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The influence of institutional investors on the IPOs of Italian companies

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"Non hai finito perché non è la fine per te. Non c'è un traguardo, non c'è un punto d'arrivo. Devi continuare."

Meredith Grey

Alle nostre famiglie

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ABSTRACT

In this thesis, we want to investigate the impact of same characteristics of institutional investors belonging to the ownership structure of a target company on the IPO of this last one. In particular, the variables on which this thesis is focused are the age of the institutional investor, the geographical distance between the headquarter of the institutional investor and the headquarter of the listing firm, the equity market distance between the country of the institutional investor and country of the company that made the IPO, and finally, only considering venture capitalists and private equity funds, the cultural distance between them and the target company. The thesis analyses the impact of these variables on different phenomena typical of initial public offering: valuation, underpricing, oversubscription and long run performance. The literature about the institutional investors in the ownership structure of a company is wide, but it is not specific on how this fact influences the different phases of the listing process. In this thesis, it will be demonstrated all the possible correlations and impacts that come out from the analysis of a sample of Italian IPOs between 1997 and 2015.

Keywords: IPO, Institutional Investors, Valuation, Underpricing, Oversubscription, Long run performance

SOMMARIO

Le Offerte Pubbliche Iniziali (IPO) è un'operazione di finanza aziendale attraverso la quale una società entra per la prima volta nel mercato borsistico, offrendo le proprie azioni al pubblico. Questo è uno dei momenti più importanti nella vita di un'azienda. Dopo l'IPO, infatti, un insieme diversificato di investitori entra a far parte dell'azienda e avviene una diluzione del capitale.

Ci sono diverse ragioni che spingono un'azienda a quotarsi in borsa, e di conseguenza esistono diversi tipi di offerte pubbliche. Pagano, Panetta, et al. [1998] hanno dimostrato che la prima ragione dietro la quotazione è la necessità di bilanciare la struttura finanziaria dell'azienda. Zingales [1995], Mello et al. [2000] sostengono che l'IPO è il risultato della necessità degli attuali azionisti di vendere le loro azioni. Inoltre, la quotazione è anche un metodo per accrescere la reputazione e garantire maggiore visibilità all'azienda (T. J. Chemmanur et al. [1999]). Infine, secondo Jr [1976]; Modigliani et al. [1963] le aziende decidono di diventare pubbliche quando il processo di quotazione permette loro di minimizzare il costo del capitale.

La quotazione porta sicuramente dei benefici all'azienda (questi sono stati classificati da Giudici [2010] in quattro categorie), ma comporta anche importanti costi; per questa ragione Ritter [1987] sostiene che piccole aziende hanno meno probabilità di quotarsi di aziende più grandi, le quali sono in grado di ammortizzare i costi relativi al processo di quotazione.

Molti attori sono coinvolti nel processo di quotazione: uno di questi è l'investitore istituzionale. Questo rappresenta un'organizzazione finanziaria specializzata che investe a nome dei membri dell'organizzazione stessa. L'obiettivo dell'investitore istituzionale è quello di gestire collettivamente i risparmi dei piccoli investitori per massimizzare il ritorno, a fronte di uno specifico livello di rischio (E. P. Davis et al. [2004]). L'investitore istituzionale può far parte dell'azienda ancora prima che questa venga quotata oppure può acquistare azioni al momento dell'offerta pubblica iniziale.

Una speciale categoria di investitori istituzionali è data dai *venture capitalists* e dai fondi di *private equity*, i quali forniscono all'azienda non solo denaro, ma anche supporto e competenze. In particolare, i *venture capitalists* sono definiti da Timmons et al. [1986] come investitori che aiutano gli imprenditori nelle fasi iniziali di sviluppo dell'azienda, contribuendo sia finanziariamente che non. I fondi di *private equity*, invece, rappresentano un investimento in capitale di rischio fatto da investitori professionali nelle fasi iniziali e successive di un'azienda non quotata (Leeds et al. [2003]). Il loro obiettivo è quello di ottenere un guadagno nel lungo periodo attraverso la creazione di valore nell'azienda di riferimento.

Il successo di un'offerta pubblica iniziale può essere influenzato da diversi fattori. In questo lavoro di tesi verrà studiato come le caratteristiche degli investitori istituzionali che appartengono all'azienda prima della quotazione possano influenzare i diversi fenomeni caratteristici dell'IPO: valutazione, *underpricing*, *oversubscription* e performance di lungo termine. Le caratteristiche che verranno analizzate sono l'età dell'investitore istituzionale al momento dell'IPO, la distanza geografica tra la sede centrale dell'investitore istituzionale e la sede centrale dell'azienda che deve quotarsi, l'equity *market distance* e la distanza culturale tra lo Stato dell'investitore istituzionale e lo Stato dell'azienda che deve quotarsi (in particolare, la distanza culturale verrà considerata solo per *venture capitalists* e fondi di *private equity*).

La letteratura in merito alle offerte pubbliche iniziali è vasta, ma non vi sono studi riguardanti come le caratteristiche degli investitori istituzionali che fanno parte dell'azienda prima della quotazione possano influenzare la buona riuscita dell'IPO. Le uniche analisi sono fornite da Dhaliwal et al. [2005] i quali hanno dimostrato la valutazione dell'azienda pesata sui guadagni aumenta con l'aumentare della presenza di investitori istituzionali per le aziende di profitto; la valutazione dell'azienda pesata sul valore contabile del patrimonio netto, invece, aumenta per con l'aumentare della presenza di investitori istituzionali per le aziende di perdita. Inoltre, Bushee [1998]; Shleifer et al. [1997]; Shleifer et al. [1986] hanno sottolineato come gli investitori istituzionali giocano un ruolo positivo nella governance dell'azienda e questo può influenzare le performance presenti e future dell'azienda. Riguardo alle performance di lungo periodo, sono stati

condotti alcuni studi riguardo al ruolo dei *venture capitalists*, ma i risultati sono discordanti. P. Gompers et al. [1998] ha sottolineato come le IPO di aziende con *venture capitalist* hanno prestazioni significativamente migliori prima dell'uscita del *venture capitalist* e significativamente peggiori dopo l'uscita del *venture capitalist* dall'azienda. Brav et al. [1997], invece, attribuiscono migliori performance di lungo termine ad aziende con *venture capitalists* rispetto ad aziende senza. Questa tesi è confermata anche da Krishnan et al. [2009] i quali aggiungono che i *venture capitalists* con una più alta reputazione sono in grado di ottenere migliori performance di lungo termine; questo è dovuto anche dal fatto che sono in grado di selezionare aziende migliori. Un diverso punto di vista hanno invece Bradley et al. [2001] secondo i quali una perdita nel valore delle azioni al termine del periodo di *lock-up* è più marcata nel caso di aziende che hanno all'interno un *venture capitalist*. Brau et al. [2003],infine, hanno dimostrato che non ci sono differenze nel lungo termine tra aziende con *venture capitalists* e quelle senza.

Questa tesi analizza tutti questi fenomeni considerando un campione di aziende italiane che si sono quotate tra il 1997 e il 2015.

La tesi è strutturata nel seguente modo.

Nel Capitolo 1 è fornita una visione generale delle IPO e del contesto italiano: quali sono le principali tipologie di quotazione, le regioni dietro la decisione di quotarsi e i maggiori costi e benefici del processo. In seguito, è presentata la struttura del processo con una descrizione dei principali attori coinvolti. In fine, è riportato un excursus riguardante la Borsa Italiana e come questa opera.

Il Capitolo 2 è suddiviso in due parti. Nella prima parte vi è una descrizione e una classificazione degli investitori istituzionali a come questi possono influenzare le performance dell'azienda nella quale partecipano. È fornita, inoltre, un'analisi dettagliata riguardante i *venture capitalists* e i fondi di *private equity*. Nella seconda parte del capitolo, invece, sono descritti i fenomeni caratteristici delle offerte pubbliche iniziali: valutazione, *underpricing*, *oversubscription* e performance di lungo termine. È analizzato in particolar modo l'impatto degli investitori istituzionali nelle diverse fasi.

Nel Capitolo 3 è spiegato in dettaglio il lavoro di tesi e vengono riportate le ipotesi fatte. In particolare, sono riportate cinque categorie di ipotesi, ciascuna delle quali riferita a un particolare fenomeno dell'IPO.

Il Capitolo 4 contiene la metodologia utilizzata per testare le diverse ipotesi. Sono spiegate in dettaglio le analisi univariate e multivariate e i metodi per comprendere la significatività delle regressioni.

Nel Capitolo 5 è descritto il data set utilizzato nelle analisi. In particolare, due data bases saranno utilizzati: il primo relativo alle performance the aziende italiane quotate tra il 1997 e il 2015; il secondo legato alle caratteristiche degli azionisti dell'azienda prima della quotazione. Nella seconda parte del capitolo sono spiegate tutte le variabili considerate nelle analisi, divise per variabili indipendenti, dipendenti e di controllo.

Nel Capitolo 6 sono riportati i risultati ottenuti dalle regressioni. Nella prima parte sono mostrati gli esiti delle analisi univariate. Successivamente, vi sono i risultati delle analisi multivariate, presentati secondo l'ordine con cui le ipotesi sono state formulate.

Nel Capitolo 7, infine, sono tratte le conclusioni di questo lavoro di tesi.

EXECUTIVE SUMMARY

The Initial Public Offering (IPO) is a corporate finance operation through which a company, thanks to the offer of its shares to the public, enters for the first time in a stock exchange. This represents one of the most relevant events during the life of a company. In fact, after the IPO, on one side the company can have a wider and diversified pool of investors and on the other side it will take place a dilution of the capital.

There are different reasons for which a firm decides to go public, and according to them, there are different types of offerings. Pagano, Panetta, et al. [1998] showed that the first reason behind the listing choice is the need of rebalancing the financial structure of the company. Zingales [1995], Mello et al. [2000] said that IPO is pushed by insiders that want to sell shares. Moreover, the listing is also considered a method to increase the reputation and guarantee more visibility to the firm Maksimovic et al. [2001], but also to enhance the ownership differentiation (T. J. Chemmanur et al. [1999]). Finally, according to Jr [1976]; Modigliani et al. [1963] companies decide to go public when the equity issue allows them to minimize the firm cost of capital.

Obviously, the initial public offering has some benefits, classified by Giudici [2010] in four different categories, but also huge costs, and for this reason, Ritter [1987] argued that smaller companies are less likely to go public than larger ones that can better amortize these expenses.

One of the actors involved in this process is the figure of institutional investor. It is a specialized financial institution that invests on behalf of the organization's members. More in detail, institutional investors manage savings collectively on behalf of small investors toward a specific objective in terms of acceptable risk, return maximization, and maturity of claims (E. P. Davis et al. [2004]). This actor can belong to the ownership structure of the company that is going to be listed or it can buy shares during the initial public offering and so enter in the company during the IPO.

A particular category of institutional investors is the one represented by venture capitalist and private equity funds that provide to the company not only money but also support and

competencies. In particular, venture capitalists are defined by Timmons et al. [1986] as investors that help entrepreneurs (private companies) in the start-up phase of their firms, contributing to their new venture development not only financially, but also non-financially. Private equity, instead, is a risk capital investment made by professional investors for the early and later stage of mostly not listed companies (Leeds et al. [2003]). Their aim is to obtain a long term capital gain through value creation in the target companies: this means buying at a certain price and selling at a multiple one.

The success of the initial public offerings can be influenced by diverse and disparate factors. In this study work, it is investigated how some characteristics of institutional investors that belong to the ownership structure of the company before the IPO may influence different phenomena typical of the listing process: valuation, underpricing, oversubscription and long run performance. The characteristics that are analysed are the age of the institutional investor, the geographical distance between the headquarter of the institutional investor and the headquarter of the listing firm, the equity market distance between the country of the institutional investor and country of the company that made the IPO, and finally, only considering venture capitalists and private equity funds, the cultural distance between them and the target company.

The literature about IPO is ample, but there is not a lot of study on how the characteristics of institutional investors already in the company at the moment of the listing can affect the success of the process. The only evidence are given by Dhaliwal et al. [2005] who demonstrated that the market valuation weight on earnings increases with the level of institutional ownership for profit firms; the valuation weight on the book value of equity, instead, rises with the level of institutional ownership for loss firms. Moreover, Bushee [1998]; Shleifer et al. [1997]; Shleifer et al. [1986] underlined that institutional investors play a positive role in the corporate governance and this can influence firm's current and future performance. Regarding long run performance, some studies were conducted about the role of venture capitalists, but the results are discordant. P. Gompers et al. [1998] highlighted that venture capital backed IPOs significantly outperform before and significantly underperform after the venture capital exit. Brav et al. [1997], instead, attributed superior long run performance to VC backed IPOs in comparison to non-

venture backed IPOs. This thesis is confirmed also by Krishnan et al. [2009] which added that more reputable VCs are able to obtain superior long run post-IPO performance and this result is also related to the fact that more reputable VCs are able to select better quality firms. Opposite point of view have Bradley et al. [2001] for which a loss in the share price at the end of the lock-up period is much more marked in the case of VC backed companies. Brau et al. [2003], instead, demonstrated that there are not differences between the long run performance of VC backed and not VC backed firms.

This thesis investigates all these phenomena considering a sample of Italian firms that have made an initial public offering between 1997 and 2015.

The study has the following structure.

In Chapter 1, it is given a general overview of IPOs and the Italian context: which are the main typologies of listing, the reasons behind the choice of going public and the main costs and benefits. After, it is presented the structure of the process with a description of the main actors involved. Finally, there is an excursus on the Italian stock exchange and how it works.

Chapter 2 is made by two parts. In the first one, there are a description and a classification of institutional investors and how they can affect the performance of the company on which they belong to. There is also an in-depth analysis about venture capitalists and private equity funds. In the second part, instead, the different phenomena of the IPO process are described: valuation, underpricing, oversubscription and long run performance. The impact of institutional investors on different phases is investigated.

In Chapter 3, the thesis work is explained in detail and there is the formulation of the hypotheses. In particular, five categories of assumptions are presented, each one referred to a phenomenon typical of the listing process.

Chapter 4 contains the methodology used to test the hypotheses formulated in the previous chapter. Univariate and multivariate analyses are explained in detail and there is a focus on how to understand if the regression is significant or not.

In Chapter 5, there is the description of the data set used in the analyses. In particular, two databases will be used: the first one related to the performance of Italian IPOs between 1997 and 2015; the second one related to the characteristics of shareholders belong to the companies before the listing. In the second part of the chapter, all the variables considered in the analyses are explained, divided into independent, dependent and control variables.

Chapter 6 includes all the empirical results that come out from the regression models described above. In the first part, the outcomes of univariate analyses are presented. Then, there are the results of multivariate analyses, graded in the order in which the hypotheses were presented in chapter 3.

In Chapter 7, finally, the conclusions of the thesis work are reported.

1 The Initial Public Offerings (IPOs)

In this first part, it is given a general overview of the Initial Public Offerings, with a particular focus on the Italian context and the different typologies of IPOs (Paragraph 1.1).

Moreover, there is an analysis regarding the reasons behind the decision of listing and the tradeoff between costs and benefits of the process (Paragraph 1.2), and the choice of the right timing for the procedure (Paragraph 1.3).

Then, the more relevant aspects for an IPO are discussed: the main steps of the listing process (Paragraph 1.4), the actors involved and their roles (Paragraph 1.5), and a digression related to how a stock exchange works (Paragraph 1.6).

1.1 Introduction

The Initial Public Offering (IPO) is a corporate finance operation through which a firm, thanks to the offer of its shares to the public, enters for the first time in a stock exchange. This represents one of the most relevant events during the life of a firm. In fact, after the IPO, on one side the firm can have a wider and diversified pool of investors and on the other side it will take place a dilution of the capital.

1.1.1 The Italian context

The focus of our analysis is on the Italian context. In particular, regarding this particular framework, it can be noticed an irregular trend. For example, during the period 1999-2000, there were 69 Italian firms that started the listing process, but during the following two years the number of firms that opted for the IPO dramatically decreased down to 23. These fluctuations are relevant also on the global landscape as explained by Lowry [2003] that identifies companies' demand for capital and the level of investor sentiment as main causes of the variation of the number of IPOs.

Moreover, also economic and industry-specific dynamics affect the companies' decisions, while adverse selection costs are of secondary importance. Furthermore, a particular positive market performance by a few IPO firms attracts more firms to go public (Lowry et al. [2002]). For this reason, during the technology bubble burst of the early 2000s, it can be noticed a renewed interest in IPOs (Dalle Vedove et al. [2005]).

In the following years, the international market conditions have not been favored the access to the stock market: the financial crisis was seen as a discouraging factor against quotation. Furthermore, there was a change in the regulation of the market, due to the measures taken by the USA with the Sarbanes-Oxley Act. The introduction of law 262 (Legge sul Risparmio 262/2005), modified the corporate governance for listed firms on the Italian stock exchange, in order to guarantee the reliability, completeness, accuracy and timeliness of new financial information that enters into the market.

Pagano, Panetta, et al. [1998] identified a particular obstacle to the quotation of Italian firms: Italian entrepreneurs wants to have direct control of the company in order not to weaken their own leadership.

In the last years, we have seen a recovery in the IPO market and now there is a consolidation of the trend. An example is the Poste Italiane IPO in 2015 that was one of the most relevant IPO in Europe.

1.1.2 Typologies of Initial Public Offering

The IPO process can have a series of purposes that differ from one company to another one. The most relevant are: increasing the diversification of the ownership, rewarding existing shareholders, and raising new liquidity.

We can identify three different types of emission:

- Rights Issue: there is the assignment of a certain number of "rights" to each existing shareholder in relation to his/her ownership. The shareholder can decide if exercise the right or sell it on the market. In the first case, the ownership percentage of the shareholder is kept constant, instead in the second one there is a dilution effect. In the right issue, there is an underwriter that guarantees the issue and purchases unsubscribed shares at the end of the issue, charging a commission fee.
- Private Placement: the offer is targeted to specific investors that may be external or internal to the firm; the price of the shares is settled through negotiation. The older shareholders have a dilution effect.
- Public Offering: shares are offered to the whole market. If it is the first time that a firm offers its shares on the market, it is called Initial Public Offering (IPO); instead, if the firm is already listed on the stock exchange, the new issue is a Seasoned Equity Offering (SEO). The main difference is in the new shares price setting: in the SEO it has already been a market price, instead in the IPO the price is settled through a complex and expensive process.

Regarding IPOs, a distinction can be done according to the nature of shares that are offered on the market:

- Issuing new share: in this case, the shares offered to the public come from an increase in the equity capital; this has as a consequence a dilution effect for already existing shareholders.
- Sales of already existing shares: existing shareholders decide to sell their shares. This typical happens when there are venture capital, private equity or funds as shareholders of the company. Through this way, existing shareholders have the possibility to liquidate their shares, but for the company, there is no capital collection.
- A mix of the previous two: the shares offered to the public are partially newly issued shares and partially shares of existing shareholders.

1.2 Which are the reasons behind the listing?

The listing is a crucial moment in the life of a company, it represents the opportunity to collect new capital from new shareholders and the possibility to increase the company reputation thanks to higher visibility. The listing is important also because it has a huge impact on the firm's structure and processes (Nelson [2003]).

Before selecting the public channel, managers have to undertake a deep analysis in order to evaluate the benefits of this kind of operation: the listing process is very complex and it takes a long time to be completed and it is necessary to comply stringent regulations.

1.2.1 The theoretical framework

A first reason for which a firm can implement an equity issue is the continuous need of capital. In fact, in the long run, the firm survival is strictly related to its ability to invest, innovate and being able to adapt itself to the changes in the market; to do this, the company should be able to collect capital in a continuous way

Pagano, Panetta, et al. [1998], choosing Italy as an ideal European setting to study the issue, showed that the first reason behind the listing choice is the need of rebalancing the financial structure of the company. Moreover, the stock market valuation of firms in the same industry positively affects the probability of target firm's IPO. Finally, the probability of listing is strongly correlated with the size of the firm: this result is much stronger in Europe than in the United States.

Other sources underline that the main reason is the desire of shareholders to have returns and to obtain a higher liquidity: Zingales [1995], Mello et al. [2000] said that IPO is pushed by insiders that want to sell shares. IPO is also considered a method to increase the reputation and guarantee more visibility to the firm Maksimovic et al. [2001], but also to enhance the ownership differentiation (T. J. Chemmanur et al. [1999]).

An indicator to evaluate the feasibility of a company listing is the analysis of the Capital structure theory (Myers [1984]; Harris et al. [1991]; Titman et al. [1988]). This

investigation defines the optimal financial leverage that a company should have, according to the cost of capital and the cost of debt. The two financing sources should be balanced in order to mitigate possible drawbacks. In fact, advantages related to debt financing tend to wane once a certain threshold is reached; in this case, the company is forced to increase the level of equity in order to keep a good financial position. According to this theory, companies decide to go public when the equity issue permits to minimize the firm cost of capital (Jr [1976]; Modigliani et al. [1963]).

1.2.2 Costs and benefits

The listing process is embedded with benefits and costs that have to be considered before taking the decision to go public.

In particular, Giudici [2010] identified four different categories of benefits related to the listing process:

1) Operative benefits: new institutional investors mean more operative efficiency; increasing the level of visibility, especially in foreign markets; the listing is a sort of certification of the quality of the company.

2) Financial benefits: lower cost of capital (thanks to company information available on the market) and facilitated access to different forms of capital in respect to not listed companies (Pagano, Panetta, et al. [1998]). The capital raised can be used to finance future acquisitions of investments. Finally, the operation increases the bargaining power of the company towards banks because now the company has available new finance sources (Rajan [1992]).

3) Organizational benefits: new information flow available inside and outside the company that can be used by the management control system. Stock options can also be assigned to deserving managers in order to enhance their productivity or salaries can be related to the price of stocks on the market (Holmstrom et al. [1993]; Schipper et al. [1986]).

4) Fiscal benefits: there could be a possible tax break for listed companies.

Moreover, it can be added benefits for initial owners, like an increase of liquidity (Pagano [1993]) and the opportunity of diversification by selling shares and reinvesting in other companies (Pagano, Panetta, et al. [1998]). In addition, the bargaining power of initial owners against a potential buyer increases by going public (Zingales [1995]). A consequence of listing is also the intensifying monitoring: managers' decisions are directly brought to trial of the market (Holmstrom et al. [1993]; Pagano and Röell [1998]). On the other side, many are also the costs that a company has to face in order to put shares on the market. These expenditures are borne not only at the moment of listing but also in the following years.

Giudici [2010] classified the costs in:

1) Direct costs: they are all the costs related to the listing process. Examples could be payments to advisors and underwriter's compensation, administrative practices, writing of all the documentation required by authorities. Further, it has to be considered also all costs related to marketing activities, like for example the road show, and fees to be paid to the stock exchange in the moment of listing and in the consecutive years.

2) Indirect costs: costs related to the fact that now the company is a listed one. In this category, they are included changes in the management control system, related to the fact that now the firm has to disclose a huge amount of information and it has to guarantee an investor relation service. A drawback of this fact is the possibility of losing some competitive advantages due to the large quantity of data published related to research and development and future strategies (Campbell [1979]).

These costs can be divided into fixed and variable category. Variable costs change according to the offering size: an example is the cost of placement of securities that is calculated as a percentage of the collected capital. Fixed costs, instead, are the ones related to the company's preparation to the listing and they do not increase proportionally with the size of the IPO; for this reason, like it is suggested by Ritter [1987] smaller companies are less likely to go public than larger ones that can better amortize these expenses.

Table 1 shows the costs that a company has to sustain in case of an IPO on the Italian stock exchange, starting from July 1st, 2016.

