to a spread associated with the interest coverage ratio (ICR) of the target company computed as operating income over interest expense. Then, in the calculation of the weighted average cost of capital we will use the same capital structure that we used previously in the re-levering exercise for the beta calculation. We can then apply an unlevered DCF to estimate the value of the company pre-IPO. However, some aspects will obviously have an impact on the FCFF projections of the firm such as its growth rate. The overall valuation might also be affected by the usage of proceeds from the IPO by the company. For instance, if the company decides to invest the proceeds to take on a particular project, or whether the company uses the proceeds for de-levering purposes. In the first case, that would determine an added-value flowing into the company in the form of additional cash flows flowing into it; in the second case, the de-levering would determine a change in the capital structure that on its turn might affect the overall cost of capital. If instead, the cash proceeds from the IPO have not been already allocated to an imminent project, then such additional cash should be added in the DCF valuation methodology for the target company. Once we discount the free cash flow to the firm or unlevered free cash flow and their terminal value, then through the enterprise value to equity value bridge we estimate the equity value for the company. Usually, in the context of a

valuation for a private firm, professionals might also apply a liquidity discount which is about 20-30% (Damodaran, 2017). However, in the case of a private firm aiming to go public, upon ending of the transition there will be an established marketplace for the shares that will cope with the initial lack of liquidity of the same; therefore, such discount won't be applied in this case.

For what concerns the multiples method instead, the approach is to use trading multiples of comparable companies which are already listed on the market. Multiples can be seen both from the equity-side with special reference made to P/E (price over earnings per share) multiple as well as asset-side multiples with the main reference represented by the EV/EBITDA (enterprise value over earnings before interest, taxes, depreciation and amortization) multiple.

As stated at the beginning, the theoretical share value estimated following the above procedure and furtherly checked and adjusted using the multiples method, might differ from what will be the offer price at the moment of the issue in the IPO process. The differences might stem from several factors impacting the decision upon the setting of the offer price. Among those latter, there might be: the presence of particular rights belonging to early investors such as VCs of the company to buy or sell shares at a determined price, the type of contract negotiated with the investment bank and the type of guarantees offered by the same, the company's plans for potential follow-on offerings after the IPO, or the presence of a greenshoe. All those considerations together might affect not only the offer price but also the issue size. For instance, most often, in the case of IPOs, the investment bank will guarantee the offering price to the issuing company. Since, the investment bank might not be willing to then buy itself the stock remained unsold on the market, it might lower the offering price to not bear this risk or to reduce sensibly this risk, being more assured of being able to sell the whole issue out to investors.

In this preliminary section we have discussed the main methods of valuation for companies aiming to go public, beginning from the valuation of a private company but contextualizing the life stage and the aim of the company itself in forming the building assumptions of the model and a thorough comprehension of its value. We have also given attention to the source of risk affecting the company and discussed whether a liquidity premium was really needed. Finally, we anticipated some of the reasons why the offer price might be different from the theoretical value per share of the company as it was estimated with the above-mentioned reasoning. In the following sections, we will start from the offering price and we will study the IPO performance in its main two declinations: short-term and long-term, referencing to past studies on the subject and defining IPO success.

1.4.2. How to measure IPO performance

After having seen the foundations of the theoretical value of a company aiming to go public, we can also discuss what happens after the IPO. In particular we are interested in defining what “success” means in the context of an IPO. The aim is also to discern this definition of success from the perspective of the multiple parties involved in the event. Then, a brief overview upon the performance measurements of an IPO will be offered by mentioning the most popular ones. In the present section we will also report an alternative measure of IPO performance that appears to be based on the medium-term view. Then, the main three measures of performance will be declined into three different perspectives: the post-IPO market capitalization of the company, the first-day trading return of the stock, and the long-run share price performance. Finally, their main attributes and their theoretical basis for their measurement will be discussed.

The term “success” in the case of an IPO might entail different aspects of the process. Those aspects depend on the perspective of whom we are defining success in the case of an IPO. To better explain the concept of success, we can take as reference different parties to the same IPO: the issuing company, the underwriter, and the first-hand investors which will buy the stock at the offer price. The issuing company might define success the case in which the proceeds raised in the IPO are maximized, namely when the company has raised enough capital from the IPO to deem itself satisfied. On the other hand, the underwriter’s success would be that of placing all the shares on the market out to investors and not to remain with some shares unplaced that will then be needed to be bought by the same investment bank bearing the difference in price as a loss. Finally, for the initial investors, those ones acquiring the stock at the offer price they would be more than happy if the stock price would appreciate immediately after the offer. Such heterogeneity in the views of definition of success in the context of an IPO has brought forward different measures of success, both looking more in the immediate post-IPO phase, some others looking at the first trading day ending, and again others looking more in the future to gather conclusions on the overall IPO effect on the company. In the first case, we would look at the immediate post-IPO market capitalization, computed as offer price times the number of shares outstanding; in the second case instead, we would look at the share price appreciation in the first day of trading, so the difference between the offer price and the price of the stock at the end of the first day of trading; finally, in the third case we would look at longer-term measures of performance such as the stock price performance 3 years post-IPO considering also potential dividends paid out to investors.

Among these views on IPO success and how to measure success, some scholars and professionals have also envisaged other measures. An example of that, is the new metric adopted by Binder et al.

in the study of a sample of 230 IPOs around the world between 1991 and 2000 ranging from \$50 million to \$18 billion (Binder, Steiner, & Woetzel, 2002). Before describing this alternative measure, a bit of context is needed to understand why those scholars have come up with an alternative measure. In particular, the phenomenon of the first-day trading share price appreciation (our second case mentioned above) has been named by several academics as “underpricing”, reflecting indeed the difference between the initial offer price and the price of the stock once the first day of trading ends. This latter case has been the aspect most often taken into consideration when dealing with and defining the IPO “success”. Indeed, also according to McKinsey <<one common indicator of success that many IPO watchers continue to apply is the increase in the share price on the first day of trading>> (Binder, Steiner, & Woetzel, 2002). However, this metric of success is contradictory sometimes, due to the fact that an initial excessive first day appreciation would also reflect a mispricing of the stock and a failure to appropriately sell the stock for a fair price out to investors.

The alternative these scholars propose is a measure based on two parts, one reflecting market competitiveness and the other reflecting market pricing (Binder, Steiner, & Woetzel, 2002). Indeed, it prescribes to assess both the market competitiveness and the market pricing of the stock 30 days after the IPO. The market competitiveness is judged based on the relative valuation of the stock with respect to its peers; this consists in a relative value assessment comparing trading multiples (market to book value in case of banks and financial services companies, market value of equity to earnings or enterprise value to EBITDA for industrial companies). In the case in which the company’s trading multiples are higher than those ones of its peers, then it means that the company has a great degree of competitiveness on the market. On the contrary, if the company had lower trading multiples, it means that its market competitiveness is not adequate to the one held by its peers. The second metrics taken into consideration is the market pricing. The latter prescribes to have a change lower than 20% between the price at the offer in the IPO and the 30-day post IPO one. This measure might be well included in the medium-term horizon across the measures of IPO performance.

As stated at the beginning, we can divide those measures of IPO performance in three time-buckets: immediately after the offering, after the first-day of trading, three years after the IPO.

In the first case we would refer to the post-IPO market capitalization, defined as the product between the offer price and the number of shares outstanding upon completion of the offering. We have already discussed how the offer price is built up gradually, though an iterative process, therefore the immediately post-IPO market capitalization defined in the manner above, is susceptible to several factors.

In the second case we would refer to the underpricing of the stock, stemming from the difference between the closing price after the first day of trading and the opening price, namely the offer price. The level of underpricing in an IPO is defined as the return on the stock assuming an investor bought it at the offer price and kept it until the end of the first day of trading; in formula we would have that:

$$\text{Underpricing} = (\text{closing price after first day of trading} - \text{offer price}) / \text{offer price}$$

In the IPO context, underpricing has been widely discussed. It occurs when the first day closing price is higher than the offering price. Underpricing appears to be recurring in IPO transactions and several theories have been proposed by past literature aiming at explaining its causes. In the present section we can report the main categories of these theories and we can also investigate their roots. The first group of theories attempting to explain the phenomenon of underpricing are based on asymmetry of information (Daugherty, M. S., & Jithendranathan, T. 2012) between the key parties in an IPO transaction, namely the firm going public, the investment bank responsible for the underwriting and the marketing of the entire issue, and the investors who will purchase the newly issued stock. Rock in the formulation of his theoretical explanatory model for underpricing suggests the existence of two types of investors: informed and uninformed (Rock, 1986). Firms, to ensure the participation at IPO also of these uninformed investors should offer a discount to the share offer price; the greater the advantage of superior information these informed investors have, the greater the discount should be (Rock, 1986). Consistently with this view on asymmetry of information, Ritter affirms that a high degree of uncertainty about the true price of the IPO will bring about higher underpricing (Ritter, J. R. 1984). This is based on the reasoning that informed investors should be compensated for the cost of information gathering. Since the latter will increase in a context characterized by a relatively high level of uncertainty, then the more this uncertainty concerning the true price of the issue, the more underpricing would be needed for the compensation of this cost of information gathering. The second type of theories associated with explaining the roots of underpricing is constituted by the group of institutional reasons. According to Hughes and Thakor, underwriters deliberately underprice the issue as a kind of insurance against potential litigations (Hughes & Thakor, 1992). The reasoning behind this theoretical explanatory framework is that underwriters are faced with the risk of litigation, stemming from potential misstatements and omissions in the IPO prospectus. This situation is even more likely in the case in which the price of the stock post-IPO declines substantially, fostering investors to sue the underwriters for misrepresentation. Therefore, in order to prevent those types of circumstances, underwriters might be willing to underprice the issue (Hughes & Thakor, 1992). In addition to these types of theories, there is also a third type named “behavioural explanations” (Daugherty, M. S., & Jithendranathan, T. 2012). This type of explanatory theories is based on the

assumption of the existence of irrational or sentiment investors that follow the emotional cycle in the investment decision-making process. By rationing the issue and underpricing the initial portion of stock issued, investors might compete to buy the stock in the after-market building up a positive momentum for the stock price which is then pushed up. Then, those emotional investors would be very much willing to invest in the stock in later issues, due to their emotional cycle activated. Knowing that, managers of IPO firms will initially limit the number of shares to offer at IPO and if the mechanisms of pushing up the price through a positive initial momentum will be activated, then they will sell an additional portion in a secondary moment at that higher price. This last type of theories and the information asymmetry-based type might both include the signalling theory (Allen & Faulhaber, 1989), which affirms that firms might deliberately underprice and rationing the issue; by doing so, firms might incur in the cost of initially giving up a stake in the firm for a lower price, however, if the firm is of good quality it will be able to recoup this initial cost in subsequent issues. Investors know that only good quality firms will be able to then sell an additional issue at a higher price and thus recover from the cost of the initial issue at a lower price, therefore underpricing might also be seen as a signal used by firms to convey the message of being of good quality. The whole reasoning behind might be well summed up by the following: “leave a good taste in investors’ mouths so that future underwritings from the same issuer could be sold at attractive prices” (Ibbotson, R. G., 1975).

Finally, in the third time bucket case of our study, we would refer to the 3 years post-IPO performance. It will be assessed by investigating the 3-years stock price appreciation, including a thorough considerations of any potential dividend paid out to shareholders in between. In particular we will consider the stock’s return over the three years following the IPO including the dividends paid out. Since each stock performance might also be influenced by the overall market return in a given period, we will consider the single stock performance in comparison with the return of the market in that particular period, i.e. the 3 years after the IPO.

After having discussed the main measures of IPO performance and the explanatory theories attempting to give a reason to their foundations, we have limited ourselves to describe the method through which these performance measures are assessed. Afterwards, we will also investigate the factors that might have an impact on those performances both in the short run as well as in the long run, drawing from past researches and formulating also new propositions that will lead to our empirical study.

1.5 Past studies on family firms and IPO performance

In the present section the aim is to investigate throughout past studies whether there is a link found between ownership structure and IPO performance. More in depth, we are interested in identifying a potential relation between a specific type of firms, namely family firms, and their performance at IPO. In the present section, performance will be judged from the short-term perspective and the long-term perspective, namely we will focus on the level of underpricing of family firm IPOs and the after three years performance of the latter.

In past literature we find several studies attempting to investigate the relationship between family firms and IPO underpricing. However, it appears that the results of that group of research are mixed and opposed one to each other. One thing to notice while going more in depth in each of these studies, is the definition that each one of them gives to the notion of family firm, or family-controlled business. Depending on this definition, the samples that will then be built to undertake the statistical analysis will be different and will apply a different exclusionary screening in the selection process of the candidates to study. A second aspect is the geography covered by those studies; in particular, past research focused on several geographies, selecting specific countries or macro geographical areas such as Europe. While in the next section we will also present examples of studies concentrating their investigation on specific countries, in the present section we give the foundations to establish a relationship between the type of firm and the level of underpricing at IPO. While introducing the phenomenon of underpricing of firms at IPOs we have also presented the main explanatory theories behind it. To investigate whether a possible relationship between the above-mentioned variables, namely the fact of being a family firm and the level of underpricing, exists, we will start from these theories and we will try to link them to the main features of family firms previously described. In the context of the asymmetry of information theory, outside investors are less informed about the firm than the actual owners, therefore the latter might exploit underpricing as a mechanism to incentivize outside investors to invest in the IPO. However, in the context of family firms, recalling also the line of reasoning of Leland and Pyle according to which the personal investment in a firm by the owners, namely their commitment to invest in it to make it grow is already evidence of the quality of the firm itself (Leland & Pyle, 1977), there might be a reduction of this information asymmetry with outside investors. Moreover, families in family-controlled businesses might also be well interested in keeping a solid firm and make it grow with a longer-term perspective towards the future; such perspective might also be emphasized by the willingness of establishing a real legacy thanks to the development of the firm in the future. Therefore, upon the assumption that outside investors know that, family firms might also be able to not necessarily underprice substantially their issue of stock in light of this

reduced information asymmetry with outside investors. That would result in family firms displaying a lower underpricing with respect to non-family firms (Setia-Atmaja, & Chandera, 2021). Concerning instead potential conflicts given by the different corporate governance and ownership structure, we can recall the agency theory proposed by many scholars. In particular, agency theory focuses on the potential conflicts of interest between the principal and the agent (Banks, Bloom & Clingingsmith, 2018). In the context of IPO underpricing, firms affected by a higher degree of agency conflicts might be subject to a higher underpricing required by investors to come in and invest in the IPO. Family firms have good reasons both to be subject to higher levels of agency conflicts as well as lower levels. The reason behind this, is the following; in the case of family firms, we have often a majority or controlling shareholders which have usually already invested family's assets into the business and that therefore will likely appoint a family member in the management team or equivalently will exercise a tougher control on the management of the company; that would provide an incentive to monitor and therefore minimize more efficiently the agency conflict stemming from the potential misalignment of interest between owners of the firm and management of the same (Anderson & Reeb, 2003). On the other hand, in light of the majority owned by the family in the ownership of the company, agency conflicts might originate from the relationship with minority or non-controlling shareholders (Setia-Atmaja, & Chandera, 2021). Therefore, it appears hard to make a general assumption concerning the level of agency conflicts in family firms from which then deducting the impact on the potential level of underpricing in the case of an IPO. An additional element that can be added to our analysis is the fact of having in family firms not only the founder of the firm but also the successive generations of the family leading the firm. Whether there is still the founder leading the firm, or equivalently in the majority shareholders of the firm, or in the other case there are members of his following generations, it all depends on the time date in which the firm aims to sign for an IPO. Several studies have discussed the implications of having still the founder vis a vis having his future generations within the firm in the context of intrinsic family conflicts, reputation, perception of outside investors related to the true value of the firm. For instance, in a study conducted in Germany and Spain it was witnessed how family conflicts worsened across generations, reflecting a negative impact on the overall performance of those family firms (Jaskiewicz, González, Menéndez, & Schiereck, 2005). On the other hand, the presence of the family founder could significantly improve the perception of the investors about the firm in an IPO, also in terms of the valuation of the firm itself (Basu., Dimitrova, & Paeglis, 2009; Nelson, 2003; Certo, Covin., Daily, & Dalton, 2001). Therefore, concerning underpricing, the presence of the founder at IPO might be beneficial for a lower level of underpricing required by outside investors, while on the contrary, the absence of the founder or the future generations' presence might be fostering a higher level of underpricing. At the

beginning of this section we have announced to report the main results of past literature on family firms and IPO performance; after having highlighted the main links between the theoretical explanatory frameworks of IPO performance and family firms, we can present the results achieved by past research. Some studies have identified a negative relationship between family firms as type of firms, and level of underpricing in IPOs; namely, the results of this first group of studies witnessed that family firms are found to be subjected to a lower level of underpricing with respect to their non-family counterpart. In this first group of studies evidencing this instance we can include: the study carried out on a sample of Chinese companies between years 2004 and 2014 (Yang, Ma, & Doty, 2020), the study carried out in the North African region (Hearn, 2011), the study carried out in the Middle East region (Alrubaishi & Alarifi, 2019), the study carried out on US companies IPO data (Jithendranathan & Daugherty, 2012). In addition, we have also cross-country studies supporting this first group of studies according to which family firms display a lower underpricing with respect to non-family firms. For instance, a study carried out on a sample of 25 countries with a prevalence of family firms in the period between 1995 and 2002 supports the latter evidence (Walker, 2008). Moreover, more recent studies, have focused on studying also how the presence of a family member in the Board of Directors might impact underpricing; an example of that, is the research performed by Huang et al. who investigated such relationship in the Chinese context confirming not only that family firms display a lower level of underpricing but also that the presence of a family member in the Board had the same effect in terms of direction of the phenomenon (Huang, Li & Zhang, 2019). On the other hand, despite the evidence brought forward by this pillar of past research, some studies found out opposite evidence for the relationship between family firms and underpricing. In particular, a study conducted on a sample in Germany, shows that the IPO underpricing of family firms is higher than that of non-family firms (Leitterstorf & Rau, 2014). The same direction of evidence was supported by stating that in addition to the fact of being a family firm, also the family involvement is positively associated with underpricing (Yu & Zheng, 2012).

For what concerns longer-term performance, results are not very much clear as well. According to a cross-country study realized targeting Germany and Spain, and investigating the performance of firms three years after the IPO, family firms do not display a statistically significantly different performance with respect to non-family firms (Jaskiewicz, González, Menéndez & Schiereck, 2005).

Probably, by comparing all those studies, there are several additional variables that should be taken into account when investigating the relationship of family firms with the level of underpricing at IPO with respect to their non-family counterpart. Indeed, in the next section we will go more in depth to identify the main variables that have been included in the analysis of the underpricing phenomenon

until nowadays. The aforementioned identification task will be based on the comparison of the past studies on underpricing and longer term performance of IPOs, in multiple countries.

1.5.1 Factors affecting IPO performance

As we have seen, IPO performance can be measured through several metrics, referring to a shorter or longer time frame. Previous research has focused mainly on the phenomenon of underpricing while in the present research we will focus also on the longer-term. What follows is a discussion upon all those factors discussed by previous research and additional factors that will then be included in the present analysis. As we have previously announced with the asymmetry of information theory related to the underpricing phenomenon, uncertainty might well be considered as a factor influencing underpricing. The reasoning here would be that the more uncertainty concerning the firm, the more would be its underpricing at IPO (Ritter, J. R. 1984). However, there is no unique way to quantify uncertainty. Indeed, uncertainty might be generated from several factors such as those ones related to the lack of a sufficiently long historical record. In order to begin this analysis, we can discuss some of the proxies used for uncertainty; The age of the firm might be one of those since older firms might be perceived as less uncertain by the market or more established in a given sector from an historical point of view (Ljungqvist & Wilhelm, 2003). A second proxy could be constituted by the industry type; indeed, if some firms belonging to the same industry have already undertaken the IPO process previously, then there will be lower information uncertainty concerning the valuation of the firm by the market (Benveniste, Ljungqvist, Wilhelm, & Yu, 2003). A third proxy could be instead represented by the logarithm of revenue (Ritter, 1987). All those proxies would indicate a higher or lower level of information asymmetry given by a more or less pronounced uncertainty perceived by the public investors. Moreover, an additional factor that may be related to that uncertainty is the use of proceeds (Beatty & Ritter, 1986), quantified as the number of uses mentioned in the prospectus for which an amount to be allocated to has been planned; this variable is most often inserted in the studies as the logarithm of one plus the number of those uses (see e.g. Beatty & Ritter, 1986). It appears that this factor is interpreted as positively correlated with ex ante uncertainty by investors (Beatty & Ritter, 1986), however, in the case of the study proposed by Beatty and Ritter in 1986, the reasoning behind the direction of this correlation has to be found on the Securities and exchange Commission (SEC) regulation since the sample was based in US. According to SEC regulation, depending upon the type of company, it is required for the latter to disclose one or more intended uses for the future proceeds gathered; the requirement's strength varies: in the case of more established issuers then such requirements would be more loose, while on the contrary, in case of less established firms, the latter are required to explicitly disclose more accurately their intended uses. However, firms might not be

so welcoming towards these requirements, also because once they make them, they become subject to legal liabilities depending by the breach of those uses after the IPO takes place (Beatty & Ritter, 1986). A second factor we can identify among previous research is the fact of a firm being venture capital backed. Past research on the effect of being venture capital-backed on underpricing at IPO for a firm appears to be mixed. Indeed, on the one hand it can be shared the reasoning that venture capitalists are able to foster professionalism to management and they can also act as a certification of quality of the issue. Therefore, venture backed firms would be more likely to be priced higher than non-venture capital backed ones at IPO and therefore be subject to a lower level of underpricing (Megginson & Weiss, 1991). On the other hand, the opposite result is found by Lee et al. namely indicating that VC-backed firms have higher underpricing at IPO (Lee & Wahal, 2004). The explanation put forward for this last finding might be the one proposed by Gompers, according to which VC funds are characterized by a perpetual research for raising additional capital and a great first-day return (e.g. underpricing) might well benefit this purpose (Gompers, 1996). As we see indeed, past research on the effect of venture capital on underpricing reveals to be contradictory. Moving on, additional variables might be represented by the return on assets (ROA), computed as the net income before the IPO divided by total assets (Demers & Lewellen, 2003), or the size (Ibbotson, Sindelar, & Ritter, 1988). In particular the size might be declined in two different aspects: the size of the company going public and the size of the issue. If we consider the first one, we have already pointed out that a more established firm would bring to public investors lower information asymmetry which in turn might be beneficial for a lower uncertainty. It appears that this relationship is witnessed even with the use of different measures from revenues such as for instance the total asset size. In this last case, it is witnessed that the larger the asset base, the lower the underpricing (Daugherty, M. S., & Jithendranathan, T. 2012). The reasoning behind this relation might be equivalent to the one explained above, namely a higher asset base would imply investors being more confident in determining the uncertainty of the issue, thus requiring a lower underpricing of the stock at IPO. The second declination instead, supports the evidence according to which a higher size of the issue would be related to a higher underpricing; indeed, for instance, Daugherty et al. found that the size of the issue is positively related to underpricing for firms (Daugherty, M. S., & Jithendranathan, T. 2012). Concerning the variables that might have an influence of the level of underpricing at IPO, past research has also pointed out that factors such as the underwriter choice and the type or category of sector in which the firm might be operating might also play an influential role. Discussing the first factor of the two, namely the choice of the underwriter, its reputation might affect the IPO underpricing. The direction of such influence is the following: prestigious underwriters are associated with IPOs that have lower underpricing in general (Carter & Manaster, 1990). The reasoning