	Amount related to 500.000€ of capitalization	Capital	Floor
New companies	75€	500.000€	MTA - Capitalization < 1 billion€ : 25.000€ - Capitalization > 1 billion€ : 75.000€ MIV: 25.000€ AIM Italia/Mercato Alternativo del Capitale: 20.000€
Companies that are the result of M&As with already listed companies	40€	150.000€	10.000€
Companies already listed on foreign stock exchanges	40€	50.000€	10.000€
New categories of shares	5.000 for single category		

Table 1 - Different listing costs according to the capitalization

<table>
<tr><td rowspan="2">Main costs</td><td colspan="3">Listing costs</td></tr>
<tr><td>Min</td><td>Average</td><td>Max</td></tr>
<tr><td>Global coordinator/Sponsor</td><td>3,5%</td><td>4,3%</td><td>5,0%</td></tr>
<tr><td>Financial due diligence</td><td colspan="3" rowspan="7">It depends on the offering dimensions</td></tr>
<tr><td>Valuation</td></tr>
<tr><td>Development of the underwriting syndicate</td></tr>
<tr><td>Guarantee placement</td></tr>
<tr><td>Trade</td></tr>
<tr><td>Sponsor</td></tr>
<tr><td>Specialist</td></tr>
<tr><td>Financial Advisor</td><td>0,0%</td><td>0,2%</td><td>0,4%</td></tr>
<tr><td>Support in the selection of intermediaries</td><td colspan="3" rowspan="7">It depends on the offering dimensions</td></tr>
<tr><td>Intermediaries coordination</td></tr>
<tr><td>Price choice</td></tr>
<tr><td>Prospectus preparation</td></tr>
<tr><td>Business plan support</td></tr>
<tr><td>Price negotiation with global coordinator</td></tr>
<tr><td>Legal advisory</td></tr>
<tr><td>Legal due diligence</td><td colspan="3" rowspan="4">It depends on the offering dimensions</td></tr>
<tr><td>Governance advisory</td></tr>
<tr><td>Prospectus</td></tr>
<tr><td>Offering</td></tr>
</table>

Main costs	Listing costs		
	Min	Average	Max
Auditing business	€ 100.000	€ 250.000	€ 300.000
Balance sheets auditing			
Prospectus check			
Business plan support			
Public relation agency	€ 100.000	€ 120.000	€ 200.000
Preliminary activities			
Marketing			
Promotion costs	€ 200.000	€ 600.000	€ 1.000.000
Stamp fee	Fixed cost: € 125		
CONSOB	0,02% of offering dimension Min € 2.500; Max € 2,5 Mln		
Borsa Italiana S.p.A.	€ 75 for each € 500.000 of market capitalization		
Listing fee			
Half fare	€ 11 for each € 500.000 of market capitalization		
Prospectus	€ 150.000	€ 250.000	€ 400.000
Road show	€ 50.000	€ 110.000	€ 150.000

Table 2 - Listing costs

1.3 When going public?

The timing of an IPO is one of the most relevant factors that can influence its success. This choice is conditioned not only by the whole market condition (macro-environment) but also by the company's situation and by the condition of the industry in which it operates. In particular, this last point is widely studied in the literature. Oved [1995] demonstrated that for younger and more innovative companies it is not convenient to be listed, in order to avoid the sharing of information with competitors. T. J. Chemmanur et al. [1999] showed that in the high-tech sector, due to the high information asymmetries, firms tend to postpone the listing moment. Furthermore, the IPO process can expose the firm to spill-over risk and it can be more expensive if there are no other listed firms of the same industry. Benveniste et al. [2002] identified a solution to this problem: if companies in the same sector decide to be listed in the same moment, they can share costs and risks, avoiding deadlocks.

In order to reduce the agency costs, Italian firms that analyze the possibility to start a listing process usually are eight times bigger and six times older in respect of the American ones; this is due to the fact that in Italy a company must have a higher reputation for reducing agency costs. Pagano, Panetta, et al. [1998] showed that in the Italian market the size and the age of a firm is strictly related to its probability to begin the listing process; also T. J. Chemmanur et al. [1999] demonstrated that the listing process starts when there is sufficient information about the company in the market in order to reduce the costs related to assess the real value of the firm. In recent times, T. J. Chemmanur et al. [2009] showed the existence of a positive relation between the sales growth, the company's size, the capability to have access to private financing and the probability of the firm to enter in a stock exchange.

Also, the general macro-environment conditions highly influence the timing decision of making an IPO. Ibbotson et al. [1975]; Ritter [1984] said that in a period where there is overvaluation of the already listed firm, we can assist to a greater number of IPO processes. These waves are called hot issue markets. Due to this reason, it can be identified a cyclicality in the IPOs' number, characterized by periods with a large number of listing process (hot issue markets) and periods poor in this issue (cold issue periods).

For example, in Italy (as explained by Dalle Vedove et al. [2005]) the period between 1998 and 2000 can be seen as a sort of "window of opportunity" for IPOs thanks to the worldwide technological bubble and the introduction of tax incentives for capital increases. Benninga et al. [2005] suggested that companies tend to issue shares when their cash flows are relatively high and these periods coincide with high stock prices.

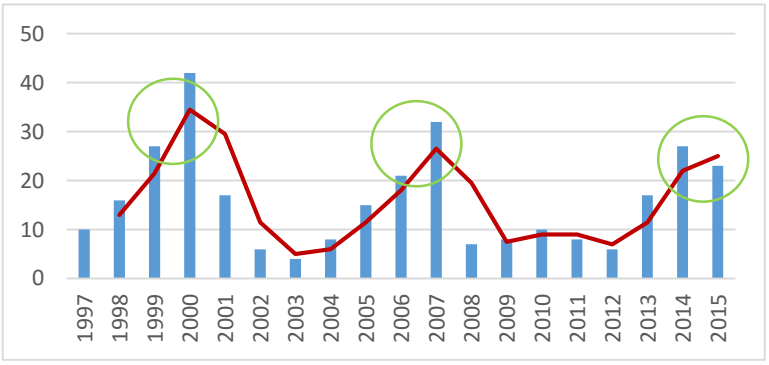

Figure 1 – Italian IPOs

This graph shows the number of Italian IPO per year, during the period 1997-2015. It can be noticed that there are three periods of hot issue markets (1999-2000, 2006-2007 and 2014-2015).

1.4 What is the IPO process?

The Initial Public Offering (IPO) is the main technique through which a company can be listed on a stock exchange. In order to be listed, a firm must observe a series of deadlines and regulations: for this reason, the process is complex and expensive. We can identify five phases: strategic decision, selection of intermediaries, the decision of the price per share and issue of the prospectus, placement of securities and stock exchange listing.

1.4.1 Strategic Decision

The strategic decision is a preliminary phase during which the company verifies the feasibility of the operation. In particular, there is the analysis of the trade-off between benefits and costs, the selection of the specific stock exchange and the definition of the characteristics of the offering. In this phase, it is involved a Financial Advisor who has the role of consultant and he supports the firm in the process (e.g.: definition of the number of shares, the choice between new emission vs. sales of old shares, etc.). In this first step, it is very important to select the proper moment in which the shares will be placed on the stock exchange: this point is crucial for the success of the operation.

1.4.2 Selection of Intermediaries

During the second phase, there is the selection of the intermediaries that help the firm before and after the listing. The most relevant are:

- Global coordinator: it coordinates the underwriting syndicate, liaise with the CONSOB (Commissione Nazionale per le Società e la Borsa), that is the supervisory organization of the Italian stock exchange, and it supports the marketing and book building activities.

- Lead manager (i.e. underwriter): it collects the demand for the shares (book of orders) and he/she gives a valuation of the firm. It can act also as guarantor pledging the undersubscription of unsubscribed shares.
- Sponsor: it guarantees the accuracy and precision of provided information, and the correctness of the entire process.
- Underwriting syndicate: it is led by the lead manager and the global coordinator and it has the role of placing the shares on the market for the firm.

1.4.3 Issue of the Prospectus

In the third step, all the necessary material to be admitted in a stock exchange is prepared and published. The most relevant document is the prospectus, which is the result of a process in which collaborates the firm, the global coordinator, and the lead manager. In the prospectus, there is all the information about the firm and the characteristics of the offering. In the first part of the prospectus, there are the last three balance sheets (that must be certified), the future strategy, the history and the management of the company. A description of the offering, such as timing, price range, the number of shares offered and how they are divided between retailers, institutional investors, employees and other subjects, is reported in the second part.

In this phase, there is also the selection of the offering price: it is important to define a range that satisfies both the company and the intermediaries.

After, there are a series of meetings, called roadshows, with possible investors. They are held by the lead manager, the global coordinator, and the underwriting syndicate and the aim is to collect orders or interests in the IPO. This phase is known as “book building”. According to the investors’ demand and to the collected information, the final price is settled. Busaba W.Y. et al. [2001] underlined that this phase is the one with the higher probability of blocking the IPO.

1.4.4 Placement of Securities

In this phase securities are placed on the market in three different ways:

- Fixed price offering: the underwriting syndicate and the firm set the subscription price without knowing the demand from the market. The investors know the shares price before the emission of the shares. If the demand for shares is higher than the offering, the shares are assigned with a random method. With this method the emission company has a low level of discretion.
- Variable price offers: the offer price is strictly related to the book building. In the prospectus is not defined a price but a range, inside which is defined the offer price. In certain cases, the final price can be out of the range: for this reason, some firms decide beforehand not to make binding the range recorded in the prospectus. In this case, the firm has a strong power in the setting of the price. Dalle Vedove et al. [2006] shown that this is the most diffused method in Italy.
- Placement through auction: this method is much diffused in markets of small dimension and with a concentrated ownership. The investors interested in the IPO should submit their offers specifying the amount of shares and the maximum price they are willing to pay. The use of the book building has replaced this method, however, Eckbo et al. [2005] have demonstrated that this method is diffused where there are regulations or a floor in the number of shares to be offered, which limit the use of book building.

1.4.5 Stock Exchange Listing

In this step, we can notice the phenomenon of underpricing. This consists in a higher evaluation of the shares by the market than the offer price chosen by the company. Due to the underpricing, the firm suffers a cost: at the beginning of the offering, the shares are sold at a price lower than the one that investors are willing to pay. Eckbo et al. [2005] estimated that the price variation during the first listing day in the US is about 10-20 percentage point and it can reach over 70 points in case of hot issue markets.

The most relevant theory in literature is the one related to asymmetric information, according to which there is not a homogeneous information distribution among the firm, underwriter analysts and investors. However, other theories were developed, like the one by Ibbotson [1975] that said that the underpricing is used by the firm as a signal of the high value to the market. Loughran et al. [2004] supported the fact that underpricing is used by the underwriter in order to obtain a higher return for itself and its investors. Eckbo et al. [2005] defined the underpricing cost for a firm as the cost to sustain in order to attract a wider public of investors.

1.5 Who are the main actors and which are their roles?

Due to the fact that an initial public offering is composed of a series of complex activities, a company cannot complete the whole process in a correct and efficient way alone. In order to avoid a failure, that represents a relevant cost and a serious problem for the reputation, firms usually ask the support of financial intermediaries and specialized professionals, which have to be chosen in the right way.

1.5.1 Financial Advisor

It is the first actor involved by the firm into the IPO process. Sometimes it is a consultant of the firm before the listing on the stock exchange. This actor isn't mandatory, but it is fundamental for firms that do not have the competencies and knowledge in order to manage a very complex process as an IPO. Its relevance is higher for a firm that has to manage conflict of interests.

The main function of a financial advisor is to evaluate the convenience of the IPO and provide advisory to the firm. It supports the company in the selection of the intermediaries and it supports the firm in all the phases of the listing process, it coordinates the relations between the firm and intermediaries, and it assists the company in the preparation of the necessary documentation and of the prospectus. Finally, the financial advisor helps the company in the period after the IPO in order to deal with changes in the organization.

1.5.2 Global Coordinator

The global coordinator is usually an investment bank or a financial intermediary belonging to the Testo Unico Bancario (i.e. the rules related to bank and credit). This actor is a consequence of the fact that the offering can be addressed to different countries. This figure is involved in all the steps of the listing process. In particular, its main functions are the management and coordination of the offering, the evaluation of the firm and, only in case the listing process is feasible for the firm, the organization of the due

diligence with lawyers, advisors, and reviewers. In order to evaluate the firm, it analyzes the business model, the management, the governance and the control systems of the target company. Moreover, the global coordinator is involved also in other activities: the construction of a pool of banks that forms the underwriting syndicate; the communication to firm and shareholders from all the necessary information to make understandable and clear the whole process (this function is executed jointly with the lead manager); the management of the relations between the issuing firm, the supervisory authority (CONSOB, in Italy) and the company supervisor of the stock exchange (Borsa Italiana S.p.A., in Italy); the preparation of the prospectus; the marketing activity; the book building; the roadshow; the setting of the offering price and the stock price after the IPO.

1.5.3 Lead Manager

The role of the Lead Manager is very tricky, for this reason, it is chosen by the firm through a process known as “beauty contest”, in which the potential underwriters are put in competition and evaluated taking into consideration their reputation, ranking in the IPO rank and past experience. Krigman et al. [2001] noticed that another criterion for the selection is the quality of the analyst team. Eckbo et al. [2005] added other two measures: the previous relation with the target company and the fee required by the underwriter.

D. Kim et al. [2005] showed that the frequency that an underwriter with a high (low) reputation follow the listing process of a firm whose value is high (low) is the same as the opposite, so there is no relation between the reputation of an underwriter and the value of a firm.

The lead manager is responsible for the composition of the underwriting syndicate, so it has to involve several intermediaries in the transaction and convince them to join a consortium agreement. In some cases, there are two separate underwriting syndicates, one dedicated to retail investors and the other one dedicated to institutional investors. Moreover, the lead manager has to keep the relation between banks belonged to the underwriting syndicate and the issuing firm, and it has to define the offering terms and the drafting of the prospectus with the issuing firm and the advisor. It can offer an extra

guarantee called “firm commitment” if it decides to subscribe all the unsold shares during the placement. Instead, if it only collocates the shares on the market, but it does not buy the unsubscribed shares, there is a “best effort” guarantee.

1.5.4 Underwriting syndicate

The underwriting syndicate is composed of a pool of banks, chosen by the lead manager. As explained before, there can be two different syndicates, one for the retail and the other one for the institution. The two are different in the number of banks which participate in (typically few banks belong to the one for institutional investors) and in the typology of banks.

The underwriting syndicate is fundamental for the issuing firm, in fact, it influences the choices of the market for the potential investors, the offering timing, the risk related to the offering and the offering price for the shares. The rules that related to the distribution of the shares, the division of markets and geographical areas between all the banks are defined in the “patto consortile” to which all the members must agree.

1.5.5 Sponsor

The sponsor is a mandatory agent for all the firms that want to be listed on a stock exchange. It can be a bank, a securities firm (in Italy Società di Intermediazione Mobiliare) or a financial intermediary registered in the special list of the Testo Unico. If the sponsor and the global coordinator are two different subjects, the first must necessarily fill the role of lead manager.

The main functions of the sponsor are: guaranteeing the quality of the issuing firm; taking care of the commitments related to the listing; publishing at least two financial analyses per year after the listing regarding the firm; organizing at least two meetings per year between shareholders and management.

1.6 How does a stock exchange work?

In this paragraph, it is analyzed how the structure of the stock exchange is and how it works. Firstly, the history and the current structure are described. Then, there is an explanation of the requirements to enter in a stock exchange.

1.6.1 History

In Italy, the stock exchange is managed by Borsa Italiana S.p.a. It was founded on January 16, 1808, through an act of Napoleon that imposed the opening within one month. The first temporary headquarter was in Monte di Pietà route in Milan and the exchanges began on February 15, 1808. The consolidation of the stock exchange took place during the Austrian domination, and it became the most relevant in all the peninsula. During the Italy unification, there was the first form of regulation ("Codice di commercio" of 1865) and the transfer in Palazzo Broggi. After a strong depression during the fascism, there was a rapid recovery in the stock market in the mid-50s of 1900 that pushed the boom of the Italian economy.

From 1991, Borsa Italiana is supervised by the Consiglio di Borsa, a body appointed by the Ministero del Tesoro, that was recognized as Borsa Valori Nazionale. On June 23, 2007, it has been bought by the London Stock Exchange.

1.6.2 Structure

The main functions of the stock exchange are the management of the financial markets and the proper operation of these. In particular, it has to ensure the proper conduct of trading, define the admission requirements for the intermediaries and manage all the information on listed firms.

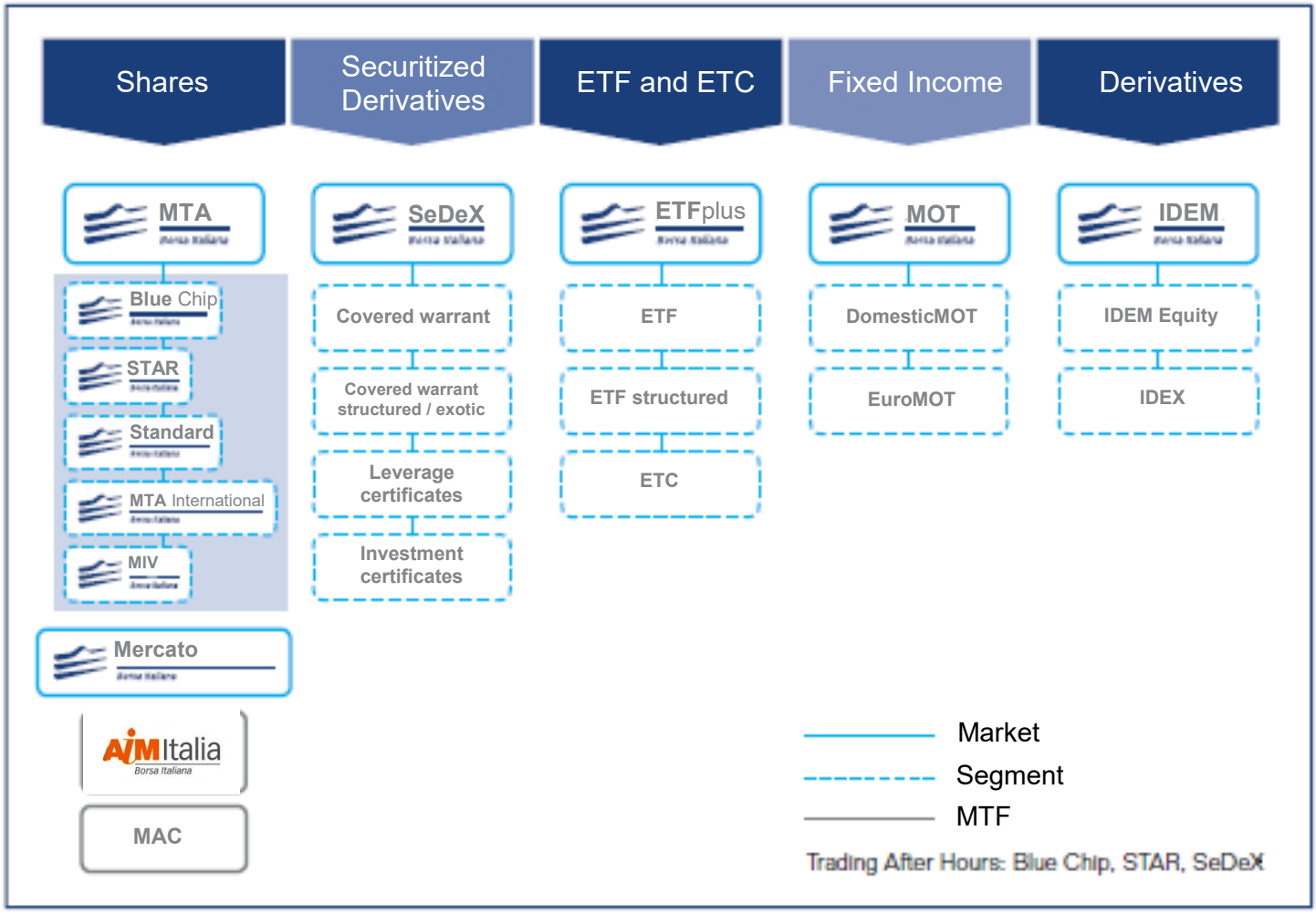

Figure 2 – Italian stock exchange

Borsa Italiana manages a series of markets:

- MTF (Multilateral Trading Facilities): they are private trading systems that offer the possibility to deal with financial instruments listed on a stock, without regulations for the admission and disclosure duties.

  There are two main markets:

  1) AIMItalia: it is dedicated to the medium-low capitalized firms with a high growth potential. In 2009 it took the place of the previous Mercato Expandi.

     The main actor in the listing on this market is the Nomad (Nominated Advisor), which keeps the relation between Borsa Italiana and the firm. Its main function is to guarantee the adequacy of the firm to the admission criteria for all the periods in which it is traded. In this market, they are required neither the publishing of a prospectus nor the report on the management of the firm.

  2) MAC (Mercato Alternativo del Capitale): it is composed of very small firms, that are very common in the Italian context. In this market only institutional investors can operate, while the access to small savers is foreclosed. On December 31, 2012, this market was closed and all the firms belonged to this market had the possibility to pass to the AIM.

- MTA (Mercato Telematico Azionario): in this market, there is the exchange of shares of firms, convertible bonds, warrants, shares of close-end funds, option rights and certificates representative of OICR (Organismi di Investimento Collettivo del Risparmio) shares.

  It is divided into 5 segments:

  1) Blue Chips: firms with a market capitalization higher than € 1 billion are in this segment. FTSE MIB and FTSE ITALIA Mid Cap are indexes referred to this segment.

2) STAR: it is composed of firms with a capitalization between € 40 million and € 1 billion. They have to follow transparency and specific governance criteria: they must present the balance sheet 45 days before the quarterly reports closure; into the Board of Directors there must be present independent members; there must be a Comitato per il Controllo Interno and a plan of remuneration and incentives. Furthermore, they must have a minimum of 35% of the total capital as floating (20% for the already listed firms). The indexes that refer to this market are ALL STARS, STAR and TECH STAR.
3) Standard: the requirement for the capitalization is the same as the STAR, but for this segment, there are not all the requirement presents in the STAR one.
4) MTA International: this segment is dedicated to a group of foreign multinational firms.
5) MIV: segment dedicated to the listing of FIA (Fondi Alternativi di Investimento), SPAC (Special Purpose Acquisition Companies) and firms with a not already defined investment strategy (for example SIIQ).

- Mercato Expandi: in 1977 Borsa Italiana created a market called Mercato Ristretto in which all the shares that cannot be exchanged on the ordinary market are traded. In 2003 it was created this market in which are traded all the shares, bonds, warrants and options that are not admitted to the official listing on the stock exchange. Also in this market there are a series of requirements to follow: a minimum capitalization of € 1 million; at least 10% of floating capital (with a minimum value of € 750,000); the presence of two balance sheets of which the last certified; in the last two years before the listing the presence of adequate financial indicators is required.

  On June 22, 2009, the market was closed and the firms divided into the MTA.

- SeDex (Securitized Derivatives Exchange): it is a market dedicated to the exchange of securitized derivatives such as covered warrants and certificates.

- ETFplus: market in which there are the trading indexes and funds that replicate it such as ETF (Exchange Traded Funds) and ETC (Exchange Traded Commodities).
- MOT (Mercato Telematico delle Obbligazioni): in this market, there is the exchange of Titoli di Stato and not convertibles bonds.
- IDEM: market in which are negotiated futures contracts and options contracts whose underlying assets are indices or individual stocks.

1.6.3 Admission requirements

All the firms that want to be listed on the stock exchange have to have two main requirements.

The first one is a minimum capitalization of € 40 million with a floating of at least the 25% of the total capital of the company. Sometimes this requirement can be released, usually, if the authority thinks that the stock can guarantee a good level of liquidity and trading.

The second requirement is the deposit of the balance sheets of the last three years: they must have a positive valuation from the audit company and they must show that the firm will be able to generate profits for the future years.

For the AIM, the listing firms must deposit only the last year balance sheet and draw an annual report for the investors that recaps the management of the firm. Furthermore, as explained before, it is necessary a Nominated Advisor, usually a bank or a broker. Its main functions are to draft the due diligence, to manage the listing process and to check that the firm respects all the parameters settled by the authority.

2 Literature review

This paragraph is divided in two parts. In the first one, there are a description and a classification of institutional investors (Paragraph 2.1.1) and how they can affect the performance of the company to which they belong (Paragraph 2.1.2). There is also an in-depth analysis of venture capitalists and private equity funds (Paragraph 2.1.3; Paragraph 2.1.4).

In the second part, instead, the different phenomena of the IPO process are described: valuation, underpricing, oversubscription and long run performance (Paragraph 2.2).

2.1 Institutional investors

This section has the aim to analyze the main typologies of institutional investors (Paragraph 2.1.1) and their impact on the performance of the target firms (Paragraph 2.1.2). After, there is an excursus on two categories of institutional investors (venture capitalist and private equity) (Paragraph 2.1.3) and major literature results of their influence on backed-firms' performance (Paragraph 2.1.4).

2.1.1 Which are the institutional investors?

An institutional investor is a specialized financial institution that invests on behalf of the organization's members. More in detail, institutional investors manage savings collectively on behalf of small investors toward a specific objective in terms of acceptable risk, return maximization, and maturity of claims (E. P. Davis et al. [2004]).

In particular, an institutional investor wants to guarantee profits both for itself and for the subscribers of the fund.

There are different categories of institutional investors:

- OICR (Organismi di Investimento Collettivo del Risparmio): according to the Art. 1 comma 1 lett. i d.lgs 24 febbraio 1998, n. 58, they are organisms with different juridical forms that invest money collected from savers into financial instruments or other activities. They operate according to the principle of distribution of risks. Into this category, there are SGR (Società di Gestione del Risparmio) and SICAV (Società di Investimento a Capitale Variabile). The first typology is characterized by a net worth divided into shares and each saver has a certain number of shares. The value of the shares varies along time according to the investments of the fund. In the second one, instead, savers buy directly shares of the company and so they become shareholders and they have voting rights.
- Pension funds: funds in which members invest in order to build up a lump sum to provide them an income in retirement.

- Hedge funds: alternative investments characterized by a portfolio that is not aligned and correlated with the market. The typical structure of a hedge fund is to take a long position on securities that are considered undervalued on the market, and make a short selling on securities that are considered overvalued on the market. Moreover, the hedge fund tends to enlarge its power through a huge amount of leverage.
- SIM (Società di Intermediazione Immobiliare): they are companies authorized to make investment activities, according to the TUF (Testo Unico della Finanza). The main activities are brokerage, selling, dealing, underwriting, portfolio management and collection and transfer of orders. These companies are enrolled in a CONSOB's register.
- Banks and financial institutions
- Family office and private banking: they are figures that manage considerable families' assets.
- Insurance companies: they are firms that offer insurance policies to the public. They can be specialized on a particular insurance (e.g. health insurance, house insurance) or they can provide different guarantees.
- Public entities: States and local governments.
- Business angels: a business angel is defined as a high net worth individual, acting alone or in a formal or informal syndicate, who invests his or her own money directly in an unquoted business in which there is no family connection and who, after making the investment, generally takes an active involvement in the business, for example, as an advisor or member of the board of directors (Harrison et al. [2008]).
- Venture capitalists: equity investors in mainly high-tech entrepreneurial firms in the early stages of their lives. Investors may be specialized financial intermediaries, diversified financial firms, and other firms (Colombo et al. [2007]).