proposed to justify the relationship between underwriter's reputation and underpricing proposed by past literature is that underwriters with good reputation are perceived as less associated with risk offerings; indeed, recalling the theory proposed by Rock in 1986 about informed and uninformed investors (Rock, 1986), in the case of IPOs marketed by underwriters with good reputation, there will be less incentive to acquire information and a subsequently lower number of informed investors; Since, according to that theory, underpricing is a means through which the cost of investigation of information is somehow compensated and reimbursed to those informed investors at IPO, when the latter appear to be fewer, then there might not be an exacerbated need of underpricing the issue (Carter & Manaster, 1990). The second factor proposed instead, namely the category of specific sector to which a given company going public refers, is specifically aimed at targeting only one sector that is witnessed to be subjected historically to a significantly different level of underpricing with respect to the firms operating in others sectors or industries. The sector of reference in this case is the technology sector; in a past study, Loughran and Ritter analysed the phenomenon of underpricing on technology and internet-related stock in comparison with the first-day return at IPO of stocks belonging to the non-tech category (Loughran & Ritter, 2004). In a sample of 6,169 firms that got listed on the NYSE, Nasdaq and the American Stock Exchange between 1980 and 2000, the descriptive statistics on the first-day return of tech and internet-related stocks is witnessed to be in each sub-period (1980-1989, 1990-1998, 1999-2000) significantly higher than the one of non-technology stocks. Indeed, the authors of the study witnessed the following: while on the one hand non-technology or internet-related stocks displayed namely an underpricing equal to 6.3%, 11.3%, 23.9% in the three sub-periods, on the other hand, tech and internet-related stocks are characterized by an underpricing equal to 10.4%, 22.7%, 81.1%. A potential reason why tech stocks appear to be more underpriced with respect to non-tech stocks was proposed by the authors and it also displays consistency with the uncertainty-based theoretical explanation of underpricing supported by Ritter in 1984 (Ritter, J. R. 1984). In the present paper we have already discussed the latter in the section on underpricing's theories and by reading it one might easily deduct why tech stocks might display such higher underpricing. Among the theories proposed by the authors of the study, the uncertainty theory related to Ritter's one is the one that appears to be more grounded. Indeed, according to it, tech or internet-related firms are more exposed to an uncertainty concerning the technology itself. As highlighted by Ritter, if the firm's related uncertainty increases, also the underpricing of that stock at IPO would be required to increase as well to compensate investors for that additional risk undertaken when investing in the stock (Ritter, J. R. 1984). Also the uncertainty of valuation, especially in the years proposed concerning tech stocks appeared to be a major concern in the proposed study. Also, in this case as well, the higher the valuation uncertainty the higher the underpricing affecting the stock. Therefore,

from the previous studies and theories covered, the lesson on underpricing that we might decide to actively recall when performing the present analysis is that we should be really careful in evaluating the uncertainty related to a given sector or even sub-sector concerning its technology or its valuation. We will indeed delve further on this aspect when deciding upon the factors to include in the present research, including a dummy variable for the sectors that in our opinion might be characterized indeed by one these two types of uncertainties. As additional factor, which once again reflects the size aspect of the firm, we might bring into the analysis the latter put in relation to the issue proceeds of the IPO. Indeed, according to Schultz by computing the ratio of assets to IPO proceeds, it appears that a higher ratio is negatively correlated with the level of underpricing at IPO (Schultz, P. , 1993); namely, firms displaying a lower ratio of assets to IPO proceeds appear to be underpriced more with respect to firms with a higher ratio of assets to IPO proceeds. In the regression run by Schultz, assets divided by the IPO proceeds has a negative coefficient that is significantly different from zero at the 1% significance level (Schultz, P. , 1993), witnessing the above mentioned relationship. Therefore, it appears that is not just a matter of absolute size of the total assets held by the company aiming to go public, but rather it is also a matter of the proportion between the proceeds the firms plans to raise from the issue and its asset size. If such relationship was found true also in the present analysis it would imply that firms with a higher underlying asset base would be able to raise more proceeds from the issue without being subject to a significant level of underpricing. Most of those factors have focused on the uncertainty theory concerning asymmetry of information and riskiness perceived in the issuing subject; one factor that instead could involve not only that uncertainty reasoning but also signalling theory is the retention of ownership by insiders. Two scholars, Leland and Pyle, suggested that insider retention can effectively work as a signal to outside investors; in the case in which insiders' retention is higher, the effect in the perception of outsiders is that if insiders retain their ownership the underlying stock would be of relatively good or at least satisfactory quality for them (Leland & Pyle, 1977); according to signal theory, as we have already explained in the explanatory theories' section of the present study, issuers of good quality will be the ones able to afford a higher underpricing, thus initially leaving money on the table, due to the fact that they will be then able to recoup in the future that initial loss. Therefore, according to signalling theory, retention of ownership by insiders, since it is a signal of good quality and since good quality firms will bring about a higher underpricing (Grinblatt & Hwang, 1989), then for the transitive property also retention of ownership by insiders will be associated with a higher level of underpricing; however, from the point of view of the asymmetry of information theory and uncertainty related to the quality of the issue, as we can notice from the previous explanation in the reference section in the explanatory theories on underpricing, the reasoning might lead to quite the opposite; indeed, the fact that insiders retain ownership at the

moment of an IPO would reduce the information asymmetry for outside investors, working as proof of validation of the firm's worth. If that is the case, namely that uncertainty of information is reduced, underpricing would then not be so strongly demanded by outside investors, and the phenomenon would then be weakened down. By witnessing the same reasoning above, Beatty and Welch affirm that "holding the ex ante perception of risk constant, more insider retention could lower IPO underpricing" (Beatty & Welch, 1996). For the purpose of the present analysis on family firms in the Italian IPO market, we will take notice of the mixed relationship achieved by the reasonings of past research and we will formulate our subsequent hypothesis taking into account the difference between family and non-family firms concerning insider retention at IPO. From the same standpoint seen when analysing the impact of the underwriter reputation, a similar consideration might be done in the case of the auditor reputation too; in the case of an IPO, as we have seen, a company from private becomes public, and to do that it must provide a prospectus including its audited financial statements. The regulatory context which private firms are subject to is less demanding than the one affecting public firms. From the aforementioned difference the figure of the certified public accountant might implicitly have an influence on the perception of investors at IPO of the firm. As we have seen such perceptions in terms of signalling and asymmetries of information might well exert an impact on the overall underpricing at IPO. The strength of this impact would then be measured by the coefficient of including such factor into the regression run to understand the underpricing phenomenon. What was hypothesized by past literature is the occurrence of an inverse relation between the reputation of the auditor on an IPO and the initial return of the stock (Beatty, 2016). That would correspond to evidencing the following: firms that hire more reputable auditors would exhibit a lower level of underpricing at IPO with respect to firms that hire instead less reputable auditors. Evidence was found by the regression run by Beatty in 2016 on a sample of 2,515 IPOs from 1975 to 1984. The implication of such relation, if found true also in the present study, would be that the choice not only of the underwriter but also of the auditor would be fundamental in seeking a higher pricing at IPO and not be subjected therefore to a greater underpricing. Such choice, undoubtedly, would also be dependent on the costs of employing the most reputable auditor in comparison with the benefits in terms of lower underpricing or equivalently higher initial pricing stemming from such reputation. Furthermore, an aspect that has been not so widely discussed by previous literature but that it is worth mentioning is the overhang. Overhang may be defined as the ratio of pre-IPO shares retained in a firm relative to the number of shares filed for sale to the public (Bradley & Jordan, 2002). Reflecting upon the phenomenon of overhang in reflection with the phenomenon of underpricing, the effect on the pre-IPO owners of the firm that have retained shares in the firm not selling them is twofold. On the one hand, the more new shares are offered the higher the dilution to which they are subject, on the other

hand, the higher the underpricing the higher will equivalently be the market value of the shares retained. It might be therefore consisting in a trade-off between the shares offered and the one retained subject to the appreciation of the same stock personally owned. The analysis presented is based on the reflection upon the effect on the owners of the stock before the issue that have decided to keep the same underlying stock even after the IPO. The effect is the following: the cost of underpricing to the issuer declines as overhang rises (Bradley & Jordan, 2002). Therefore, if that is the case, we would have that underpricing would be beneficial to those investors that have been subjected to dilution at first hand at IPO because the market value of their position would then increase with the price of the underlying shares. In previous studies, it was found that this variable is statistically significant for underpricing, and it has a positive directional impact on it; namely, it was found out that IPOs with greater overhang are more subjected to underpricing than issues with smaller degrees of overhang (Bradley & Jordan, 2002). Additional variables that for complementary purposes we add to the present study are the debt-to-equity ratio, the ratio between capital expenditures and total assets, IPO pricing at integer prices and the timing. Both the debt to equity ratio and the capex to total assets ratio will be calculated on the basis of the same statements used to calculate the return on assets (ROA) discussed previously. IPO can be priced both at integer prices or even using decimals to provide a more precise price at the offer; this small difference appeared to be statistically significant in relation to the level of underpricing stemming from those IPOs priced differently. Indeed, it was found by Bradley et al. that on a sample of 4,989 equity IPOs with offer dates between 1981 and 2000, average initial returns for IPOs with integer offer prices were significantly higher (24.5%) than those priced on the fraction of the dollar (8.1%) (Bradley, Cooney, Jordan, & Singh, 2004). The hypothesis put forward by the scholars of that study was that the frequency of integer pricing would be an increasing function of the offer price and the level of uncertainty around the firm's value (Bradley, Cooney, Jordan, & Singh, 2004). Therefore, according to this interpretation, more uncertainty one has on the value of the firm at IPO, more probable it is that the IPO will be priced with an integer number, the more likely it will be that the IPO will be subject to a level of underpricing which is higher than the one had by a firm priced with a decimal number. Concerning the timing as additional variable that we have decided to include in the present analysis, as briefly announced in the section about the different IPO market phases, scholars have analysed how the fact of being in an "hot issue market phase" (Ibbotson & Jaffe, 1975) might actually have an impact on the underpricing of IPOs. It was found that, on average, periods named "hot issue phases" in the IPO market are positively correlated with the initial return of the stock (Rathnayake, Louembé, Kassi, Sun, & Ning, 2019). In the present study we can consider the variable timing to test such relationship by measuring the IPO volume in

any given year identifying therefore the hot IPO phases in the Italian market and putting equal to one the ones found to be most active.

To sum up, the factors gathered up to this point including those discussed within the present and previous section are included in the list as follows:

- Age of the firm
- Industry type
- Logarithm of revenue
- Number of uses of proceeds disclosed
- Venture Capital backing
- Return on assets (ROA)
- Size of the issue
- Total asset size
- Underwriter reputation // #underwriters rank best one
- Technology and internet-related stock
- Ratio of assets to issue proceeds
- Family type of firm
- Founder as CEO
- Family descendent as CEO
- Auditor reputation
- Overhang
- D/E ratio
- Capex / assets ratio
- Integer IPO pricing
- Timing

In the present study we are also interested in analysing the performance of family and non-family firms in a longer time horizon. Therefore, we will extend the time frame to 3 years after the IPO to compare the two types of firms between each other. The variables we will consider to carry out this analysis will be for the most part the same that we have discussed up to this point for the short-term performance. Therefore, also for the longer term analysis we can refer to the above list to notice the variables that we will consider in the overall analysis. As stated at the beginning, most of past studies have focused on the understanding of the short term performance of firms at IPOs and left much more space to investigate the longer term performance to future researches. The few ones that have done it, did not choose any factor significantly different from the ones reported above. At least to the

knowledge gathered from the past research read, we can deem our list to be satisfactory and comprehensive for the purpose of this study.

CHAPTER 2: GAPS IN PREVIOUS RESEARCH AND HYPOYHESIS FORMULATION

After having analysed and discussed the factors stemming from previous research on IPO performance and family firms, we can report in the following table a comprehensive list of the studies performed on the subject in the context of the Italian stock market:

Article	Theoretical Framework	Sample	Focus	Performance Variables	Findings
Cirillo, A., Romano, M., & Ardovino, O. (2015). Does family involvement foster IPO value? Empirical analysis on Italian stock market. <i>Management Decision</i> , 53(5), 1125-1154.	Stewardship theory	113 IPOs (2000-2011)	FB and NFB	IPO premium, MB (mixed)	CEO power positively affects IPO premium and MB. This effect is stronger in the first generation.
Cirillo, A., Romano, M., & Pennacchio, L. (2015). All the power in two hands: The role of CEOs in family IPOs. <i>European Management Journal</i> , 33(5), 392-406.	Stewardship theory	77 IPOs (2000-2011)	FB	IPO premium, MB (mixed)	CEO power positively affects IPO premium and MB. If CEO is a family member the relationship is strengthened.
Mazzola, P., & Marchisio, G. (2002). The role of going public in family businesses' long-lasting growth: A study of Italian IPOs. <i>Family Business Review</i> , 15(2), 133-148.	Corporate Governance life cycle perspective	37 IPOs (1995-1998)	FB and NFB	Listing	Involving private equity in ownership fosters FB listing.

Source of the data in the table: *Carbone, E., Cirillo, A., Saggese, S., & Sarto, F. (2021). IPO in family business: A systematic review and directions for future research. International Journal of Management Reviews, 23(2), 252-270.*

For what concerns the Italian studies we can observe that they represent just a minor part of the entire population of the studies discussed. Moreover, most of them are interested more in the IPO value than in the IPO performance. As far as my knowledge goes, the present study is the first that has as objective the one of addressing the IPO performance both in the short run as well as in the long run in relation to the family firms in the Italian market. In addition, the present study has also the possibility to leverage on past research outside of Italy to gather all the elements to formulate some hypotheses that will then be tested in the Italian context. As we can observe indeed, most of the past research comes from Germany and US but even in those cases it was not possible to generalize the results of those studies on the Italian context due to the peculiarities of the latter. Moreover, variables

such as timing are not the same across all geographies; the reason behind that is the possibility of occurrence of hot phases in the IPO market at different time from one period to the latter. The main gap of previous literature addressed by the present study is therefore the one of not having a comprehensive study made specifically on the Italian context on the analysis of family firms and their relation to IPO performance on both the two types of time horizons. Apart from this main gap identified in previous research, there will be additional small relationships between short/long term performance and some of the factors discussed above that we will test further. We will start from the discussion above and we will then formulate the hypotheses to test in the present study. In order to shed a bit more clarity on the overall approach pursued by the present study, the purpose of the empirical part will consist in the investigation of family firms vis a vis non-family firms upon the short-term performance, the long-term performance after IPO, and their level of sensitivities to the factors historically found to play a role towards these variables. Indeed, there won't only be a mere differentiation of family and non-family firms on their IPO performance but also a thorough analysis of the impact of certain firm-level and corporate governance characteristics on the same across those types of firms. Moreover, the hypotheses presented will also be made specifically on the context of the overall study, namely the Italian IPO market. In order to give an order to the hypotheses formulated, we have a first part of hypotheses considered to be studied on a sole basis while a second part of them will be focused on a twofold study: the one made generally on the phenomenon, and a second one made more specifically in the distinction between family and non-family firms in the relationship between the same given phenomenon and the variable of interest. We will indeed divide this second type of hypothesis between letter a and b of the same, with the first one standing for the general hypothesis and the second for the comparison of the present study between family and non-family businesses.

List of the hypotheses of the present study and reasoning behind each of them:

- i. Family firms will be characterized by a lower level of underpricing with respect to non-family firms.*

We have already discussed how the outcomes of past literature on the phenomenon of underpricing studied in the context of family firms have been misaligned among themselves (see for instance (Jithendranathan & Daugherty, 2012 with respect to Leitterstorf & Rau, 2014). Despite the overall misalignment, we went a bit more in depth in identifying the peculiar traits of family firms with respect to non-family firms that might be influencing the level of underpricing at IPO. The above hypothesis has been formulated on the basis of different aspects that might be beneficial for a lower level of underpricing. In particular, the personal investment of the of family-owner of the firm in the

latter might already be a signal of quality to external investors; moreover, also the willingness by the family to transmit the firm to future generations of the family would be beneficial in this sense because it augments that sense of caring by the original owners of the firm to public investors. We have also seen how agency conflict can flow both ways in the case of family firms, so we won't use this aspect to formulate the above reported hypothesis. Finally, the concept of socioemotional wealth in the context of a family firm might contribute to a lower level of underpricing due to the fact of having by the initial owners a higher attachment to the firm that won't allow for a relatively low offer price at IPO; A higher offer price might then reduce the overall upside in terms of price during the first trading day. The ones reported here have been the most convincing aspects that made us providing this initial hypothesis for the present study.

ii. Family firms won't influence y a significantly different 3-years performance post IPO with respect to non-family firms.

For what concerns longer-term performance, results are not very much clear as well. According to a cross-country study realized targeting Germany and Spain, and investigating the performance of firms three years after the IPO, family firms do not display a statistically significantly different performance with respect to non-family firms (Jaskiewicz, González, Menéndez & Schiereck, 2005). Although it is true that some traits such as parsimony or particularism might be beneficial for the overall performance of the firm because of a more conservative use of resources and a higher level of flexibility in decision-making procedures, on the other hand those same traits might also lead to a poorer performance. They might do so due to the fact that parsimony on the other hand might lead to not investing in positive NPV opportunities and particularism might lead to the appointment of someone close to the family rather than someone truly competent in the top management. Moreover, as we have already seen there is a also a risk-attitude that changes between family and non-family firms. In the case in which, as witnessed by past research, family firms appear to be more risk-averse than non-family firms, they might not be able to undertake growth opportunities when they arise or they will hesitate in undertaking the latter. Therefore, in light of this peculiar traits, we hypothesize that the benefits counterbalance the negative sides stemming from the same traits, thus not contributing to a significantly different performance of family and non-family firms.

iii. The presence of the family founder as CEO or in the BoD at IPO will reduce the level of underpricing with respect to those cases in which there will be a successor generation in place.

The presence of the founder at IPO would constitute a good signal to outside investors for several reasons; it might be assumed that her presence might diminish the family conflicts with respect to

those situations in which there are the future generations leading the firm. It might also be the case of the founder being able to increase the reputation of the firm for a particular trait linked to the personalism attached to the firm. This would also imply a better perception of outside investors towards the firm. Moreover, the founder of the firm might also have a strong willingness to transmit the firm to her future generations and therefore also the latter might be a signal of due care with respect to the responsible management of the firm. Furthermore, the socio-emotional wealth the founder might have for her firm would consist in a consolidated attachment to the firm, thus involving for it a higher premium on the valuation of the same; namely, the founder won't easily sell the firm for a relatively low price. Finally, we may mention also another aspect that we never mentioned up to this moment: the capacity to sell the equity story of the firm. The assumption that the founder might be well positioned to tell the whole equity story of the firm to investors is not so difficult to believe; indeed, the founder is the person who has seen the firm since it was born in all its phases of development, and might be better also at describing the mechanisms of success and those of failure of the sector of reference. Therefore, the equity story when told directly by the person who has built the firm from the ground, it might result even more convincing for outside investors. Consistently with past studies (see for instance Basu, Dimitrova, & Paeglis, 2009), we have formulated the above-reported hypothesis according to which the presence of the founder in a position of control at IPO might reduce significantly underpricing.

iv. Firms operating in the tech sector or using new technologies will be characterized by a higher level of underpricing with respect to firms belonging to other sectors.

As already discussed, certain sectors appear to be more uncertain than others concerning their future developments and possibilities of expansion; such uncertainty at IPO won't be related just to the valuation of the firm but also to the underlying technology of the same. Investors out there will demand a higher underpricing to compensate for the additional risk they bear by investing in the stock. As we have seen indeed, it appears that underpricing is positively associated with the level of ex ante uncertainty of a given stock going public. If that is the case then, consistently with the study of Loughran & Ritter (2004) based on a US sample, we might also hypothesize the same relationship between specific tech sector stocks and underpricing in the Italian context. Namely, all else equal, firms operating in two different sectors will be subject to different level of underpricing; namely, such level would be proportional to the level of valuation and technological uncertainty intrinsic in those types of sectors. In the present study, we will investigate whether tech stocks have been historically underpriced more than other-sectors' stocks across the years in the Italian IPO market; we therefore, formulate the above reported hypothesis.

v. *A greater percentage of company sold will imply a lower underpricing at IPO.*

We have previously discussed how overhang might be linked to underpricing; by recalling the notion that the higher the overhang the higher the loss stemming from underpricing that can be recovered by the initial shareholders, one may immediately understand that overhang would then be positively associated with underpricing at IPO. By sticking to the definition of overhang as the ratio between pre-IPO shares retained and shares filed for sale to the public investors, we formulate the hypothesis which is consistent with the finding of Bradley and Jordan (2002) on overhang and we envisage that IPOs with greater percentage of company sold will imply a lower level of underpricing than issues with lower percentages of company sold.

vi.

a. *A higher debt-to-equity ratio will imply a higher underpricing at IPO.*

b. *The relationship between debt-to-equity ratio and underpricing at IPO won't be significantly different between family and non-family firms.*

The debt-to-equity ratio has been added as additional variable in the present study to investigate whether the leverage structure of firms had an impact on the level of underpricing at IPO. Reasons why it should have an impact might be related by the constraints that a more debt-financed capital structure might put on a company aiming to go public; in particular, investors might also be a bit sceptical that their funds will just be used to repay debt and not to further grow the firm's business. Initial outside investors might therefore discount more severely those firms which are highly leveraged at IPO demanding a lower offer price to compensate for this higher risk to which the firm is exposed. Going a bit more in depth then, we think that there won't be any reasons for which such relationship should be statistically significantly different between family and non-family businesses, or at least we do not think that the characteristics of family firms will exacerbate or weaken significantly this relationship. Therefore, we formulate that generally the level of leverage in a firm would be positively associated with underpricing while such relationship won't be very much different between family and non-family businesses.

vii.

a. *A higher capex-to-total assets ratio will imply a lower level of underpricing at IPO.*

b. *The relationship between the capex-to-total asset ratio and underpricing will be stronger for family firms than non-family firms.*

Generally speaking, a higher capex-to-total assets ratio would correspond to the case in which a firm is investing more with respect to another to foster its production, everything else equal. The signal

that such higher investment would bring to public investors is that of a firm following a capex plan aimed at improving its production capacity or expand further. Therefore, it might be considered a good signal to public investors, and the latter would retain this positive information about the firm demanding a lower underpricing for the firm. Upon the assumption that investors' perception is the one that we have here described, then a higher capex-to-total assets ratio would bring about a lower underpricing for the firm at IPO. For what concerns the family firms vis a vis non-family firms in the context of the effect of the capex-to-total assets ratio on the level of underpricing, the reasoning could be the following; we have seen that, especially initially, family firms owners have most often poured personal funds into the firm in order to promote its growth. We have also seen the peculiar trait of parsimony that characterize family firms; knowing that family firms will be very attentive in their use of resources and complementing this consideration with the one of risk-aversion of family firms, one might think that if a family firm has invested strongly in comparison with its asset base the reason behind might be a good opportunity of investment, growth or expansion in a new market for which the risk-return trade-off is superior to the average. The above reasoning is the logic behind the second part of the hypothesis made, namely that family firms will display a higher effect of the capex-to-total assets ratio on underpricing than non-family firms.

viii.

- a. IPOs priced at integer prices will be subjected to a higher level of underpricing than those priced up to the decimal place.*
- b. The effect of pricing format on underpricing at IPO won't be statistically significantly different between family firms and non-family firms.*

This hypothesis has been formulated on the basis of the uncertainty theory on underpricing and the past results of the study of Bradly, Cooney, Jordan and Singh (2004). As we have discussed previously, according to their interpretation, more uncertainty one has on the value of the firm at IPO, more probable it is that the IPO will be priced with an integer number, the more likely it will be that the IPO will be subject to a level of underpricing which is higher than the one had by a firm priced with a decimal number. We have decided for the present study to repeat the same analysis in the Italian context to see whether the pricing at IPO of the firm is significantly relevant to the purpose of communicating outside investors a signal of uncertainty around the firm's value or whether it does not have a significant impact on the overall level of underpricing. Moreover, we do not hypothesize a significant difference between family and non-family firms in the effect of the pricing of IPOs on underpricing simply because we do not envisage particular difference on how the two types of firms are priced in relation to the uncertainty around their value.

ix.