- Private equity funds: agents that directly invest in mostly not listed companies in order to obtain a long term capital gain through value creation in the target companies. The capital can be used for example to finance new technologies, support an acquisition or expand the business.

According to their objectives and taking into consideration the trade-off between risk and return, different institutional investors select the best assets in which invest; this is the result of an evaluation process in which the institutional investor act as a rational investor.

Institutional investors can be classified also according to the nature of the investments:

- Size, age, and industry of the target company
- Objectives of the institutional investors
- Investment horizon: short, medium or long term
- Geographical area of interest
- Economic outlook
- Size and type of the capital to be invested
- Investors' characteristics

Moreover, institutional investors can adopt two different management styles of the fund. In particular, they can use a passive management if they hold highly diversified portfolios without spending effort or other resources attempting to improve investment performance through security analysis. The alternative way is an active management with which institutional investors attempt to improve performance either by identifying mispriced securities or by timing the performance of broad asset classes.

Regarding institutional investors, Assogestioni explains the situation in Italy at 2007, as shown in the following table:

	OICR	Pension funds	Life insurances	Banking foundations	Families wealth
ITALY	559	58	417	58	2,960
GERMANY	1,364	429	795	-	3,005
FRANCE	1,673	154	1,426	-	2,390
SPAIN	279	79	n.d.	-	995
UK	492	1,490	1,840	-	3,455
HOLLAND	77	853	312	-	965
DENMARK	132	244	141	-	217
Data in percentage of GDP					
ITALY	36%	4%	27%	4%	192%
GERMANY	56%	18%	33%	-	124%
FRANCE	88%	8%	75%	-	126%
SPAIN	27%	8%	n.d.	-	95%
UK	24%	73%	90%	-	169%
HOLLAND	14%	150%	55%	-	170%
DENMARK	58%	108%	62%	-	96%

Table 3 Assets of institutional investors (bln €)

It can be noticed that, with respect to other European countries, in Italy, there is the maximum ratio between the families' financial wealth and the GDP. Furthermore, the role of pension funds is not so relevant and the SGR have a particular weight. Finally, it is important to underline that Italy is the only country with the presence of funds that have a bank origin.

2.1.2 How institutional investors affect firms' performances

The literature suggests that the presence of one or more institutional investors affect not only the governance and managerial decisions (Erenburg et al. [2016]; Aghion et al. [2013]; Brav et al. [2008]), but it can also influence the governance and the performances of the target firm.

In particular, there are two primary avenues through which the presence of institutional investors can affect something in the company. The first one is the engage in activism that, according to Karpoff [2001], can lead to changes in governance, but it has no impact on share value or earning. However, more recently studies made by Denes et al. [2016] affirm that institutional investors positively affect the value of the target company, increasing the share value, and improve operating performances. Furthermore, Appel et al. [2016] underline that also passive institutions (not active owners in the traditional sense) are interested in firms' corporate governance, and they use their large voting blocs to affect managerial decisions.

The second way through which the presence of institutional investors influence the target firm is the monitoring way and the threat to divest underperforming firms. Specifically, Parrino et al. [2003] argued that the decision of an institutional investor to sell can affect board decision to replace the CEO. Kahn et al. [1998] added that the influence of institutional investor increases with institution's holdings. However, P. A. Gompers et al. [2001] debated that the increase in stock returns is not related to the monitoring power of the institutional investor, but rather on the sustained price pressure.

2.1.3 Focus on venture capitalists and private equity funds

It is presented a brief excursus on venture capitalists and private equity funds because they are a type of investors that provide to the target company not only money but also support and competencies.

Venture capitalists are investors that help entrepreneurs (private companies) in the start-up phase of their firms, contributing to their new venture development not only

financially, but also non-financially (Timmons et al. [1986]). In particular, venture capitalists prefer to invest in early-stage, high-potential, high risk, High-Tech entrepreneurial firms (Samila et al. [2011]). The presence of a VC is a crucial milestone in the life of a High-Tech entrepreneurial firm and it determines a drastic change in the governance (P. Gompers et al. [2001]). In fact, it permits on one side a substantial infusion of financial resources, and on the other side the enlargement and improvement of firm's resources and capabilities due to the coaching performed by the VC investor and its network of business contracts. Venture capitalists can give a direct contribution, participating in the board of directors of the target firm (Fried et al. [1998]; Clarysse et al. [2007]; Winton et al. [2008]), and an indirect contribution by providing a network of partners with relevant and complementary competencies (Bygrave [1987]). Finally, VC can be used also as an intermediary between lenders and the entrepreneur (Daily et al. [2002]).

The main goal of each venture capitalist is to maximize its financial return by exiting investments through an IPO (the company is taken public), a trade sale (the VC stake is sold with a private offer) or a write-off (in case of failure and poor performance, the venture is left to its own destiny and the investment in written-off). The choice of the exit alternative is strongly affected by market conditions and momentum; the timing may generate conflicts between the founder and the VC that is interested in capitalizing the investment.

In addition, there are other objectives that are very different from a VC to another one; for this reason, the choice of the best VC is a very important activity for the target firm. It can be distinguished among four different types of venture capitalists:

1) Corporate VCs: they are interested in new technologies developed by privately held entrepreneurial ventures.
2) Bank-controlled VCs: they want to generate demand for bank services.
3) Governmental VCs: they may have as goal not only financial returns but also social and political objectives, like investing in the local economy, job creation or support the development of local technological hubs.

4) Independent VC: they want to make money, but also create a reputation of successful investors, showing that they are capable of making money.

As documented by Christensen et al. [2009], between the venture capitalist and the entrepreneur there could be the Principal-Agent problem. This occurs when one person or entity (the "agent") makes a decision on behalf of, and that impact, another person or entity (the "principal"). This generates agency costs, which represent a drawback. From the study of Christensen et al. [2009], it emerges that venture capitalists apply an opportunistic behavior towards not only the entrepreneur, but also other venture partners, and this occurs in all the stages of the process.

Private equity is a risk capital investment made by professional investors for the early and later stage of mostly not listed companies (Leeds et al. [2003]). Their aim is to obtain a long term capital gain through value creation in the target companies: this means buying at a certain price and selling at a multiple one. The time horizon for private equity funds is more or less two-three years: for this reason, they prefer private companies in which there is not the pressure for short term results by shareholders. In particular, private equity is about taking an existing company and trying to optimize processes in order to obtain higher performances.

The private equity can provide support to the target company in different ways: giving money, providing strategic support and networking, challenging the status quo, giving incentives and support to the board in the strategic planning, and so on.

A private equity fund can be chosen for different reasons. For example, if a company needs money to support the growth, the PE fund becomes an attractive shareholder because it provides monetary and managerial resources. Moreover, the private equity can be used in case of family business succession or in the firm's restructuring phase.

2.1.4 How VCs and PEs affect firms' performances

The presence of a venture capitalist in an entrepreneurial firm brings a lot of value-added activities, as explained before, that can enhance firms' performance. In particular, Flynn et al. [2001] underlined that the contribution of VCs in new ventures positively affects early stage performance. Moreover, if current company's performances are worst, VC involvement usually is higher in order to detect possible causes and problems (Higashide et al. [2002]).

The venture capitalist's capability in improving the performance of the target firm is related to the effectiveness of the entrepreneur's co-operation with the (VC Sapienza et al. [2000]), and of the trust level, the various stages of the trust development and the use way of the trust (Yi [2009]).

Clercq et al. [2005] identified three different points that positively influence the performance of the venture firm: the quality of the value-added activities; the quantity of the value added activities; the openness of the entrepreneur to accept the VC's advice.

Finally, the venture capital activism, that is the involvement in the day-to-day managerial decisions, has as a consequence the increase in the internal rates of returns (Jackson III et al. [2012]; Bottazzi et al. [2008]).

Regarding private equity investors, the literature underlines the ability of them to raise the productivity and the profitability of their portfolio companies (S. J. Davis et al. [2008]; Smith [1990]; Kaplan [1989]).

Specifically, private equity-backed firms show a faster growth (Bertoni et al. [2011]; Engel [2002]) and obtain more patents (Lerner et al. [2013]; Kortum et al. [2000]). Moreover, these firms demonstrate higher productivity (Croce et al. [2013]) and better operating performance (Guo et al. [2011]; Kaplan [1989]).

Wright [1998] found out that the probability that a PE-backed firm goes public is higher than the one for non-backed firms. The firms that make an IPO maintain, also after the exit of the PE, the beneficial management and the financial practices put in place thanks to the presence of the private equity investor (Levis [2011]). However, Meles et al. [2014]

demonstrated that PE-backed firms that go public perform worse than other PE-backed firms in post-exit period. This result is confirmed also by Jain et al. [1994].

2.2 The main phenomena of IPOs

This chapter is devoted to the explanation of the different phenomena related to the IPO process (Valuation Paragraph 2.2.1; Oversubscription Paragraph 2.2.2; Underpricing Paragraph 2.2.3; Long run financial performance Paragraph 2.2.4) and how the presence of institutional investors impacts on them.

2.2.1 Valuation

The valuation is the process through which the fair value of a company is estimated. There are two methodologies: the first one provides an estimate of the equity value; the second one provides an estimate of the enterprise value, from which the equity value can be then derived. However, the price of shares is referred to the equity value.

A valuation can be run for different reasons:

- Trading: IPO, carve out, sale to an external acquirer, sale to another company of the group.
- Capital increases: the issue of new shares or new convertible bonds, M&A, seasoned offers.
- Company transformations: restructuring, strategical changes, sale/purchase of business units.

Obviously, the focus of this thesis will be on the IPO reason.

The "Union Européenne des Experts Comtables Economiques et Financiers" (UEC) has defined some principle that has to be followed in the valuation process. The most relevant are the following:

1) The value of a target company is subjective since it depends on the scope and the objectives of the valuation
2) The value of a target company is also objective because it must reflect the real situation of the company and different analysts that evaluate the same company for the same reason must come out with the same valuation.

3) The valuation must be the result of the combination of assets and profits, considered with different weights.
4) The value is different from the price: the first has a subjective nature, the second has an objective nature.

It is possible to define four different valuation approaches.

- Asset-based approach: it values the company on how the assets and liabilities are today, without considering the expectations about the future. It calculates the value of the economic capital of a target company identifying its book value of equity, adjusted accordingly to the differences between the current value of each item in the balance sheet and the correspondent book value. It is a very conservative and prudent way, and it is used for example for real estate companies.
- Flows of results approach: it assesses the value of a target company trying to understand which will be the results that the company will have in the future. In this category is included the Discounted Cash Flows method in which the value of a company is equal to the present value of the cash flows that will be generated in the future.

  The earnings based method, instead, makes analyses of the profitability that the firm will be able to generate in later times. However, this last method cannot be used in case of IPO.
- Economic profit approach: it is a combination of the earnings based method and the asset-based approach. The economic profit is based on the idea that value of the economic capital depends on the value of the company operations and the value of the incomes higher than the expected return of such operations; the economic profit is generated when such excess exists and it is positive.
- Relative valuation approach: it compares the target company with a group of similar listed companies, called comparables. In particular, it is important to select comparable companies with comparable transactions. The parameters used for the evaluation are the multiples, like for example the ratio between the share's price and the earnings per shares.

The relative valuation is a very important approach in the IPO process.

The valuation process is made by the investment banker that has to combine different approaches. The result has to be a range of values: it will be the market to decide the final price.

The presence of institutional investors in a target company could influence the result of the valuation process. However, the literature about this issue is poor. The only evidence is given by Dhaliwal et al. [2005] that demonstrated that the market valuation weight on earnings increases with the level of institutional ownership for profit firms. The valuation weight on the book value of equity, instead, rises with the level of institutional ownership for loss firms.

Moreover, the effects are more consistent if the institutional investors have long term horizons and monitoring incentives. These results are confirmed by previous literature that shows how institutional investors play a positive role in the corporate governance and this can influence firm's current and future performance (Bushee [1998]; Shleifer et al. [1997]; Shleifer et al. [1986]). Moreover, institutional investors prefer to invest in financially healthy firms (Del Guercio [1996]; Hessel et al. [1992]), and market valuation weights on earnings and book value of equity are a function of the company's financial wealth (Barth et al. [1998]; Burgstahler et al. [1997]).

2.2.2 Underpricing

The underpricing is the phenomenon in which the offer price, of the IPO, is lower than the price at the end of the first trading day. It can be calculated as the difference between the closing price and offer price divided by the offer price (Bertoni et al. [2014]). The first authors that documented underpricing were Stoll et al. [1970]; Reilly [1973]; Logue [1973]; Ibbotson [1975]. During years, the literature has collected a lot of theories about the underpricing.

The first block of theories is based on the asymmetric information problem: issuers have more information than investors about the IPO and the company that is going to be listed.

In particular, T. J. Chemmanur et al. [2010] demonstrated that institutional investors know significant private information about the initial public offering in respect to retail investors: institutional investors gradually lose their information advantage as more and more information about the IPO firm becomes available to public.

The asymmetric information generates the adverse selection problem: a situation in which one side of the market cannot observe the "type" of goods offered by the other side of the market (Akerlof [1970]). In the case of IPOs, only issuers, whose firms are worse than the average, are willing to sell their shares at the average price; to solve the problem of adverse selection, high quality issuers can use the signalling remedy: they sell their shares at a lower price than the one the market believes they worth, which dissuades lower quality issuers from imitating (Welch [1989]; Rock [1986]). These initial losses faced by the listing firm can be covered during future issuing activities (Welch [1989]), thanks to positive market response to future dividends announcements (Allen et al. [1989]), or with analyst coverage (T. Chemmanur [1993]).
To summing up, according to these theories underpricing is a way to reduce the adverse selection problem.

Another front related to asymmetric information is the one of the book-building theories (Spatt et al. [1991]; Benveniste et al. [1990]; Benveniste et al. [1989]). The book-building is a period of about four weeks before the listing during which orders are collected and a preliminary offer price range is set. During the book-building, the amount of information exchanged between the issuers, underwriters and investors increases. If during the book-building there is a high demand, the underwriter will set a higher offer price. However, to persuade investors to disclose that they are willing to purchase at a high price, the underwriter must offer underpricing.

An alternative theory is the one showed by Baron [1982] that considered information asymmetry between different actors: issuer and underwriter. According to him, underpricing is the cost that the issuer has to pay in order to monitor the behaviour of the underwriter.

Welch et al. [2002] summarized all these theories related to information asymmetry saying that underpricing is positively related to the degree of asymmetric information: when asymmetric information problems are more or less null, underpricing disappears.

The second block of theories is not related to asymmetric information that can be solved in the first day of trading. Welch et al. [2002]; Hughes et al. [1992]; Tinic [1988] argued that underpricing is used by the issuing company in order to diminish legal liabilities. However, Drake et al. [1993] disagreed and they demonstrated that prosecuted IPOs have had higher underpricing: as a consequence underpricing does not protect firms against legal problems.

Finally, Boehmer et al. [2001]; Ellis et al. [2000]; Krigman et al. [1999] noticed that the greater is the underpricing level, the higher are the trading volumes in the aftermarket.

No one of the previous theories examines how the presence of institutional investors in the target company before the listing influences the underpricing. The model developed in this thesis analyses the issue.

2.2.3 Oversubscription

Oversubscription is the phenomenon that occurs when the demand exceeds the supply of shares: in the case of oversubscription, some investors will be rationed. It can be calculated as the ratio between the demand of shares and the share offer.

It is the global coordinator that decides the minimum quantity of shares allocated to retail investors and the maximum quantity of shares for some special classes of investors, like for example employees. The residual amount of shares is addressed to institutional investors (Cassia et al. [2004]). As a consequence, there could be oversubscription both for retail and institutional investors.

In the event of oversubscription, the global coordinator has the option to enlarge the offering number of shares (over-allotment option or greenshoe option) up to 15% more than the original number. Institutional investors can subscribe shares lent by some shareholders (this mechanism is called stock lending) for 30 days to the global

coordinator. This latter has also an option to buy shares at the offering price that has as deadline the end of the lending period. Therefore, within 30 days the global coordinator has to give back to shareholders' stocks that it does not have but on which it has a call option. Two different situations can occur. The first one is the case in which share price goes under the offering price: in this case the global coordinator buys shares on the market without exercise the call option. The second case befalls when share price grows above the offering price: this is the situation in which the global coordinator exercises the call option in order to buy shares and give back them to lenders.

The opposite of the oversubscription is the demand satisfaction: this measures the satisfaction about the allocation of shares for each class of investors (retail and institutional). It is the ratio between the number of shares allocated to a class of investors and the number of requested shares by that class. Bertoni et al. [2014] found out that the demand satisfaction of a class of investors is negatively related with the oversubscription faced by the other class of investors. Moreover, the demand satisfaction of retail investors is more sensitive to the oversubscription of institutional investors, than the opposite.

In the literature, there is no evidence that the presence of institutional investors in the company that is going to be listed can affect the oversubscription and the demand satisfaction. However, in this thesis, it will be evaluated this hypothesis.

2.2.4 Long run performance

The long run performance are those measures that monitor the trend of share price along time. The long run performance can be calculated in absolute terms or related to a certain benchmark; in this last case abnormal returns are calculated. The abnormal return is given by the difference between the expected return and the actual return of a stock. The Cumulative Abnormal Returns (CAR) is the sum of abnormal returns. Another indicator is the Buy-and-Hold Abnormal Return (BHAR) that is the geometric mean between the return of the stock and the return of the market. These indicators are used during the event study: it is the study of how a certain event can impact on the return of a certain stock, without considering external factors, like market conditions.

The overwhelming majority of studies is related to how long run performance are affected by the presence of venture capitalists inside the listed firm. The opinions are different and sometimes they are incompatible. P. Gompers et al. [1998] highlighted that venture capital backed IPOs significantly outperform before and significantly underperform after the venture capital exit. Brav et al. [1997], instead, attributed superior long run performance to VC backed IPOs in comparison to non-venture backed IPOs. This thesis is confirmed also by Krishnan et al. [2009] which added that more reputable VCs are able to obtain superior long run post-IPO performance and this result is also related to the fact that more reputable VCs are able to select better quality firms. Opposite point of view have Bradley et al. [2001] for which a loss in the share price at the end of the lock-up period is much more marked in the case of VC backed companies. Brau et al. [2003], instead, demonstrated that there are not differences between the long run performance of VC backed and not VC backed firms.

3 Goal and Hypothesis

The chapter is divided into two parts, in the first one we explain the reasons behind this study (Paragraph 3.1), and a second part in which we show the adopted research hypothesis, motivating and contextualizing them in the literature (Paragraph 3.2).

3.1 Reason for the research and Question

This research is done in order to better understand the impact of the institutional investors on Italian IPOs. We want to understand if the presence of some institutional investors as shareholders of the company that is going to be listed has some relevant impacts on the initial public offering, and in particular on the valuation, the underpricing, the oversubscription and the long run performance. In particular, we want to investigate the effects that some characteristics of the institutional investor can cause. Especially, we investigate how the age of the institutional investor, the equity market distance and the geographical distance between the target firm and the institutional investor may affect the different phases of the listing process.

Finally, there is a focus on a particular type of institutional investors: venture capitalist and private equity funds. We study their impact using the previous variables, but adding also the cultural distance between the fund and the target firm.

Our research work is proposed as a serious candidate to fill the gap in the international literature: beforehand, no author has studied the impact of institutional investors, as shareholders, on IPOs. An exception is the case of venture capitalist and private equity funds for which a lot of literature is present. For example, Barry et al. [1990] argued that thanks to the venture capitalists' monitoring role, VC-backed companies have lower underpricing.

Our thesis, therefore, is between two research branches: on one side there is the study of the phenomena related to IPOs and the performance of the company after the listing, and on the other side there is the study of the characteristics of all types of institutional investors.

This last part is more related to the institutional investors that become shareholders of the target firm following the listing process; to the contrary, we want to investigate how the characteristics of institutional investors already present in the target company before the listing may affect the success of the IPO.

3.2 Research hypothesis

3.2.1 Hypothesis 1: Institutional Investors

Starting from the research question that this work arises, we can deduce the first assumptions:

Hp 1.1

The presence of an institutional investor in the ownership of a company during its listing process generates a higher valuation made by the investment bank.

Hp 1.2

The presence of an institutional investor in the ownership of a company during its listing process generates a lower underpricing.

Hp 1.3

The presence of an institutional investor in the ownership of a company during its listing process has a positive impact on the oversubscription. This is mainly due to the fact that an institutional investor has, given its nature, a wide knowledge of other investors.

Hp 1.4

The presence of an institutional investor in the ownership of a company during its listing process has no impact on the long-run performance since the institutional investor has already left the target firm.

In the hypothesis for the long-run, we discuss also the particular case of PE/VC, which generates an impact on the performance of the firm during the long-run. These hypotheses come to the numerous literature regarding the positive influence of institutional investors in the ownership of a company. For example, Ting [2013] sustained that institutional ownership shows positive effects on performance. In the long run, instead, the effect of

the presence of an institutional investor vanishes because usually in the long run the institutional investor has already gone out from the company.

3.2.2 Hypothesis 2: Valuation

The main hypotheses related to the valuation phase are:

Hp 2.1

The age of an institutional investor, during the IPO, has a positive impact on the valuation: the oldest is the institutional investor, the higher is the valuation of the target company. This is true also for venture capitalists and private equity funds.

The age of the institutional investor can be used as a proxy of its reputation. The higher the reputation, the higher will be the valuation that analysts will give about the target firm.

Hp 2.2

If the geographical distance between the target firm and the institutional investor increases, there is a lower valuation of the listing firm. This is true also for venture capitalists and private equity funds.

There is a negative relationship between the geographical distance and the valuation of the target company. This is due to the fact that the monitoring capabilities of the institutional investor decrease and so asymmetric information problems arise. This fact is discounted by the investment bank in the valuation of the firm.

Hp 2.3

An institutional investor located in a country with a more developed equity market than the one of the target company has a positive impact on the valuation. This is true also for venture capitalists and private equity funds.

If the equity market of the country of the institutional investor is more advanced, this means that the institutional investor has the possibility to create a network of

acquaintances in the investment banking world, that permits to know which are the best ways to influence the analysts in the valuation process.

Hp 2.4

The cultural distance between a venture capitalist/private equity fund and the target firm has a negative impact on the valuation.

Clercq et al. [2005] noticed that the value added given by venture capitalists is a function of the openness of the target firm to accept the VC's advice. If the cultural distance increases, this becomes more difficult and so the beneficial effects of the fund diminish.

3.2.3 Hypothesis 3: Underpricing

For the underpricing we assume a series of hypotheses:

Hp 3.1

The age of the institutional investor at the moment of the IPO has an impact on the underpricing: the older is the institutional investor at the time of the IPO, the lower will be the underpricing. This is true also for venture capitalist and private equity funds.

An institutional investor at the moment of the IPO tries to obtain the highest profit from the exit from the investment. An older institutional investor has a higher power to influence the market due to its reputation. For these reasons, it can generate a lower underprice.

Hp 3.2

The geographical distance between the target firm and the institutional investor, which belongs to the ownership of the firm at the moment of listing, has a negative impact on the underpricing: the more is the distance, the higher will be the underpricing. This is true also for venture capitalists and private equity funds.

Hp 3.3

An institutional investor located in a country with a more developed equity market than the one of the target firm generates a lower underpricing. This is true also for venture capitalists and private equity funds.

This hypothesis is generated following the same argument of the 3.1. In this case, a fund located in a country with a more developed equity market has a wider connection with the possible investors and can influence them at its own vantage.

Hp 3.4

The higher is the cultural distance between the venture capitalist/private equity fund and the target firm, the lower is the underpricing.

All these hypotheses are related to the asymmetric information issue.

3.2.4 Hypothesis 4: Oversubscription

Hp 4.1

The presence of an older institutional investor in the ownership of the company that is going to be listed creates a higher demand for shares; as a consequence, the probability of having oversubscription is higher. This is true also for venture capitalists and private equity funds.

Once again, the age is a measure of reputation: if there is a high reputation there is more probability that the number of required shares will be greater than the number of offered shares. Another issue can be the connection of the institutional investor, in fact, if it is older it can have a wider connection with other institutional investors or also customers (retail investors).

Hp 4.2

Increasing the geographical distance between the institutional investor headquarter and the one of the target firm, there is a variation in the oversubscription. This is true also for venture capitalists and private equity funds.

Hp 4.3

An institutional investor located in a country with a more developed equity market than the one of the target firm generates a higher oversubscription. This is true also for venture capitalists and private equity funds.

If the institutional investor belongs to a country with a well-developed equity market, it is able to contact and attract more subscribers and so the probability to have oversubscription increases.

Hp 4.4

The cultural distance between the venture capital/private equity fund and the target firm has an impact on the oversubscription. In particular, the higher is the distance, the lower will be the oversubscription.