- a. *IPOs made in periods characterized by a high IPO volume will be characterized by a higher level of underpricing.*
- b. *In hot periods, family firms will be subject to a lower level of underpricing than non-family firms.*

By considering the IPO volume in a given period as main proxy to identify a “hot issue market phase” (Ibbotson & Jaffe, 1975), we can analyse whether also in the Italian context during those phases IPOs present a higher level of underpricing with respect to periods characterized by a lower level of underpricing. We have already identified the hot issue market phases of the Italian IPO market by pointing out the volume of IPOs by year in the reference context while describing it in the appropriate section. We have therefore already the path traced to the test of the above hypothesis. Despite the effect of those hot issue phases on the level of underpricing, at least to my knowledge, there was no past research addressing the potential difference of the effect of timing on underpricing between family and non-family firms. By recalling that family firms for the whole reasoning explained in hypothesis (i) should display on average a lower level of underpricing, we do not envisage any reason why such relationship between the two groups should be broken or even statistically different in the case of a hot issue phase in the market. Indeed, even in these phases, family firms would always be characterized by the same traits that would bring them to price higher the issue and to be subjected to a lower level of underpricing. Therefore, we propose that during those hot phases, family firms will display a lower level of underpricing with respect to non-family firms.

x.

- a. *A. The age of the firm at IPO will negatively affect underpricing; namely, more aged firms at IPO will be subject to a lower level of underpricing with respect to less aged ones.*
- b. *The sensitivity of underpricing to the age of the firm will be significantly lower for family firms than for non-family firms.*

We have already seen how there might be no unique way to define uncertainty in the context of a firm aiming to go public. One of the proxies for it could be represented by the age factor. Namely, older firms might be perceived as less uncertain by the market or more established in a given sector from an historical point of view (Ljungqvist & Wilhelm, 2003). As we have repeatedly suggested, less uncertainty would bring in a lower level of underpricing; therefore, older firms might be underpriced less than younger firms, everything else equal. Therefore, according to this last statement, the logic behind the first part of the hypothesis is clear. What’s most interesting in this hypothesis is

its second part in the comparison between family and non-family firms. In particular, by considering the difference between family and non-family firms we have seen two different parameters: age and CEO as founder of the family firm. It might be the case to underline a particular relationship between these two variables; the more aged a family firm is, the less likely would be that its founder is still alive and leading the firm; as we have discussed earlier and as we will test later, the family firm founder as CEO or in the BoD might be beneficial to a lower level of underpricing while its absence would actually foster a higher level of underpricing instead. Having said that, knowing the relationship with the age factor in a family firm, as soon as the age of a firm increases, the lower the uncertainty, the lower the underpricing, the lower the probability of having the family firm founder as CEO, the higher the underpricing. As we have highlighted the fact of being older is positive for underpricing per se because it reduces uncertainty, but it also reduces the likelihood of having the family firm founder in a position of control in the firm and the latter increases the level of underpricing. Therefore, since the age factor works not just as a factor influencing negatively the level of underpricing, we might hypothesize that the sensitivity of underpricing to the age factor in family firms will be less significantly stronger than the one observed in non-family firms.

xi.

- a. *The number of uses of proceeds mentioned in the prospectus will be negatively associated with underpricing at IPO.*
- b. *The sensitivity of underpricing of family and non-family firms to the number of uses of proceeds mentioned in the prospectus won't be statistically different.*

We have already mentioned in the factors related to IPO performance section how the number of uses of proceeds disclosed in the prospectus or in the admission document may be related to the ex-ante uncertainty; however, that correlation was based on the US market and on SEC regulation; in order to investigate a potential relationship between the number of uses mentioned in the prospectus and the level of underpricing at IPO, a careful analysis also on the context of the present study should be carried out. Previously we have highlighted how the number of uses mentioned in the prospectus in US is related to the ex-ante uncertainty of a given firm by rule of the regulation of the SEC imposed there; the more uncertainty concerning a firm would then also be correlated positively with the level of underpricing at IPO. But is it the same in the Italian context? Namely, is there a regulation imposing the mentioning of the uses of proceeds into the prospectus for less established firms in Italy? In Italy there is no such rule as in the US that links the uncertainty of firms at IPO to the number of uses of proceeds that they should disclose in the prospectus, but the firms must disclose at least one use for the IPO proceeds in their prospectus; the number of uses they mention in addition to the first

mentioned use of the IPO proceeds is then based on the discretion of the same firm aiming to go public; therefore, we are more prone to formulate an hypothesis which is different from the one tested in the US study reported above. Since the regulation appears to be different in Italy, we do not formulate an hypothesis consistent with the one of the previous study of Beatty and Ritter (1986); moreover, since we believe that a voluntary disclosure of the uses of proceeds can better direct outside investors for a more precise valuation of the firm, and it may therefore also reduce the ex-ante uncertainty held by them, we formulate actually the opposite hypothesis; namely we want to test whether the number of uses of proceeds mentioned in the prospectus by firms going public may reduce the level of underpricing at IPO of those firms. If that was found to be true, it would then imply that disclosing the uses of the IPO proceeds in the prospectus might actually be beneficial in the Italian context to reduce the level of underpricing at IPO. For the second part of the hypothesis we do not envisage any particular difference between family and non-family firms in their subjectivity to the relationship between number of uses of proceeds disclosed in the prospectus and the level of underpricing.

xii.

- a. *The number of uses of proceeds mentioned in the prospectus will be negatively associated with the three-year post IPO performance.*

By disclosing the uses of proceeds in the prospectus, the firm aiming to go public gives such information not only to public investors but also to its competitors. Competitors might exploit such information to envisage new strategies and undertake new opportunities of growth they had not seen originally; by doing so, they would reduce the market share of the target firm and its capacity to effectively address the unmet need in the market. By disclosing a number of uses of proceeds at IPO firms might indirectly empower competitors, thus having a lower competitive advantage for the business opportunity they had originally identified. This is the main reasoning behind our hypothesis, namely we hypothesize that firms will be negatively affected by the number of uses of proceeds disclosed in their prospectuses at IPO in the long-term performance taken as reference as the three-year time after the IPO.

xiii.

- a. *VC-backing will foster a lower level of underpricing at IPO.*
- b. *Family firms will benefit significantly more than non-family firms from VC-backing*

We have already discussed how venture capital backing might have reasons to bring about both a positive and negative influence on underpricing. The issue here is to formulate a hypothesis consistent with the aspects we weight more for the effect of venture capital backing on underpricing at IPO.

Upon the reflections that we made earlier when analysing the effect of venture capital backing on a firm aiming to go public, we do believe that the aspects that emphasize a decreasing effect on the underpricing should be of greater weight. Indeed, among the peculiarities stemming from being venture capital backed, we should well take notice of the level of professionalism brought into the firm, the fact of acting as a certification of quality for the issue. The latter are the aspects that we decide to weight more in order to formulate an hypothesis that foresees that the fact of being venture capital-backed reduces significantly the level of underpricing at IPO. Moreover, we also suspect that venture capital backing, since it brings into the firm a higher level of professionalism, will be more beneficial to family firms than non-family firms; the reason behind is that venture capitalists might reduce significantly all those characteristics of family firms driven by instinct, mental accounting, closeness-related hiring, so evident under the umbrella of the trait named particularism of family firms. Therefore, we hypothesize that at IPO family firms which are venture backed will benefit more from this characteristic with respect to venture backed non-family firms towards a lower level of underpricing.

xiv.

- a. *A greater size of the firm will reduce the level of underpricing at IPO.*
- b. *The impact of the size of the firm on underpricing won't be significantly different between family and non-family firms.*

Based on the reasoning made on the ex-ante uncertainty around the value of the firm and the level of underpricing at IPO, we might include among our hypotheses also the factor of the size of firm aiming to go public. Consistently with the logic that a more established firm would imply a lower level of information asymmetry to outside investors, the latter won't be likely to ask a severe level of underpricing at IPO. As we have seen, different measures of size of the firm have been implied by past research; in the present study, we decide to use as the proxy of the size of the firm the total asset base of the firm in the year before IPO. Following the measure implied also by other studies (e.g. Daugherty, M. S., & Jithendranathan, T. 2012) we formulate that a higher total asset size will imply a lower level of underpricing at IPO; moreover, we do not find any reason for which the relationship between total asset size and level of underpricing should be statistically significantly different between family and non-family firms.

xv.

- a. *A higher size of the issue will imply a higher level of underpricing at IPO.*
- b. *The relationship between size of the issue and level of underpricing will be significantly weaker in the case of family firms than in the case of non-family firms.*

An additional relationship that we can test is the one between the size of the issue and the level of underpricing at IPO. Indeed, previous research finds a positive correlation between the two variables (see for instance Daugherty, M. S., & Jithendranathan, T. 2012). If found true, it would imply that if a firm wants to raise more capital is not necessarily true that it will be able to not be subjected to a higher underpricing; indeed, the contrary will then be true; in order to issue more, the firm will have to underprice the issue. What's most interesting here, is to test whether such positive correlation between size of the issue and underpricing is found identical also in family and non-family firms. In order to formulate the second part of the above mentioned hypothesis, the reasoning has been the following; family firms, despite the size of the issue, will be always less inclined to give up to a part of the ownership of the firm for a relatively low price, in light of the socioemotional wealth they have as attachment to their firm. Therefore, it won't be likely that family firms will underprice the issue given a greater size, or better, it won't be as strong the effect of the size of the issue on underpricing in the case of family firms as it would be instead for non-family firms.

xvi.

- a. A higher underwriter reputation will imply a lower underpricing at IPO.*
- b. The relationship between underwriter reputation and underpricing won't be significantly different between family and non-family firms.*

Previous studies have been supporting the view according to which prestigious underwriters are associated with IPOs that have lower underpricing in general (Carter & Manaster, 1990). Based on the previously explained logic, that foresees that underwriters with a good reputation are perceived as less associated with risk offerings we can formulate the first part of our sixteenth hypothesis, namely that the underwriter reputation might well be beneficial for a lower level of underpricing at IPO. Investigating then the differences between family and non-family firms with respect to the relationship between underwriter reputation and underpricing we do not envisage any particular reason for which we would be more likely to find statistical evidence of two different sensitivities. An additional aspect that we can discuss, and that we will discuss even further in the hypothesis testing section, is the following; usually, in IPOs there are more banks participating to the issue; that leads to a practical problem of how to determine the underwriter reputation in a group of banks; we had several options, among which taking the average of each underwriter's reputation in the banks' group but we decided to stick to the best bank's reputation of the group and assign it a level for the analysis.

xvii.

- a. A higher ratio of assets to IPO proceeds will imply a lower underpricing at IPO.*

- b. The relationship between ratio of assets to IPO proceeds and level of underpricing at IPO will be significantly weaker for family firms than for non-family firms.*

With the present hypothesis the aim is to investigate whether it is not just a matter of absolute size of the total assets held by the company aiming to go public, but rather also a matter of the proportion between the proceeds the firms plans to raise from the issue and its asset size to have an impact on the overall level of underpricing at IPO. The hypothesis appears to be very interesting, because it would shed light on important implications stemming from the capacity of the firm of being less subject to underpricing at IPO. Previous studies (see for instance Schultz, P., 1993) have tested and found evidence of the first part of our hypothesis: however, at least to my knowledge, no previous studies have tested the sensitivity of family and non-family firms to such relationship, comparing the two. As we have witnessed above, family firms, despite the size of their assets and the proceeds they want to raise, will be always less inclined to give up to a part of the ownership of the firm for a relatively low price, in light of the socioemotional wealth they have as attachment to their firm. Therefore, it won't be likely that family firms will underprice the issue given the greater proceeds they want to raise in comparison with their asset base, or better, it won't be as strong the effect of the ratio of the size of the assets to the IPO proceeds on underpricing in the case of family firms as it would be instead for non-family firms.

xviii.

- a. A higher auditor reputation will imply a lower underpricing at IPO.*
- b. The relationship between auditor reputation and underpricing won't be statistically significantly different between family and non-family firms.*

The last hypothesis is based on a logic which is similar to the one we have used to describe the hypothesis concerning underwriter reputation; Also the certified public accountant might implicitly have an influence on the perception of investors at IPO of the firm. As we have seen, such perception of outside investors will then be an important determinant of the level of underpricing at IPO. Previous studies hypothesized and witnessed the occurrence of an inverse relation between the reputation of the auditor on an IPO and the initial return of the stock (Beatty, 2016). The implication of such relation, would be that the choice not only of the underwriter but also of the auditor would be fundamental in seeking a higher pricing at IPO and not be subjected therefore to a greater underpricing. We also want to test for completeness purposes whether there is a statistically significant difference between family and non-family firms in the relationship between auditor reputation and underpricing; we formulate however the absence of a significant one.

CHAPTER 3: METHODOLOGY

In the present section an analysis of the methods used to carry out our study on the Italian IPO market will be presented. The starting point will be the identification of the target of the study and the type of study we will pursue. Then, we will identify the variables of interest and we will divide them between independent and dependent ones to better highlight their positioning in the study. After that, we will build the sample, and we will also provide a description for its composition. In addition to some initial descriptive statistics, we will also further specify how the entire statistical study will be done, implying a step-by-step guide on how we test each hypothesis previously mentioned.

3.1 Observational study

The overall study is based on the Italian IPO market, namely the market in Italy composed of all those firms that decided to go public (e.g., get listed) on the Italian Stock Exchange in the period of reference. The logic of the study is the following: we will first identify all those firms that got listed in the Italian Stock Exchange, then we will gather all the information regarding their financials of interest for the present study, and finally we will conduct the statistical analysis on them. In this process, the type of the present study is clearly observational in that we are effectively observing data from a researcher point of view to answer our main research question. Indeed, there will be no interference or manipulation of the research subject and no control/treatment groups. As we know, observational studies are exposed to some considerations such as the observer bias or the fact of omitting some relevant variables; we have tried still to limit the risks stemming from these two aspects by emphasizing in each passage the building of the dataset and by figuring out a comprehensive framework for the phenomenon of interest. However, as we will also discuss in the appropriate section, the study is only targeted on the Italian IPO market and its result won't be much generalizable on other markets due to the peculiarities we have seen of the Italian context. On the other hand, this limitation does not appear to be an issue for the present study, since the purpose is just to study a target market, e.g. the Italian one. There is no willingness to generalize those results elsewhere, in different markets;

3.2 Dependent and Independent variables

For the purpose of the present study we have identified as independent variable the phenomenon of interest that we want to analyse, namely underpricing and the long-term performance after 3 years from the IPO. In particular, underpricing will be computed as:

$$\text{Underpricing} = (\text{closing price after first day of trading} - \text{opening price}) / \text{opening price}$$

The long-term performance after 3 years from the IPO will instead be meant as a relative performance of the stock in comparison with the market performance in the same period. The market index of reference against which we will compare the performance of the stocks of the present study will be the FTSE MIB; FTSE MIB is the most relevant stock market index of Borsa Italiana and it includes the forty companies with greatest market capitalization listed on the MTA or Euronext Milan and on the MIV or Market of Investment Vehicles. In order to measure the performance of the stock in the three years after the IPO relative to the Italian stock market performance of the same period, we will first compute the return of the stock in the three years after the IPO; There are various methods to calculate the stock return over a 3-year period while taking dividends into account, but a popular approach involves utilizing the total return formula, encompassing both the capital gain and the dividend yield. This formula entails:

$$\text{Total Return} = ((\text{Ending Price} - \text{Beginning Price} + \text{Dividends}) / \text{Beginning Price})$$




To apply this formula for a 3-year time frame we identify the initial and final stock prices during the period, which can be obtained from a financial website or stock chart; then, we aggregate all of the dividends disbursed by the stock during the period, which can be sourced from the company's financial records or dividend history. Finally, we plug in the values into the above formula and solve for the total return. Let's suppose we want to compute the total return of a stock that had a beginning price of €50, an ending price of €70, and paid dividends of €1, €5, and €3 in each of the three years, respectively. The total dividends paid over the 3 years would be €9 (€1 + €5 + €3). The total return would be: $\text{Total Return} = ((€70 - €50 + €9) / €50) * 100\% = 46\%$ This means that the stock generated a total return of 46% over the 3-year period, including both the capital appreciation and the dividend income. Then, we will apply the same logic to compute the return of the FTSE MIB over the same period. Finally, we will compute the difference between the total return of the stock over the period and the total return of the index of reference. In this long term performance analysis we will exclude the effect of underpricing, therefore we will take as "beginning price" the stock price at closing in the first day of trading, namely the closing price at first day of trading that we take also to compute the underpricing.



$$\text{Performance}_{LT} = [(\text{closing price after 3 years post-IPO} - \text{closing price of 1}^{\text{st}} \text{ day of trading of the stock}) / \text{closing price of 1}^{\text{st}} \text{ day of trading of the stock}] - \text{FTSE MIB return over the same time frame.}$$

The FTSE MIB return over the same period will be computed as:

$$\text{Mkt_return} = (\text{closing price at date equal to 3-years post IPO of the firm} - \text{closing price at date equal to IPO date of the firm}) / \text{closing price at date equal to IPO date of the firm}$$

In the following table we can highlight the dependent variables of the present study, with their names, their meaning and their source; notice that we report also a legend for the type of source used to retrieve the variables mentioned:

Category:	Source:
	Dealogic
	built upon the data of Dealogic
	retrieved from Prospectus/Refinitiv/BM/other

Dependent Variables	
Variable Name	Meaning
 Underpricing	it will be equal to: (closing price after first day of trading - opening price) / opening price
 PerformanceLT	It will be equal to: [(Ending Price 3 years after IPO - closing price 1st day + Dividends paid in between) / Closing 1st day Price] - FTSE MIB return in the same time span

Moving on to the independent variables we have already highlighted the factors that we have decided to discuss in the present analysis; we will first of all distinguish two types of firms: family and non-family firms. In order to indicate whether a firm is of the first type we introduce a dummy variable called “family_dummy”. Being a dummy variable it will take values equal to 1 or 0 depending on the type of firm; namely, it will assume value 0 in the case of a non-family firm and 1 in the case of a family firm. The second variable is called “founder_dummy” and it will refer to the fact of having as CEO in a family firm the founder of the firm; also in this case we model the variable as a dummy one, indicating that the firm has a founder CEO at IPO when the variable assumes values equal to 1, while in those cases instead in which it will be zero, then the variable will indicate that the CEO at IPO is not the founder of the firm belonging to the family. Also the third variable will be dummy and it will be equal to 1 in those cases for which the company will belong to the tech sector, and 0 instead in all those cases in which the company will operate in different sectors. The fourth variable will be instead called “percentage of company sold” and it will refer to the % of shares filed for sale to the public; As stated previously in the factors of interest for the present study, we have decided to include also the debt-to-equity ratio of the company computed on the statements of the year before IPO and using their book values. Then, we include also the capital expenditures-to-total assets ratio always computed on the basis of the statements of the year before the IPO of the company. Then, we have the variable named “integer_price_dummy”, that will refer to the fact of being an IPO priced with an integer price or up to the decimal; it will be equal to one in the first case, and 0 otherwise. Moving to the next variable, we have the one named “hot_phase_dummy” that refers to the fact of an IPO

occurring in a IPO market “hot phase”. In case it does occur in a hot period then it will be assigned value equal to 1, while it will be assigned 0 otherwise. In particular, for the purpose of this study we identify five time-buckets and for each one of them we compute the average IPO volume considering the whole Italian stock market without any exclusion from the sub-type of market (MTA, AIM, etc.) and then we compare the IPO volume of a year to the average IPO volume of the phase to which it belongs. In the case the given year IPO volume is higher than the average IPO volume of the phase of reference, then, such year will be considered “hot”. Every IPO that occurs in a “hot year” will be then assigned 1 as value to its “hot_phase_dummy” in the present study. This will indicate the the given IPO occurred in a year whose IPO volume was greater than the period of reference to which it belongs. To better understand the procedure we have followed, we report below the tables of reference.

Phase	Average IPO volume
2004-2008	17
2008-2012	5
2012-2016	16
2016-2020	27
2020-2022	33

Year	IPO volume	> avg. IPO phase volume	Timing variable (dummy)
2004	9	NO	0
2005	15	NO	0
2006	22	YES	1
2007	32	YES	1
2008	7	NO	0
2009	5	NO	0
2010	8	YES	1
2011	5	NO	0
2012	1	NO	0
2013	14	NO	0
2014	26	YES	1
2015	27	YES	1
2016	14	NO	0
2017	31	YES	1
2018	31	YES	1
2019	35	YES	1
2020	23	NO	0
2021	46	YES	1
2022	29	NO	0

(Source of those data for the IPO volume: Dealogic, 2023, Exchange nationality equals Italy)

After that, we gather data also on additional variables that we do not model excessively such as: age (the age of the firm at the moment of the IPO expressed in number of years), the number of uses mentioned in the prospectus filed for IPO (we count them from the ones reported by Dealogic). Then, we include the variable named “VC_backing_dummy”, in order to take notice of the participation of VC at IPO in the firm. This variable will be equal to 1 in the case of participation and to 0 otherwise.

Then, we will also include among the independent variables of the study the total asset size named “total_assets_size” expressing the value of the total assets as reported in the balance sheet of the listing company the year before the IPO. Then, we will also report the size of the issue, considered as the total value of the deal provided by Dealogic. Finally, we report two variables for the reputation of the bookrunners and the auditors. For the reputation of the bookrunners, also in light of the higher amount of literature that backs it, we decided to build a league table with the ranking of the underwriters for each year of the sample (2005-2022). The ranking of each year is built by considering the total deal value reported by the underwriter in the given year, in addition we can also report the number of deals executed. In the following tables we report indeed those rankings.

2022				
Rank	Bookrunner	Deal Value EUR (m)	No.	% Share
1	BNP Paribas	874.86	2	13.28
2	BofA Securities	603.13	3	9.16
3	Barclays	455.27	2	6.91
3	Citi	455.27	2	6.91
3	Santander	455.27	2	6.91
3	SG Corporate & Investment Banking	455.27	2	6.91
3	Stifel	455.27	2	6.91
8	Credit Suisse	408.48	2	6.2
8	Mediobanca	408.48	2	6.2
10	Intesa Sanpaolo SpA	373.31	5	5.67
11	Goldman Sachs	238.92	2	3.63
11	UniCredit	238.92	2	3.63
13	JPMorgan	194.65	1	2.96
14	Deutsche Bank	181.18	2	2.75
15	Banco BPM SpA	160.55	2	2.44
16	ABN AMRO Bank	142.86	1	2.17
16	BPER Banca SpA	142.86	1	2.17
16	HSBC	142.86	1	2.17
19	Jefferies LLC	80.05	1	1.22
20	Equita SIM SpA	78.08	2	1.19

We might decide to define the underwriter reputation as being equal to the rank it occupies in the given tables in the respective year in which the IPO occurs. In case of an IPO followed by more underwriters, then we will take the rank of the most reputable underwriter participating into the deal. Notice that since the more reputable an underwriter is the lower the value it will have if we decide to assign values to this variable as being equal to the rank the underwriter occupies, the underwriter reputation variable will be modelled in the following different manner. We would like to have a

variable for the underwriter reputation which is increasing in value with the higher reputation of the underwriter and not the opposite as it would be by not modelling the variable; therefore, we decide to assign the following values to the underwriter reputation variable given the place occupied by the underwriter in the rank of the year. Reported below, it might be beneficial to have the conversion table for the modelling of this variable:

Conversion table for the modelling of the underwriter reputation variable	
Rank position	Assigned Value
1	20
2	19
3	18
4	17
5	16
6	15
7	14
8	13
9	12
10	11
11	10
12	9
13	8
14	7
15	6
16	5
17	4
18	3
19	2
20	1
>20	0

Basically, the following mechanism consistent with the logic explained above will be applied; let's suppose that company X decides to go public in 2022 and it will entrust BNP Paribas as underwriter for the IPO. In this case company X will have as underwriter reputation variable ("underwriter_reputation") a value equal to 20, since BNP is the most reputable underwriter in the year 2022 and therefore, by looking at the conversion table, it will be assigned a value equal to 1 for its reputation. By referring each year to the ranking table of reference and using this conversion table we will be able to assign a value to each underwriter reputation variable in each IPO of the sample. For what concerns instead the auditor reputation we will follow a more straight logic, modelling this

variable as dummy, and assigning it a value equal to one in the case in which the auditor of the IPO is among the big four auditing firms, e.g. KPMG, Deloitte, EY, PwC, and 0 otherwise.

We report below a list of all the variables decided to include in the study given the reference hypothesis formulated; for each variable we cite its name in the study, its meaning, and its source; notice that for the source we have envisaged the following legend:

Category:	Source:
	Dealogic
	built upon the data of Dealogic
	retrieved from Prospectus/Refinitiv/BM/other

Independent Variables	
Variable Name	Meaning
family_dummy	it will be equal to one in case of a family firm, it will be equal to 0 in case of a non-family firm
founder_dummy	it will be equal to one in case of founder as CEO in family firm, it will be equal to 0 otherwise
techsector_dummy	it will be equal to 1 if the firm belongs to the technology sector, 0 otherwise
percentage_company_sold	percentage of company sold
D_E_ratio	debt-to-equity ratio of the firm in the year before IPO
capex_assets_ratio	capex-to-total assets ratio of the firm in the year before IPO
integer_price_dummy	it will be equal to one in case of firms' priced at IPO with integer offer prices, 0 otherwise
hot_phase_dummy	it will be equal to 1 if the year in which the IPO occurs is characterized by a high IPO volume
age	firm's age at the moment of the IPO
number_of_uses	the number of uses of the IPO proceeds mentioend in the prospectus
total_assets_size	size of the firm expressed as total assets of the firm in the year before IPO
issue_size	size of the issue expressed as IPO proceeds
underwriter_reputation	it will be equal to the ranking position of the underwriter in the previous year of the IPO given by Dealogic
assets_issuesize_ratio	it will be equal to the ratio between the total assets of the firm one year before the IPO and the issue proceeds from the IPO
auditor_reputation_dummy	It will be equal to 1 if the auditor is Deloitte/PwC/EY/KPMG, and 0 otherwise
IPO_volume	number of IPOs occurred in the year of reference
ln_total_assets	natural logarithm of the total assets size

As we can see, we have added two additional variables for completeness purposes, i.e. the IPO volume of the reference year and the natural logarithm of the total assets size. These two variables will be used to further test the relationship between the hot issue phases and size of the firm. After having

discussed the variables that will be included in the present study we can move on to the sample we have built.

3.3 Sample

From Dealogic we download the data related to all the IPOs occurred in Italy from June 21st 2007 to December 31st 2022. Concerning the time frame taken as reference period, we can say that taking only six-seven years was a bit too low in terms of data gathered while going too much in the past might not have been beneficial for the characteristics of the IPO market that have been and are constantly evolving. Therefore, it appeared reasonable to select this time span and work with the data stemming from this period.

For the purpose of the present study we will include both those firms listed on the Italian Mercato Telematico Azionario (MTA), or as recently re-named Euronext Milan, as well as those listed on the AIM or as recently re-named the Euronext Growth Milan. The second modification we will do to the initial screening we have applied is not to take in the reference sample banks or purely financial institutions due to the fact that in our opinion they are not related to the present study because of their functioning, financials, and generally speaking “business activity”.

Moreover, we will work on two different samples based on the dependent variables we want to study; indeed, in the case in which we will study the underpricing phenomenon we will work on the entire dataset across years 2007-2022, while for the studying of the long-term performance after three years from the IPO, we will necessarily work on the IPO occurred until 2019. In this latter case therefore, we will exclude all those observations that have a pricing date after year 2019 and those observations for which the post-3years from IPO share price cannot be retrieved because delisted.

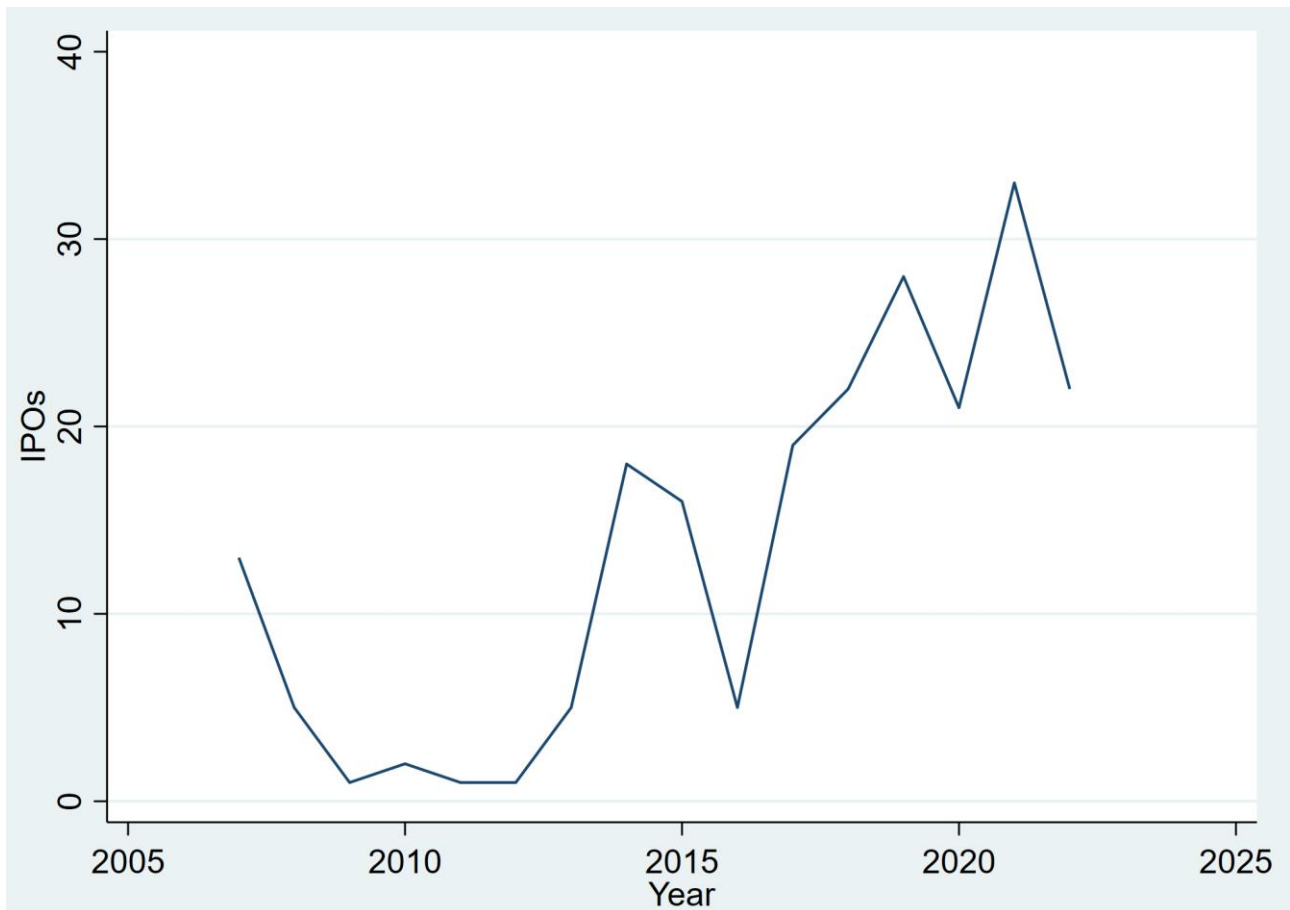
After this preliminary download and first-hand exclusion of some observations from the sample, we start to gather data concerning the variables of interest that were not directly available from our first source, namely Dealogic 2023.

In order to define family firms as such in the present study we will use the definition given by Andres (2008) specifies a family firm as following: The founder and/or family members hold more than 25% of the voting shares, or if the family owns less than 25% of the voting rights they have to be represented on either the executive or the supervisory board (Andres, C., 2008).

After the overall procedure explained above in order to build the sample, we present the latter; the sample is composed of 212 companies that decided to go public in the reference period. These companies include both family and non-family firms; What follows is some descriptive statistics of

the overall sample gathered (the statistics will make reference to the dataset that will then be used to study the level of underpricing, e.g. the dataset with the highest number of observations without any exclusion concerning the 3-years stock performance data).

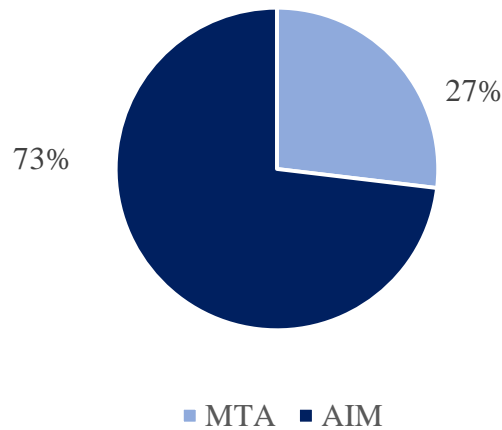
In the following graph we can better visualize the number of IPOs of which we have gathered the necessary information for the present study by each year taken in the sample:



As already mentioned in the section related to the Italian IPO market, the number of IPOs has varied a lot throughout the years recording phases characterized by a relatively high IPO volume and phases which appear as depressed in terms of IPO volume. As we can observe from the graph the Italian IPO market has witnessed an overall expansion throughout the years; moreover, such growth have not occurred linearly but through ups and downs which over the 15-years time span have defined this general increase in the IPO volume.

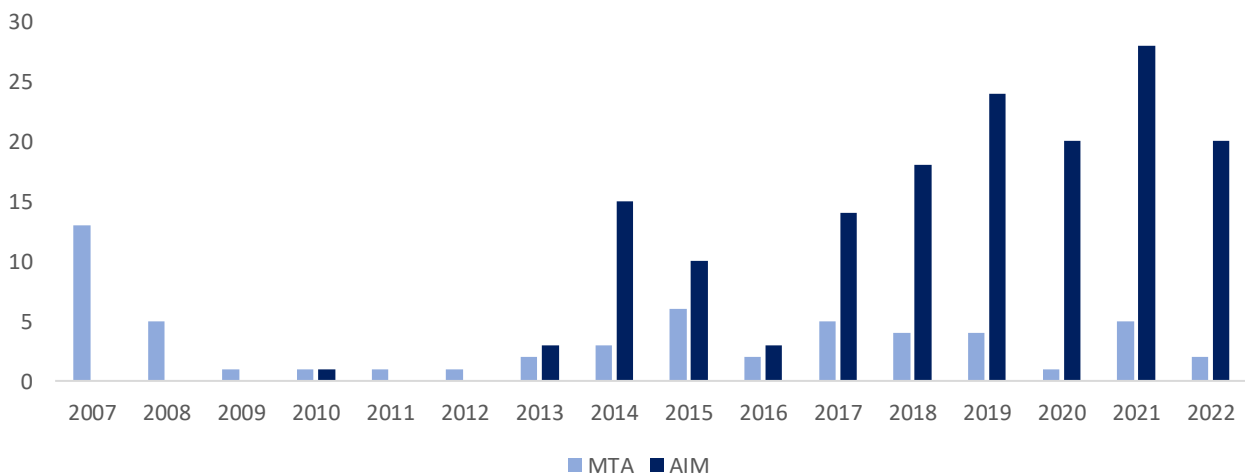
We can then observe how many IPOs occurred on the AIM and how many IPOs have occurred on the MTA. It appears that 155 have occurred on the AIM and 57 have occurred on the MTA.

Sample split by segment



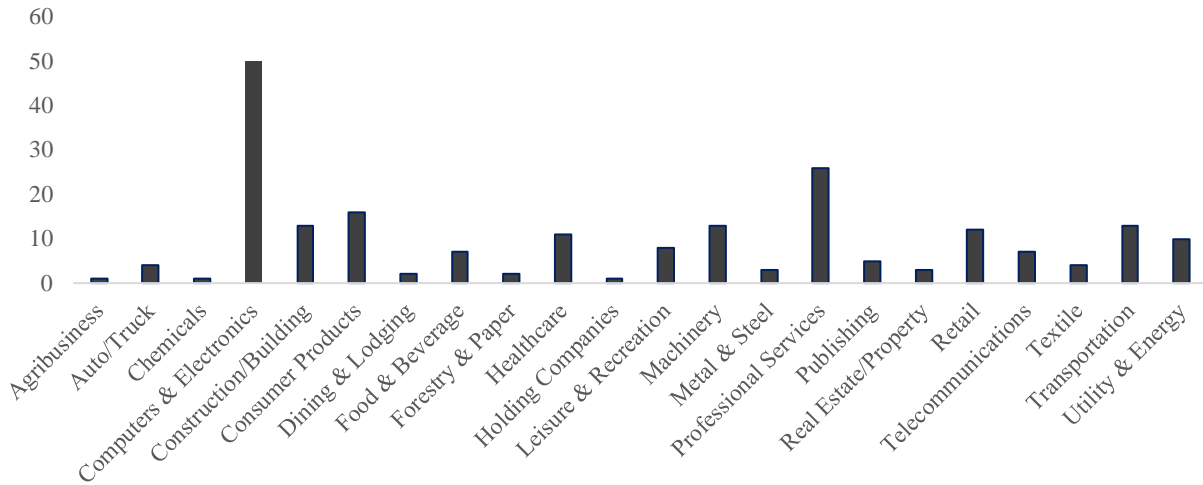
Moreover, we can also observe how this categorization has evolved across the years selected for the present analysis. It appears that from 2013 onwards the AIM segment has always been hosting a higher number of companies deciding to go public with respect to the MTA. This phenomenon might well be justified by the lower requirements needed to get listed on the AIM that provide some easiness to firms in applying to it.

Sample split by segment across the years



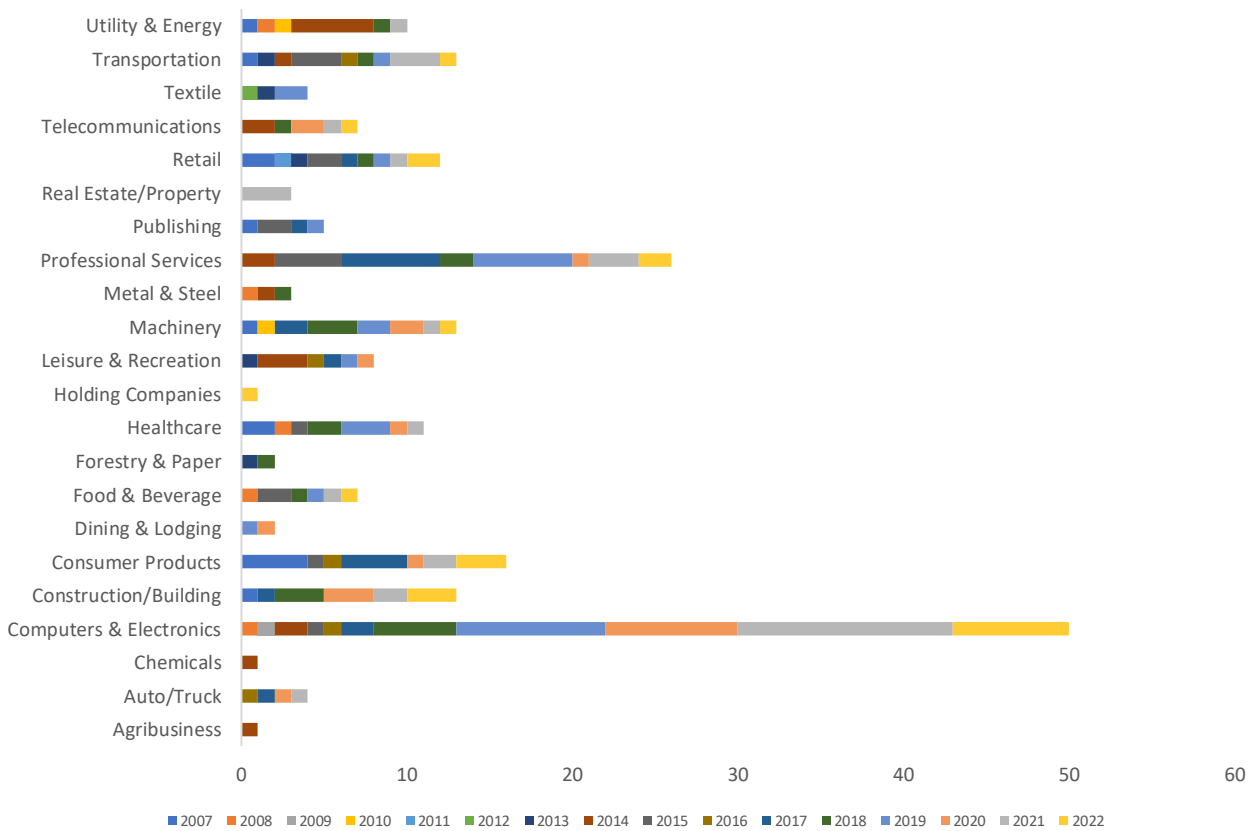
Concerning the sectors to which the companies that decided to go public in the sample belong to we find the following differentiation:

Sample IPO Volume by Sector

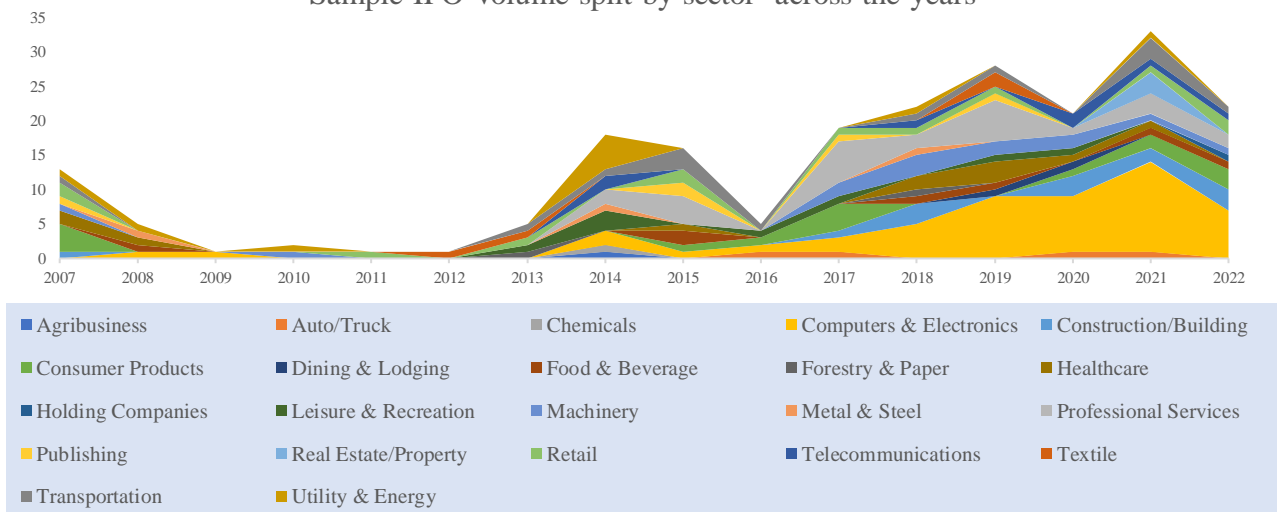


We can also visualize how the volume of IPOs in each sector evolved across the years of the sample:

Sample IPO Volume split by sector across the years



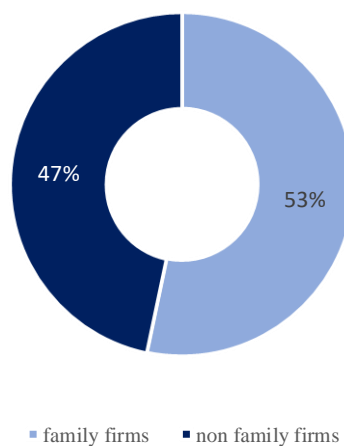
Sample IPO Volume split by sector across the years



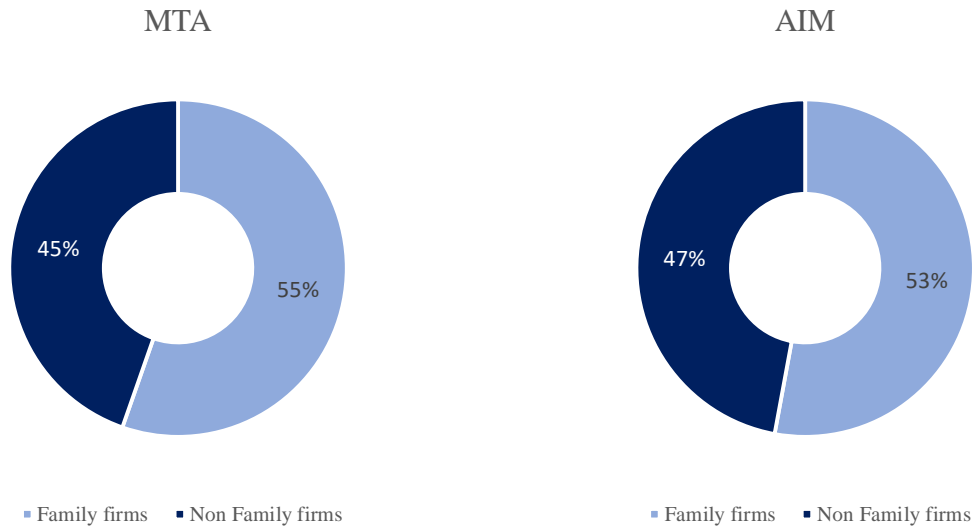
Not surprisingly, one of the strongest evolutions in terms of number of companies reaching the IPO has been represented by the Computers and Electronics segment which in 2021 constituted a record in the Italian IPO market.

Since the main purpose of the study is to understand the relationship between family and non-family firms, we can also highlight the split between family and non-family firms within our sample. Namely we have 113 family firms, representing 53% of the sample, and 99 non family firms, representing the remaining 47% of the sample.

Sample IPOs number split by firm category



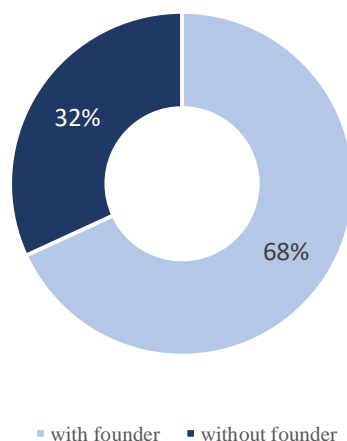
An additional insight can be gathered on the basis of how many family firms went public on the AIM and how many family firms went public on the MTA; we can also compare the latter to their counterpart, i.e. non-family firms.



In the sample taken as reference, we find that during the period chosen we have a relatively equal division between family and non-family firms not only on a total basis but also from a market segment standpoint. Indeed, among the companies that decide to go public on the MTA 31 were family firms, representing 55% of the sampled MTA companies, and 25 were non-family firms representing 45% of the sampled MTA companies. On the AIM the split is not substantially different with 82 family firms representing 53% of the sampled AIM companies and 73 non-family firms representing 47% of the sampled AIM companies.