3.2.5 Hypothesis 5: Long run performance

The main hypothesis related to the impact on long run performance is:

Hp 5.1

The age of the institutional investor, the geographical and the equity market distance between the target firm and the institutional investor belongs to the ownership of the firm at the moment of the IPO have no influence on the long run performance of the listed firm.

Hp 5.2

The presence of one or more venture capitalists/private equity funds in the ownership of the target firm at the moment of the IPO has a positive impact on the long run performance of the target firm. In particular, the older is the VC/PE, the shorter is the geographical distance and the equity market distance and the cultural distance between the firm and the VC/PE, the better will be the effects on the long run performance of the target firm. This positive influence after a period of 3-5 years expires.

4 Methodology

This chapter contains the methodology used to test the hypotheses formulated in the previously. Univariate and multivariate analyses are explained in detail and there is a focus on how to understand if the regression is significant or not.

4.1 Linear regressions

In order to test all the hypothesis explained in chapter 3, we have used OLS (Ordinary Least Squares) models, which is a linear regression. These models are typically used in econometrics studies in order to find possible relations between two or more variables.

It is structured as follow:

$$y = \mu + X\beta + \varepsilon$$

$$X = [x_1 \quad x_2 \quad \cdots \quad x_n] \qquad \beta = \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_n \end{bmatrix}$$

where:

- y is the dependent variable or predicted variable; it is random and observable.
- X is the matrix of independent variables; they are random and observable.
- β is the vector of regression coefficients; they are not random and unobservable. Each β_k can be interpreted as the marginal effect of the independent variable (x_k) on the dependent one (y), considering also the values of the other independent variables (Vercellis [2006]).
- n represents the number of independent variables in the regression.
- μ is the intercept parameter; it is not random and unobservable.
- ε is the error of the model; it is random and unobservable.

The aim of OLS model is to find out the β that minimize the mean squared errors, solving the following optimization problem:

$$\min_{\beta}(y - X\beta)'(y - X\beta)$$

$$\beta^* = (X'X)^{-1}X'y$$

Seeing as how OLS coefficients are unbiased in a small and finite sample, the variables inserted in the regression can have also a distribution different from the formal one. This fact, therefore, permits to use also dummy variables that have a binomial distribution.

In our analyses, we used both univariate regressions (n=1) and multivariate regressions (n>1). In particular, to test the hypothesis 1 we adopted simple univariate regressions, instead all the other hypothesis was tested using multivariate analyses.

This is a list of all the dependent and independent variables that are included in the models. A more detailed explanation provided in the following chapter.

According to the hypotheses formulated before, the dependent variables used in our thesis work are:

- Valuation (OP/IV)
- Underpricing
- Oversubscription
- BHAR 1 year
- BHAR 3 years
- BHAR 5 years

The estimate of regression coefficients has been conducted using the following independent variables:

- Variables related to the institutional investors belong to the ownership structure of the listing company at the moment of the IPO:
    - Institutional investor's age
    - Geographical distance
    - Equity market distance
    - Cultural distance, subdivided into power distance index, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance index, long term orientation versus short term normative orientation, indulgence versus restraint

- Dummy variables whose value is 1 if a certain condition is verified, 0 in other cases:
  - Sector
  - Reputation
  - Privatization
  - Hot issue markets
- Variables related to the listing firm and the IPO process:
  - Tobin's Q
  - Sales
  - ΔSales
  - Total sales
  - Revision
  - Participation
  - Offering
  - IPO scaling
  - Firm age
  - Dilution
  - Concentration
  - Assets
  - Allocation of shares to institutional investors
  - Allocation of shares to retail investors
- Variables related to the market conditions at the moment of the IPO:
  - Volatility
  - Market

4.2 Goodness of regression and statistical significance

In order to verify the goodness of the model, we used R^2 indicators. R^2 is called coefficient of determination and it represents the portion of total variability justified by the diversity of input levels (Ross [2003]). It is calculated as follow:

$$R^2 = \frac{RSS_{reg}}{SSE}$$

where RSS_{reg} (Residual Sum of Squares) is the variance explained by the model, and SSE (Sum of Squared Errors of prediction) is the total variance. R^2 has always values between 0 and 1; if it is near to 1, this means that the majority of the variance is explained by the dispersion of input data.

On the other hand, to assess the statistical significance of the regression coefficients we adopted the p-value. The outputs of this test have to be used in order to accept or refuse the null hypothesis about β_k (β_k=0). If the null hypothesis is accepted, this means that there is no correlation between the dependent variable x_k and the independent variable y.

In each one of the regression, the tests were conducted making heteroscedasticity correction.

The software utilized for the regressions is *gretl 2016a*.

4.3 Multicollinearity

In a multivariate regression, it is required that independent variables are not linear correlated. In the case of correlation between two or more independent variables, there is the problem of multicollinearity. If there is this phenomenon, the estimates of parameters are inaccurate and the model becomes not appropriate.

Usually, if there is multicollinearity the coefficient R2 has high values, close to 1, while regression coefficients are not significantly different from zero. This issue can be solved selecting a subset of variables that are not collinear, or eliminating variables that are linear correlated with others.

To verify the presence of multicollinearity correlation coefficients between couples of independent variables are calculated. In this way, a variance-covariance matrix is created. If the correlation value overtakes a certain threshold, this means there is a linear correlation between variables.

In order to prove the presence of multicollinearity between more than two independent variables, the VIF (Variance Inflation Factor) has to be calculated. For each x_k, VIF is defined as:

$$VIF_k = \frac{1}{1 - R_j^2}$$

where R_j^2 is the coefficient of determination for the regression model that explains the independent variable x_k. VIF_k higher than 5 indicates the presence of multicollinearity.

5 Sample and characteristics

In this chapter, it is described the research methodology and data selection. Then, there is an analysis of the proper characteristics of the sample.

5.1 Data

In our analysis we used mainly two samples:

- Performance of Italian IPOs in the years between 1997 and 2015
- Pre-IPO shareholders of the Italian firms listed in the years between 1997 and 2015

5.1.1 Performance of Italian IPOs in the years between 1997 and 2015

In this database are collected data related to the performance of initial public offering processes regarding Italian listed firms between 1997 and 2015.

In particular, thanks to this information (that are explained in detail in Appendix) it was possible to calculate some essential parameters for our analysis. Specifically, we identified a proxy for the valuation of the company made by investment banks, the underpricing registered on the first listing day, the oversubscription of offered shares and the long run performance of the listed firms one, three and five years after the IPO. All these variables represent the independent variables in our analysis and will be better clarified in the Paragraph 4.2.1.

5.1.2 Shareholders before the IPO of the firms listed in the years 1997-2015

The management engineering department of Politecnico di Milano shared with us a database with all the shareholders before/during the IPO for a sample of Italian firms. Our first activity on this database was to update all the data, adding missing information.

Then we add some characteristics of interest for our analysis:

- The age of each institutional investor at the moment of the IPO. To collect these data, we made a research on websites in order to find out the foundation year of each corporation.

- The geographical distance between the headquarter of the institutional investor and the headquarter of the target company. To do this we gather information about the cities where headquarters of institutional investors and firms are located, leading a research on websites. Afterward, we calculated both as the crow flies distance and the distance road. Finally, we decided to use only the first for our analysis because it is a more objective measure.
- The equity market distance between the country of institutional investors and the country of the firm. We have already collected information about the location of different headquarters during the evaluation of geographical distance; the equity market distance is calculated as the difference between the market capitalization (share price times the number of shares outstanding) of the country of the target company and the market capitalization of the country of the institutional investor. The data about market capitalization comes from "The world bank group" website; it consists of five organizations (The International Bank for Reconstruction and Development, The International Development Association, The International Finance Corporation, The Multilateral Investment Guarantee Agency, The International Centre for Settlement of Investment Disputes) that provide financial and technical assistance to developing countries around the world.
- The cultural distance: we collected scores of institutional investors' countries and listing firms' countries on www.geert-hofstede.com website and we calculated the differences in the six dimensions of the cultural distance (see Paragraph 4.2.2).

5.2 Regression variables

Here, all the variables used in the analyses are explained in detail.

5.2.1 Independent Variables

The independent variables employed in the analysis are the valuation, the underpricing, the oversubscription and the long run, divided in 1, 3 and 5 years after the listing.

	Sample size	Mean	Min	Max	Median	Standard deviation	Kurtosis	Skew
Valuation	195	6.076	0.018	30	1.997	8.777	2.335	1,908
Underpricing	220	0.115	-0.2	5.326	0.036	0.414	113.32	9,651
Oversubscription	220	6.421	0.495	88.263	3.412	9.823	32.216	4.936
ln(oversubscription)	220	1.291	-0.702	4.480	1.227	1.003	-0.165	0.486
Long Run 1year	195	0.033	-0.976	4.574	-0.161	0.756	10.246	2.74
Long Run 3years	195	-0.182	-1.627	3.021	-0.347	0.636	5.219	1,800
Long Run 5years	195	-0.367	-1.873	2.940	-0.523	0.734	4.958	1,659

Table 4 - Independent variables

In the following paragraphs, there are explanations about each single independent variable and how we have calculated them.

Valuation

As proxy for the valuation of the company we used OP/IV, calculated as:

$$valuation \simeq \frac{Offer\ Price_{\ Middle}}{Intrinsic\ Value}$$

We can notice that on average there is overvaluation. There is approximately the 25% of the cases in which there is an undervaluation of the firm (OP/IV<1). This cause a loss for the company: the shares will be sold at a price lower than their intrinsic value. The distribution has a Kurtosis lower than 3, so it has fatter tails in respect to a normal distribution, and a positive Skew, so it is an asymmetric distribution with the right tail fatter.

Underpricing

$$Underpricing = \frac{Return\ of\ the\ first\ day}{Offer\ Price}$$

The underpricing on average is positive (mean equal to 0.11537) that means that there is an increase in the price of shares during the first listing day. However, there are approximately the 35% of negative values: the minimum is -0.2. The high value for the Kurtosis (113.32) suggests that there is a distribution with very narrow tails. The high value of the Skew (9.6518), instead, is probably due to some sporadic values that are present in the database. Approximately the 76% of the observations are around 0, so with a lower variation of the price during the first listing day.

Oversubscription and ln(oversubscription)

$$oversubscription = \frac{Shares\ required}{Shares\ issued}$$

As the mean suggests, usually there is a higher demand for shares in respect to the offered one. Only 5% of the observations has a value lower than 1 that means that the demand for shares is lower than the offer. If we consider the logarithm of the oversubscription, it can be noticed that the Skew is close to 0, so there is a symmetry similar to the one of the normal distribution. However, there is a very low value for the Kurtosis that suggests a

not normal distribution due to the fatter tails. For the following analysis, we decided to adopt the natural logarithm of the oversubscription.

Long Run

We have chosen to analyse three different long run periods: 1 year, 3 years and 5 years after the listing. As proxy for the performance of the firm in the long run we took the BHAR (Buy-And-Hold Abnormal Return), calculated as follow:

$$BHAR = \left[\prod_{i=1}^{\min(T,delist)} (1 + R_{i,t})\right] - \left[\prod_{i=1}^{\min(T,delist)} (1 + R_{Market,t})\right]$$

With this measure, it is removed the component of the firm return coming from the market effect. We can notice that the average BHAR decreases along time. This result is confirmed also by the literature (Loughran et al. [1995]). Although in the first year the BHAR has a positive mean (0.033484), only 38% of the firms exhibits a positive value. The BHAR at one year has an asymmetric distribution with narrow tails, but increasing the time horizon to 3 and then to 5 years, it reaches a distribution more similar to the normal one.

Institutional investors backed firms (I.I. backed)

To identify if in the ownership of a company at the moment of the listing there are one or more institutional investors, we used a dummy variable. It is equal to 1 if at the moment of the IPO there is at least one institutional investor as shareholder of the issuing firm, otherwise, it is equal to 0. There are 220 observations and for approximately the 42% of them the dummy variable is 1, so there is an institutional investor. We used this variable to do a first comparison between firms with an institutional investor and firms without an institutional investor, in order to understand the general impact that this figure can have on the different phases of the listing process.

5.2.2 Dependent Variables

We analyzed a series of variables related to the institutional investor that could affect the different phases of the listing process:

	Sample size	Mean	Min	Max	Median	Standard Deviation	Kurtosis	Skew
Institutional investor age	159	52	1	542	11	98	12.5	3.4
Equity market distance	166	-5.463	-73	26	0	17	6.26	-2.36
Geographical distance	152	765.4	0	9550	244	1681	15.224	3.89
Cultural distance	152	-2.198	-13.5	10.83	-2.83	5.165	2.429	-0.253

Table 5 - Dependent variables

Institutional investor's age

This variable represents the age of the institutional investor at the moment of the IPO. It is calculated as the difference between the year of the IPO and the foundation year of the institutional investor's corporation. The age of the institutional investor is strongly related to the reputation because an older institutional investor usually is more known and so it has a higher reputation than a younger one. This fact can generate a different impact on the four independent variables (valuation, underpricing, oversubscription and long run performance). The distribution of this variable can be approximated by a Gamma distribution. We can notice that the mean is high (52 years). However, this can be caused by some sporadic values; in fact, if we isolate these values the distribution becomes more similar to a normal one, the Skew drops to 1.5, Kurtosis goes to 2.4 and the mean drops to 35 years.

Equity market distance

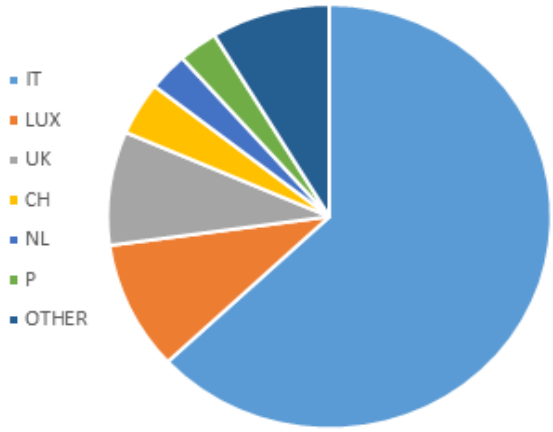

Figure 4 - Countries of institutional investors

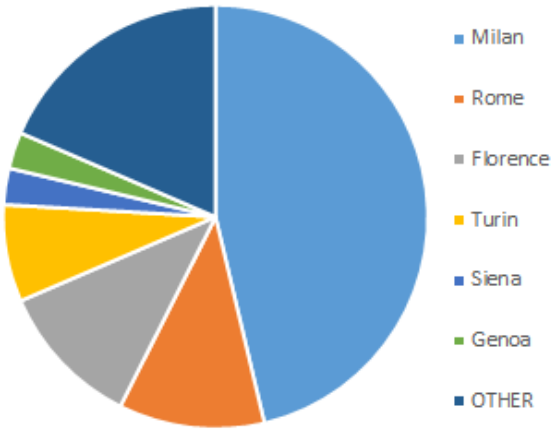

Figure 3 - Italian cities of institutional investors

The equity market distance is calculated as the difference between the market capitalization (share price times the number of shares outstanding) of the country of the target company and the market capitalization of the country of the institutional investor. In the left pie chart, it is represented the distribution of countries of institutional investors. In the other graph, instead, there is the distribution of the location of Italian institutional investors in the different cities. The equity market distance variable is relevant for our analysis because we think that a fund located in a country with a more sophisticated equity market can help the target firm to obtain better results during the IPO. An interesting fact is that the 66% of the institutional investors, which are present in a firm at the moment of the IPO, is located in Italy, 46% of them are in Milan. It can be also noticed that the majority of the foreign funds comes from a country with a less developed equity market, in fact, the Skew is negative.

Geographical distance

We considered the crow flies distance between the headquarter of the fund and the one of the firm. We obtained a relatively small distance, as average: this is mainly due to the fact that the majority of the institutional investors is Italian. The distribution is more similar to a Gamma one, in fact, we have a reduction of the frequency with an increase of the

values. Also, in this case, there are problems related to sporadic values: there are some funds from USA, Panama, and Japan that cause a distortion of the data.

Cultural distance

The culture is defined as "the accumulation of shared meaning, rituals, norms, and traditions among members of a society, it is the collective programming of the mind that distinguishes members of one society from another" (Solomon [2012]; Crotts [2004]). The cultural distance between the institutional investor and the target company could have one or more impacts on the different phases of the IPO process. In particular, the cultural distance is explained by Hofstede [2001] as the degree to which the rules and values shared and approved in one society diverge from those of another society. Hofstede (Hofstede [1980]) made a research to study the national culture and the differences among different nations; he conducted an empirical analysis on a sample of 88.000 workers of IBM coming from 72 different countries, speaking 20 different languages. As result, he identified four different dimensions among which national cultures are different; he assigned different scores to different dimensions for each country:

1) Power distance index (PDI): it represents a measure of how much organization's members with less power accept or expect that the power is subdivided in an unequal way. A low score means that the members want to be considered all the same and they foresee democratic relations. A high value, instead, is equivalent to a society in which everybody is aware and accept the presence of hierarchies.
2) Individualism versus collectivism (IDV): it is a measure of the integration of individuals inside groups. A high value corresponds to individualism, and so a society in which individuals take care only of themselves; on the contrary, collectivism coincide with low values and it means that the aims of a group are more important than the ones of the individual.
3) Masculinity versus femininity (MAS): this dimension refers to the relevance that a society gives to masculinity values (e.g. ambition, materialism, heroism, power, assertiveness) or to femininity values (e.g. emphasis on human relations, intuition, modesty, cooperation).

4) Uncertainty avoidance index (UAI): it indicates the lenience of the country against the uncertainty. High scores are given to societies that want to avoid ambiguity and so they provide strict rules and norms.

Bond [1992], supported by Hofstede, studied Chinese population and came out with a fifth dimension:

5) Long term orientation versus short term normative orientation (LTO): the long term orientation (high values) characterizes societies that look at the future and spend time in giving a modern education. On the contrary, low scores refer to countries in which the respect of traditions is very important.

The researches made by Minkov et al. [2010] on data of 93 countries generated a sixth dimension (Hofstede et al. [2010]):

6) Indulgence versus restraint (IND): it measures the capability of a society to satisfy desires and needs of members. The preponderance of the restraint part underlines the existence of strict laws that stifle the needs of individuals.

From www.geert-hofstede.com website we were able to collect scores of different countries of which listing firms and institutional investors belong to.

	PDI	IDV	MAS	UAI	LTO	IND
Italy	50	76	70	75	61	30
Belgium	65	75	54	94	82	57
Luxembourg	40	60	50	70	64	56
Portugal	63	27	31	99	28	33
Switzerland	34	68	70	58	74	66
United Kingdom	35	89	66	35	51	69
United States	40	91	62	46	26	68

Figure 5 - Scores of national cultures

From a complete analysis, it can be noticed that there are high values related to power distance in Latin, Asian and African countries, while individualism is highlighted in

developed and Occidental countries. In Nordic countries, there is a predominance of femininity dimension, and uncertainty avoidance is higher in Latin and German countries.

A little literature investigates the impact of cultural distance on the listing process. Especially, Grinblatt et al. [2001] underlined that investors prefer firms with the same culture. To go more in deep, Costa et al. [2013] found out the significant relation between underpricing and power distance index, uncertainty avoidance index and long term orientation. These results are partially confirmed by Cai et al. [2015] that analysed the relation between US investors and foreign companies that were going to be listed; the results were that a greater cultural distance increases underpricing costs and there is a positive relation between underpricing and two dimensions of the cultural distance: uncertainty avoidance index and individualism versus collectivism.

5.2.3 Control variables

ASII/ASRI (Allocation of Shares to Institutional Investors/Retail Investors)

ASII (Allocation of Shares to Institutional Investors) is the ratio between the shares designed to institutional investors and the total number of shares offered in the IPO. ASRI (Allocation of Shares to Retail Investors), instead, is the ratio between the shares designed to retail investors and the total number of shares offered in the IPO. These values have to be communicated by the underwriter in the prospectus. Institutional investors are better informed and more important clients than the retail investors. In our sample, the 73% of the shares are targeted to institutional investors. This result is confirmed also by Aggarwal et al. [2002]: in their study three-quarter of shares were allocated to institutional investors. Moreover, they found out that “institutional allocation is significantly lower in lower-end issues that are less likely to appreciate in the aftermarket”. This result is proved also by Benveniste et al. [1989]; Cornelli et al. [2001].

Assets

This variable is the natural logarithm of the value of assets of a firm at the moment of the IPO. It is relevant for the analysis because the size of a firm can modify the results of an IPO. For example, Loughran et al. [1994] demonstrated a negative connection between the firm size and short-term IPO returns. As mentioned earlier, Italian firms that begin the IPO are big because the listing process is expensive.

Concentration

It is calculated as the logarithm of Herfindahl index on the ownership structure of the firm. For what concern the index, in the sample the average value is 5700, this means that the typical structure has a concentrated ownership before the IPO. In the 26% of cases, there is a value higher than 9000 that means a structure highly concentrated. Instead, in the 13% of cases, the value is lower than 2000 that represents a dispersed ownership structure.

Dilution

The dilution is calculated in this way:

$$\frac{New\ Emission\ Shares}{Total\ Pre-IPO\ Shares}$$

If it is equal to 0 it means that there is no issue of new shares, so the offer is fully of already existing shares. Habib et al. [2001] demonstrated that owners tend to reduce underpricing when the magnitude of the dilution is higher.

Firm age

This variable represents the age of the issuing firm at the moment of the IPO. It is calculated as the logarithm of the age plus one. Pagano, Panetta, et al. [1998] demonstrated that the probability to go public is positively correlated with the age of the target firm. T. J. Chemmanur et al. [1999] explained that adverse selection problem is more accentuated in small and young companies and this represents an obstacle for the

listing. In Italy the companies that begin the IPO process usually are older in respect to other countries. In our sample, there is an average age of 40.5 years.

HIM (Hot Issue Markets)

This variable is a dummy and it is equal to 1 if the IPO was done during a hot issue market (1999-2000, 2006-2007 or 2014-2015), 0 in other cases. It is relevant because in hot issue market periods, as mentioned earlier, there is firstly a higher probability of underpricing; Günther et al. [2006] found out extreme levels of underpricing during hot issue markets in Germany. Eckbo et al. [2005], instead, emphasized that price variations during the first listing day are more accentuated during hot issue periods.

IPO scaling

$$\frac{Expected\ shares\ in\ the\ prospectus}{Shares\ really\ placed}$$

It is the ratio between the total number of shares offered, net of the green shoe option and the total number of shares effectively allotted (Levis et al. [2013]). This control variable measures the success of the IPO. In fact, if this value is higher than 1 it means that the IPO achieved good results. In our sample, only in the 5.5% of the cases, there is a value higher than 1. In these cases, the firm can use the green shoe option and increase the number of shares offered. The average value is 0.97, with a minimum of 0.75.

Market

It represents the performance of the FTSE MIB (MIBTEL) market index during the two weeks before the decision of the offering price.

Offering

The offering is the natural logarithm of the expected offering dimension. It is calculated as follow:

$$\ln(\ shares * mid\ price\ )$$

This variable gives a measure of the expected dimension of the offering.

Participation

$$\frac{Secondary\ Shares}{pre-IPO\ Shares}$$

This variable is the ratio between the number of secondary shares in the IPO and the total number of shares pre-IPO.

Privatization

The privatization is a dummy variable. It is equal to 1 if the IPO is a privatization, otherwise, it is equal to 0. In our sample, there are 21 privatizations on 208 observations. A lot of literature, for example, Ljungqvist et al. [2000]; Su et al. [1999]; Menyah et al. [1996], demonstrated that privatization IPOs show more underpricing than other initial public offerings. Moreover, Choi et al. [2010] argued that privatization IPOs significantly outperform stock markets in the long run.

Reputation

The underwriter reputation is a dummy variable. It is equal to 1 if the lead underwriter is one of the five best Italian investment banks or an American one, otherwise, it is 0. We observed that the 59% of the firm selects one of these best lead-underwriters. This has an impact especially during the placement; in fact, if a firm chooses one of the major investment banks can reach a larger number of investors. This variable influences in different ways the listing process. For instance, Michaely et al. [1994]; Carter et al. [1990] suggested a negative relation between underwriter reputation and underpricing; however, this relation was inverted by the studies of Loughran et al. [2004]; Beatty et al. [1996]. Regarding long run performance, instead, Dong et al. [2011] explained that higher underwriter quality predicts better long run performance.

Revision

This control variable is calculated as following:

$$\frac{(price_{offer} - price_{mid})}{(price_{max} - price_{min})}$$

If it is equal to 0 it means that the offer price is equal to the mid-price. Instead, if its absolute value is higher than 0.5 it means that the offer price is out of the valuation estimation: only in 2 cases over 194 in the sample, there is this situation. The average is approximately 0: this suggests that the firms tend to stay close to the mid-price when they set the offer price.

Sales / ΔSales/Total sales

The variable "sales" represents the natural logarithm of the revenues of the target firm. ΔSales, instead, is the difference between the revenues at year t and the revenues at year (t-1). Finally, "total sales" represents the revenues of the listing company.

Sector

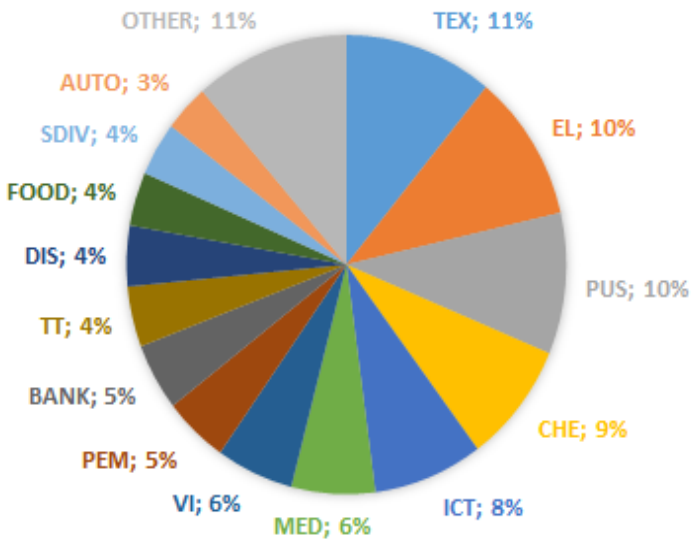

Figure 6 - Sectors on which institutional investors belong to

Automobile	AUTO	3%
Banking	BANK	5%
Chemical	CHE	9%
Distribution	DIS	4%
Electronic-Electromechanical	EL	10%
Food	FOOD	4%
Information and communications technology	ICT	8%
Media	MED	6%
Other	OTHER	11%
Plants and machineries	PEM	5%
Public utility services	PUS	10%
Different services	SDIV	4%
Textile	TEX	11%
Tourism transport	TT	4%
Various industrial	VI	6%

Table 6 – Sectors on which institutional investors belong to and relative percentage

In this graph, there are the different sectors and the relative percentages of which the Italian firms that have done an IPO in the years 1997-2015 belong to. The sector with the higher number of IPO is the Textile (TEX) that is composed mainly of firms operating in

the fashion, with luxury brands of the Made in Italy, like Tod's (2000), Salvatore Ferragamo (2011), Brunello Cuccinelli (2012) and recently Moncler (2013). Another predominant sector is the Electronic/Electromechanical (EL) with brands like Beghelli (1998), De Longhi (2001) and Prysmian (2007). Other sectors with a high number of IPOs are Public Utility Service (PUS), with the IPO of Enel (1999) that was the biggest IPO, and Chemical (CHE).

Also, the sector is an important parameter for determining the success of an IPO. For example, Gleason et al. [2008] demonstrated that the aftermarket risk is higher for companies belong to the technological sector. Moreover, J. Kim et al. [2008] argued that considering low-tech firms, that consequently belongs to more traditional industries, underpricing is lower for firms with high leverage, while it is greater for firms with little debt in their capital structure; the relation between leverage and underpricing reverses for high-tech IPOs.

In the analysis we have grouped the different sectors in three macro-areas:

1. Industrial sector (e.g. food, automobile, chemical)
2. Service industry (e.g. tourism and transport, distribution, media)
3. Financial services (e.g. banking)

For each of that, we have created a dummy in the analysis.

Tobin's Q

The Tobin's Q is calculated as follow:

$$\frac{Market\ value\ of\ Assets}{Book\ value\ of\ Assets}$$

If it is higher than 1, the company is evaluated more on the market than the real value in the balance sheet. In our sample, the average value is equal to 8.45, but if we exclude the sporadic values we reach 2.7. In the 50% of the cases, the value is between 1.4 and 2.8. Only in 2 cases over 194, there is Tobin's Q lower than 1. The distribution is similar to a Gamma Distribution.

Volatility

It measures the volatility of the market two weeks before the decision of the offering price. Patel [2013] demonstrated that higher market volatility can make difficult to set the listing pricing. Furthermore, Beaulieu et al. [2015] underlined that periods with high volatility are followed by a small number of initial public offerings. This last result confirms the previous studies made by Blum [2011].

6 Empirical results

We divide this paragraph according to the set of hypothesis generated in Chapter 3. Before showing the analysis, we have to do a premise with respect to the sample actually used for the purpose: only a portion of the sample considered in Chapter 5, is used. This due to the lack of some data. We decided to focus, for this part, only on the firms of which we had all the information.

6.1 Models for Hp 1

In order to test the first hypothesis, we applied univariate analyses. For this reason, we divided the sample into two sub-samples: in the first there are all the observations of the dependent variables associated with a value of the independent variable "I.I. backed" equal to 1; in the other sub-sample there are the observations related to the value 0 of the variable "I.I. backed".

The aim is to evaluate the impact and the effects on the IPO process of the institutional investors participating in the company before the listing. To do this, we applied two different tests:

1. Wilcoxon test: it is a non-parametric test whose aim is to identify a possible difference in the median between the two sub-samples. It is a powerful instrument because it does not require any specific distribution of the data.
2. T-test: it is a parametric test, whose aim is to evaluate the meaningfulness of the difference, as mean, between the two sub-samples. Due to the fact that this test is parametric, it assumes a Normal distribution of the involved variables. However, as we explained before, not all the variables employed in our study follow a Gaussian distribution. In spite of this constraint, this test is considered more reliable than the non-parametric tests in rejecting the wrong hypotheses.

6.1.1 Impact of institutional investors

The first analyses are related to the valuation that has been approximated with the variable OP/IV. We want to verify the hypothesis 1.1 of this thesis.

Valuation	Sample size	Mean	Standard Error	Standard Deviation	t	z
I.I. backed = 1	81	6.2551	0.9714	8.7427		
I.I. backed = 0	112	6.0066	0.8414	8.9053		
Total	193	6.1109	0.6345	8.8154		
					0.19276	-0.3414

Table 7 – Valuation of Italian IPO

Looking at table 7, it can be noticed that the mean of the two sub-samples is different. The sub-sample that represents the group of firms with an institutional investor in the ownership structure before the IPO has a higher mean. This means that this kind of firms has a better valuation respect to the other sub-sample. These results support our first hypothesis.

Considering the standard deviation, it can be observed that the valuation of firms with institutional investors has a more concentrated distribution.

The t-test and the Wilcoxon test do not show any meaningfulness, so we cannot say if the two sub-samples are statistically different.

The second analyses are related to the underpricing variable in order to test the hypothesis 1.2.

Underpricing	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	94	0.0917	0.0282	0.2543		
I.I.backed = 0	124	0.1352	0.0454	0.5062		
Total	218	0.1164	0.0282	0.4165		
					-0.7641	-0.8954

Table 8 – Underpricing of Italian IPO

From the analyses reported in table 8, it can be noticed that the firms with an institutional investor in the ownership structure before the IPO have a very low mean in respect to the other firms.

Another relevant factor is the lower standard deviation that indicates a more concentrated distribution of values. These results confirm our hypothesis about the fact that an institutional investor tries to extract the higher possible value from an IPO. For this reason, the institutional investor tries to reduce the underpricing.

The p-values of the t-test and of the Wilcoxon test are comprised between 0.1 and 0.2.

Shown below there are the results used to test the hypothesis 1.3 related to the oversubscription. We decided to examine the oversubscription related to all the types of investors; later, we divided the investigation into the oversubscription for retail investors and institutional investors.

Oversubscription-total	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	94	5.5206	0.6679	6.4764		
I.I.backed = 0	124	7.1674	1.0574	11.7753		
Total	218	6.4573	0.6678	9.8609		
					-1.2225	-0.6634

Table 9 – Oversubscription of Italian IPO considering all the investors

The mean oversubscription value of the firms with an institutional investor is lower than the one of the other sub-sample. This result suggests rejecting our hypothesis that an institutional investor generates a higher oversubscription.

The standard deviation, also in this case, is lower for the first sub-sample. The p-value of the t-test is 0.2 instead the one of the Wilcoxon test is 0.5. These results recommend that there is a weak statistical difference between the two sub-samples, and, once again, this disagrees with our hypothesis.

These are the results of oversubscription for retail investors:

Oversubscription - Retail	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	89	7.0404	1.1991	11.3129		
I.I.backed = 0	128	10.6398	2.9153	32.9828		
Total	217	9.1636	1.7895	26.361		
					0.9892	-0.3835

Table 10 - Oversubscription of Italian IPO considering only retail investors

Also in the case of overvaluation for retail investors, there is a lower mean for the first sub-sample (the one with the dummy variable equal to 1). However, for the firms with an institutional investor in the ownership before the IPO the standard deviation is very low with respect to the other firms.

The p-value for the Wilcoxon test is 0.35, which suggests that the two sub-samples are not statistically different, and for the t-test is 0.15. So there is a weak statistical difference.

Finally, the results of oversubscription for institutional investors are reported in the following table:

Oversubscription – Institutional investors	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	90	6.36	0.9188	8.7167		
I.I.backed = 0	128	6.58	0.925	10.4653		
Total	218	6.4896	0.661	9.7608		
					0.1639	0.5212

Table 11 - Oversubscription of Italian IPO considering only institutional investors

Considering the oversubscription for institutional investors, there is a similar mean between the two sub-samples. On the contrary, like in the previous cases, the standard deviation is higher for the first sub-sample.

The Wilcoxon test and t-test do not show any meaningfulness, so we cannot say if the two samples are statistically different.

The last univariate analyses are related to the long run performance of the firms. The study is divided into three periods: 1 year, 3 years and 5 years after the listing date.

Long-run 1 year	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	81	-0.0293	0.0778	0.7009		
I.I.backed = 0	112	0.0463	0.0633	0.6701		
Total	193	0.0145	0.0491	0.6824		
					-0.7593	-1.1045

Table 12 – Long-run performance of firms after 1 year from the IPO

Considering the long run performance 1 year after the listing, it can be noticed that the mean for the first sub-sample is negative. This means that the firms with an institutional investor perform worse than the one without this figure.

Another relevant aspect is that, considering all the samples, there is on average a positive return during the first year. Conversely of all the other cases, for the long run 1 year there is a standard deviation higher for the first sub-sample. These results reject our hypothesis that between the two sub-samples there are no differences in the long run performance after the first listing year.

Here, there are the results considering the performance three years after the listing:

Long-run 3 years	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	81	-0.1797	0.0736	0.6627		
I.I.backed = 0	112	-0.1799	0.0589	0.6239		
Total	193	-0.1798	0.0459	0.6388		
					-0.0017	-0.05352

Table 13 - Long-run performance of firms after 3 years from the IPO

After three years from the IPO, the average performance of the two sub-samples is approximately the same between the two samples of analysis. A relevant fact is that the mean is negative for both. Also the standard deviations are very similar each other.

In this case, the results confirm our hypothesis that there is no difference among the sub-sample after three years from the time of IPO. The t-test and Wilcoxon test do not show any meaningfulness, so we cannot say if the two sub-samples are statistically different.

Finally, in the following table there are the outcomes of the analyses five years after the IPO:

Long-run 5 years	Sample Size	Mean	Standard Error	Standard Deviation	t	z
I.I.backed = 1	81	-0.3691	0.0901	0.8775		
I.I.backed = 0	112	-0.3535	0.0636	0.6731		
Total	193	-0.3601	0.0527	0.7324		
					-0.1455	-0.24281

Table 14 - Long-run performance of firms after 5 years from the IPO

Also in this case like in the previous one, there is not a significant difference in the mean of the two sub-samples. Instead, we can notice that the standard deviation of the first sub-sample is higher than the other one. These results confirm our hypothesis of no difference between the two sub-samples.

The t-test and Wilcoxon test do not show any meaningfulness, so we cannot say if the two sub-samples are statistically different.

6.2 Models for Hp 2

In this second chapter, there are all the analyses conducted in order to understand the impact of different characteristics of institutional investors, belong to the ownership of the target company before the listing, on the valuation process.

For each variable, we have made two different regressions changing the control variables, so as to make the results more solid. For each regression, they are disclosed the value of the regression coefficient, the standard error and the p-value for each independent variable.

Each one of the hypothesis is tested firstly using all the companies that have an institutional investor in the ownership structure at the listing time; after, we have gone more in deep and we have focused only on firms with venture capitalist and private equity funds. The tables with the first rectangle on the left coloured in grey are referred to the analyses related to all types of institutional investors; on the contrary, tables with the rectangle coloured in yellow are related to results about venture capitalists and private equity funds. Finally, in each table, the light blue line is referred to the independent variable on which we want to focus the attention.

Hypothesis 2.1

The first variable whose impact we want to evaluate is the age of the institutional investor. In the following table, there are the results of the two regressions: the first one with seven control variables and the second one obtained eliminating two control variables.

Valuation-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	26.3277	10.7272	0.0155**	27.7169	9.96167	0.0062***
Institutional investor age	0.00988216	0.00760975	0.1964	0.00990811	0.00756466	0.1926
Assets	−41.3907	41.8017	0.3240	−42.843	39.3217	0.2780
Firm age	−109.737	91.182	0.2310	−141.523	83.8462	0.0939*
Privatization	−3.59422	2.60656	0.1704	−2.6649	2.32393	0.2536
Dilution	5.06911	2.65953	0.0589*	6.14614	2.44616	0.0132**
ASII	−15.7311	8.79309	0.0760*	−15.004	8.73261	0.0882*
Dummy sector 1	0.503511	2.58706	0.8460			
Dummy sector 2	2.24675	2.65757	0.3995			
R^2	0.226578			0.227878		
P-value (F)	0.000013			0.000053		

Table 15 - Relation between valuation and age of institutional investor

From the analysis of the results, we can notice that the **hypothesis 2.1 is not verified**, neither for the model with fewer control variables nor for the one with more control variables. There is a regression coefficient for the institutional investor age variable equal to approximately 0.01 for both the models, which suggests confirming the hypothesis. However, the high p-value suggests us that the correlation between the valuation of a firm and the age of the institutional investor in the ownership structure, at the moment of the IPO, is very weak. For this reason, we cannot confirm the hypothesis made previously. The fact that for both the models we obtain a similar coefficient with a similar p-value, suggests us that the analysis is robust.

Now, the focus is on firms that have a specific type of institutional investors: venture capitalists or private equity funds.

VC/PE Valuation-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−11.8259	16.2735	0.4739	−16,0791	18,1035	0,3829
VC/PE age	0.0150007	0.0133555	0.2716	0,015478	0,0135586	0,2645
Privatization	4.11024	4.05859	0.3205	4,37041	4,13773	0,3010
Firm age	−391.313	175.854	0.0350**	−366,61	183,396	0,0566*
Assets	133.286	109.11	0.2328	97,511	127,175	0,4504
Dilution	4.81962	2.26718	0.0432**	4,40953	2,40759	0,0790*
Reputation	−2.4378	2.0305	0.2407	−2,80996	2,15883	0,2049
Dummy sector 1	4.19189	2.89367	0.5204	4,26337	2,93473	0,1587
Dummy sector 2	−1.83412	2.81522	0.5204	−1,74099	2,85724	0,5478
Offering				56,5471	99,3501	0,5743
R^2	0.428819			0,436126		
P-value (F)	0.040765			0,063450		

Table 16 - Relation between valuation and age of VC/PE

We can notice that the value of the constant increases, this means that the age of this kind of institutional investors plays a more relevant role in the valuation. Nevertheless, the p-value is still high. For this reason, we have to **reject the hypothesis 2.1** also for the venture capitalists and private equity funds.

Hypothesis 2.2

The following analyses are related to the relation between the valuation and the geographical distance that exists among the target firm and the institutional investor.

Valuation-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	23.649	11.7913	0.0472**	10.4333	6.07532	0.0885*
Geographical distance	−0.00091091	0.000439021	0.0402**	−0.000787808	0.000431553	0.0704*
Dilution	4.57236	2.65163	0.0873*	5.54993	2.41536	0.0233**
Assets	−13.9878	41.8816	0.7390	−4.48953	38.536	0.9074
Firm age	−173.25	87.4389	0.0499**	−207.215	81.9507	0.0127**
Privatization	−5.75218	2.8185	0.0435**	−3.5365	2.25957	0.1201
Dummy sector 1	0.467501	2.90445	0.8724			
Dummy sector 2	2.0573	2.80121	0.4641			
Reputation	2.44239	1.75945	0.1677			
HIM	3.66042	1.5969	0.0237**	4.46944	1.5064	0.0036***
ASII	−18.6357	9.77751	0.0591*			
R^2	0.318129			0.289379		
P-value (F)	1.09*e^-06			1.58*e^-07		

Table 17 - Relation between valuation and geographical distance among firm and institutional investor

We can notice that exists a relation between valuation and geographical distance. The coefficient of the variable "Geographical distance" is negative, this means that increasing the distance there is a reduction of the valuation of the firm. The impact seems low, but it has to be considered that the distances are long (max 9550 km) and that the valuation is a relative measure; therefore, the relevance of the geographical distance is high.

We can also say that this result is robust due to the very low p-value for both the analysis. Summing up we can say that **Hypothesis 2.2 is confirmed**.

Considering only venture capitalists and private equity funds:

VC/PE Valuation-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	30.6446	25.1784	0.2345	3.52338	1.86358	0.0684*
Geographical distance	0.000833691	0.000898521	0.3620	0.000883644	0.000729938	0.2355
Assets	−165.925	167.189	0.3301			
Firm age	86.0673	226.073	0.7065			
Dummy sector 1	4.42587	3.97322	0.2755			
Dummy sector 2	2.55086	3.52201	0.4754			
Reputation	−4.04426	2.51647	0.1201	−3.51237	1.85257	0.0676*
Privatization	7.91437	6.98213	0.2673			
HIM				3.45468	1.79695	0.0641*
R^2	0.201177			0.198843		
P-value (F)	0.496569			0.080016		

Table 18 - Relation between valuation and geographical distance among firm and VC/PE

Considering only the private equity funds and venture capitalists, the correlation between valuation and geographical distance is lost. So, we have to **reject the hypothesis 2.2** for this kind of institutional investors. Moreover, the p-value is high in both the regressions and the coefficient of the variable “Geographical distance” is positive.

Hypothesis 2.3

The next study is related to the relation between valuation and equity market distance among the target firm and the institutional investor.

Valuation-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	30.1564	10.7151	0.0057***	14.6235	6.25037	0.0208**
Equity market distance	-0.0476613	0.0423277	0.2623	−0.033832	0.0431907	0.4349
Dilution	4.50541	2.43467	0.0665*	5.92475	2.46979	0.0179**
Assets	−43.9798	40.3704	0.2780	−21.0339	40.4007	0.6035
Firm age	−138.84	90.8565	0.1289	−192.895	91.8819	0.0377**
Privatization	−4.71142	2.35077	0.0472**	−1.44247	2.21891	0.5168
Reputation	2.44585	1.68506	0.1491			
HIM	3.54079	1.55056	0.0240**			
ASII	−21.0213	9.89441	0.0355**			
R^2	0.265955			0.192812		
P-value(F)	2.61e-06			0.000031		

Table 19 - Relation between valuation and equity market distance among firm and institutional investor

Analyzing the results, we can notice that it seems to be a negative relation between valuation and equity market distance, in fact, the coefficient is approximately (-0.04). However, the p-value is higher than 5% and so it suggests that no relation exists between the two variables. The fact that in both the analysis the p-value is high and the coefficient is negative suggests us that the **hypothesis 2.3 has to be rejected**.

We want to investigate if there are the same results considering a sub-sample of institutional investors.

VC/PE Valuation-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.24462	20.8027	0.9149	−1.56731	14.0546	0.9120
Equity market distance	−0.0267098	0.0551599	0.6323	−0.0273058	0.0541454	0.6181
Assets	−30.5356	127.071	0.8120	−3.66493	68.1525	0.9575
HIM	5.49622	2.25539	0.0220**	5.59652	2.18127	0.0162**
Privatization	−3.43454	4.0804	0.4076	−3.60389	3.95445	0.3702
Dummy sector 1	4.13599	3.19436	0.2068	4.36866	3.00495	0.1575
Dummy sector 2	2.9849	2.93486	0.3185	3.07658	2.86135	0.2918
Firm age	45.7817	181.398	0.8027			
R^2	0.277260			0.275489		
P-value (F)	0.237876			0.156706		

Table 20 - Relation between valuation and equity market distance among firm and VC/PE

Taking into consideration venture capitalist and private equity funds, we notice that the coefficients are still negative, and the p-values are both high (≃0.6). Due to this fact, we can **reject the hypothesis 2.3** also for this kind of institutional investors.

Hypothesis 2.4

Hypothesis 2.4 investigates the relation among the valuation and the cultural distance between the listing company and the institutional investor belonging to the ownership structure of the company.

The discussion is divided into three parts. Firstly, there is an analysis of the impact of each one of the six variables that compose the cultural distance; in the second part, we examine the impact generated by the cultural distance as sum of the six variables; finally, a third part in which we made a regression in which we included all the six variables.

VC/PE Valuation-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	46.1027	15.4706	0.0056***	48.3685	15.7755	0.0045***
ΔPDI	0.176541	0.124992	0.1678			
ΔIDV				0.047449	0.0568132	0.4100
Assets	−98.7711	46.0051	0.0397**	−111.455	45.71	0.0207**
ASII	−31.2198	11.7917	0.0126**	−30.2083	12.0712	0.0178**
HIM	1.27898	1.66049	0.4470	1.42537	1.74486	0.4202
Reputation	−1.4886	1.63495	0.3696	−1.35812	1.70265	0.4311
R^2	0.380760			0.340980		
P-value (F)	0.008307			0.018967		

Table 21 - Relation between valuation and PDI/IDV

Taking into consideration the variable "ΔIDV" (individualism versus collectivism), we can notice that it has no correlation with the valuation: the p-value is equal to 0.41.

Instead, if we consider "ΔPDI" (power distance index), the p-value (0.1678) suggests a weak correlation with the valuation. The regression coefficient is equal to 0.17, so increasing the cultural distance the valuation should increase.

These results are **incoherent with our hypothesis 2.4**, so we have to reject it.

VC/ PE Valuation-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	49.6055	15.8461	0.0038***	49.0531	15.3667	0.0032***
ΔMAS	0.035784	0.0660164	0.5917			
ΔUAI				0.0540964	0.0514693	0.3014
Assets	−115.385	46.0837	0.0178**	−109.722	45.0794	0.0209**
ASII	−30.734	12.1205	0.0165**	−31.2914	11.9558	0.0136**
HIM	1.33271	1.7751	0.4584	0.907226	1.68085	0.5932
Reputation	−1.08274	1.65705	0.5183	−1.42038	1.67694	0.4035
R^2	0.347099			0.363589		
P-value (F)	0.016784			0.011970		

Table 22 - Relation between valuation and MAS/UAI

Both the variables have a positive coefficient, which is in contrast with our hypothesis. Moreover, the p-values are high, so we have to **reject the hypothesis 2.4** also for "ΔMAS" (masculinity versus femininity) and "ΔUAI" (uncertainty avoidance index).

VC/PE Valuation-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	51.0102	15.279	0.0022***	46.4884	15.14	0.0044***
ΔLTO	0.061616	0.0747162	0.4159			
ΔIND				0.0737919	0.0451335	0.1122
Assets	−116.917	44.1685	0.0126**	−104.676	43.6942	0.0228**
ASII	−32.1652	12.1102	0.0124**	−30.1698	11.6838	0.0148**
HIM	1.34188	1.7232	0.4421	1.10167	1.63615	0.5057
Reputation	−1.35006	1.70216	0.4337	−1.18693	1.57535	0.4569
R^2	0.355059			0.393232		
P-value (F)	0.014279			0.006315		

Table 23 - Relation between valuation and LTO/IND

The variable "ΔLTO" (long term orientation versus short term normative orientation) has a positive coefficient and it has a high p-value, so we can say that no relation exists between the two variables.

Instead, if we consider the variable "ΔIND" (indulgence versus restraint), we can notice that the p-value is approximately 0.11 that suggests the existence of a quite stable relation between the variable "ΔIND" and the valuation. However, the coefficient of the variable is positive that means an opposite relation in comparison to the one that we have forecasted, so we have to **reject the hypothesis 2.4** for this variable.

After having considered all the six variables of cultural distance separated, here we considered them firstly in a unique analysis and after we grouped them in an only one variable called "cultural distance".

VC/PE Valuation-CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	44.6169	16.869	0.0137**	45.7592	15.4856	0.0059***
Cultural Distance				0.0202356	0.0139791	0.1578
ΔPDI	−0.21882	0.577298	0.7077			
ΔIDV	0.225636	0.198387	0.2658			
ΔMAS	−0.184546	0.270185	0.5006			
ΔUAI	−0.166418	0.185663	0.3783			
ΔLTO	0.13111	0.152109	0.3966			
ΔIND	0.222031	0.148347	0.1465			
Assets	−110.281	49.8427	0.0359**	−98.7975	45.782	0.0388**
ASII	−27.4437	12.8326	0.0420**	−30.7567	11.7748	0.0138**
HIM	2.30912	1.91468	0.2387	1.45254	1.67331	0.3920
Reputation	−1.62966	1.77012	0.3657	−1.68177	1.66813	0.3212
R^2	0.446343			0.382640		
P-value (F)	0.063217			0.007974		

Table 24 - Relation between valuation and cultural distance

Considering the variable "cultural distance" as the sum of the six variables previously analyzed, it can be observed that its coefficient is positive. Considering also the p-value, which suggests a weak correlation, we can **reject the hypothesis 2.4**.

Instead, if we consider the regression including all the six variables, we can notice that half of the coefficients are negative. This result is partially coherent with our hypothesis of a negative correlation between cultural distance and valuation. However, if we take a look at the p-value we must reject the hypothesis made due to the high value of it for all the variables, except for "ΔIND" that seems to have a weak correlation with the valuation.