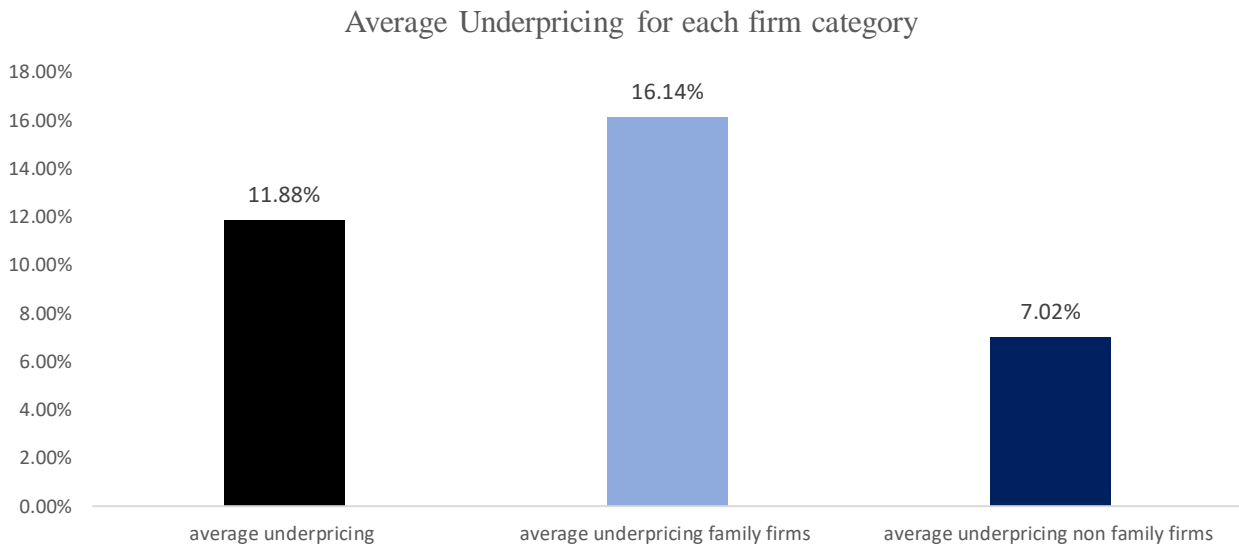
In the family firm's macro group, including both AIM and MTA, 77 had the founder as CEO/Chairman, while 36 had a successor generation in place, namely representing a split of 68% and 32% of the total of family firms sampled.

Family firms split by the presence of the founder at IPO

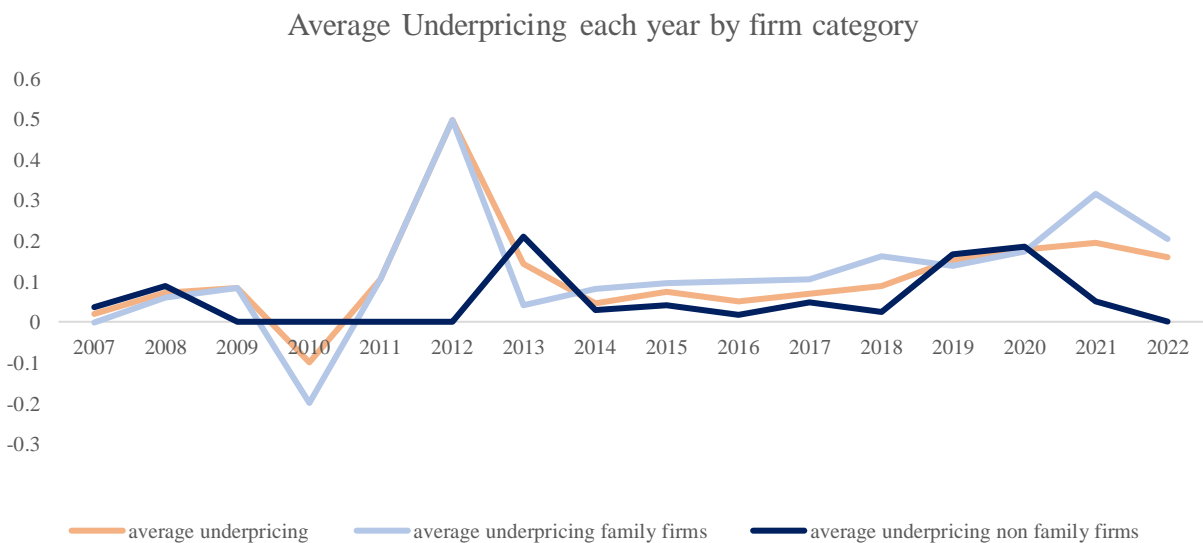


Finally, we can have a look to our dependent variables of interest, namely the underpricing and the 3-years post IPO relative performance to the market.

The average underpricing witnessed by the IPOs of the sample is equal to 11.88%. We can also highlight the difference in terms of average underpricing between family and non-family firms; it appears that the average underpricing of family firms is 16.14% while the average underpricing of non-family firms is 7.02%.



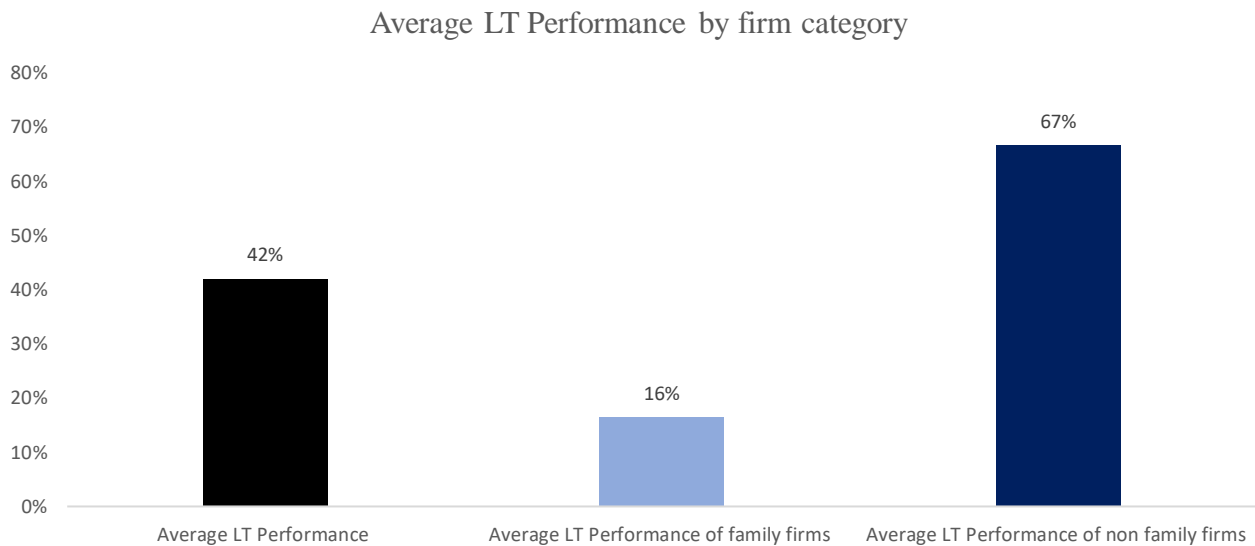
It might also be interesting to observe how the average underpricing has varied throughout the years by considering three cases: all firms, only family firms, only non-family firms.



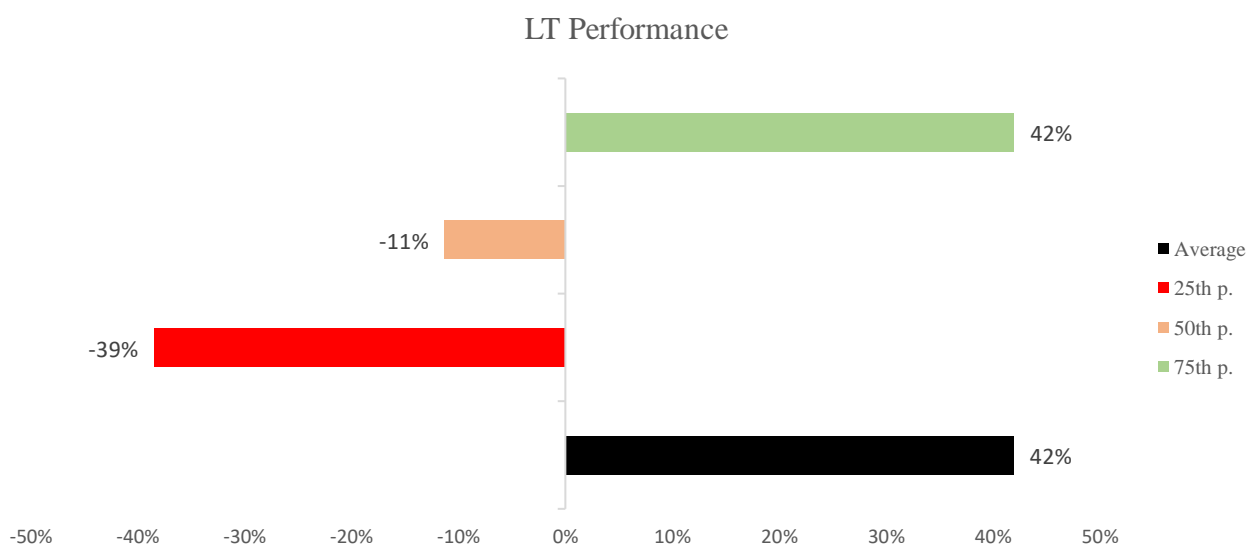
It appears that certain years have generally been characterized by higher levels of underpricing both for family and non-family firms, while on average the underpricing of family firms have been higher

than the one of non-family firms. The pick of underpricing in 2012 is due to the IPO of Brunello Cucinelli witnessing an incredible underpricing of 49.7% considering the strong demand for the company that closed books well in advance of the original planning.

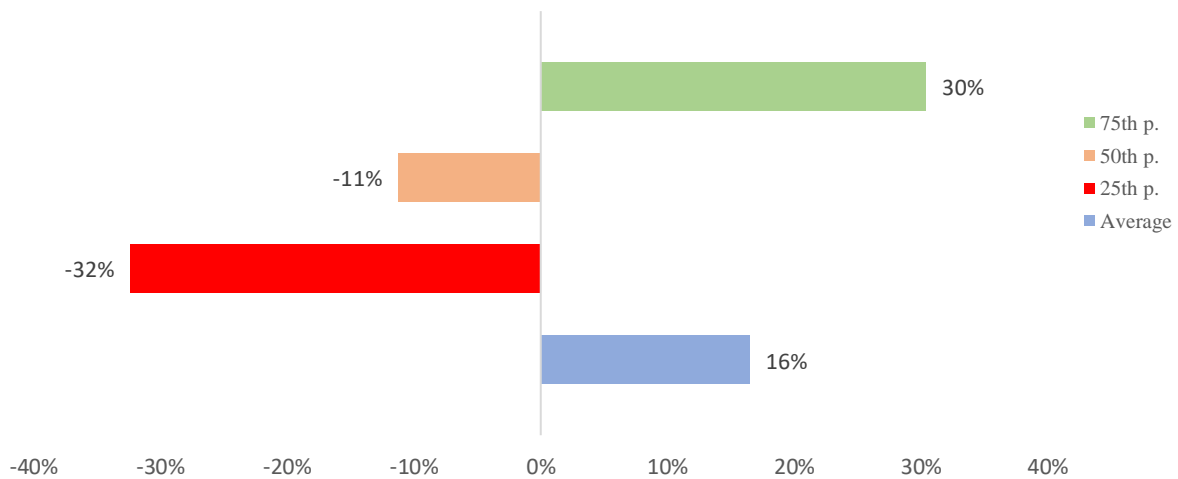
Observing the second of our dependent variables of interest, namely the performance of the stock relative to the market in the three years after the IPO we observe the following:



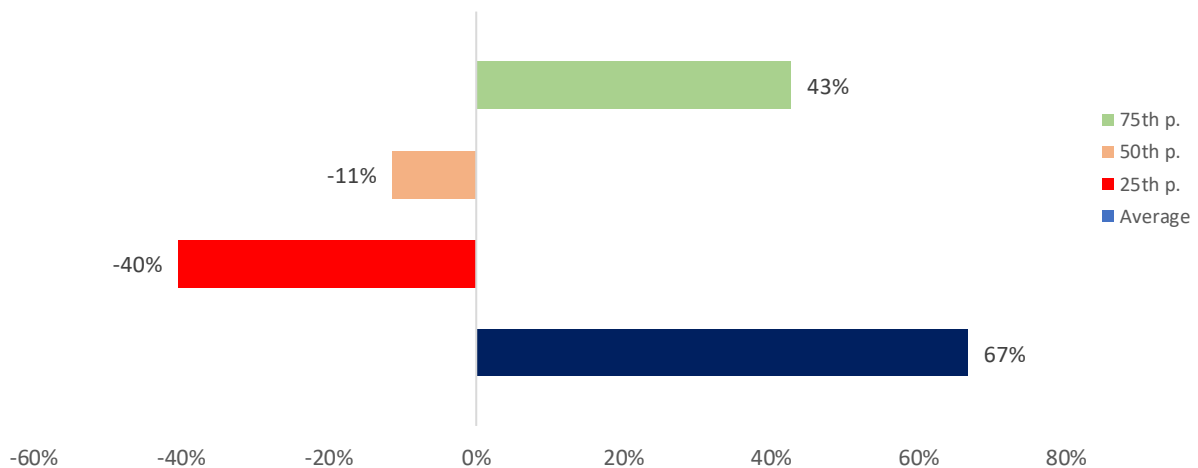
On average the LT Performance appears to be pretty high but being this an average might be misleading in making oneself an idea of the relative return of a company in the three years after its IPO on the Italian market; indeed, we might also observe how those relative performances are distributed, and their respective percentiles that we report below:



LT Performance of Family Firms



LT Performance of Non-Family Firms



As suspected, despite a high average in terms of relative stock performance in the three years post-IPO such average is strongly conditioned by a high-end portion of data that brings the average up; indeed, by observing the 25th and 50th percentile which are negative we can understand that despite the high average half of the relative performances are below 0% and in the negative double-digit range. It appears indeed that both family and non-family firms present this type of distribution and that on average family firms perform worse than non-family firms in the three-years after IPO.

After this preliminary presentation of the dataset and some descriptive statistics to better highlight the main evolution of the Italian IPO market and the reference to our variables of interest, we can

now move to the next section in which we will present the statistical methods used and the overall statistical analysis carried out on the sample to test our initial hypotheses.

3.4 Statistical methods

The software on which we will run our statistical analysis and our ad hoc coding to test our hypothesis will be STATA. In order to test our hypothesis on the variables of interest we will stick to the statistical methods used also in previous studies on the subject: the Ordinary Least Squares (OLS) regression model. OLS is a regression technique based on linear coefficients that will minimize the sum of squared residuals between the observed values and the ones predicted by the same model. We will run two general regression model on the overall sample, one taking as dependent variable the level of underpricing and one taking as dependent variable the relative performance of the stock after three years from the IPO.

1. $Underpricing = a + \beta_1 family_dummy + \beta_2 founder_dummy + \beta_3 techsector_dummy + \beta_4 percentage_company_sold + \beta_5 D_E_ratio + \beta_6 capex_assets_ratio + \beta_7 integer_price_dummy + \beta_8 IPO_volume + \beta_9 age + \beta_{10} number_of_uses + \beta_{11} VC_backing_dummy + \beta_{12} issue_size + \beta_{13} underwriter_reputation + \beta_{14} assets_issuesize_ratio + \beta_{15} auditor_reputation_dummy + \beta_{16} ln_total_assets$
2. $LT\ Performance = a + \beta_1 family_dummy + \beta_2 founder_dummy + \beta_3 techsector_dummy + \beta_4 percentage_company_sold + \beta_5 D_E_ratio + \beta_6 capex_assets_ratio + \beta_7 integer_price_dummy + \beta_8 hot_phase_dummy + \beta_9 age + \beta_{10} number_of_uses + \beta_{11} VC_backing_dummy + \beta_{12} issue_size + \beta_{13} underwriter_reputation + \beta_{14} assets_issuesize_ratio + \beta_{15} auditor_reputation_dummy + \beta_{16} ln_total_assets$

We will also further test these models substituting to the IPO volume variable directly the hot phase dummy variable to test further the relation between underpricing and number of companies going public in the same period.

$$Underpricing = a + \beta_1 family_dummy + \beta_2 founder_dummy + \beta_3 techsector_dummy + \beta_4 percentage_company_sold + \beta_5 D_E_ratio + \beta_6 capex_assets_ratio + \beta_7 integer_price_dummy + \beta_8 hot_phase_dummy + \beta_9 age + \beta_{10} number_of_uses + \beta_{11} VC_backing_dummy + \beta_{12} issue_size + \beta_{13} underwriter_reputation + \beta_{14} assets_issuesize_ratio + \beta_{15} auditor_reputation_dummy + \beta_{16} ln_total_assets$$

We will then include the variables that we have already discussed in the previous sections to control for differences that may arise unvoluntary from the sample taken as reference. Moreover, in order to test the second part of each hypothesis made (when present) we will separately conduct our regression

models by splitting the sample into two parts; one made of family firms and one made of non-family firms; in case the coefficients will then be both significant and pointing to the same direction we will necessarily do an additional test reported by Paternoster in 1998 (Paternoster, R. et. al, 1998). This method, although cited by Paternoster in 1998, was originally reported by Clogg, C. C. et. al (Clogg, C. C., Petkova, E., & Haritou, A., 1995) supports the use of the following Z-test:

$$Z = \frac{\beta_1 - \beta_2}{\sqrt{(SE\beta_1)^2 + (SE\beta_2)^2}}$$

Where SE beta1 or 2 is the standard error of the correspondent regression coefficient. Once obtained the Z-score we would then obtain the p-value in STATA to investigate whether there is a statistical difference between the two regression coefficients.

$$IF. \quad Underpricing_{Family} = a + \beta_1 founder_dummy + \beta_2 techsector_dummy + \beta_3 percentage_company_sold + \beta_4 D_E_ratio + \beta_5 capex_assets_ratio + \beta_6 integer_price_dummy + \beta_7 hot_phase_dummy + \beta_8 age + \beta_9 number_of_uses + \beta_{10} VC_backing_dummy + \beta_{11} issue_size + \beta_{12} underwriter_reputation + \beta_{13} assets_issuesize_ratio + \beta_{14} auditor_reputation_dummy + \beta_{15} ln_total_assets$$

$$I.NF. \quad Underpricing_{NonFamily} = a + \beta_1 founder_dummy + \beta_2 techsector_dummy + \beta_3 percentage_company_sold + \beta_4 D_E_ratio + \beta_5 capex_assets_ratio + \beta_6 integer_price_dummy + \beta_7 hot_phase_dummy + \beta_8 age + \beta_9 number_of_uses + \beta_{10} VC_backing_dummy + \beta_{11} issue_size + \beta_{12} underwriter_reputation + \beta_{13} assets_issuesize_ratio + \beta_{14} auditor_reputation_dummy + \beta_{15} ln_total_assets$$

Before applying OLS and running the regression on STATA we have verified that we were in the position at first of using OLS given its preliminary assumptions required to use it.

- a. Linearity in the coefficients and in the error term of the regression model.

The variables included in the present study and reported in the appropriate section will be ad hoc modelled to fit into the linear regression model; for instance the total asset size variable will be modelled as the natural logarithm of the total asset size in order to stick to such assumption, since as witnessed by previous studies the relationship between total asset size and underpricing might not be appropriately linear in the regression coefficient.

- b. The population mean of the error term is zero.

In order to satisfy this second assumption, we have included in the regression model more variables than the initial variable of interest, namely the dummy variable of being or not being a family firm.

Indeed, these additional variables should step by step reduce all the omitted factors and being compliant with this preliminary OLS assumption.

- c. The error term is uncorrelated with all the independent variables.

In order to respect this assumption, we have used the same procedure of the previous one, namely including more possibly significant factors as regressors in the study to reduce as much as possible any omitted factor that might be correlated with the independent variables. In such a way, the error term would be not predictable and random.

- d. Uncorrelation of the error terms observed among each other.

This assumption is sometimes difficult to hold true especially in the financial and economic phenomenon and time series. In the present case, apart from picking a cross-sectional panel of data, we also control for the timing factor by making explicit a timing variable that we can express as IPO volume or hot phase related to the year in which the IPO occurred.

- e. Homoskedasticity of the error term

We can assume in the present case that the error has a constant variance across the sample and verify it by plotting the residuals of the model against the predicted values of the model and see whether this changes across the fitted values. We also apply robust standard errors for the regressions as to cope with this possible issue. If we have the previous two, we would have that the variables are I.I.D. (independent and identically distributed). The meaning of this assumption is that the observations implied in the study have been randomly selected (no criteria has been followed in selecting them) and the observations have been selected by the same population; This assumption is implicitly true since the overall sample has been built on the basis of all the available IPOs on the Italian IPO market without any screening criteria that might bias our final analysis.

- f. The error term follows a normal distribution.

In order to verify this assumption, we plot the residuals on a normal probability plot and if they follow a straight line they are witnessing to be normally distributed.

In the next section we will run the models highlighted above in order to finally carry out our statistical analysis.

CHAPTER 4: HYPOTHESIS TESTING

In the present section we will first run our four models and then we will present the main coefficients and their significance level. Then, we will refer to our initial hypothesis to investigate whether they can already be confirmed, rejected or if further investigation with a secondary statistical test is needed.

Regression Model 1:

$$\begin{aligned} \text{Underpricing} = & a + \beta_1 \text{family_dummy} + \beta_2 \text{founder_dummy} + \beta_3 \text{techsector_dummy} + \beta_4 \\ & \text{percentage_company_sold} + \beta_5 \text{D_E_ratio} + \beta_6 \text{capex_assets_ratio} + \beta_7 \text{integer_price_dummy} + \beta_8 \\ & \text{IPO_volume} + \beta_9 \text{age} + \beta_{10} \text{number_of_uses} + \beta_{11} \text{VC_backing_dummy} + \beta_{12} \text{issue_size} + \beta_{13} \\ & \text{underwriter_reputation} + \beta_{14} \text{assets_issuesize_ratio} + \beta_{15} \text{auditor_reputation_dummy} + \beta_{16} \\ & \ln_total_assets \end{aligned}$$

We will use this model to test the following hypotheses:

- i. Family firms will be characterized by a lower level of underpricing with respect to non-family firms.
- iv. Firms operating in the tech sector or using new technologies will be characterized by a higher level of underpricing with respect to firms belonging to other sectors.
- v. A greater percentage of company sold will imply a lower underpricing at IPO.
- vi. a. A higher debt-to-equity ratio will imply a higher underpricing at IPO.
- vii. a. A higher capex-to-total assets ratio will imply a lower level of underpricing at IPO.
- viii. a. IPOs priced at integer prices will be subjected to a higher level of underpricing than those priced up to the decimal place.
- ix. a. IPOs made in periods characterized by a high IPO volume will be characterized by a higher level of underpricing.
- x. a. The age of the firm at IPO will negatively affect underpricing; namely, more aged firms at IPO will be subject to a lower level of underpricing with respect to less aged ones.
- xi. a. The number of uses of proceeds mentioned in the prospectus will be negatively associated with underpricing at IPO.
- xii. a. VC-backing will foster a lower level of underpricing at IPO.
- xiv. a. A greater size of the firm will reduce the level of underpricing at IPO.
- xv. a. A higher size of the issue will imply a higher level of underpricing at IPO.
- xvi. a. A higher underwriter reputation will imply a lower underpricing at IPO.
- xvii. a. A higher ratio of assets to IPO proceeds will imply a lower underpricing at IPO.
- xviii. a. A higher auditor reputation will imply a lower underpricing at IPO.