Overall Valuation

To conclude the analysis related to the valuation, we have decided to build two models that include all the variables of interest in order to test them together.

The results confirm the ones previously obtained. In fact, we found out that the geographical distance has a real impact on the valuation, while the age and the equity market distance have no relevance.

However, during the analysis, we find out other relations between valuation and some control variables. In particular, the variables "dilution" and "HIM" (Hot Issue Markets) are positively correlated with the valuation, while "firm age" and "ASII" (allocation shares to institutional investors) are negative correlated. It could be interesting to analyze more in deep these relations and investigate the causes, in particular regarding the dilution and the allocation of shares to institutional investors as no literature deepen these arguments.

Here are the results:

Valuation-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	11.54	6.3178	0.0706*	9.4455	6.15853	0.1281
Institutional investor age	0.00892946	0.0076759	0.2473	0.00196667	0.00748723	0.7933
Geographical distance	−0.000920937	0.000495558	0.0659*	−0.00111409	0.000488969	0.0247**
Equity market distance	0.0187335	0.0463743	0.6871	−0.00407308	0.0454536	0.9288
Firm age	−259.273	101.296	0.0119**	−275.857	98.6491	0.0062***
Privatization	−1.63063	2.40941	0.5000			
Assets	3.20524	42.4294	0.9399	−5.8391	40.7684	0.8864
Dilution	7.89085	2.49576	0.0021***	8.68926	2.46158	0.0006***
Reputation				3.26748	1.76155	0.0664*
HIM				3.22994	1.56566	0.0416**
R^2	0.275962			0.325308		
P-value (F)	0.000013			1.32e-06		

Table 25 - Relation between valuation and independent variables

We report the same analysis for venture capitalists and private equity funds, including also the cultural distance:

VC/PE Valuation-Mix	Regression		
	Coefficient	*Std. Error*	*p-value*
Constant	26.1431	10.7056	0.0227**
VC/PE age	0.00600238	0.0171615	0.7297
Geographical distance	4.98364e-05	0.000967128	0.9593
Cultural distance	0.00753626	0.0239721	0.7561
Equity market distance	0.0403084	0.0522406	0.4482
Firm age	−160.978	82.8065	0.0642*
ASII	−22.7776	11.9519	0.0693*
R^2	0.260882		
P-value (F)	0.274917		

Table 26 - Relation between valuation and independent variables related to VC/PE

6.3 Models for Hp 3

In this section, there are the results related to the analysis to understand possible correlations between the underpricing and the variables of our interest. The chapter is organized as the 6.2.

Hypothesis 3.1

In the following table, there are the two regressions conducted in order to verify the relation between the age of the institutional investor and the underpricing after the first listing day.

Underpricing-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.474561	0.207103	0.0236**	0.51284	0.205442	0.0138**
Institutional investor age	0.000306953	0.000181233	0.0928*	0.000315594	0.000176377	0.0759*
IPO scaling	−0.0997447	0.0962933	0.3023	−0.121993	0.0944117	0.1987
Tobin's Q	0.626854	0.221872	0.0055***	0.693311	0.216422	0.0017***
Dilution	−0.0626571	0.060911	0.3056	−0.0565072	0.0605289	0.3523
Offering	−1.66633	1.07174	0.1225	−1.75571	1.06378	0.1013
Firm age	−1.36251	1.82127	0.4558	−0.787872	1.75609	0.6544
Market	1.86526	0.830696	0.0265**	1.81288	0.812518	0.0274**
HIM	0.0467887	0.0384116	0.2255			
Revision	0.298984	0.273561	0.2765			
R^2	0.215731			0.202286		
P-value (F)	0.000273			0.000130		

Table 27 - Relation between underpricing and age of institutional investor

From the analysis of the results, we can notice that the **hypothesis 3.1 is not verified** either for the model with fewer control variables nor for the one with more control variables. In fact, we have a positive coefficient for both the models. Furthermore, the p-values suggest us that the correlation is strong between the underpricing of a firm and the age of the institutional investors in the ownership before the IPO. For this reason, we have to reject the hypothesis 3.1. The fact that for both the models we obtain a similar coefficient with a similar p-value suggests us that the analysis is robust, so a correlation

exist, but it is opposite than the one that we have previously formulated: the older is the institutional investor, the higher is the underpricing.

We have made the same thing considering venture capitalists and private equity funds:

VC/PE Underpricing-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.43415	1.17297	0.0473**	1.70078	1.29336	0.1996
VC/PE age	0.00252118	0.000890192	0.0085***	0.00270671	0.000892006	0.0053***
IPO scaling	−1.22661	0.678772	0.0815*	−1.05525	0.684331	0.1347
Tobin's Q	0.320104	0.382905	0.4102	0.0384749	0.437793	0.9306
Offering	−6.50645	4.54906	0.1637	−2.18642	5.62159	0.7004
Market	−3.00028	3.18415	0.3541	−2.27279	3.19911	0.4835
Dilution	−0.167843	0.147023	0.2633	−0.176996	0.145544	0.2345
Firm age				−6.99469	5.45998	0.2111
R^2	0.372989			0.408918		
P-value (F)	0.030236			0.030974		

Table 28 - Relation between underpricing and age of VC/PE

It can be noticed that the age has, also in this case, a strong correlation with the underpricing. In this analyses, the regression coefficient is higher than the one that we have obtained considering all the institutional investors. So we can say that the impact on the underpricing is higher for this kind of institutional investors. To sum up, taking into consideration the coefficients and the p-values we have to **reject the hypothesis 3.1** also in this case.

Hypothesis 3.2

The relation between underpricing and geographical distance is analyzed in the following table:

Underpricing-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.470167	0.212279	0.0287**	0.498294	0.212693	0.0208**
Geographical distance	−2.19377e-06	1.08214e-05	0.8397	−3.02628e-06	1.09315e-05	0.7824
IPO scaling	−0.0938324	0.0995201	0.3477	−0.120373	0.09807	0.2220
Tobin's Q	0.656119	0.223509	0.0040***	0.717707	0.222132	0.0016***
Dilution	−0.0734322	0.0636007	0.2506	−0.0493329	0.0630094	0.4352
Offering	−1.4675	1.11745	0.1916	−1.62039	1.1215	0.1511
Firm age	−0.342025	1.87898	0.8559	−0.84622	1.87815	0.6531
Market	1.85373	0.826609	0.0268**	1.65327	0.827516	0.0480**
Participation	−0.174568	0.098565	0.0791*			
HIM	0.028832	0.0389392	0.4605			
R^2	0.216998			0.186437		
P-value (F)	0.000449			0.000626		

Table 29 - Relation between underpricing and geographical distance among firm and institutional investor

Analyzing the results, we can notice that no relation exists between underpricing and geographical distance. In fact, the coefficient is approximately 0, and the p-value is very high. The fact that in both the analysis the p-value is high and the coefficient is likely 0 suggests us that **hypothesis 3.2 is rejected**.

The same thing has been done considering venture capitalists and private equity funds:

VC/PE Underpricing-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.29775	1.40608	0.0266**	1.28759	1.06314	0.2360
Geographical distance	2.41792e-05	4.44694e-05	0.5911	3.09065e-05	4.80566e-05	0.5254
IPO scaling	−1.61389	0.780261	0.0483**			
Tobin's Q	0.371816	0.437782	0.4032	−0.00657218	0.464197	0.9888
Offering	−8.71132	5.54918	0.1281	−7.14761	5.81187	0.2290
Market	−5.4726	3.59637	0.1397	2.8796	3.30528	0.3910
Dilution	−0.260922	0.173798	0.1449			
HIM				0.194755	0.153571	0.2152
R^2	0.204959			0.087359		
P-value (F)	0.356206			0.747203		

Table 30 - Relation between underpricing and geographical distance among firm and VC/PE

If we consider only private equity funds and venture capitalists, we can observe that the p-value is lower than the case of all institutional investors, but always high. For this reason, we have to **reject the hypothesis 3.2** also for this specific category of institutional investors.

Hypothesis 3.3

The relation between underpricing and equity market distance is examined in the following part:

Underpricing-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.275839	0.240761	0.2541	0.435513	0.2327	0.0635*
Equity market distance	0.00250563	0.000982317	0.0120**	0.0023006	0.00096841	0.0190**
IPO scaling	−0.0953154	0.093479	0.3099	−0.1218	0.0920757	0.1883
Tobin's Q	0.679789	0.211174	0.0016***	0.723994	0.210415	0.0008***
Offering	−0.900798	1.21059	0.4582	−1.03589	1.23106	0.4017
Firm age	−2.12147	1.80167	0.2412	−1.7498	1.81861	0.3378
Dilution	−0.0963075	0.0594278	0.1076	−0.0627066	0.0579548	0.2813
Market	1.5639	0.785683	0.0487**	1.33303	0.788137	0.0932*
HIM	0.0386816	0.0356452	0.2799			
Revision	−0.143478	0.129646	0.2706			
Volatility	12.0282	5.79348	0.0399**			
R^2	0.248976			0.202542		
P-value (F)	0.000059			0.000116		

Table 31 - Relation between underpricing and equity market distance among firm and institutional investor

We can notice that exist a relation between the underpricing and the equity market distance. The coefficient of the variable of interest is positive, this means that increasing the distance there will be an increase in the underpricing of the firm. The coefficient is low (0.002), so it has a weak impact on the underpricing. We can also say that this result is robust due to the very low p-value for both the analysis. Summing up we can say that **hypothesis 3.3 is rejected**.

Now, venture capitalists and private equity funds are taken into consideration:

VC/PE Underpricing-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.14884	1.3572	0.0281**	0.823616	1.12772	0.4713
Equity market distance	0.00337042	0.00330931	0.3175	0.00478342	0.00340684	0.1713
IPO scaling	−1.45588	0.773582	0.0707*			
Tobin's Q	0.387842	0.432325	0.3776	−0.0461082	0.514047	0.9292
Offering	−8.50694	5.29991	0.1201	−2.5483	6.63523	0.7038
Market	−3.83902	3.6893	0.3073	2.23239	2.87223	0.4435
Dilution	−0.224159	0.164433	0.1841			
Firm age				−6.50122	6.48968	0.3250
R^2	0.225423			0.123059		
P-value (F)	0.286697			0.568610		

Table 32 - Relation between underpricing and equity market distance among firm and VC/PE

Taking into consideration venture capitalists and private equity funds, we notice that the coefficients are still positive. Instead, the p-value is grown. In the first model we have a p-value that suggests that no relation exist, but looking at the second model seems that there is a weak relation between equity market distance and underpricing for this particular category of institutional investors. Summing up we can say that **hypothesis 3.3 is rejected**.

Hypothesis 3.4

In this part, the effects of cultural distance on underpricing are evaluated. The structure of the paragraph is the same of the one explained for the valuation.

VC/PE Underpricing-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.08011	0.614503	0.0887*	1.15047	0.607735	0.0677*
ΔPDI	0.00363879	0.00699598	0.6067			
ΔIDV				−0.0028924 1	0.00314509	0.3649
Market	−2.17189	2.51723	0.3949	−2.03156	2.50012	0.4227
Revision	−1.12091	0.364803	0.0044***	−1.22035	0.366334	0.0022***
IPO scaling	−1.11274	0.645133	0.0945*	−1.12574	0.63931	0.0881*
Tobin's Q	0.231426	0.374932	0.5416	0.262439	0.370777	0.4844
R^2		0.304309			0.316875	
P-value(F)		0.038133			0.030215	

Table 33 - Relation between underpricing and PDI/IDV

Taking into consideration the variable "ΔPDI" we can notice that the coefficient is positive and that the p-value is high. Instead, the variable "ΔIDV" has a negative coefficient according to our hypothesis but it has a high p-value. For these reasons, we have to **reject the hypothesis 3.4** for both the variables.

VC/PE Underpricing-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.1037	0.604698	0.0776*	0.963419	0.616455	0.1282
ΔMAS	0.00363895	0.00362892	0.3237			
ΔUAI				0.00334039	0.00298189	0.2712
Market	−1.72474	2.53088	0.5006	−1.61079	2.53171	0.5293
Revision	−1.18134	0.358439	0.0025***	−1.0818	0.36039	0.0053***
IPO scaling	−1.07356	0.639088	0.1030	−1.00728	0.642637	0.1272
Tobin's Q	0.285448	0.371469	0.4480	0.258477	0.368176	0.4879
R^2		0.320285			0.325540	
P-value (F)		0.028332			0.025633	

Table 34 - Relation between underpricing and MAS/UAI

For both the variables of interest, we have a positive coefficient with a high p-value that suggests no correlation between underpricing and ΔMAS/ΔUAI. This is in conflict with the **hypothesis 3.4**, so we have to **reject** it also in this case.

VC/PE Underpricing-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.19046	0.612053	0.0609*	1.08763	0.602036	0.0805*
ΔLTO	−0.00387468	0.00416418	0.3593			
ΔIND				0.00314586	0.0027377	0.2593
Market	−2.07708	2.49633	0.4117	−2.00771	2.48086	0.4245
Revision	−1.23851	0.370665	0.0022***	−1.12189	0.355877	0.0036***
IPO scaling	−1.16674	0.641292	0.0785*	−1.1426	0.634924	0.0817*
Tobin's Q	0.226285	0.370919	0.5463	0.199714	0.369924	0.5931
R^2	0.317304			0.326907		
P-value (F)	0.029972			0.024969		

Table 35 - Relation between underpricing and LTO/IND

As in the previous case, for both the variables of interest, there is a high p-value. For this reason, we have to **reject the hypothesis 3.4**.

Now, we consider all the six variable in the first regression, and a summing up of them in the second regression:

VC/PE Underpricing-CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.898968	0.603133	0.1481	1.10666	0.618561	0.0834*
Cultural Distance				4.11906e-05	0.000780124	0.9582
ΔPDI	−0.0217323	0.0327573	0.5129			
ΔIDV	−0.0203726	0.0114969	0.0881*			
ΔMAS	0.0271079	0.0159548	0.1012			
ΔUAI	0.0249562	0.0106795	0.0274**			
ΔLTO	−0.0169151	0.00835128	0.0532*			
ΔIND	−0.00335429	0.00831084	0.6898			
Market	−0.0207546	2.55971	0.9936	−2.18941	2.5279	0.3931
Revision	−1.49939	0.380689	0.0005***	−1.14417	0.369821	0.0042***
IPO scaling	−0.89862	0.636745	0.1700	−1.11549	0.648284	0.0953*
Tobin's Q	0.208968	0.365605	0.5725	0.245648	0.375951	0.5183
R^2	0.485658			0.298301		
P-value(F)	0.032114			0.042519		

Table 36 - Relation between underpricing and cultural distance

Considering the variable "cultural distance" as the sum of the six previous variables, we can notice that its coefficient is likely 0, but positive. However, looking at the p-value we **reject the hypothesis 3.4** due to its high value.

If we consider each variable alone, we can observe that the variables "ΔPDI" and "ΔIND" have a negative coefficient but a high p-value; "ΔIDV" and "ΔLTO" have a negative coefficient but a low p-value; "ΔMAS" and "ΔUAI", instead, have a positive coefficient and a low p-value.

Summing up the results, we can say that four variables (ΔPDI, ΔIDV, ΔLTO, ΔIND) are in accordance with the hypothesis 3.4, but only two of them (ΔIDV, ΔLTO) have a good level of meaningfulness. So for individualism versus collectivism and long term orientation versus short term orientation **the hypothesis 3.4 is accepted**. The other two variables (ΔMAS, ΔUAI) have a good level of meaningfulness, but a coefficient not

coherent with our hypothesis 3.4. For these reasons, we have to **reject the hypothesis 3.4** for these two variables.

Overall Underpricing

As for the valuation, also for underpricing we have made an analysis considering all the variables of interest together:

Underpricing-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.559609	0.222668	0.0135**	0.264289	0.206325	0.2031
Institutional investor age	0.000325133	0.000190207	0.0904*	0.000280334	0.000189998	0.1131
Geographical distance	−9.29937e-06	1.27409e-05	0.4671	−6.40957e-06	1.24539e-05	0.6079
Equity market distance	0.00312637	0.00116911	0.0087***	0.00323199	0.00116136	0.0064***
Tobin's Q	0.68317	0.233904	0.0043***	0.684095	0.229338	0.0036***
Dilution	−0.057181	0.0665328	0.3921			
Offering	−1.46426	1.17414	0.2152	−1.58912	1.15045	0.1701
Firm age	−2.9206	2.22641	0.1925	−1.49956	2.10209	0.4772
IPO scaling	−0.134734	0.103612	0.1964			
Market	1.67635	0.919159	0.0711*	1.94518	0.866014	0.0268**
Volatility				13.8519	6.85208	0.0458**
R^2	0.255543			0.262074		
P-value (F)	0.000253			0.000076		

Table 37 - Relation between underpricing and independent variables

As we can see from the previous table, taking into consideration all the variables of interest, the age, and the equity market distance keep a relevant correlation.

Looking also at the control variables, we can notice that in all the models related to the institutional investors the variables "Tobin's Q", "market" and "volatility" have a very low p-value that indicates the existence of a correlation between them and the underpricing.

VC/PE Underpricing-Mix	Regression		
	Coefficient	*Std. Error*	*p-value*
Constant	0.887697	0.534842	0.1105
VC/PE age	0.00217615	0.000983789	0.0372**
Geographical distance	−4.64105e-05	4.33365e-05	0.2953
Equity market distance	0.00710767	0.0028246	0.0193**
Cultural distance	−0.000809014	0.00178259	0.6542
Revision	−1.25647	0.427914	0.0074***
IPO scaling	−0.850868	0.548474	0.1345
R^2	0.562953		
P-value (F)	0.002222		

Table 38 - Relation between underpricing and independent variables related to VC/PE

Taking into consideration all the 4 variables of interest for the VC and PE we can notice that the age of VC/PE and the equity market distance between them and the target firm have a strong correlation with the underpricing.

Regarding the control variables, for all the models regarding private equity funds and venture capitalists, we have the variables “IPO scaling” and “revision” that show always a good level of meaningfulness and a negative correlation with the underpricing.

6.4 Models for Hp 4

In the following paragraphs, they are reported the tests for the correlation of the selected variables and the oversubscription of the initial public offering. Each hypothesis has been tested considering firstly the overall oversubscription, and after concentrating on the oversubscription related to retail investors and then institutional investors.

Hypothesis 4.1

Oversubscription Total-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.89	0.834032	0.0251**	2.00893	0.819125	0.0155**
Institutional investor age	−0.000657044	0.000813435	0.4207	−0.000620974	0.000810966	0.4452
Tobin's Q	1.77521	0.964371	0.0680*	1.74673	0.962289	0.0718*
Offering	−4.34447	7.60332	0.5687	−9.02133	4.76143	0.0604*
HIM	0.618241	0.160615	0.0002***	0.612575	0.16022	0.0002***
Firm age	13.9122	7.40036	0.0624*	14.2137	7.37972	0.0563*
Concentration	−9.1466	11.5822	0.4312			
R^2	0.158966			0.154868		
P-value (F)	0.000983			0.000534		

Table 39 - Relation between total oversubscription and age of institutional investor

Looking at the results of the analysis, it is clear that for both the regressions we have obtained the same results. The p-value of the variable "institutional investor age" is high (≃0.4), so no strong correlation exists between this variable and the oversubscription. For this reason, we have to **reject the hypothesis 4.1**.

Oversubscription Retail-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.81107	1.26161	0.0276**	2.73772	1.2583	0.0314**
Institutional investor age	−0.000369936	0.000939656	0.6945	−0.000418157	0.000937608	0.6564
Tobin's Q	1.71633	1.11524	0.1263	1.75406	1.1138	0.1178
Offering	−22.3568	9.63114	0.0219**	−16.4939	7.20628	0.0237**
HIM	0.773078	0.186781	<0.0001***	0.78049	0.186491	<0.0001***
Firm age	30.4193	8.68137	0.0006***	30.0489	8.66664	0.0007***
Concentration	12.4185	13.5236	0.3602			
R^2	0.214251			0.208992		
P-value (F)	0.000027			0.000014		

Table 40 - Relation between retail oversubscription and age of institutional investor

Oversubscription Institutional Investors-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.86512	1.14569	0.0137**	2.33288	1.15513	0.0455**
Institutional investor age	−0.000436693	0.00080248	0.5873	−0.000623814	0.000860736	0.4699
Tobin's Q	0.904962	0.969478	0.3524	1.68851	1.02248	0.1011
Offering	25.1645	11.3818	0.0289**	−10.1524	6.61545	0.1274
HIM	0.457918	0.164528	0.0062***	0.510023	0.171201	0.0035***
Firm age	47.1404	10.4025	<0.0001***	8.90147	7.95608	0.2653
Concentration	−1.09483	11.663	0.9254			
Assets	−41.1339	9.93031	<0.0001***			
Dummy sector 1	−0.637769	0.298876	0.0348**			
Dummy sector 2	−0.0567562	0.302558	0.8515			
R^2	0.283278			0.110816		
P-value (F)	3.16e-06			0.009985		

Table 41 - Relation between institutional investors oversubscription and age of institutional investor

If we consider the oversubscription for both the institutional investors and retail investors we can notice that the results are the same that we have obtained previously. So we have to **reject the hypothesis 4.1**.

Now, we conducted the same analysis for venture capitalists and private equity funds:

VC/PE Oversubscription Total-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−1.34772	2.06762	0.5196	2.94874	2.12915	0.1774
Institutional investor age	0.00119939	0.00198054	0.5495	−0.0005558 31	0.00175727	0.7542
Offering	16.3649	12.1706	0.1892	28.2044	13.0522	0.0397**
HIM	0.700159	0.22122	0.0036***	0.71935	0.191843	0.0009***
Firm age	−22.9994	11.8427	0.0619*	17.9742	20.2191	0.3819
Tobin's Q	−0.968362	0.951968	0.3175	−0.320552	0.861398	0.7127
Concentration				−46.4929	15.2472	0.0051***
Assets				−21.4687	13.4966	0.1233
R^2	0.3462			0.55881		
P-value(F)	0.024078			0.001163		

Table 42 - Relation between total oversubscription and age of VC/PE

VC/PE Oversubscription Retail-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	4.30424	2.73515	0.1264	6.49703	2.87386	0.0324**
Institutional investor age	−0.0013724 9	0.00261996	0.6044	−0.0035391 6	0.0024117	0.1542
Offering	−22.7915	16.0999	0.1675	−8.06028	15.1832	0.6000
HIM	1.16271	0.29264	0.0004***	1.29076	0.281913	0.0001***
Firm age	16.0448	15.6661	0.3142	15.8456	16.5585	0.3474
Tobin's Q	0.559183	1.25931	0.6603	0.261138	1.21054	0.8309
Concentration				−63.6389	22.5087	0.0089***
Dummy sector 1				−0.327101	0.43219	0.4559
Dummy sector 2				0.608727	0.402452	0.1425
R^2	0.380671			0.573604		
P-value (F)	0.012363			0.001914		

Table 43 - Relation between retail oversubscription and age of VC/PE

VC/PE Oversubscription Institutional investors -Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.548009	2.49487	0.8277	−0.408073	2.60244	0.8766
Institutional investor age	0.0015125	0.0020688	0.4708	0.00161349	0.00218393	0.4666
Offering	29.0108	12.3782	0.0264**	30.3224	13.7492	0.0365**
HIM	0.588435	0.225325	0.0143**	0.545996	0.255288	0.0420**
Firm age	−24.6605	13.0952	0.0701*	−27.8004	14.9946	0.0751*
Tobin's Q	−0.641538	1.01749	0.5335	−0.717711	1.09621	0.5184
Concentration	−39.6945	18.106	0.0368**	−41.2194	20.3829	0.0536*
Dummy sector 1				−0.138835	0.364442	0.7063
Dummy sector 2				−0.202475	0.391372	0.6093
R^2	0.471105			0.47652		
P-value (F)	0.004141			0.017088		

Table 44 - Relation between institutional investors oversubscription and age of VC/PE

Considering only the private equity and venture capitalist funds, we can notice that also in this case there is no correlation between the institutional investor age and the total oversubscription. So we have to **reject the hypothesis 4.1**. If we look at the oversubscription related to institutional investors, we can notice that the results are the same as the case in which we consider the total oversubscription. We can observe a weak correlation in the case of the model with more control variables for the retail investors' oversubscription, but due to the value of the regression coefficients, we have to **reject the hypothesis 4.1** also in this case.

Hypothesis 4.2

In the following tables, the relation between oversubscription and geographical distance is investigated.

Oversubscription Total-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.65097	0.789532	0.0386**	2.53016	0.863604	0.0041***
Geographical distance	4.59123e-06	4.55167e-05	0.9198	3.50712e-06	4.44146e-05	0.9372
Tobin's Q	0.952968	0.941197	0.3133	0.874389	0.927268	0.3476
Offering	25.5756	9.59939	0.0088***	21.3827	10.5188	0.0443**
HIM	0.62061	0.150116	<0.0001***	0.478468	0.15349	0.0023***
Firm age	41.2152	8.98873	<0.0001***	49.8727	9.1975	<0.0001***
Assets	−36.2808	8.28141	<0.0001***	−43.9606	9.29674	<0.0001***
Concentration				18.2742	11.1272	0.1032
Dummy sector 1				−0.544174	0.281186	0.0553*
Dummy sector 2				−0.146141	0.288784	0.6138
R^2	0.276088			0.329762		
P-value (F)	4.47e-07			1.69e-07		

Table 45 - Relation between total oversubscription and geographical distance among firm and institutional investor

Oversubscription Retail-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.73316	1.27157	0.0336**	3.29096	1.37606	0.0184**
Geographical distance	6.2918e-05	5.39853e-05	0.2461	4.46273e-05	5.32559e-05	0.4038
Tobin's Q	1.93638	1.09344	0.0791*	0.993164	1.11716	0.3758
Offering	−21.3368	7.31201	0.0042***	−0.686981	13.6373	0.9599
HIM	0.628614	0.188133	0.0011***	0.513876	0.191527	0.0084***
Firm age	33.6454	8.92085	0.0003***	53.2709	11.2387	<0.0001***
Dummy sector 1				−0.67594	0.340948	0.0498**
Dummy sector 2				−0.571856	0.350773	0.1057
Concentration				24.7734	13.5025	0.0691*
Assets				−34.2566	11.607	0.0038***
ASRI	3.07759	1.07901	0.0051***	3.76962	1.10535	0.0009***
R^2	0.272194			0.334016		
P-value (F)	6.97e-07			3.88e-07		

Table 46 - Relation between retail oversubscription and geographical distance among firm and institutional investor

Oversubscription Institutional Investors-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.20029	1.26774	0.0852*	2.80239	1.18733	0.0198**
Geographical distance	2.57349e-05	4.93095e-05	0.6027	3.53278e-05	5.101e-05	0.4899
Tobin's Q	2.0535	0.998127	0.0418**	1.93328	1.03502	0.0642*
Offering	−14.285	6.85292	0.0392**	−13.5213	6.91882	0.0530*
HIM	0.398029	0.171484	0.0220**	0.455751	0.170563	0.0086***
Firm age	23.5708	8.65887	0.0075***	13.1457	8.44427	0.1221
Dummy sector 1	0.246051	0.287302	0.3935			
Dummy sector 2	0.792684	0.293867	0.0080***			
R^2		0.196784			0.116349	
P-value (F)		0.000358			0.009256	

Table 47 - Relation between institutional investors oversubscription and geographical distance among firm and institutional investor

Analysing the results of the previous three tables, we can notice that all the p-values are high, so we can affirm that there is no correlation among oversubscription and geographical distance between institutional investor and listing firm. So we have to **reject the hypothesis 4.2**.

Now, we want to investigate if this result is true also for venture capitalists and private equity funds:

VC/PE Oversubscription Total - GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−3.11308	2.27421	0.1819	1.47647	2.70136	0.5892
Geographical distance	−0.000105356	9.2687e-05	0.2653	−8.93324e-05	8.43953e-05	0.2992
Tobin's Q	−1.36265	0.965329	0.1691	−0.253995	0.972357	0.7959
Offering	27.7628	13.8408	0.0546*	20.5181	12.8669	0.1224
HIM	0.720987	0.225371	0.0034***	0.664612	0.205791	0.0032***
Firm age	−31.0088	12.9077	0.0232**	−11.5574	13.8517	0.4114
Concentration				−48.6332	18.4499	0.0137**
R^2	0.422978			0.541079		
P-value (F)	0.006382			0.001003		

Table 48 - Relation between total oversubscription and Geographical distance of VC/PE

VC/PE Oversubscription Retail-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.0888786	0.262873	0.7378	−0.199387	0.339382	0.5618
Geographical distance	−1.94515e-06	1.07136e-05	0.8572	−2.95158e-06	1.06029e-05	0.7828
Tobin's Q	0.0197601	0.111581	0.8607	−0.0498734	0.122161	0.6863
HIM	0.0701648	0.0260503	0.0118**	0.0737057	0.0258543	0.0083***
Offering	−0.0270731	1.59985	0.9866	0.427963	1.61652	0.7932
Firm age	2.94375	1.49198	0.0584*	1.72203	1.74024	0.3312
Concentration				3.05461	2.31794	0.1986
R^2	0.391305			0.42809		
P-value (F)	0.012218			0.013089		

Table 49 - Relation between retail investors oversubscription and Geographical distance of VC/PE

Looking at the overvaluation as total and the one referred to institutional investors, we can say that the results obtained before are confirmed because the p-value are high and so there is no correlation.

VC/PE Oversubscription Institutional investors - GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−5.70714	2.10905	0.0115**	−6.4011	2.65966	0.0227**
Geographical distance	−0.00022187	8.34024e-05	0.0128**	−0.000183571	0.000104881	0.0906*
Tobin's Q	−2.10497	0.912976	0.0288**	−1.47766	1.13981	0.2051
Offering	96.583	16.6893	<0.0001***	50.0531	16.0392	0.0041***
Firm age	20.642	19.7755	0.3055	−46.4555	15.2975	0.0050***
Assets	−60.5336	14.1151	0.0002***			
R^2	0.572672			0.291981		
P-value (F)	0.000141			0.035032		

Table 50 - Relation between retail investors oversubscription and Geographical distance of VC/PE

Taking in consideration the oversubscription generated by the institutional investors, instead, we notice that exists a relation with the variable "Geographical distance". In fact, the low p-value is favourable to the hypothesis 4.2. The coefficient of the variable is

negative according to us. Summing up we can **accept the hypothesis 4.2**, related only to the oversubscription generated by retail investors.

Hypothesis 4.3

Oversubscription Total-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.26143	0.776125	0.0042***	2.32659	0.868124	0.0083***
Equity market distance	0.00906992	0.00419269	0.0323**	0.00887557	0.00422916	0.0378**
Offering	−9.59255	4.54275	0.0366**	−10.2273	7.15693	0.1554
Tobin's Q	1.45655	0.911915	0.1126	1.57434	0.919563	0.0893*
HIM	0.746872	0.148086	<0.0001***	0.697826	0.157729	<0.0001***
Firm age	7.09179	7.44381	0.3425	11.7238	8.40039	0.1652
Dummy sector 1				−0.062919	0.242057	0.7953
Dummy sector 2				0.182485	0.255769	0.4769
Concentration				−1.44482	10.6068	0.8919
R^2	0.240161			0.252214		
P-value (F)	7.97e-07			7.38e-06		

Table 51 - Relation between total oversubscription and equity market distance among firm and institutional investor

Considering the "Equity Market Distance", we can notice that it has a correlation with the total oversubscription, in fact, the p-value of the is very low. The coefficient of the variable is positive so it suggests to **reject our hypothesis 4.3**.

Oversubscription Retail-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.7466	1.19321	0.0229**	2.9617	1.27602	0.0219**
Equity market distance	0.0139729	0.00487437	0.0048***	0.0154795	0.00482828	0.0017***
Offering	−14.294	6.921	0.0409**	−24.9296	8.95611	0.0062***
Tobin's Q	1.25907	1.05636	0.2355	1.22903	1.04451	0.2416
HIM	0.944987	0.172735	<0.0001***	0.796189	0.186658	<0.0001***
Firm age	15.1003	8.7898	0.0882*	12.6423	9.68327	0.1941
Concentration				20.7557	12.2118	0.0917*
Dummy sector 1				−0.282453	0.275369	0.3070
Dummy sector 2				−0.32023	0.290428	0.2723
ASRI				1.99634	1.04516	0.0584*
R^2	0.291702			0.335568		
P-value (F)	1.46e-08			3.68e-08		

Table 52 - Relation between retail oversubscription and equity market distance among firm and institutional investor

Oversubscription Institutional Investors-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.58951	1.11455	0.0217**	2.3106	1.18566	0.0535*
Equity market distance	0.00650506	0.00455304	0.1555	0.00581186	0.00453342	0.2022
Offering	−11.2858	6.46475	0.0832*	−10.2939	8.41633	0.2236
Tobin's Q	1.41221	0.986724	0.1548	1.57226	0.981643	0.1117
HIM	0.660567	0.161348	<0.0001***	0.625321	0.169444	0.0003***
Firm age	4.37107	8.21036	0.5954	13.7088	9.09179	0.1341
Dummy sector 1				0.153524	0.258559	0.5537
Dummy sector 2				0.520504	0.272904	0.0588*
Concentration				−5.83027	11.4285	0.6108
R^2	0.178549			0.213622		
P-value (F)	0.000104			0.000142		

Table 53 - Relation between institutional investors oversubscription and equity market distance among firm and institutional investor

If we consider the retail investors, we can notice that the correlation between "EMD" and oversubscription become stronger respect to the previous one. In fact, its p-value is very low (<0.01). Considering the positive coefficient and the robustness of the results, we can **accept the hypothesis 4.3**.

Instead, if we consider the oversubscription generated by institutional investors, we notice that the p-value is high, but we can say that exists a very weak correlation between the two variables. Considering also the coefficient we can **accept the hypothesis 4.3** also in this case.

VC/PE Oversubscription Total - EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.34023	2.6999	0.2263	4.22371	2.64453	0.1219
Equity market distance	0.0121823	0.00660101	0.0756*	0.0126938	0.00635931	0.0561*
Tobin's Q	1.03736	1.07574	0.3431	0.889312	1.03858	0.3994
Firm age	1.21025	13.9664	0.9316	34.0566	22.688	0.1449
Offering	12.0801	13.1581	0.3664	28.0136	15.4589	0.0811*
Concentration	−52.7635	19.3577	0.0109**	−51.5257	18.6429	0.0102**
Assets				−26.2975	14.6335	0.0835*
R^2	0.347683			0.417371		
P-value (F)	0.027785			0.016116		

Table 54 - Relation between total oversubscription and equity market distance among firm and VC/PE

If we take into consideration only private equity funds and venture capitalists, we can notice that the variable "Equity market distance" shows a strong correlation with the total oversubscription. Considering also the coefficient and the robustness of the analysis we can **accept the hypothesis 4.3** also for this kind of institutional investors.

VC/PE Oversubscription Retail-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.4936	2.3517	0.1486	3.29731	2.13568	0.1342
Equity market distance	0.0108247	0.00761	0.1659	0.010888	0.00690684	0.1266
Tobin's Q	0.640173	1.10394	0.5666	0.627662	1.00194	0.5363
HIM	1.32934	0.274944	<0.0001***	0.978568	0.282607	0.0018***
Firm age	11.2038	13.2628	0.4054	−0.410199	12.8135	0.9747
Offering	−18.4379	13.7219	0.1898	−19.69	12.4629	0.1258
ASRI				4.68617	1.77224	0.0135**
R^2	0.596717			0.679669		
P-value (F)	0.000066			0.000012		

Table 55 - Relation between retail oversubscription and equity market distance among firm and VC/PE

VC/PE Oversubscription Institutional investors - EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.39569	0.454411	0.0046***	2.72731	2.82509	0.3429
Equity market distance	0.0038751	0.00811055	0.6364	0.00975972	0.0067935	0.1623
Tobin's Q	−0.578712	1.11917	0.6090	0.360403	1.10949	0.7478
HIM	0.776815	0.295799	0.0136**			
Firm age	−16.8737	11.8171	0.1640	35.3294	24.2371	0.1565
Offering				45.0797	16.5144	0.0110**
Concentration				−51.0469	19.9158	0.0163**
Assets				−36.0034	15.6326	0.0292**
R^2	0.279773			0.439382		
P-value (F)	0.043368			0.010449		

Table 56 - Relation between institutional investors oversubscription and equity market distance among firm and VC/PE

Taking a look to the oversubscription generated by both institutional investors and retail investors, we can notice that the p-values show a very weak correlation between the two variables. In particular, in the regression with few control variables the p-value for the oversubscription of institutional investors is extremely high. The coefficient of the variable "Equity market distance" is positive in all the regressions. For these reasons we

can **accept the hypothesis 4.3** for retail investors, but we have to reject it for the institutional investors.

Hypothesis 4.4

VC/PE Oversubscription Total-CD	Sum			All Variables		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.81465	1.99468	0.3700	1.71954	2.19849	0.4412
Cultural Distance	−0.00170372	0.00172406	0.3307			
ΔPDI				−0.0253288	0.0700326	0.7205
ΔIDV				−0.0315197	0.0236333	0.1939
ΔMAS				0.0430709	0.0324776	0.1963
ΔUAI				0.014092	0.022712	0.5404
ΔLTO				−0.0153716	0.0186337	0.4169
ΔIND				0.000909824	0.0189194	0.9620
HIM	0.743802	0.186716	0.0004***	0.711443	0.217673	0.0030***
Concentration	−44.6262	14.0051	0.0033***	−50.6774	15.8434	0.0036***
Firm age	−11.9732	10.1836	0.2486	−8.46074	10.7628	0.4389
Offering	17.1212	10.6003	0.1164	19.4247	11.4622	0.1021
R^2	0.528560			0.581145		
P-value (F)	0.000186			0.004106		

Table 57 - Relation between total oversubscription and cultural distance among firm and VC/PE

VC/PE Oversubscription Total-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.94351	2.00709	0.3404	1.92657	1.97913	0.3379
ΔPDI	−0.00923555	0.0152976	0.5504			
ΔIDV				−0.00725647	0.00667233	0.2852
HIM	0.770909	0.185315	0.0002***	0.731197	0.188156	0.0005***
Concentration	−43.9498	14.1254	0.0040***	−43.6763	13.8847	0.0036***
Firm age	−10.0366	10.1152	0.3288	−11.3169	9.75198	0.2547
Offering	15.4873	10.527	0.1513	15.8759	10.2038	0.1299
R^2	0.519360			0.531581		
P-value(F)	0.00245			0.00017		

Table 58 - Relation between total oversubscription and PDI/IDV

VC/PE Oversubscription Total-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.99907	2.01516	0.3289	1.93116	1.9768	0.3362
ΔMAS	−0.00192665	0.00808464	0.8132			
ΔUAI				−0.00704376	0.00630052	0.2722
HIM	0.776303	0.194613	0.0004***	0.791524	0.179415	0.0001***
Concentration	−42.7819	14.1846	0.0051***	−47.3241	14.367	0.0025***
Firm age	−8.49782	10.1114	0.4071	−10.9025	9.58712	0.2642
Offering	14.1273	10.29	0.1796	17.2147	10.4672	0.1102
R^2	0.514598			0.532555		
P-value (F)	0.000282			0.000165		

Table 59 - Relation between total oversubscription and MAS/UAI

VC/PE Oversubscription Total-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.7003	1.97958	0.3970	1.98437	2.03119	0.3362
ΔLTO	−0.0116025	0.00907625	0.2106			
ΔIND				−0.000818856	0.00562204	0.8851
HIM	0.704852	0.190995	0.0009***	0.790706	0.183219	0.0002***
Concentration	−46.2603	13.9989	0.0024***	−43.1072	14.1321	0.0047***
Firm age	−12.2366	9.76674	0.2196	−7.892	9.59295	0.4170
Offering	18.5203	10.6152	0.0909*	14.1638	10.4886	0.1867
R^2	0.53806			0.514042		
P-value (F)	0.000139			0.00287		

Table 60 - Relation between total oversubscription and LTO/IND

Summing up all the regressions shown in the last 4 tables, we can notice that the coefficients of cultural distance are negative for almost all the variables. We can also observe that for all these variables the p-value is high. This suggests us the absence of a correlation between the cultural distance and the total oversubscription. So we have to **reject the hypothesis 4.4.**

VC/PE Oversubscription Retail -CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	4.81737	2.74307	0.0908*	3.58411	2.75262	0.2025
Cultural distance				−0.00303442	0.00237917	0.2116
ΔPDI	−0.180736	0.0873803	0.0487**			
ΔIDV	−0.00927838	0.0294875	0.7555			
ΔMAS	0.0557228	0.0405226	0.1808			
ΔUAI	0.0175677	0.028338	0.5407			
ΔLTO	−0.0243709	0.0232494	0.3042			
ΔIND	0.0487529	0.0236059	0.0490**			
HIM	1.25137	0.271592	<0.0001***	1.2931	0.257665	<0.0001***
Concentration	−35.7178	19.768	0.0824*	−16.5648	19.3268	0.3980
Firm age	7.55529	13.4288	0.5785	6.07474	14.0531	0.6685
Offering	−8.67919	14.3015	0.5492	−9.78918	14.6282	0.5083
R^2	0.654443			0.524225		
P-value (F)	0.000511			0.000212		

Table 61 - Relation between retail investors oversubscription and cultural distance among firm and VC/PE

Considering the variable "cultural distance" as the sum of the 6 elements that compose the cultural distance we can notice that its coefficient is negative. This result confirms our hypothesis, but if we take a look at the p-value we **reject the hypothesis 4.4** due to the absence of meaningfulness.

If we consider each variable alone, we can notice that the variable: "ΔPDI" has a negative coefficient and a low p-value; "ΔIDV" and "ΔLTO" have a negative coefficient, but a high p-value; "ΔMAS" and "ΔUAI" have a positive coefficient and a high p-value; "ΔIND" has a positive coefficient and a low p-value. Summing up the results we can say that half of the variables are in accordance with the hypothesis 4.4, but only one of them has a good level of meaningfulness. The other variables are in contrast with our hypothesis 4.4. For these reasons, we have to **reject the hypothesis 4.4**.

VC/PE Oversubscription Retail -CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.75845	2.76211	0.1834	3.81167	2.75141	0.1758
ΔPDI	−0.0228616	0.0210522	0.2859			
ΔIDV				−0.0107999	0.00927594	0.2532
HIM	1.32659	0.255026	<0.0001***	1.2885	0.261577	<0.0001***
Concentration	−15.9538	19.4391	0.4181	−14.7026	19.3027	0.4520
Firm age	7.78968	13.9203	0.5798	8.34974	13.5573	0.5425
Offering	−11.5385	14.4871	0.4318	−12.6103	14.1854	0.3809
R^2	0.517611			0.520239		
P-value (F)	0.000258			0.000239		

Table 62 - Relation between retail investors oversubscription and PDI/IDV

VC/PE Oversubscription Retail -CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.85977	2.79043	0.1765	3.80754	2.73713	0.1741
ΔMAS	−0.00769064	0.0111949	0.4972			
ΔUAI				−0.0113243	0.00872387	0.2038
HIM	1.31585	0.269483	<0.0001***	1.37821	0.248424	<0.0001***
Concentration	−12.5884	19.6416	0.5263	−20.6367	19.893	0.3076
Firm age	10.1444	14.0014	0.4742	8.56478	13.2746	0.5235
Offering	−14.4321	14.2487	0.3190	−10.2119	14.4932	0.4863
R^2	0.506769			0.525075		
P-value (F)	0.000354			0.000207		

Table 63 - Relation between retail investors oversubscription and MAS/UAI

VC/PE Oversubscription Retail -CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.1812	2.61292	0.2326	4.03431	2.83022	0.1640
ΔLTO	−0.0278292	0.01198	0.0269**			
ΔIND				0.00167968	0.00783365	0.8316
HIM	1.16979	0.2521	<0.0001***	1.38235	0.255294	<0.0001***
Concentration	−21.4299	18.4776	0.2550	−13.8113	19.6914	0.4883
Firm age	2.70481	12.8914	0.8352	14.6975	13.3666	0.2800
Offering	−4.39212	14.0114	0.7560	−16.3914	14.6147	0.2707
R^2	0.573500			0.500001		
P-value (F)	0.000044			0.000430		

Table 64 - Relation between retail investors oversubscription and LTO/IND

Taking each variable that composes the cultural distance alone, we notice that for all the variables, except "ΔLTO", the p-value is high. This fact suggests rejecting the hypothesis 4.4. The variable "ΔLTO", instead, has a low p-value, which advises the existence of a correlation with the oversubscription generated by the retail investors. Considering also its coefficient we can **accept the hypothesis 4.4** for this variable.

VC/PE Oversubscription Inst. Inv. -CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.0578829	2.67409	0.9829	0.237268	2.37174	0.9210
Cultural distance				−0.000857985	0.00204996	0.6784
ΔPDI	0.00336216	0.085183	0.9688			
ΔIDV	−0.0327221	0.028746	0.2654			
ΔMAS	0.0366375	0.0395036	0.3622			
ΔUAI	0.013629	0.0276254	0.6259			
ΔLTO	−0.0127199	0.0226647	0.5795			
ΔIND	−0.00578159	0.0230123	0.8036			
HIM	0.633311	0.264763	0.0243**	0.679009	0.222011	0.0046***
Concentration	−45.463	19.2709	0.0261**	−42.5994	16.6525	0.0156**
Firm age	−16.045	13.0911	0.2313	−19.2529	12.1086	0.1220
Offering	27.4938	13.9419	0.0593*	25.3656	12.6041	0.0529*
R^2	0.485029			0.446108		
P-value (F)	0.032487			0.001809		

Table 65 - Relation between institutional investors oversubscription and cultural distance among firm and VC/PE

VC/PE Oversubscription Inst. Inv.-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.336041	2.37015	0.8882	0.261633	2.34534	0.9119
ΔPDI	−0.000713016	0.0180647	0.9688			
ΔIDV				−0.00606328	0.00790695	0.4490
HIM	0.701737	0.218836	0.0031***	0.652411	0.222972	0.0064***
Concentration	−41.8941	16.6806	0.0174**	−42.3141	16.4539	0.0151**
Firm age	−17.2125	11.9449	0.1596	−20.1766	11.5565	0.0907*
Offering	23.83	12.4312	0.0645*	25.4225	12.0918	0.0437**
R^2	0.443006			0.453348		
P-value (F)	0.001955			0.001507		

Table 66 - Relation between institutional investors oversubscription and PDI/IDV

VC/PE Oversubscription Inst. Inv.-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.32411	2.36714	0.8920	0.299672	2.36001	0.8998
ΔMAS	−0.00145678	0.00949674	0.8791			
ΔUAI				−0.00326102	0.0075219	0.6676
HIM	0.691363	0.228605	0.0050***	0.703069	0.214196	0.0026***
Concentration	−41.5916	16.6621	0.0181**	−43.7862	17.1522	0.0158**
Firm age	−17.7449	11.8775	0.1453	−18.577	11.4456	0.1147
Offering	23.9367	12.0873	0.0566*	25.2746	12.4964	0.0518*
R^2	0.443401			0.446335		
P-value (F)	0.001936			0.001799		

Table 67 - Relation between institutional investors oversubscription and MAS/UAI

VC/PE Oversubscription Inst. Inv.-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.141406	2.36774	0.9528	0.400059	2.38417	0.8678
ΔLTO	−0.00721931	0.0108559	0.5110			
ΔIND				0.00122791	0.00659905	0.8536
HIM	0.649033	0.228445	0.0079***	0.705617	0.215059	0.0026***
Concentration	−43.7978	16.7438	0.0136**	−41.8094	16.588	0.0171**
Firm age	−19.9428	11.6818	0.0978*	−16.4899	11.26	0.1531
Offering	26.6283	12.6966	0.0442**	23.1785	12.3114	0.0692*
R^2	0.450813			0.443600		
P-value (F)	0.001607			0.001926		

Table 68 - Relation between institutional investors oversubscription and LTO/IND

For the oversubscription generated by institutional investors, we can notice any correlation with the cultural distance. In fact, the p-value of each variable is high. For this reason, we have to **reject the hypothesis 4.4.**

Overall Oversubscription

Oversubscription Total-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.9932	0.809511	0.0155**	0.852353	1.41981	0.5498
Institutional investor age	−0.000122115	0.000774697	0.8751	−0.000560573	0.000726632	0.4425
Geographical distance	−2.89324e-05	5.0246e-05	0.5660	−4.02008e-05	5.30572e-05	0.4507
Equity market distance	0.0108249	0.00488824	0.0290**	0.0147913	0.00467037	0.0021***
Tobin's Q	1.13888	0.949112	0.2329	2.25459	0.854324	0.0099***
Offering	15.0797	11.2195	0.1819	−1.58168	4.30831	0.7144
HIM	0.630052	0.166193	0.0003***	0.656517	0.187269	0.0007***
Assets	−29.2974	10.0418	0.0043***			
Firm age	29.7513	11.9381	0.0143**			
Concentration	7.95486	11.8943	0.5051			
ASII				0.50913	1.03594	0.6243
Market				−3.42666	3.88046	0.3796
Dummy sector 1				−0.98156	0.481129	0.0444**
Dummy sector 2				−1.14545	0.54468	0.0384**
Volatility				7.54118	30.2448	0.8037
R^2	0.308122			0.544256		
P-value (F)	0.000011			3.84e-07		

Table 69 - Relation between total oversubscription and independent variables

Oversubscription Retail-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.19698	1.22285	0.0103**	1.85934	1.09798	0.0934*
Institutional investor age	−3.19587e-05	0.000891765	0.9715	−3.6458e-05	0.000800705	0.9638
Geographical distance	−9.81069e-06	5.78804e-05	0.8657	−3.16205e-05	5.19702e-05	0.5443
Equity market distance	0.0201821	0.00565639	0.0005***	0.00633014	0.0050788	0.2155
Tobin's Q	1.78761	1.09438	0.1055	0.636532	0.982629	0.5186
Offering	−26.836	13.5131	0.0497**	29.3494	12.1333	0.0173**
HIM	0.746413	0.191461	0.0002***	0.551826	0.17191	0.0018***
Assets	1.26588	11.5601	0.9130	−45.3153	10.3797	<0.0001***
Firm age	17.6203	13.8544	0.2063	37.2517	12.4397	0.0034***
Concentration	20.387	13.8453	0.1440	10.8052	12.4316	0.3868
R^2	0.3369			0.311205		
P-value(F)	1.91e-06			0.00001		

Table 70 - Relation between retail/institutional investors oversubscription and independent variables

We can notice that for both the total oversubscription and the oversubscription generated by retail investors we have a strong correlation with the "Equity market distance". In fact, the p-value is very low. On the contrary, for the oversubscription generated by institutional investors, we can notice that the high p-value suggests the absence of a correlation with all the variables of interest. We can notice that some variables have a correlation with the three kinds of oversubscription, in particular, we have: for the total oversubscription a strong correlation with "offering", "HIM" and "assets", and a weak correlation with "Tobin's Q" and "firm age"; for the retail investors a strong correlation with "offering", "HIM", "ASRI" and "firm age", and a weak correlation with "assets" and "concentration"; for the institutional investors a strong correlation with "offering", "HIM", "firm age" and "assets", and a weak correlation with "sector".