We present the STATA output of the regression model, given our input command:

```
. regress Underpricing family_dummy founder_dummy techsector_dummy percentage_company_sold D_E_ratio capex_assets_ratio integer_price_dummy IPO_volume age number_of_uses VC_backing_du
> mmy issue_size underwriter_reputation assets_issuysize_ratio auditor_reputation_dummy ln_total_assets, vce(robust)
```

```
Linear regression                Number of obs    =      212
                                F(16, 195)      =      2.32
                                Prob > F            =      0.0038
                                R-squared           =      0.2232
                                Root MSE        =      .19124
```

Underpricing	Coefficient	Robust std. err.	t	P> t
family_dummy	.1124363	.0290681	3.87	0.000
founder_dummy	-.1062972	.0436342	-2.44	0.016
techsector_dummy	.1064543	.0421737	2.52	0.012
percentage_company_sold	-.2411286	.1095954	-2.20	0.029
D_E_ratio	-.0003164	.0022075	-0.14	0.886
capex_assets_ratio	.0072225	.0222586	0.32	0.746
integer_price_dummy	.0190414	.0290649	0.66	0.513
IPO_volume	.0033223	.001754	1.89	0.060
age	-.0015096	.0007329	-2.06	0.041
number_of_uses	-.0431175	.0243422	-1.77	0.078
VC_backing_dummy	-.0321637	.0659684	-0.49	0.626
issue_size	.0000526	.0000386	1.36	0.175
underwriter_reputation	.0001879	.0020879	0.09	0.928
assets_issuysize_ratio	-.0049554	.0033636	-1.47	0.142
auditor_reputation_dummy	-.0197047	.0330094	-0.60	0.551
ln_total_assets	-.0103009	.0115534	-0.89	0.374
_cons	.2282203	.0750781	3.04	0.003

From the output table reported we find that the statistically significant coefficients are the ones related to the family dummy variable (1% significance level), the founder dummy variable (3% significance level), the tech sector dummy variable (1% significance level), the percentage of company sold variable (3% significance level), the age variable (5% significance level); The model specified above explains 22.32% of the variation in the phenomenon of interest, namely underpricing, since its R-squared is 0.2232. The family dummy variable, the tech sector dummy variable, the IPO volume (although not statistically significant since the p-value stands at 6%) contribute positively to the level of underpricing; instead, the founder dummy variable, the percentage of company sold variable, and

the age variable contribute negatively to the level of underpricing. In light of the hypotheses formulated above we can investigate thanks to this output which ones should be rejected, and which ones should be accepted. For clarity, we present a table with the hypotheses formulated above, the acceptance/rejection tick box and the reason why it has been so. Moreover, we initially provide a legend to better understand the outcome of our hypothesis testing.

Legend	
✓	original hypothesis accepted
✗	original hypothesis rejected
↔	original hypothesis reverted
***	1% significance level
**	3% significance level
*	5% significance level

Hypothesis		Reasoning	Acceptance/Rejection
i.	Family firms will be characterized by a lower level of underpricing with respect to non-family firms.	family firms appear to be underpriced of 11.24 percentage points more with respect to non-family firms	↔***
iv.	Firms operating in the tech sector or using new technologies will be characterized by a higher level of underpricing with respect to firms belonging to other sectors.	firms operating in the tech sector appear to be underpriced 10.64 percentage points more than firms operating in other sectors	✓***
v.	A greater percentage of company sold will imply a lower underpricing at IPO.	For each percentage point of the total company percentage sold in addition firms appear to be underpriced 0.24 percentage points less	✓***
vi.	a. A higher debt-to-equity ratio will imply a higher underpricing at IPO.	Not significant relationship both ways	✗
vii.	a. A higher capex-to-total assets ratio will imply a lower level of underpricing at IPO.	Not significant relationship both ways	✗
viii.	a. IPOs priced at integer prices will be subjected to a higher level of underpricing than those priced up to the decimal place.	Not significant relationship both ways	✗
ix.	a. IPOs made in periods characterized by a high IPO volume will be characterized by a higher level of underpricing.	IPOs occurring in periods characterized by a high IPO volume appear to be underpriced 0.3 percentage points more than those occurring in low IPO volume periods (slightly significant)	✓
x.	a. A. The age of the firm at IPO will negatively affect underpricing; namely, more aged firms at IPO will be subject to a lower level of underpricing with respect to less aged ones.	Based on a single year difference, older firms appear to be, on average, underpriced 0.15 percentage points less than younger firms	✓*

xi.	a.	The number of uses of proceeds mentioned in the prospectus will be negatively associated with underpricing at IPO.	Not significant relationship both ways	X
xii.	a.	VC-backing will foster a lower level of underpricing at IPO.	Not significant relationship both ways	X
xiv.	a.	A greater size of the firm will reduce the level of underpricing at IPO.	Not significant relationship both ways	X
xv.	a.	A higher size of the issue will imply a higher level of underpricing at IPO.	Not significant relationship both ways	X
xvi.	a.	A higher underwriter reputation will imply a lower underpricing at IPO.	Not significant relationship both ways	X
xvii.	a.	A higher ratio of assets to IPO proceeds will imply a lower underpricing at IPO.	Not significant relationship both ways	X
xviii.	a.	A higher auditor reputation will imply a lower underpricing at IPO.	Not significant relationship both ways	X

After having tested, commented, and gathered the results of our hypothesis testing made on the first regression model specified in the present section, we can split the sample into two parts, one made of family firms and one made of non family firms and test some of the remaining hypothesis. In particular, we will apply on those two datasets formed the regression model 1F and 1NF, which are built up in the same manner.

Regression model 1F:

$$\begin{aligned}
 \text{Underpricing}_{\text{Family}} = & a + \beta_1 \text{founder_dummy} + \beta_2 \text{techsector_dummy} + \beta_3 \\
 & \text{percentage_company_sold} + \beta_4 \text{D_E_ratio} + \beta_5 \text{capex_assets_ratio} + \beta_6 \\
 & \text{integer_price_dummy} + \beta_7 \text{hot_phase_dummy} + \beta_8 \text{age} + \beta_9 \text{number_of_uses} + \beta_{10} \\
 & \text{VC_backing_dummy} + \beta_{11} \text{issue_size} + \beta_{12} \text{underwriter_reputation} + \beta_{13} \\
 & \text{assets_issuesize_ratio} + \beta_{14} \text{auditor_reputation_dummy} + \beta_{15} \ln_total_assets
 \end{aligned}$$

Regression model 1NF:

$$\begin{aligned} \cdot \quad \text{Underpricing}_{\text{NonFamily}} = & a + \beta_1 \text{founder_dummy} + \beta_2 \text{techsector_dummy} + \beta_3 \\ & \text{percentage_company_sold} + \beta_4 \text{D_E_ratio} + \beta_5 \text{capex_assets_ratio} + \beta_6 \\ & \text{integer_price_dummy} + \beta_7 \text{hot_phase_dummy} + \beta_8 \text{age} + \beta_9 \text{number_of_uses} + \beta_{10} \\ & \text{VC_backing_dummy} + \beta_{11} \text{issue_size} + \beta_{12} \text{underwriter_reputation} + \beta_{13} \\ & \text{assets_issuesize_ratio} + \beta_{14} \text{auditor_reputation_dummy} + \beta_{15} \ln_total_assets \end{aligned}$$

We will use these models to test the following hypotheses:

- iii. The presence of the family founder as CEO or in the BoD at IPO will reduce the level of underpricing with respect to those cases in which there will be a successor generation in place.
- vi. b. The relationship between debt-to-equity ratio and underpricing at IPO won't be significantly different between family and non-family firms.
- vii. b. The relationship between the capex-to-total asset ratio and underpricing will be stronger for family firms than non-family firms.
- viii. b. The effect of pricing format on underpricing at IPO won't be statistically significantly different between family firms and non-family firms.
- ix. b. In hot periods, family firms will be subject to a lower level of underpricing than non-family firms.
- x. b. The sensitivity of underpricing to the age of the firm will be significantly lower for family firms than for non-family firms.
- xi. b. The sensitivity of underpricing of family and non-family firms to the number of uses of proceeds mentioned in the prospectus won't be statistically different.
- xiii. b. Family firms will benefit significantly more than non-family firms from VC-backing.
- xiv. b. The impact of the size of the firm on underpricing won't be significantly different between family and non-family firms.
- xv. b. The relationship between size of the issue and level of underpricing will be significantly weaker in the case of family firms than in the case of non-family firms.
- xvi. b. The relationship between underwriter reputation and underpricing won't be significantly different between family and non-family firms.

xvii. b. The relationship between ratio of assets to IPO proceeds and level of underpricing at IPO will be significantly weaker for family firms than for non-family firms.

xviii b. The relationship between auditor reputation and underpricing won't be statistically significantly different between family and non-family firms.

We present the STATA output of the two regression models:

Regression model 1F:

```
. regress Underpricing founder_dummy techsector_dummy percentage_company_sold D_E_ratio capex_assets_ratio integer_price_dummy hot_phase_dummy age number_of_uses VC_backing_dummy
> underwriter_reputation assets_issuize_ratio auditor_reputation_dummy ln_total_assets if family_dummy == 1, vce (robust)
```

Linear regression	Number of obs	=	113
	F(14, 97)	=	.
	Prob > F	=	.
	R-squared	=	0.2522
	Root MSE	=	.22409

Underpricing	Coefficient	Robust std. err.	t	P> t
founder_dummy	-.1281659	.0689564	-1.86	0.066
techsector_dummy	.0867964	.0725226	1.20	0.234
percentage_company_sold	-.3691329	.1424642	-2.59	0.011
D_E_ratio	-.0055878	.0033671	-1.66	0.100
capex_assets_ratio	-.012102	.0191746	-0.63	0.529
integer_price_dummy	.0367492	.0516738	0.71	0.479
hot_phase_dummy	-.028998	.0508424	-0.57	0.570
age	-.0010819	.0011885	-0.91	0.365
number_of_uses	-.0771715	.0277458	-2.78	0.007
VC_backing_dummy	.0584354	.0761309	0.77	0.445
issue_size	-.0001153	.0002063	-0.56	0.578
underwriter_reputation	-.0030662	.0029495	-1.04	0.301
assets_issuize_ratio	-.0202779	.0103065	-1.97	0.052
auditor_reputation_dummy	-.034491	.057261	-0.60	0.548
ln_total_assets	-.0012368	.0250331	-0.05	0.961
_cons	.5741845	.1244547	4.61	0.000

From the output table reported we find that the statistically significant coefficients are the ones related to the percentage of company sold (1% significance level), number of uses (1% significance level), assets – issue size ratio (5% significance level); The model specified above explains 25.22% of the

variation in the phenomenon of interest, namely underpricing, since its R-squared is 0.2522.; The founder dummy (slightly significant at 6.6% significance level), the percentage of company sold, the number of uses, the assets-issue size ratio appears to contribute negatively to the level of underpricing of the firm at IPO. The direction indicated by the regressors of our general regression model 1 does not appear to have changed in the context of only family firms. In particular in the context of family firms, we observe that two new coefficients achieve significance, and it is the one of the assets-issue size regressor and the one of the number of uses disclosed in the documentation pre-IPO.

Regression model 1NF:

```
. regress Underpricing founder_dummy techsector_dummy percentage_company_sold D_E_ratio capex_assets_ratio integer_price_dummy hot_phase_dummy age number_of_uses VC_backing_dummy
> issue_size underwriter_reputation assets_issuysize_ratio auditor_reputation_dummy ln_total_assets if family_dummy == 0, vce (robust)
```

Linear regression	Number of obs	=	99
	F(14, 83)	=	.
	Prob > F	=	.
	R-squared	=	0.2207
	Root MSE	=	.14467

Underpricing	Coefficient	Robust std. err.	t	P> t
founder_dummy	-.0119379	.0368038	-0.32	0.746
techsector_dummy	.1351072	.0481516	2.81	0.006
percentage_company_sold	-.122831	.1598336	-0.77	0.444
D_E_ratio	.0030292	.0029383	1.03	0.306
capex_assets_ratio	.0224507	.0179532	1.25	0.215
integer_price_dummy	-.0169906	.029006	-0.59	0.560
hot_phase_dummy	-.0277634	.0427918	-0.65	0.518
age	-.0011069	.0006486	-1.71	0.092
number_of_uses	.0244105	.0478651	0.51	0.611
VC_backing_dummy	-.1264611	.0580394	-2.18	0.032
issue_size	-2.05e-06	.0000339	-0.06	0.952
underwriter_reputation	.0049286	.0024676	2.00	0.049
assets_issuysize_ratio	-.0024517	.0026684	-0.92	0.361
auditor_reputation_dummy	-.0235805	.0401472	-0.59	0.559
ln_total_assets	-.0012628	.0108316	-0.12	0.907
_cons	.0841595	.0901339	0.93	0.353

From the output table reported we find that the statistically significant coefficients are the ones related to the tech sector variable (1% significance level), VC backing dummy (3% significance level),

underwriter reputation (5% significance level); The model specified above explains 22.07% of the variation in the phenomenon of interest, namely underpricing, since its R-squared is 0.2207; the tech sector dummy variable continues to positively contribute to the underpricing level as it has been witnessed by the general regression model 1. However, two new coefficients in the case of non-family firms achieve significance: the one related to the VC backing dummy variable and the one related to the underwriter reputation variable. By looking at the magnitude of the coefficients found while the VC backing dummy variable appears to contribute negatively to the phenomenon of underpricing, the underwriter reputation slightly fosters it.

In light of the hypotheses formulated above we can investigate thanks to these two output tables generated by STATA which ones should be rejected and which ones should be accepted. For clarity, we present a table as previously reported with the hypotheses formulated above, the acceptance/rejection tick box and the reason why it has been so. Moreover, we initially provide a legend to better understand the outcome of our hypothesis testing.

Legend	
✓	original hypothesis accepted
✗	original hypothesis rejected and no relation exists
↔	original hypothesis reverted in light of existing relation
***	1% significance level
**	3% significance level
*	5% significance level

	Hypothesis	Reasoning	Acceptance/Rejection
iii.	The presence of the family founder as CEO or in the BoD at IPO will reduce the level of underpricing with respect to those cases in which there will be a successor generation in place.	Firms that have the founder as CEO or in the BoD at the moment of IPO will be subject to a level of underpricing which is 12.82% lower on average than firms that possess a successive generation in such place	✓
vi. b.	The relationship between debt-to-equity ratio and underpricing at IPO won't be significantly different between family and non-family firms.	Both the two coefficients are not statistically significant in their influence towards the level of underpricing, both in family and non family firms	✓
vii. b.	The relationship between the capex-to-total asset ratio and underpricing will be stronger for family firms than non-family firms	Both the two coefficients are not statistically significant in their influence towards the level of underpricing, both in family and non family firms	✗
viii. b.	The effect of pricing format on underpricing at IPO won't be statistically significantly different between family firms and non-family firms.	Both the two coefficients are not statistically significant in their influence towards the level of underpricing, both in family and non family firms	✓
ix. b.	In hot periods, family firms will be subject to a lower level of underpricing than non-family firms.	Both the two coefficients are not statistically significant in their influence towards the level of underpricing, both in family and non family firms	✗
x. b.	The sensitivity of underpricing to the age of the firm will be significantly lower for family firms than for non-family firms.	It appears that the age factor influences the level of underpricing 0.01% more in terms of absolute value in the case of non-family firms with respect to family firms; however the significance level of the coefficient in the case of non family firm is in the order of 9% while it is not significant in the case of family firms	✓
xi. b.	The sensitivity of underpricing of family and non-family firms to the number of uses of proceeds mentioned in the prospectus won't be statistically different.	It appears that the coefficient of the number of uses of proceeds regressor is significant (significance level in the order of 1%) in its influence of the level of underpricing in the context of family firms while it is not in the context of non family firms; it appears that, on average, in the case of family firms, the increase of one unit in terms of uses disclosed decreases the overall underpricing level by 0.077	⇌***
xiii. b.	Family firms will benefit significantly more than non-family firms from VC-backing	It appears that while in the case of family firms the coefficient of VC backing is not statistically significant, in the context of non family firms the coefficient is significant and it witnesses that VC backing decreases the overall level of underpricing by 0.1264 at the 3% significance level.	⇌**
xiv. b.	The impact of the size of the firm on underpricing won't be significantly different between family and non-family firms.	It appears that none of the coefficients related to the natural logarithm of the total asset size is significant in its influence on the level of underpricing witnessed by family and non family firms	✓

xv. b.	The relationship between size of the issue and level of underpricing will be significantly weaker in the case of family firms than in the case of non-family firms.	It appears that the coefficient of the issue size in the two regression models on both family and non family firm underpricing is significant	X
xvi. b.	The relationship between underwriter reputation and underpricing won't be significantly different between family and non-family firms	the underwriter reputation regression coefficient appears positive and statistically significant at the 5% level only in the context of non family firms, witnessing that non-family firms choosing a top ranked underwriter are, on average, underpriced 0.49% more than those ones choosing a lower ranked underwriter.	⇌*
xvii. b.	The relationship between ratio of assets to IPO proceeds and level of underpricing at IPO will be significantly weaker for family firms than for non-family firms.	There is no statistical significance for both the two regression models in their regression coefficients concerning the ratio between the assets and the issue size, i.e. no difference witnessed between family and non family firms.	X
xviii. b.	The relationship between auditor reputation and underpricing won't be statistically significantly different between family and non-family firms.	There is no statistical significance for both the two regression models in their regression coefficients concerning the auditor reputation dummy, i.e. no difference witnessed between family and non family firms.	✓

We can now run the last of our regression models, namely regression model 2, in which we will consider the LT performance of the stock; the latter will be based, as previously explained, on the difference between the stock appreciation from the closing of the first day of trading until three years post the IPO plus any dividends paid in between, and the performance of the FTSE MIB in the same period.

Regression model 2:

$$2. \text{LT Performance} = a + \beta_1 \text{family_dummy} + \beta_2 \text{founder_dummy} + \beta_3 \text{techsector_dummy} + \beta_4 \text{percentage_company_sold} + \beta_5 \text{D_E_ratio} + \beta_6 \text{capex_assets_ratio} + \beta_7 \text{integer_price_dummy} + \beta_8 \text{hot_phase_dummy} + \beta_9 \text{age} + \beta_{10} \text{number_of_uses} + \beta_{11} \text{VC_backing_dummy} + \beta_{12} \text{issue_size} + \beta_{13} \text{underwriter_reputation} + \beta_{14} \text{assets_issuesize_ratio} + \beta_{15} \text{auditor_reputation_dummy} + \beta_{16} \ln_total_assets$$

In order to do so we will use our second dataset, the one made of those firms for which we are able to gather all those information concerning the stock price and dividends paid in between that we need to compute our dependent variable “LT performance”. Thanks to this model we will test our last hypotheses:

- ii. Family firms won't be causing a significantly different 3-years performance post IPO with respect to non-family firms.
- xii. The number of uses of proceeds mentioned in the prospectus will be negatively associated with the three-year post IPO performance.

Running the regression model on STATA we observe the following input and output:

```
. regress PerformanceLT family_dummy founder_dummy techsector_dummy percentage_company_sold D_E_ratio capex_assets_ratio integer_price_dummy age number_of_uses VC_backing_dummy is
> sue_size underwriter_reputation assets_issuysize_ratio auditor_reputation_dummy ln_total_assets IPO_volume, vce(robust)
```

```
Linear regression                               Number of obs   =       124
                                                F(15, 107)     =           .
                                                Prob > F       =           .
                                                R-squared      =       0.1248
                                                Root MSE     =       2.0269
```

PerformanceLT	Coefficient	Robust std. err.	t	P> t
family_dummy	-.7728824	.595656	-1.30	0.197
founder_dummy	.9818652	.6550642	1.50	0.137
techsector_dummy	.1918674	.5305805	0.36	0.718
percentage_company_sold	.0775444	1.262644	0.06	0.951
D_E_ratio	.0049177	.0288115	0.17	0.865
capex_assets_ratio	.0534855	.1193731	0.45	0.655
integer_price_dummy	-.3166603	.4805221	-0.66	0.511
age	.018167	.0231124	0.79	0.434
number_of_uses	-.2808209	.236356	-1.19	0.237
VC_backing_dummy	1.826102	.6909638	2.64	0.009
issue_size	-.0008823	.0005865	-1.50	0.135
underwriter_reputation	-.0113424	.0243447	-0.47	0.642
assets_issuysize_ratio	.0162042	.0383855	0.42	0.674
auditor_reputation_dummy	-.6479667	.4246963	-1.53	0.130
ln_total_assets	.2275548	.1870672	1.22	0.226
IPO_volume	-.0078075	.0236807	-0.33	0.742
_cons	-.0174106	.6424938	-0.03	0.978

As we suspected, the model does not fit very well the long term performance of the stock three-years post IPO relative to the market and additional variables might be put in place; however, we needed this model just to test the primary relationship of family and non-family firms in their comparison on three years post IPO performance relative to the market. The only slightly significant coefficient we find in the regression output is the one related to the VC backing dummy variable contributing positively to such three years post IPO performance. However, concerning our initial hypothesis we find the following:

	Hypothesis	Reasoning	Acceptance/Rejection
ii.	Family firms won't be causing a significantly different 3-years performance post IPO with respect to non-family firms.	It appears that despite the negative sign on the regression coefficient related to the family dummy variable such coefficient is not statistically significant thus not enabling us to reject the hypothesis that family and non-family firms display a significantly different 3 years post IPO stock performance relative	✓
xii.	The number of uses of proceeds mentioned in the prospectus will be negatively associated with the three-year post IPO performance.	It appears that the number of uses of proceeds disclosed in the prospectus/admission document are not statistically significant in their influence on the stock performance three years post IPO relative to the market	✗

In the following section we will summarize our findings based on our overall hypothesis testing carried out on STATA and will then discuss them in comparison with previous findings.

CHAPTER 5: RESULTS

Before discussing our results, a summary of all our most relevant findings is presented. By testing our hypotheses through our empirical regression models envisaged by studying past literature and making new reasonings we have gathered the following results which apply to the Italian IPO market:

1. Family firms are characterized, on average, by a level of underpricing which is 11.24 percentage points greater than non-family firms, all else equal.
2. Firms operating in the tech sector are, on average, subject to an underpricing which is 10.64 percentage points greater with respect to firms operating in other sectors, all else equal.
3. An increase in the percentage of company sold of a single percentage point will imply a decrease in the level of underpricing equal, on average, to 0.24 percentage points, all else equal.
4. Family firms that have at IPO the founder as CEO or in the BoD will, on average, be underpriced 12.82 percentage points lower than family firms which have as CEO or in the BoD a subsequent generation family member, all else equal.
5. An increase in the number of uses of the IPO proceeds of 1 unit disclosed in the case of family firms implies, on average, an underpricing level which is 7.7 percentage points lower, all else equal. The same relationship is not found in the case of non-family firms.
6. Non-family firms which are VC backed imply, on average, an underpricing level which is 12.64 percentage points lower than the level of underpricing of non-family firms which are not VC backed, all else equal.
7. Non family firms that choose a more reputable underwriter at IPO imply, on average, an underpricing level which is 0.49 percentage points higher than the one had by non-family

firms with less reputable underwriters. The same relation does not verify in the context of family firms.

8. Family firms and non-family firms do not perform statistically significantly different in the three years post IPO by considering their stock performance and dividends paid in relation to the stock market index of reference, e.g. the FTSE MIB.

We have decided to report only the statistically relevant results below the threshold of 5% as significance level, since this is the most used practice within the context of these studies. As reference, all the other results stemming from the hypothesis testing are observable within the hypothesis testing section in the tables provided after each regression model. On the back of these results we can compare the latter with the ones obtained by past research, evidencing similarities, differences and reflecting on the possible reasons of the same.

CHAPTER 6: DISCUSSION

In the present section we will first compare our results with past studies done in different geographies to find whether ours show consistency or discrepancy with the latter. We will also comment on the possible motivation of such similarities or discrepancies; then, we will reflect upon the implications of the study on both family and non-family firms in terms of IPO underpricing and 3-years post IPO performance. Finally, we will also mention some possible limitations of the present research and we will foster additional studies on certain aspects which have not been touched by the present analysis but that might be of interest for the overall studying of the phenomenon of family firms, underpricing and three years post IPO performance.

6.1 Comparison with past studies

We will proceed by developing a comparison with the past studies on family and non-family firms on the phenomenon of interest starting from our results and evidencing the past literature of reference. The first aspect that should be underlined before starting this comparison is that most of the differences might arise from the origin of the sample, namely the Italian IPO market which might be less developed than the US one or other more advanced markets. So, it won't be surprising to be in the case in which we won't find a perfect match for our results with studies made abroad, or better, it will be more likely to find more similarities with closer countries; thus, we should bear in mind this aspect and reconcile our analysis forecasts to the Italian IPO market. Our first result provides that family firms are characterized, on average, by a level of underpricing which is 11.24 percentage points greater than non-family firms, all else equal. Such result was not in line with the original hypothesis we had decided to formulate at the beginning; however, we have already stressed that there were

several aspects characterizing family firms that might have pushed the direction of the relationship with the level of underpricing in an opposite direction from the one envisaged by our hypothesis. Since it appears that family firms are, on average, subject to a higher underpricing than non-family firms, we should give more weight to the other side of those factors already discussed above. Namely, in the case of family firms, among the factors that might cause such higher underpricing we had the agency theory underlining the potential conflict of interest between the principal and the agent (Banks, Bloom & Clingingsmith, 2018). Family firms might be perceived as exposed to higher agency conflicts due to their characteristic of having often a majority or controlling shareholders which might be opposed to the minority stake interest held by the non-family shareholders (Setia-Atmaja, & Chandra, 2021). Most often, such majority held by the family may also fully influencing the activity of the firm due to the appointment of the family members in key management positions. The family might exploit through the firm resources for its own benefit, entering into conflict with the minority shareholders of the same firm. An additional possible reason we can think about when analysing this result is that among those non-family firms in the sample, there were also some firms which were private equity backed and this fact might have reduced the underpricing of those latter firms decreasing the overall average underpricing of non-family firms. The latter reasoning might be based on the assumption that private equity backed firms might exploit the IPO as an exit opportunity which might lead them not to be willing to leave money on the table in such operation. Family firms, on the other hand, might not be so skilled in seeking a high valuation at IPO, being then exposed to higher level of underpricing in the immediately post-IPO phase. It could also be the case that family firms might be sought much more than non-family firms by retail investors, which may be more active in the Italian market for famous family firms going public (see for instance Brunello Cucinelli); however, this last possible reason appears to be too weak to explain the overall phenomenon since retail investors constitute just a small portion of the entire investors in the stock market. Among these possible explanations for the relationship found, we think that the most plausible one remains the one of the higher agency conflicts between minority and majority (family) shareholders that might require an aggrandized IPO discount to outside investors. Our results are consistent with the findings of the study made by Leittorf & Rau on a sample of IPOs gathered in the context of Germany (Leitterstorf & Rau, 2014), and the one made by Yu and Zheng in 2012 (Yu & Zheng, 2012). Instead, our results appear to be in contrast with the evidence found by the following studies: the study carried out on a sample of Chinese companies between years 2004 and 2014 (Yang, Ma, & Doty, 2020), the study carried out in the North African region (Hearn, 2011), the study carried out in the Middle East region (Alrubaishi & Alarifi, 2019), the study carried out on US companies IPO data (Jithendranathan & Daugherty, 2012). In addition, we have also cross-country studies supporting the opposite evidence

to the one found by the present study according to which family firms display a lower underpricing with respect to non-family firms. For instance, a study carried out on a sample of 25 countries with a prevalence of family firms in the period between 1995 and 2002 supports the latter evidence (Walker, 2008). In light of the different context, theories presented and the different perceptions that outside investors might have of family firms we are able to understand the result of our analysis and find similarities with the study carried out in Germany, which is a context closer to the Italian one with respect to the US one.

Our second result witnesses a statistically significant positive relationship between the fact of being a firm operating in the tech sector and the overall level of underpricing witnessed at IPO by firms. This result is fully consistent with previous literature and it also provides evidence to the historical theoretical explanation of underpricing proposed by Ritter evolving around the concept of uncertainty in 1984 (Ritter, J. R. 1984); indeed, by recalling what was discussed in the section named “Factors affecting IPO performance” the aspect of uncertainty related to the technology sector appears to really play a role in the level of underpricing displayed by firms operating in such sector at IPO. The result of the present study witnesses that tech or internet-related firms are more exposed to an uncertainty concerning the technology itself. As highlighted by Ritter, if the firm’s related uncertainty increases, also the underpricing of that stock at IPO would be required to increase as well to compensate investors for that additional risk undertaken when investing in the stock (Ritter, J. R. 1984). The consistency with past studies is fully found in the case of Loughran and Ritter that analysed the phenomenon of underpricing on technology and internet-related stock in comparison with the first-day return at IPO of stocks belonging to the non-tech category (Loughran & Ritter, 2004), finding that while non-technology or internet-related stocks displayed namely an underpricing equal to 6.3%, 11.3%, 23.9% in the three sub-periods, on the other hand, tech and internet-related stocks were characterized by an underpricing equal to 10.4%, 22.7%, 81.1%.

Our third result involves a negative relationship between the percentage of company sold at IPO and the level of underpricing. This result originated from the analysis of the amount of company sold expressed in percentage at IPO in comparison with the underpricing at which the firms were exposed. If we consider the overhang variable (the ratio of pre-IPO shares retained in a firm relative to the number of shares filed for sale to the public) taken as main reference from previous literature to elaborate on that, we can observe how this result is logic. Investigating past literature, we had found that the effect is the following: the cost of underpricing to the issuer declines as overhang rises (Bradley & Jordan, 2002). Therefore, if that is the case, we would have that underpricing would be beneficial to those investors that have been subjected to dilution at first hand at IPO because the

market value of their position would then increase with the price of the underlying shares. In previous studies, it was found that this variable is statistically significant for underpricing, and it has a positive directional impact on it; namely, it was found out that IPOs with greater overhang are more subjected to underpricing than issues with smaller degrees of overhang (Bradley & Jordan, 2002). In the opposite case, namely in the case of selling shareholders, such compensation deriving from underpricing does not occur because they have already sold their shares, therefore such appreciation in the after-IPO of the shares is not something that benefit them; therefore, the expected result we have elaborated was that in the case of more percentage of company sold those selling shareholders won't allow for a low pricing of their shares, thus reducing underpricing. This result is consistent with the results obtained by the using of the overhang variable found in other studies (see for instance Bradley & Jordan, 2002).

The fourth result of the present study indicates a negative influence exerted by the fact of having the founder in the BoD or as CEO in the family firm on the overall level of underpricing. In particular, we find that family firms that have at IPO the founder as CEO or in the BoD will, on average, be underpriced 12.82 percentage points lower than family firms which have as CEO or in the BoD a subsequent generation family member, all else equal. We initially thought that there might be a different impact given by the presence of the founder at IPO due to the fact that with reference to two different studies, one made in Germany and one in Spain, it was witnessed how family conflicts worsened across generations, reflecting a negative impact on the overall performance of those family firms (Jaskiewicz, González, Menéndez, & Schiereck, 2005). Moreover, the presence of the family founder could significantly improve the perception of the investors about the firm in an IPO, also in terms of the valuation of the firm itself (Basu., Dimitrova, & Paeglis, 2009; Nelson ,2003; Certo, Covin., Daily, & Dalton, 2001). The result of our study confirms those expectations highlighting the beneficial impact of the presence of the founder of the firm in the context of family firms in terms of subjectivity to underpricing at IPO.

The fifth of our results is really interesting from the perspective of the theoretical explanations of why family firms might be underpriced more than non-family firms; it appears that an increase in the number of uses of the IPO proceeds of 1 unit disclosed in the case of family firms implies, on average, an underpricing level which is 7.7 percentage points lower, all else equal. The same relationship is not found in the case of non-family firms. Recalling the reason why we have decided to formulate an hypothesis which was opposite to the finding of the US study on the same topic, we partially expected this result. Indeed, since the Italian context was different from the one of US, we envisaged a different hypothesis than the one of the previous studies of Beatty and Ritter (1986); we believed that a

voluntary disclosure of the uses of proceeds could better direct outside investors for a more precise valuation of the firm, and it may therefore also reduce the ex-ante uncertainty held by them. We have found out that the number of uses of proceeds mentioned in the prospectus by firms going public reduces, on average, the level of underpricing at IPO of those firms. Namely, disclosing the uses of the IPO proceeds in the prospectus might be beneficial in the Italian context to reduce the level of underpricing at IPO. However, we also find that this relation is statistically significant only in family firms. We might reflect upon this finding by saying that it might be the case in which investors' ex ante uncertainty concerning the family firm might be reduced by a higher use of proceeds disclosure in light of the further guidance offered to investors concerning the future investments of the firm. In this case indeed, it might also be true that even the perception of outside investors concerning potential conflict of interest between minority and majority (family) shareholders shrink down due to a more precise plan of investment of the resources gathered through the IPO disclosed to the public.

The sixth result of our present study witnesses a negative impact on underpricing given by being VC backed in non-family firms. Non-family firms which are VC backed imply, on average, an underpricing level which is 12.64 percentage points lower than the level of underpricing of non-family firms which are not VC backed, all else equal. Before formulating our initial hypothesis on the effect of VC-backing on the IPO underpricing we had highlighted how previous literature had been contradictory on the topic. In light of the different possible reasons behind one direction rather than the opposite for the effect of VC backing, we had decided at first to support the view according to which VC-backing might be perceived as a certification of quality by outside investors. This quality might be perceived or even effectively brought in by VCs into the firm, by fostering a higher professionalism within it. If the perception of outside investors improved then the firm might not be necessarily heavily discounted at IPO. Our results appear to confirm this hypothesis, thus lowering the level of underpricing at IPO. Consistency is shown with the results of Lee and Wahal (Lee & Wahal, 2004) supporting a negative relation between VC backing and underpricing. However, in the present study, we find evidence of this relation only in the context of non-family firms.

An additional point that we can discuss and compare with previous literature concerns the finding that non-family firms that choose a more reputable underwriter at IPO imply, on average, an underpricing level which is 0.49 percentage points higher than the one had by non-family firms with less reputable underwriters. The same relation does not verify in the context of family firms. Previous literature has most often witnessed, as we have highlighted, a negative relation between the underwriter reputation and the underpricing at IPO, namely supporting the view according to which the choice a more reputable underwriter might lead to a lower underpricing at IPO (see for instance

Carter & Manaster, 1990). Since this is not what we empirically have found out, we investigated additional studies that have indeed analysed this relationship. Digging deeper in the ground of previous literature, we find that the relationship between underwriter reputation and underpricing level has not always been fixed, but rather it appears to have changed throughout the decades. An interesting study is offered by La Rocca, T. in 2021 (La Rocca, 2021). The theory that have been proposed to explain why in the nineties high reputation underwriters increased underpricing is suggested by the use of underpricing as incentive mechanism; indeed, prestigious underwriters could propose a lower initial price as an incentive for the market to subscribe to the new shares. Thus, the underpricing is a by-product of reputable underwriter's intention to maintain a positive track record of successful IPO processes. The investment banks' motivation to intentionally underprice stocks is related to the desire to maintain a reputation of successful IPO support (La Rocca, 2021). Apart from the possible explanation, in the present study, we also show that such relationship does not occur in the case of family firms, implying the choice of the underwriter related to its reputation does not significantly impact the level of underpricing to which family firms will be exposed.

Finally, we can comment on our last relevant result witnessing that family firms and non-family firms do not perform statistically significantly different in the three years post IPO by considering their stock performance and dividends paid in relation to the stock market index of reference, e.g. the FTSE MIB. This result is consistent both with the empirical finding of the cross-country study realized in Germany and Spain (Jaskiewicz, González, Menéndez & Schiereck, 2005) and with our reasoning as well. Indeed, we had highlighted that although it is true that some traits such as parsimony or particularism might be beneficial for the overall performance of the family firm because of a more conservative use of resources and a higher level of flexibility in decision-making process, on the other hand those same traits might also lead to a poorer performance. They might do so due to the fact that parsimony on the other hand might lead to not investing in positive NPV opportunities and particularism might lead to the appointment of someone close to the family rather than someone truly competent in the top management. Moreover, as we have already seen, there is also a risk-attitude that changes between family and non-family firms. In the case in which, as witnessed by past research, family firms appear to be more risk-averse than non-family firms, they might not be able to undertake growth opportunities when they arise, or they might hesitate in undertaking the latter. The above-mentioned considerations perfectly fit with the finding gathered by the past research and the result of the present study as well.

6.2 Implications

In the present section, after having discussed the main relevant results of our study, we reflect upon the potential implications such results might bring about for family and non-family firms. It appears that being a family firm implies an underpricing which is, on average, 11.24 percentage points greater than non-family firms, all else equal. Although the mere fact of being underpriced is not necessarily bad for a firm, it is equivalent to leave money on the table, therefore family firms might be willing to reduce the occurrence of the phenomenon or their subjectivity to the latter. In order to do so, it might be beneficial according to our analysis to go public once the founder of the family firm is already in place and in a position of control, being that a position in the BoD or a position as CEO, or even in both of them. By doing so, outside investors might perceive the firm differently with a perceived reduction in the potential conflicts within the same firm that might arise in the case instead of future generations. Indeed, having the founder in place in case of family firms instead of having a successor generation in place, leads, on average, to be underpriced 12.82 percentage points lower. Family firms might also achieve a lower underpricing subjectivity at IPO by disclosing a higher number of uses for the proceeds gathered from the IPO in the prospectus or in the admission document. Indeed, the mere disclosure of such uses might lead to have for each additional use disclosed, on average, an underpricing level which is 7.7 percentage points lower, all else equal. Indeed, offering further guidance to initial investors, concerning the future use of the resources gathered might be really beneficial also in terms of investors' perceptions that may identify and recognize a good course of action in the firm's future, and thus not require a great IPO discount. Concerning non-family firms instead, we might bring about some implications stemming from two points of view; the first one is on the choice of the underwriter which not necessarily will lead to lower underpricing at IPO, rather it appears that it will be slightly increasing the more reputable the underwriter chosen is. The second implication we might bring in addition to the first one concerns the fact of being VC backed at IPO. VC-backing is then recommendable in the case of those non-family firms that do not want to be too underpriced at IPO since VC backing would imply on average an underpricing which is 12.64 percentage points lower than the level of underpricing of non-family firms which are not VC backed, all else equal. Concerning instead, general implications that we might emphasize both for family and non-family firms stemming from our analysis we can point out the following; for instance, in the case of a firm operating in the technological sector it might be beneficial for the firm to show the groundings of such technology on which it is leveraging the company's business. A clarification upon the functioning, the opportunities, the advances brought forward by the underlying technology might be beneficial towards a reduction of the uncertainty related to the firm's valuation at IPO and it might then reduce the aggrandized underpricing brought about by the technology sector. Indeed, as we have

seen, firms operating in the tech sector appear to be underpriced 10.64 percentage points more with respect to firms operating in other sectors, all else equal. The last two implications are instead referred to the percentage of the company sold at IPO. Since it appears indeed that an increase in the percentage of company sold of a single percentage point will imply a decrease in the level of underpricing equal, on average, to 0.24 percentage points, it might also be beneficial at first to quantify such percentage to be sold to the public beforehand. Last, but not least, the final implication of the present study, is that, from an investor point of view, investing at IPO in family or non-family firms in the Italian IPO market won't imply having a significantly different performance in the three years post IPO relative to the FTSE MIB index.

6.3 Limitations

The potential limitations stemming from our study concern the reference to specific geography, i.e. Italy, a specific market, i.e. the Italian IPO market, a specific categorization of firms, i.e. family and non-family firms. Indeed, such peculiarities of the present study provoke difficulties in the generalization of our results to different populations made of family firms at IPO. However, generalizing our results to other geographies or IPO populations was not the original purpose of the present study. We indeed deem the present study satisfactory for the context in which it has been undertaken, and on the other hand we can highlight some suggestions or guidance for futures studies on the fundamental topic of the present analysis. First of all, there might be new insights which have not been thoroughly studied on the relation of underpricing with some factors such as the volatility of the market at the time in which the IPO occurs. We did not also envisage this factor in the present analysis due to the fact that underpricing was not the central focus of the present research but as we gathered multiple insights about it, it might also be interesting to dig deeper and research more on this topic in the Italian IPO market. It would also be interesting to draw a comparison with the German IPO market since we have found more similarities with it than to the US IPO market in the overall study. Furthermore, additional studies might also be preparing an analysis made on the key financials of family and non-family firms post IPO, not market related, to look at the profitability of those two categories of firms in the three years after the IPO, to expand our knowledge horizon on the differences among the two types of firms but this time in terms of profitability. Finally, concerning our last limit, namely the specific categorization that we made between family and non-family firms, one aspect that we might consider further is the division between private equity backed firms vis a vis family firms at IPO; we might then consider further how these two types of firms perform both at IPO and in the three years after the IPO as well.

CONCLUSION

In this last section a summary of the whole journey we have undertaken to present the overall research will be provided, briefly mentioning all the key passages of the research from its introduction to the discussion of its results, including its implications and limitations with some suggestions on future studies on the topic. The main subject of the study was to analyse the difference in terms of IPO performance of family and non-family firms in the context of the Italian IPO market. Initially, we began by introducing the practice of Initial Public Offer, the benefits and drawbacks stemming from going public, and the alternatives firms might consider when evaluating such opportunity. Among those latter we have mentioned the M&A and the Dual-track process. After that, we have dedicated a section to the Italian IPO market, describing it in terms of IPO volume, developments, and segments of reference with attention given to the two main segments: the AIM and the MTA, re-named in 2021 in Euronext Growth Milan and Euronext Milan. Afterwards, we introduced the category of family firms, highlighting the main traits and peculiarities that distinguish family firms from other types of firms. Particular emphasis in this case was given also to the potential implications that such traits might have on the fate of the firm itself with respect to the one of the other categories of firms. Consequently, a section in the study was also reserved to the valuation of the firm at IPO and the possible methodologies of measurement of the IPO performance. Among the latter we focused on two main measures, one short-term and one characterized by a medium-long term horizon. Indeed, reference to the underpricing and the relative 3-years post IPO performance was made, thoroughly explaining the two measures and how they are computed in practical terms. Then, we presented a proper literature review on the topic of family firms IPO performance by analysing, comparing, and cross-checking multiple studies originating from different geographies of the world. We decided to not limit ourselves to only propose and report the findings of those papers within our literature review, rather we acknowledged the fact that such comparison was just the starting point of the present paper from which gathering inspiration and make our own reasonings for the subsequent hypotheses of the present study. Indeed, a great portion of the hypotheses has been done starting from the gaps identified in previous research or from the contrasts found across different geographies on the relationship between family and non family firms and the factors historically influencing underpricing. Since we have analysed a great portion of those studies on underpricing, we are confident to have been able to include in the present research not just the visible pick of the iceberg but also its extension. Indeed, we include all those factors affecting IPO performance to a great extent, as to avoid biases in the subsequent proposed regression models concerning omission of variables. After discussing all the

potential factors influencing the two measures of performance, and especially underpricing, we completed the formulation of our own hypotheses on the basis of the witnessed previous literature gaps. Then, in order to test the hypotheses, we elaborated a proper methodology made of an observational study, the identification of the dependent and independent variables, a sample and an explanation of the statistical methods used. We based our observational study on the Italian IPO market gathering observations on the variables of interest on all the IPOs occurring between 2007 and 2022 for which we were able to find data. The main two dependent variables of interest have been the two measures of IPO performance, namely underpricing and the performance of stock price including dividends paid relative to the performance of the market index (FTSE MIB) in the three years post IPO. Thus, we built up the sample made of 212 IPOs for 38 variables (not all of them have been used to test our hypotheses, some of them were used just to check that the information provided by Dealogic were correct and could be used for the overall analysis). Furthermore, always in the methodology section we have described the statistical methods used, sticking to the most used statistical methodology undertaken in those types of studies by past research: Ordinary Least Square Regression. We envisaged four different regression models: one for underpricing made general on the whole sample, one on underpricing made just for family firms, one on underpricing made just on non-family firms, and one on long-term relative performance of firms made general on the sample. Therefore, we proceeded with the hypothesis testing, reporting for each regression model the hypothesis tested, the results in terms of rejection or acceptance of the same, and the reason why we have decided to do so. On the back of the hypothesis testing, we have gathered the results of the present study evidencing only the significant relationships we had found in the previous section, finding eight significant results on which we drew our final discussion. More precisely we found that family firms are underpriced more than non-family firms of about 11.24 percentage points more than non-family firms, all else equal. However, it also appeared that family firms that have at IPO the founder as CEO or in the BoD are, on average, underpriced 12.82 percentage points lower than family firms which have as CEO or in the BoD a subsequent generation family member, all else equal. For what concerns instead our second main topic of interest we find that family firms and non-family firms do not perform statistically significantly different in the three years post IPO by considering their stock performance and dividends paid in relation to the stock market index of reference, e.g., the FTSE MIB. Finally, after having presented the results we proposed a brief discussion upon the latter, emphasizing consistencies and dissonances with past studies, and elaborating on the potential implications of the present research advising family and non-family firms on how they could reduce their subjectivity to the phenomenon of underpricing at IPO. At the end of the research, we also presented some limitations of the study with reference to the specific geography addressed, the precise

IPO market targeted, and firms' categorization studied. We do believe this study to shed light upon the differences between family and non-family firms in the context of IPO performance; the contribution of the present study stems from the analysis we have made emphasizing the view of the phenomenon of interest from different angles, gathering insights from the past and contribute to the overall panel of studies made both on family firms and underpricing as well. Nonetheless, we encourage further research on the topic based on different geographies, additional factors not included in the present research, and addressing new categorizations of firms always in the context of IPO performance.

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THESIS SUMMARY

Blood is Thicker than Water, but is it Stronger than the Market? An Empirical Analysis of IPO Performance in Family and Non-Family Firms

INTRODUCTION

The focus of the research is based on family firms and their relationship with IPO performance in comparison with the one of nonfamily firms. The founding rationale of the present research is based on the following; from past literature and empirical evidence we know that family firms are distinguished from non-family firms due to the peculiar traits they usually possess such as personalism, particularism and parsimony (Colli, Fernandez-Perez, & Rose, 2003). Initial Public Offers (IPOs) represent the first time a company (“issuer”) sells its stock to public investors. IPO performance can be measured by two indicators: initial underpricing and stock performance in the period after the IPO. Our research questions are the following: (1) are family firms subject to a higher or lower underpricing at IPO with respect to non-family firms? (2) do family firms display a significantly different stock performance in the three years after the IPO with respect to non-family firms? The purpose of the present study is to answer these two main questions both from a theoretical as well as empirical perspective. The relevancy of the research presented is twofold; it sheds additional light on the understanding of the factors related to the IPO performance both in the short and long term and it can also help family firms addressing specific concerns related to getting listed on the Italian stock exchange. Moreover, it contributes to the literature of family firms and underpricing and it addresses specific gaps in the previous studies by targeting the Italian IPO market which has not been historically analysed from this angle of relative comparison between family and non-family firms. Basically, we will first describe the context of our study, namely IPOs in the Italian IPO market, then we will highlight the main differences found by previous literature between family and non-family firms and finally we will build an empirical study made on the Italian IPO market defining two measures of IPO performance, one based on a short term horizon and one based on a longer time span, and finally we will investigate whether these two categories of firms display a statistically different performance across these two measures.

CHAPTER 1: LITERATURE REVIEW

An initial public offer (IPO) represents the first time a company (“issuer”) sells its stock to the public investors (Rosenbaum & Pearl, 2022). The IPO process timeline can be conceptually divided in two macro phases, one called private phase and one called public phase. The private phase is constituted by two sub-phases, namely the preparatory phase and the early marketing phase. The preparatory phase has the aim to prepare all the relevant legal, accounting, regulatory documentation needed for a potential IPO process according to the relevant laws and regulation in place. Moreover, in the preparatory phase there is also the assessment of the corporate governance and the presentation of the company to the analysts done by management in order to provide information and a 360-degree view on the company itself. It is also customary to start looking at the offer structure in this phase to be prepared once the process will be ongoing. The early marketing phase is instead done as a first interaction with key selected investors, and it has the aim to collect some preliminary feedback on the company and its equity story. If everything is appropriately done in a timely manner, then the company can decide whether to move on to the public phase or whether to stop the process. Once decided to proceed with the overall process, there is the investor education; the latter starts with a press release (ITF) communicating the intention to float and the publication of the pre-IPO research reports. Thanks to this phase public investors are informed by analysts of the company’s financials, history, etc. (although this is not a marketing exercise it is still very important to get investors involved in the company IPO). At the end of the PDIE a price range is defined. After that, there is the roadshow and bookbuilding that starts with a press release that usually communicates the price range and the offer structure; during the roadshow, the management meets investors for approximately 1 week and the bookbuilding process opens up thanks to which orders from investors are collected and daily updates on the book of demand are internally provided. After having analysed the overall demand gathered on the books (waterfall) a final pricing is defined and a final press release is done with the communication of the detailed offer structure and offer terms, after which there will be the allocation of the shares to target investors, and the first day of trading of the stock. The last phase is the one concerning the aftermarket in which there will be the stabilization agent, usually one of the banks of the syndicate of banks that followed the operation, that will be in charge of exercising/not exercising the greenshoe up to 30 days post trading. In addition, the stock will start to be covered by research analysts. Apart from the process we can also discuss the main benefits and drawbacks of going public. Among the first ones, we can find: the proceeds from the offering (i.e. the capital raised from investors), the expected value of future benefits to the firm (i.e. the additional value stemming from the opportunities of investment that the firm can then undertake on the basis of the new capital available), the private benefits of the offering to insiders (i.e. the different compensation schemes or

the exit opportunities granted to key insiders), additional benefits (i.e. higher visibility, reputation). Among the second one, we can find: transaction costs (i.e. all those costs related to advisory, legal and underwriting services), ongoing annual public company costs (i.e. all those costs that are necessary to keep lawfully a public company in place), additional potential costs (i.e. costs of disclosure of the corporate strategy to competitors, exposure to activist campaigns, potential takeover by bigger companies, aggrandized litigation risk stemming from class actions, etc.). In the present study however, we also mention two valid alternatives to IPO, namely M&A and the dual-track process. The first one involves selling the company or a stake in the company to a third party in the context of a merger or acquisition; this can be done through a private deal or an auction process. The dual-track process instead, involves filing for an initial public offering while simultaneously negotiating a private acquisition of the company on a confidential basis with potential buyers; the latter process can end up as private or public depending on whether the company will first get listed and then acquired or it will be directly acquired before listing. After having presented the IPO practice with the process, main features and alternatives, we can also present the context of the present study.

The Italian IPO market originates on the basis of the Italian stock exchange that traces back its roots to the 1998. Actually, the first organized securities market originated much back in time, in 1808 in Milan; it was called Borsa di Commercio di Milano. Throughout the years then, other exchanges were established in different parts of Italy and in 1998 they were all combined to form the Borsa Italiana as we know it today. Concerning the regulation of the Italian stock exchange we have two regulatory bodies: Borsa Italiana SpA and Consob. Borsa Italiana determines the procedures companies must follow to get listed on the exchange while Consob is an autonomous regulatory body entitled to protect investors and maintain transparency and efficiency in the Italian financial market. The main segments of the Italian stock exchange for IPOs in the Italian IPO market are two: the MTA and the AIM; companies seeking to get listed on the MTA must have a minimum free float of 25%, must have a minimum capitalization of €40m and must have been in operation for at least 3 years; they also must submit a prospectus. Companies seeking to get listed on the AIM must provide a minimum free float of 10% and submit an admission document. By looking at the Italian IPO market from 2000 to 2022 we observe a gradual expansion in terms of IPO volume that did not happen linearly but rather in cycles. Indeed, cyclicity in the IPO market is a characteristic that might be well observed, moving from “hot phases” with a high volume to cold phases with relatively low volume. Moreover, the year 2021 appears to be a record year in terms of IPO volume; the latter might be confirmed also from a bird’s eye view by looking at the same counting worldwide. According to Kesten, there are four elements determining these cycles in the IPO market: changing economic or business conditions,

the effect of asymmetry of information between insiders and public external investors, political uncertainty and investors' current sentiment (Kesten, 2018).

As previously specified, the main subject of our study are the family firms, which in our opinion present some distinctive traits that might attribute to them a different IPO performance with respect to non-family firms. Finding a unique definition of family firm might be a difficult task; indeed, we report here some of the possible definitions that have been given by different scholars: "A commanding, assertive alliance that moulds the outlook of a company across generations" (Habbershon & Williams, 1999), "[...] a family member is chief executive, there are at least two generations of family control, a minimum of 5 percent of voting stock is held by the family or trust interest associated with it" (Colli, Fernandez-Perez, & Rose, 2003), one (a firm) in which a family has enough ownership to determine the composition of the board, where the CEO and at least one other executive is a family member, and where the intent is to pass the firm on to the next generation (Miller & Le Breton-Miller, 2003;), one in which "due to their ownership, family members enjoy certain control rights over the firm's assets and use these rights to exert influence over decision-making processes in the business (Carney, 2005). In addition, previous studies also identified some distinctive traits for family firms such as: parsimony, personalism, particularism (Carney, 2005). Moreover, an additional factor that characterizes family firms is socio-emotional wealth (Zellweger, Kellermanns, Chrisman, & Chua, 2012). Parsimony represents the inclination of family firms towards an attentive savings of the resources both in terms of maintenance as well as in terms of allocation of the same; personalism refers to the joined ownership and control held in the hands of the figure of the owner-manager or family, who will be the leading agent of the vision enshrined in the family for its own firm; particularism makes explicit reference to all those practices which are typical of a family firm and that distinguish it from other types of corporate governance models. Socio-emotional wealth is, instead, the added value the family-owners of the firm attribute to the firm for the mere fact of possessing the firm, generated from the emotional links that connect the family with the firm itself. Past studies evidence that in Italy there is a strong willingness in family firms to appoint a family member as chairman or director general and a great part of those family firms are also more prone to plan succession to the next generation (KPMG, 2019). Moreover, comparative studies also bring evidence that while in UK there is a strong negative correlation between family control and firm age, meaning that the older gets a firm, the more likely it is that it will be non-family controlled, in Italy such evidence is absent (Franks, J., Mayer, C., Volpin, P., & Wagner, H. F., 2013).

After having presented the main traits and past studies on family firms, we continue the overall study by investigating the valuation of a firm at IPO and the main performance measurements proposed by

scholars. We stick to Damodaran approach when describing the valuation of a firm at IPO (Damodaran, 2017); the context of reference is the valuation on a private firm transitioning from the private to the public dimension. The main assumption is that potential investors in the company are assumed to be diversified. The main approaches are the DCF and the multiples method. In the following passages we sum up the main aspects which are critical to the estimation of the equity value of the firm using the DCF methodology; the beta of target company can be estimated using a bottom-up approach and Hamada's formula; the capital structure used for re-levering of the beta might be proxied as the average of the panel set (otherwise using the current one might cause circularity reference issues); the estimation of equity cost of capital can be achieved by using CAPM and re-levered beta. The estimation of debt cost of capital can be achieved by first computing the ICR and then adding a spread to the risk-free rate; the last steps for the valuation are the calculation of the WACC and estimation of the EV using DCF; then, we use the Enterprise Value to Equity Value bridge to get to the theoretical equity value of the firm. The key passage we have stressed in the study and that is at the foundations of the phenomenon of underpricing is that the theoretical value of the shares sold at IPO might not be equal to the offer price at which they will be actually sold. There might be several reasons for this mismatch such as the demand of investors at IPO, the willingness of the bank to price the issue higher or lower, the timing of the IPO, or the green shoe. After having presented the main valuation of firms at IPO and having also seen the difference between offer price and theoretical value per share of the firm at IPO, we can also give some measurements to the IPO performance of the firm. The concept of success for an IPO varies according to the point of view belonging to the different parties to the same IPO: the issuing company, the underwriter, and the first-hand investors which will buy the stock at the offer price. We will use both first investors as well as investors that have bought the stock towards the end of the first day of trading as main reference point to carry out our analysis. Indeed, we refer to three main measurements of IPO performance, although for the present study will consider just the first two measures. The first measure we consider is the level of underpricing in an IPO, defined as the return on the stock assuming an investor bought it at the offer price and kept it until the end of the first day of trading; in formula we would have that: $\text{Underpricing} = (\text{closing price at first day of trading} - \text{offer price}) / \text{offer price}$. The second measure we consider, is instead the relative stock performance three years after the IPO. The latter refers indeed to the 3-years stock price appreciation, including a thorough considerations of any potential dividend paid out to shareholders in between. Since each stock performance might also be influenced by the overall market return in a given period, we will consider the single stock performance in comparison with the return of the market in that particular period, i.e. the 3 years after the IPO. Historically, scholars have also come up with alternative measures for the IPO performance. For

instance, Binder, Steiner, & Woetzel, envisaged a measure based on two parts, one reflecting market competitiveness and the other reflecting market pricing. It prescribes to assess both the market competitiveness and the market price of the stock 30 days after the IPO. The market competitiveness consists in a relative value assessment comparing trading multiples with key peers; In the case in which the company's trading multiples are higher than those ones of its peers, then it means that the company has a great degree of competitiveness on the market. The second metrics is the market pricing. The latter prescribes to have a change lower than 20% between the price at the offer in the IPO and the 30-day post IPO one.

Only after having presented both family firms and the measures of performance considered, we can highlight the main theories developed by past literature to explain the phenomenon of underpricing. We identify three main explanatory theories and how they can be linked to family firms: asymmetry of information theory, agency theory, generational passage. According to asymmetry of information theory: outside investors are less informed about the firm than the actual owners. In the case of family firms, the personal investment in a firm by the owners, namely their commitment to invest in it to make it grow is already evidence of the quality of the firm itself. Families in family-controlled businesses might also be well interested in keeping a solid firm and make it grow with a longer-term perspective towards the future; this would lead in theory, to a lower underpricing. The second theory, namely agency theory, in the case of family firms has reasons to bring both a lower as well as a higher underpricing with respect to non-family firms; indeed, we would have a lower agency conflict between owner and manager because of personal assets invested in the business and most often the CEO-owner is same person in the context of family firms. However, on the other hand, we would have a higher agency conflict between majority and minority shareholders: the majority belonging to the founding family of the business might exploit its position at the expenses of the minorities. Due to this reasoning, we think that agency theory in the context of family firms might bring a higher as well as lower underpricing; finally, another type of reflection can be done on the basis of families in family-controlled businesses which are interested in keeping a solid firm and make it grow with a longer-term perspective towards the future; indeed, the family owner of the firm might have the willingness of establishing a real legacy thanks to the development of the firm in the future. Future generations, namely after the family firm founder leaves, might be characterized by higher intrinsic conflict that would worsen the overall management and performance of the firm itself. Therefore, outside investors might feel more confident in pay a higher price for a family firm in which the founder is still active and in control rather than for a firm in which future generations might be leading the firm. An investigation upon the past literature that studied the IPO performance in relation to family firms vis a vis non-family firms has led to controversial results; first of all, the studies gathered

differ for several aspects among which we find the definition of family firms, the geography covered, and the IPO performance measure. A part of literature is indeed supporting the evidence according to which family firms would display a lower underpricing with respect to non-family firms. Among those studies we find for instance: the study carried out on a sample in China between years 2004 and 2014 (Yang et al., 2020), the study carried out in the North African region (Hearn, 2011), the study carried out in the Middle East region (Alrubaishi & Alarifi, 2019), the study carried out on US companies IPO data (Jithendranathan & Daugherty, 2012). In contrast, we find a part of the literature supporting instead the opposite evidence; among the latter we find for instance a study conducted on a sample in Germany that shows that the IPO underpricing of family firms is higher than that of non-family firms (Leitterstorf & Rau, 2014). The same direction of evidence was supported by stating that in addition to the fact of being a family firm, also the family involvement, is positively associated with underpricing (Yu & Zheng, 2012). By looking at the factors that have been found to historically affect underpricing in multiple regions we identified the main variables to insert in addition to our variable of interest in our present study in order to isolate the effect of being a family firm on the overall measure of IPO performance. Among the factors found to affect IPO performance we find: age of the firm, industry type, revenue, number of uses of proceeds disclosed, venture capital backing, size of the issue, total assets size, underwriter reputation, family firm as firm category, timing, integer IPO pricing. Capex-assets ratio, debt-equity ratio, overhang, auditor reputation, family founder as CEO, ratio of assets to IPO proceeds. All these factors have been explained by the present study in light of three arguments: asymmetry of information, ex-ante uncertainty, agency theory. Despite the fact that those factors were implicitly identified on the basis of the short term IPO performance, most of these factors are consistently found across the regression models implemented to study also the relative long term IPO performance of firms.

CHAPTER 2: GAPS IN PREVIOUS RESEARCH AND HYPOTHESIS FORMULATION

After having investigated all these aspects related to IPO performance and family firm, we draw from the literature and we make our own hypotheses; the list of hypotheses is reported below:

Hypothesis

Family firms will be characterized by a lower level of underpricing with respect to non-family firms.

Family firms won't influence a significantly different 3-years performance post IPO with respect to non-family firms.

The presence of the family founder as CEO or in the BoD at IPO will reduce the level of underpricing with respect to those cases in which there will be a successor generation in place.

Firms operating in the tech sector or using new technologies will be characterized by a higher level of underpricing with respect to firms belonging to other sectors.

A greater percentage of company sold will imply a lower underpricing at IPO.

a. A higher debt-to-equity ratio will imply a higher underpricing at IPO. b. The relationship between debt-to-equity ratio and underpricing at IPO won't be significantly different between family and non-family firms.

a. A higher capex-to-total assets ratio will imply a lower level of underpricing at IPO. b. The relationship between the capex-to-total asset ratio and underpricing will be stronger for family firms than non-family firms.

a. IPOs priced at integer prices will be subject to a higher level of underpricing than those priced up to the decimal place. b. The effect of pricing format on underpricing at IPO won't be statistically significantly different between family firms and non-family firms.

a. IPOs made in periods characterized by a high IPO volume will be characterized by a higher level of underpricing. b. In hot periods, family firms will be subject to a lower level of underpricing than non-family firms.

a. The age of the firm at IPO will negatively affect underpricing; namely, more aged firms at IPO will be subject to a lower level of underpricing with respect to younger ones. b. The sensitivity of underpricing to the age of the firm will be significantly lower for family firms than for non-family firms.

a. The number of uses of proceeds mentioned in the prospectus will be negatively associated with underpricing at IPO. b. The sensitivity of underpricing of family and non-family firms to the number of uses of proceeds mentioned in the prospectus won't be statistically different.

a. The number of uses of proceeds mentioned in the prospectus will be negatively associated with the three-year post IPO performance.

- a. VC-backing will foster a lower level of underpricing at IPO.
- b. Family firms will benefit significantly more than non-family firms from VC-backing

- a. A greater size of the firm will reduce the level of underpricing at IPO.
- b. The impact of the size of the firm on underpricing won't be significantly different between family and non-family firms.

- a. A higher size of the issue will imply a higher level of underpricing at IPO.
- b. The relationship between size of the issue and level of underpricing will be significantly weaker in the case of family firms than in the case of non-family firms.

- a. A higher underwriter reputation will imply a lower underpricing at IPO.
- b. The relationship between underwriter reputation and underpricing won't be significantly different between family and non-family firms

- a. A higher ratio of assets to IPO proceeds will imply a lower underpricing at IPO.
- b. The relationship between ratio of assets to IPO proceeds and level of underpricing at IPO will be significantly weaker for family firms than for non-family firms

- a. A higher auditor reputation will imply a lower underpricing at IPO.
- b. The relationship between auditor reputation and underpricing won't be statistically significantly different between family and non-family firms.

CHAPTER 3: METHODOLOGY

Before testing these hypotheses, we present the methodology we followed to carry out our empirical study on the Italian IPO market. Starting with the composition of the sample, we present some descriptive statistics in detail, and we make a clear distinction between our dependent and independent variables. The sample is composed of all those IPOs occurring on the AIM and MTA in the period between June 21st 2007 and December 31st 2022. From this sample all those firms belonging to the financial sectors and insurance companies were excluded. Depending on the dependent variables of interest we have selected a specific period or category of firms to analyse the relationships of interest. Thanks to the descriptive statistics made on the sample gathered we have a good balance between family and non-family firms both in the overall sample as well as in each market segment, i.e. MTA and AIM. The dependent variables of the study are two; on the one hand, the underpricing computed as $(closing\ price\ 1st\ day\ of\ trading - offer\ price) / offer\ price$. On the other hand, we have the Performance LT, measured as $[(Price\ of\ the\ stock\ after\ 3\ years\ from\ IPO -$

closing price 1st day of trading + any dividends paid in-between) / closing price 1st day of trading] – return of the FTSE MIB index in the same period. The independent variables we decide to include in the present empirical study are: Family dummy, Founder dummy, Tech sector dummy, Percentage of company sold, Debt/Equity ratio, Capex/assets ratio, Integer price dummy, Hot phase dummy, Age, Number of uses, Total assets size, Issue size, Underwriter reputation, Assets/issue size ratio, Auditor reputation dummy, IPO volume, Natural logarithm of total assets. The fact of being a family firm vis a vis not being a family firm at IPO has been modelled as a dummy variable in the present study; namely, the variable named *family_dummy* will be equal to 1 in the case in which the firm at IPO is a family firm and 0 it is a non-family firm. The statistical tools used are the Ordinary Least Squares (OLS) regression and the regression models are run on Stata as main statistical software used for the analysis.

CHAPTER 4: HYPOTHESIS TESTING

We envisage five different regression models to carry out our hypothesis testing; Regression Model 1 will be run on the whole sample and it will have as dependent variable the level of underpricing; Regression Model 2 will be run on the whole sample and it will have as dependent variable the relative return of the stock in comparison with the market; Regression Model 1F is the same of 1st model but it will be run on the sample composed of only family firms; Regression Model 1NF is the same of 1st model but it will be run on the sample composed of only non-family firms. The models are the following:

$$\begin{aligned} \text{Underpricing} = & a + \beta_1 \text{family_dummy} + \beta_2 \text{founder_dummy} + \beta_3 \text{techsector_dummy} + \beta_4 \\ & \text{percentage_company_sold} + \beta_5 \text{D_E_ratio} + \beta_6 \text{capex_assets_ratio} + \beta_7 \text{integer_price_dummy} + \\ & \beta_8 \text{IPO_volume} + \beta_9 \text{age} + \beta_{10} \text{number_of_uses} + \beta_{11} \text{VC_backing_dummy} + \beta_{12} \text{issue_size} + \beta_{13} \\ & \text{underwriter_reputation} + \beta_{14} \text{assets_issuesize_ratio} + \beta_{15} \text{auditor_reputation_dummy} + \beta_{16} \\ & \ln_total_assets \end{aligned}$$

$$\begin{aligned} \text{LT Performance} = & a + \beta_1 \text{family_dummy} + \beta_2 \text{founder_dummy} + \beta_3 \text{techsector_dummy} + \beta_4 \\ & \text{percentage_company_sold} + \beta_5 \text{D_E_ratio} + \beta_6 \text{capex_assets_ratio} + \beta_7 \text{integer_price_dummy} + \\ & \beta_8 \text{hot_phase_dummy} + \beta_9 \text{age} + \beta_{10} \text{number_of_uses} + \beta_{11} \text{VC_backing_dummy} + \beta_{12} \text{issue_size} \\ & + \beta_{13} \text{underwriter_reputation} + \beta_{14} \text{assets_issuesize_ratio} + \beta_{15} \text{auditor_reputation_dummy} + \beta_{16} \\ & \ln_total_assets \end{aligned}$$

$$\begin{aligned} \text{Underpricing_Family} = & a + \beta_1 \text{founder_dummy} + \beta_2 \text{techsector_dummy} + \beta_3 \\ & \text{percentage_company_sold} + \beta_4 \text{D_E_ratio} + \beta_5 \text{capex_assets_ratio} + \beta_6 \text{integer_price_dummy} + \\ & \beta_7 \text{hot_phase_dummy} + \beta_8 \text{age} + \beta_9 \text{number_of_uses} + \beta_{10} \text{VC_backing_dummy} + \beta_{11} \text{issue_size} \end{aligned}$$

+ β_{12} *underwriter_reputation* + β_{13} *assets_issuysize_ratio* + β_{14} *auditor_reputation_dummy* + β_{15} *ln_total_assets*

Underpricing_NonFamily = a + β_1 *founder_dummy* + β_2 *techsector_dummy* + β_3 *percentage_company_sold* + β_4 *D_E_ratio* + β_5 *capex_assets_ratio* + β_6 *integer_price_dummy* + β_7 *hot_phase_dummy* + β_8 *age* + β_9 *number_of_uses* + β_{10} *VC_backing_dummy* + β_{11} *issue_size* + β_{12} *underwriter_reputation* + β_{13} *assets_issuysize_ratio* + β_{14} *auditor_reputation_dummy* + β_{15} *ln_total_assets*

CHAPTER 5: RESULTS

From our empirical analysis we achieve the main results reported below:

1. Family firms are characterized, on average, by a level of underpricing which is 11.24 percentage points greater than non-family firms, all else equal.
2. Firms operating in the tech sector are, on average, subject to an underpricing which is 10.64 percentage points greater with respect to firms operating in other sectors, all else equal.
3. An increase in the percentage of company sold of a single percentage point will imply a decrease in the level of underpricing equal, on average, to 0.24 percentage points, all else equal.
4. Family firms that have at IPO the founder as CEO or in the BoD will, on average, be underpriced 12.82 percentage points lower than family firms which have as CEO or in the BoD a subsequent generation family member, all else equal.
5. An increase in the number of uses of the IPO proceeds of 1 unit disclosed in the case of family firms implies, on average, an underpricing level which is 7.7 percentage points lower, all else equal. The same relationship is not found in the case of non-family firms.
6. Non-family firms which are VC backed imply, on average, an underpricing level which is 12.64 percentage points lower than the level of underpricing of non-family firms which are not VC backed, all else equal.
7. Non family firms that choose a more reputable underwriter at IPO imply, on average, an underpricing level which is 0.49 percentage points higher than the one had by non-family firms with less reputable underwriters. The same relation does not verify in the context of family firms.
8. Family firms and non-family firms do not perform statistically significantly different in the three years post IPO by considering their stock performance and dividends paid in relation to the stock market index of reference, e.g. the FTSE MIB.

CHAPTER 6: DISCUSSION

In light of the higher underpricing experienced by family firms the latter might be perceived as exposed to higher agency conflicts due to their characteristic of having often a majority or controlling shareholders which might be opposed to the minority stake interest held by the non-family shareholders (Setia-Atmaja, & Chandera, 2021). Our results are consistent with the findings of the study made by Leittorf & Rau on a sample of IPOs gathered in the context of Germany (Leittorf & Rau, 2014) and the one made by Yu and Zheng in 2012 (Yu & Zheng, 2012). Instead, our results appear to be in contrast with the evidence found by the following studies: the study carried out on a sample of Chinese companies between years 2004 and 2014 (Yang, Ma, & Doty, 2020) the study carried out in the North African region (Hearn, 2011), the study carried out in the Middle East region (Alrubaishi & Alarifi, 2019), the study carried out on US companies IPO data (Jithendranathan & Daugherty, 2012). Concerning the implications of the present study we find that it might be beneficial according to our analysis to go public once the founder of the family firm is still in place and in a position of control, being that a position in the BoD or a position as CEO, or even in both of them. Family firms might also achieve a lower underpricing subjectivity at IPO by disclosing a higher number of uses for the proceeds gathered from the IPO in the prospectus or in the admission document. Non-family firms that want to decrease their subjectivity to underpricing may decide to be VC-backed before going public; moreover, in the case of a firm operating in the technological sector it might be beneficial for the firm to show the groundings of such technology on which it is leveraging the company's business. Ultimately, for investors, investing at IPO in family or non-family firms in the Italian IPO market won't imply having a significantly different performance in the three years post IPO relative to the FTSE MIB index.

A last comment may be done on the limitations of the present study; the only limitations of the present study stem from its intrinsic nature made on a: specific geography, i.e. Italy, a specific market, i.e. the Italian IPO market, a specific categorization of firms, i.e. family and non-family firms. Indeed, such peculiarities of the present study provoke difficulties in the generalization of our results to different populations made of family firms at IPO.

Finally we deem the study satisfactory in the results achieved and we think that one aspect that future studies might consider further is the division between private equity backed firms vis a vis family firms at IPO; additional studies might also be preparing an analysis made on the key financials of family and non-family firms post IPO, not market related, to look at the profitability of those two categories of firms in the three years after the IPO.

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