VC/PE Oversubscription -Mix	Total			Retail		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.231303	2.71744	0.9330	1.59088	3.43879	0.6486
Institutional investor age	0.00287598	0.00300423	0.3498	0.00188252	0.0038017	0.6259
Geographical distance	−0.000159676	0.000164963	0.3446	−0.000233557	0.000208753	0.2765
Equity market distance	0.0195433	0.00829973	0.0289**	0.0299125	0.0105029	0.0099***
Cultural distance	0.00230467	0.00380422	0.5514	0.00128312	0.00481406	0.7926
Volatility	−5.55195	48.6913	0.9104	20.2386	61.6165	0.7460
Tobin's Q	1.10291	1.00692	0.2864	1.27652	1.27421	0.3284
Offering	6.78723	13.5311	0.6214	−0.957907	17.123	0.9559
Dummy sector 1	−0.410163	0.439152	0.3614	−0.151591	0.555725	0.7878
Dummy sector 2	0.0421953	0.421492	0.9213	−0.381382	0.533378	0.4829
R^2	0.371742			0.394561		
P-value (F)	0.289939			0.233755		

Table 71 - Relation between total/retail investors oversubscription and independent variables related to VC/PE

VC/PE Oversubscription -Mix	Institutional investors		
	Coefficient	*Std. Error*	*p-value*
Constant	−1.33779	3.01836	0.6624
Institutional investor age	0.00299546	0.00333691	0.3800
Geographical distance	−0.000188011	0.000183231	0.3171
Equity market distance	0.0185353	0.00921882	0.0580*
Cultural distance	0.00374717	0.00422549	0.3857
Volatility	−14.3253	54.0833	0.7938
Tobin's Q	1.10221	1.11843	0.3361
Offering	13.7537	15.0295	0.3710
Dummy sector 1	−0.260172	0.487782	0.5996
Dummy sector 2	0.305228	0.468167	0.5218
R^2	0.361213		
P-value (F)	0.318149		

Table 72 - Relation between institutional investors oversubscription and independent variables related to VC/PE

We can notice that for private equity and venture Capitalists all the models regarding the oversubscription have high p-values for the four variables of interest. This suggests the absence of a correlation. We can notice that some control variables have a correlation with the three kinds of oversubscription, in particular: for the total oversubscription there is a strong correlation with “HIM” and “concentration”, and a weak correlation with “offering”; for the retail investors a strong correlation with “HIM” and “ASRI”; for the institutional investors a strong correlation with “offering”, “HIM”, “concentration” and “assets”.

6.5 Models for Hp 5

These are the last analysis related to the long run performance.

Hypothesis 5.1

To verify the hypothesis 5.1, for each independent variable of interest there are two regressions for the period 1 year after the IPO, 3 years after the IPO and 5 years after the IPO.

Hypothesis 5.1 – Institutional investor age

Long Run 1y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.9813	0.677113	0.0041***	2.01088	0.69662	0.0046***
Institutional investor age	−0.000916352	0.000684579	0.1831	−0.000649274	0.000710633	0.3627
Firm age	1.52252	7.95114	0.8484	−0.222324	8.59179	0.9794
Assets	−10.3391	5.24241	0.0507*	−10.883	5.26374	0.0407**
Dummy sector 1	−0.771543	0.233751	0.0012***	−0.88705	0.253406	0.0006***
Dummy sector 2	−0.699283	0.238855	0.0040***	−0.770227	0.244535	0.0020***
Concentration	8.0237	8.78105	0.3626	9.84928	8.86983	0.2689
HIM				−0.106146	0.144737	0.4647
Privatization				−0.0354088	0.224449	0.8749
Participation				0.448505	0.378633	0.2384
R^2	0.098998			0.117126		
P-value (F)	0.035095			0.066881		

Table 73 - Relation between long run 1 year and age of institutional investor

From the analysis of the results, we can notice that **hypothesis 5.1 is verified**. In fact, the high p-value in the model with more control variables suggests that there is no correlation between the performance of a firm after 1 year and the age of the institutional investor belonging to the ownership structure of the company before the IPO.

Long Run 3y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.21557	0.620481	0.7288	−0.101261	0.582054	0.8622
Institutional investor age	−0.000527391	0.000627322	0.4021	0.000197182	0.000593763	0.7404
Firm age	12.6209	7.28611	0.0857*	7.08733	7.17879	0.3254
Assets	0.136799	4.80394	0.9773	−1.40752	4.39807	0.7495
Dummy sector 1	−0.205098	0.2142	0.3401	−0.515467	0.211731	0.0163**
Dummy sector 2	−0.0892295	0.218877	0.6842	−0.289798	0.204319	0.1586
Concentration	−1.4545	8.04661	0.8568	3.63401	7.4111	0.6247
HIM				−0.316274	0.120934	0.0100**
Privatization				−0.0392982	0.187536	0.8344
Participation				1.22793	0.316363	0.0002***
R^2	0.057434			0.232132		
P-value (F)	0.261848			0.000092		

Table 74 - Relation between long run 3 years and age of institutional investor

Increasing the time horizon to 3 years after the initial public offering, the results become more favourable to our hypothesis. In fact, the p-value of the variable "institutional investor age" is doubled respect to the analysis at 1 year, so in this case, the impact of the age of institutional investor is more irrelevant.

Long Run 5y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.211538	0.77495	0.7853	−0.0112488	0.698033	0.9872
Institutional investor age	−0.00090949	0.000783494	0.2479	2.19285e-05	0.000712074	0.9755
Firm age	21.4996	9.1	0.0197**	10.2953	8.60922	0.2340
Dummy sector 1	−0.0557358	0.267525	0.8353	−0.427755	0.25392	0.9247
Dummy sector 2	0.136374	0.273367	0.6187	−0.146366	0.245031	0.0946*
Concentration	−12.545	10.0498	0.2142	−5.3113	8.88782	0.5514
Assets	1.77144	5.99989	0.7683	−0.499824	5.27441	0.5512
HIM				−0.455172	0.145031	0.0021***
Privatization				0.19488	0.224904	0.3879
Participation				1.82475	0.379401	<0.0001***
R^2	0.086515			0.313864		
P-value (F)	0.067515			2.19e-07		

Table 75 - Relation between long run 5 years and age of institutional investor

After 5 years from the IPO, we can notice that the p-value of the variable "institutional investor age" is increased to approximately 1 in the model with more control variables. These results suggest us that **hypothesis 5.1 is confirmed** in all the time horizon studied.

Hypothesis 5.1 – Geographical distance

Long Run 1y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.61034	0.631791	0.0120**	1.72469	0.719056	0.0180**
Geographical distance	3.74404e-06	3.62112e-05	0.9178	2.13437e-06	3.69486e-05	0.9540
Firm age	7.08803	7.22415	0.3285	3.15395	8.27203	0.7037
Assets	−8.97944	5.06632	0.0788*	−3.18533	8.15448	0.6968
Concentration	3.55996	8.45932	0.6746	7.86223	9.50963	0.4100
Dummy sector 1	−0.52342	0.218034	0.0179**	−0.529319	0.243578	0.0318**
Dummy sector 2	−0.507576	0.224508	0.0255**	−0.437668	0.241319	0.0723*
Privatization				−0.107522	0.222433	0.6297
HIM				0.0613253	0.131616	0.6421
Offering				−8.93598	9.8674	0.3670
Participation				0.62586	0.380863	0.1030
R^2	0.062682			0.086787		
P-value (F)	0.236246			0.352072		

Table 76 - Relation between long run 1 year and geographical distance among firm and institutional investor

Long Run 3y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.893707	0.628102	0.1574	−0.0239877	0.719056	0.9720
Geographical distance	3.194e-05	3.59632e-05	0.3762	2.79524e-05	3.69486e-05	0.4260
Firm age	14.868	7.70475	0.0560*	21.8907	8.27203	0.0061***
Assets	−3.58021	7.1678	0.6184	−7.95088	8.15448	0.3053
Concentration	−1.09508	9.21656	0.9056	1.93978	9.50963	0.8298
Dummy sector 1				−0.651682	0.243578	0.0056***
Dummy sector 2				−0.360305	0.241319	0.1176
Privatization	0.119404	0.192985	0.5373	−0.1432	0.222433	0.4980
HIM	−0.267018	0.126223	0.0365**	−0.333237	0.131616	0.0086***
Offering	5.14592	8.93676	0.5658	5.34928	9.8674	0.5681
Participation	1.01455	0.364097	0.0062***	0.977555	0.380863	0.0077***
R^2	0.238518			0.294344		
P-value (F)	0.00005			6.16e-06		

Table 77 - Relation between long run 3 years and geographical distance among firm and institutional investor

Long Run 5y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−1.43712	0.752063	0.0584*	−0.572004	0.817504	0.4855
Geographical distance	3.56403e-05	4.30609e-05	0.4095	2.92987e-05	4.20073e-05	0.4869
Firm age	20.2879	9.22536	0.0298**	28.4632	9.40458	0.0030***
Assets	−11.7168	8.58243	0.1747	−13.6213	9.27093	0.1444
Concentration	−17.9841	11.0355	0.1058	−14.358	10.8116	0.1867
Dummy sector 1				−0.638835	0.276927	0.0228**
Dummy sector 2				−0.2096	0.274358	0.4464
Privatization	0.39803	0.231072	0.0875*	0.0636726	0.252887	0.8016
HIM	−0.526097	0.151134	0.0007***	−0.592701	0.149636	0.0001***
Offering	22.2763	10.7005	0.0395**	19.1152	11.2184	0.0910*
Participation	1.38046	0.435955	0.0020***	1.40845	0.433008	0.0015***
R^2	0.355888			0.39996		
P-value (F)	6.76e-09			1.38e-09		

Table 78 - Relation between long run 5 years and geographical distance among firm and institutional investor

In all the three periods, it is underlined that no relation exists between the geographical distance and the long run performance. In fact, the p-value is between 37% and 95%, so high values that permit to **confirm the hypothesis 5.1** also regarding the geographical distance.

Hypothesis 5.1 – Equity market distance

Long Run 1y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.30536	0.577176	0.0254**	1.29383	0.67673	0.0582*
Equity market distance	−0.000601375	0.00326406	0.8541	−0.000809277	0.0033211	0.8079
Asset	−6.26216	4.3158	0.1492	−5.23624	6.02937	0.3868
Firm age	1.2251	7.35088	0.8679	1.7482	7.93951	0.8261
Concentration	1.92867	7.14929	0.7878	2.18526	8.3234	0.7933
Dummy sector 1	−0.397953	0.195731	0.0441**	−0.416762	0.215369	0.0552*
Dummy sector 2	−0.456618	0.205096	0.0277**	−0.485545	0.215673	0.0261**
HIM				0.00412641	0.120476	0.9727
Privatization				0.059735	0.197209	0.7625
Offering				−1.08647	7.81399	0.8896
Sales				−1.12736e-05	6.77984e-06	0.0988*
R^2	0.051455			0.072998		
P-value (F)	0.323438			0.453773		

Table 79 - Relation between long run 1 year and equity market distance among firm and institutional investor

We can notice that no stable relation exists between the performance of the firm after 1 year and the equity market distance. This is due to the extremely high p-value (>0.8) in both the regressions. Due to this result, we can **confirm the hypothesis 5.1**

Long Run 3y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.111852	0.524146	0.8314	−0.821602	0.585832	0.1632
Equity market distance	0.000612763	0.00291888	0.8341	−0.000482116	0.00287501	0.8671
Assets	3.99898	3.85467	0.3015	−3.82707	5.21951	0.4648
Firm age	1.47539	6.89987	0.8310	5.49128	6.87308	0.4258
Concentration	−5.99329	6.40466	0.3512	−14.4549	7.2054	0.0470**
Dummy sector 1	−0.188854	0.188277	0.3177	−0.283423	0.186441	0.1310
Dummy sector 2	−0.294571	0.183986	0.1118	−0.438612	0.186703	0.0204**
HIM	−0.249366	0.106914	0.0212**	−0.243598	0.104294	0.0211**
Privatization	0.0711601	0.169636	0.6756	0.186134	0.17072	0.2777
Offering				15.4436	6.76442	0.0241**
Sales				−1.2291e-05	5.86917e-06	0.0382**
R^2	0.115457			0.171850		
P-value (F)	0.041451			0.006389		

Table 80 - Relation between long run 3 years and equity market distance among firm and institutional investor

Looking at the table, we can notice that the results after 3 years are the same to the one after 1 year. In fact, the p-value of the variable “equity market distance” after 3 years is very similar to the one after 1 year. For this reason, we can **confirm the hypothesis 5.1** also after 3 years.

Long Run 5y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−0.057865	0.670462	0.9314	−1.4797	0.729183	0.0445**
Equity market distance	−0.00148388	0.00373369	0.6917	−0.00349424	0.00357852	0.3307
Assets	4.60454	4.93071	0.3521	−12.7331	6.49671	0.0522*
Firm age	7.95335	8.82598	0.3692	14.7385	8.5549	0.0874*
Concentration	−13.8064	8.19253	0.0944*	−31.451	8.96854	0.0006***
Dummy sector 1	−0.0162425	0.240835	0.9463	−0.165199	0.232062	0.4779
Dummy sector 2	−0.113222	0.235346	0.6313	−0.368619	0.232389	0.1152
HIM	−0.433959	0.13676	0.0019***	−0.427844	0.129815	0.0013***
Privatization	0.269542	0.21699	0.2164	0.479625	0.212495	0.0257**
Offering				32.9439	8.41966	0.0001***
Sales				−9.99216e-06	7.30535e-06	0.1738
R^2	0.158199			0.253753		
P-value (F)	0.003994			0.000038		

Table 81 - Relation between long run 5 years and equity market distance among firm and institutional investor

Also 5 years after the IPO we can observe that the performance of the firm is not correlated with the “equity market distance”. The p-value is lower in respect to the other two studied periods, but always high. Summing up we can say that **hypothesis 5.1 is confirmed** in all the periods.

Overall Long run performance

To conclude the test for hypothesis 5.1, we have made an analysis that includes all the variables of interest.

Long Run 1y-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.53775	0.689081	0.0278**	1.0693	2.76134	0.7016
Institutional investor age	−0.000598797	0.000665473	0.3703	−0.00468541	0.00360974	0.2053
Geographical distance	−1.21873e-05	4.27773e-05	0.7763	1.13641e-05	0.000109343	0.9180
Equity market distance	−0.00237718	0.00402472	0.5561	−0.0127538	0.00868018	0.1533
Assets	−6.53378	6.07753	0.2849			
Firm age	2.61129	10.5613	0.8052	−21.4456	27.8488	0.4479
Concentration	1.38392	9.71156	0.8870	1.53331	33.6903	0.9640
HIM	0.0648286	0.148886	0.6642			
Privatization	−0.040536	0.240796	0.8666			
Dummy sector 1	−0.553817	0.274815	0.0465**			
Dummy sector 2	−0.62865	0.252429	0.0144**			
Participation				−0.182145	0.969602	0.8524
ΔSales				−0.00139677	0.0010141	0.1797
Total sales				−0.00131654	0.00095718	0.1803
R^2	0.085722			0.302015		
P-value (F)	0.485976			0.217809		

Table 82 - Relation between long run 1 year and independent variables

The results confirm the ones previously obtained considering the three variables in a separate way: for no one of the variable, there is a correlation with the long run performance after 1 year.

Long Run 3y-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.0740891	0.590236	0.9004	−2.882	2.25871	0.2128
Institutional investor age	0.000120426	0.000570013	0.8331	−0.000456603	0.00295268	0.8783
Geographical distance	−1.87151e-05	3.66411e-05	0.6106	1.30042e-05	8.94403e-05	0.8855
Equity market distance	−0.000250477	0.00344739	0.9422	−0.0017358 4	0.00710018	0.8087
Assets	3.83256	5.20574	0.4633			
Firm age	4.16863	9.04636	0.6459	−1.9772	22.7797	0.9315
Concentration	−6.98944	8.31848	0.4027	28.8443	27.5579	0.3045
HIM	−0.213365	0.127529	0.0974*			
Privatization	−0.0573338	0.206255	0.7816			
Dummy sector 1	−0.347531	0.235394	0.1429			
Dummy sector 2	−0.456976	0.216219	0.0370**			
Participation				0.922323	0.793112	0.2550
ΔSales				0.00151252	0.00082951	0.0793*
Total sales				0.00141129	0.000782951	0.0826*
R^2	0.0146718			0.257512		
P-value (F)	0.078811			0.352052		

Table 83 - Relation between long run 3 years and independent variables

After 3 years, as expected, all the three variables of interest have a high p-value, which suggests that no relation exists between the variables and the performance of the firm in the long run.

Long Run 5y-Mix	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.152262	0.736317	0.8366	0.491657	2.10449	0.8170
Institutional investor age	−0.0002183 6	0.00071109	0.7594	−0.0012749 3	0.00275109	0.6468
Geographical distance	−9.70987e-06	4.57097e-05	0.8322	−3.40961e-05	8.33337e-05	0.6857
Equity market distance	−0.0017871 5	0.00430061	0.6786	0.00227717	0.00661541	0.7333
Assets	7.77477	6.49414	0.2340			
Firm age	7.79627	11.2853	0.4912	5.55664	21.2244	0.7955
Concentration	−19.5896	10.3773	0.0619*	−19.3941	25.6763	0.4566
HIM	−0.462097	0.159092	0.0045***			
Privatization	0.05748	0.257303	0.8237			
Dummy sector 1	−0.364066	0.293653	0.2179			
Dummy sector 2	−0.291122	0.269733	0.2830			
Participation				1.5269	0.738962	0.0485**
ΔSales				0.00192575	0.00077287 5	0.0192**
Total sales				0.00180588	0.00072949 4	0.0199**
R^2	0.198264			0.379022		
P-value (F)	0.009366			0.076764		

Table 84 - Relation between long run 5 years and independent variables

Summing up, we can say that **hypothesis 5.1 is confirmed** in every time horizon. Furthermore, we have found a series of control variables that are strongly correlated with the long run performance. After 1 year, the most relevant is the variable "sector". After 3 years from the listing, the control variables that seem to have a correlation with the performance are "HIM" and "participation". After 5 years, in addition to "HIM", and "participation" there is also "offering".

Hypothesis 5.2

In this paragraph, the hypothesis 5.2 related to the specific category of institutional investors is tested.

Hypothesis 5.2 – VC/PE age

VC/PE Long Run 1y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	6.01201	1.87222	0.0031***	7.08646	2.11241	0.0023***
VC/PE age	−0.00339133	0.00184132	0.0754*	−0.00340097	0.00186368	0.0787*
Assets	−23.8958	11.1208	0.0398**	−27.7653	13.9217	0.0559*
Firm age	34.1219	19.5926	0.0918*	35.4234	22.7681	0.1310
Concentration	−30.0826	15.5074	0.0618*	−31.1584	18.3676	0.1009
Dummy sector 1				−0.328925	0.336285	0.3364
Dummy sector 2				−0.387738	0.319208	0.2346
R^2	0.286556			0.323794		
P-value(F)	0.033461			0.069132		

Table 85 - Relation between long run 1 year and age of VC/PE

As we supposed, the age of a venture capitalist and private equity has an impact on the performance after 1 year. In fact the p-value of the variable "VC/PE age" is low. We have to **reject the hypothesis 5.2** due to the fact that the coefficient is negative, while we have supposed a positive relation.

VC/PE Long Run 3y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.44633	1.28461	0.0665*	1.52216	2.21798	0.4982
VC/PE age	−0.00177509	0.00192171	0.3630	−0.00126162	0.00195681	0.5243
Concentration	−31.9157	16.4881	0.0624*	−32.3829	19.2855	0.1043
Total sales	−2.49208e-06	6.81675e-06	0.7172			
Firm age	0.698894	10.273	0.9462	−18.1617	23.9059	0.4538
Asset				9.07942	14.6174	0.5395
Dummy sector 1				−0.251456	0.35309	0.4823
Dummy sector 2				−0.203032	0.33516	0.5495
R^2	0.148840			0.198879		
P-value(F)	0.288217			0.355998		

Table 86 - Relation between long run 3 years and age of VC/PE

Changing the time horizon to 3 years, we can notice that the p-value of the variable "VC/PE age" becomes higher. This means that the influence of the age of the VC/PE is expired. For this reason, we have to **accept the hypothesis 5.2.**

VC/PE Long Run 5y-Age	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	5.5605	2.29704	0.0218**	7.08646	2.11241	0.0023***
VC/PE age	−0.00502073	0.00343624	0.1544	−0.00340097	0.00186368	0.0787*
Concentration	−68.8586	29.4825	0.0264**	−31.1584	18.3676	0.1009
Total sales	5.48078e-06	1.21891e-05	0.6562			
Firm age	−2.38063	18.3692	0.8977	35.4234	22.7681	0.1310
Asset				−27.7653	13.9217	0.0559*
Dummy sector 1				−0.328925	0.336285	0.3364
Dummy sector 2				−0.387738	0.319208	0.2346
R^2	0.195179			0.323794		
P-value(F)	0.151226			0.069132		

Table 87 - Relation between long run 5 years and age of VC/PE

Analysing the performance after 5 years from the IPO, we notice that the variable "VC/PE age" have again a low p-value. This is a strange and unexpected result and maybe is due to the narrow sample of data that we have.

Hypothesis 5.2 – VC/PE geographical distance

VC/PE Long Run 1y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3.66718	1.98579	0.0750*	5.44524	2.36466	0.0292**
Geographical distance	−1.70426e-05	8.33152e-05	0.8393	1.14626e-05	8.79625e-05	0.8973
Asset	−11.0369	11.4678	0.3438	−14.5871	13.4994	0.2894
Firm age	9.97844	19.7743	0.6176	11.6835	21.8054	0.5965
Concentration	−23.0905	18.5297	0.2227	−32.9585	21.2717	0.1329
Dummy sector 1				−0.373467	0.380007	0.3344
Dummy sector 2				−0.558948	0.382032	0.1550
R^2	0.138795			0.202605		
P-value(F)	0.345124			0.364799		

Table 88 - Relation between long run 1 year and geographical distance among firm and VC/PE

VC/PE Long Run 3y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	3,32503	1,36529	0,0215***	2.11238	2.34231	0.3751
Geographical distance	−4,40331e-05	7,99908e-05	0,5864	8.65345e-06	8.71313e-05	0.9216
Firm age	0,825265	10,0656	0,9352	−21.9679	21.5994	0.3182
HIM	−0,47846	0,206006	0,0277**			
Total Sales	5,21586e-07	6,57703e-06	0,9374			
Asset				12.8671	13.3719	0.3445
concentration	−39,7068	17,6018	0,0321**	−46.1122	21.0707	0.0375**
Dummy sector 1				−0.305231	0.376416	0.4245
Dummy sector 2				−0.402614	0.378422	0.2968
R^2	0.283001			0.234432		
P-value(F)	0.081397			0.259122		

Table 89 - Relation between long run 3 years and geographical distance among firm and VC/PE

VC/PE Long Run 5y-GD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.974992	3.35792	0.7736	1.41832	4.15232	0.7353
Geographical distance	−2.98375e-05	0.000140884	0.8338	−1.97224e-05	0.000154461	0.8993
Asset	38.8203	19.3917	0.0547*	36.6893	23.7049	0.1333
Firm age	−56.8342	33.4379	0.0999*	−54.5342	38.2901	0.1658
Concentration	−82.7604	31.3333	0.0132**	−82.9522	37.353	0.0349**
Dummy sector 1				−0.132983	0.667289	0.8435
Dummy sector 2				−0.116729	0.670845	0.8632
R^2	0.273875			0.274985		
P-value(F)	0.047987			0.113871		

Table 90 - Relation between long run 5 years and geographical distance among firm and VC/PE

Taking into consideration the relation between "geographical distance" and long run performance, we can notice that for the three periods of analysis the p-values are high that demonstrates a low level of meaningfulness. Summing up the results, we can say that **hypothesis 5.2 is in part rejected** due to the results of the first year. The outcomes of the third and fifth year, instead, are the ones that we expected.

Hypothesis 5.2 – VC/PE equity market distance

VC/PE Long Run 1y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	4.28356	1.92885	0.0343***	5.39212	2.15405	0.0187**
Equity Market Distance	0.000378576	0.00582695	0.9486	−0.0002779 5	0.0058735	0.9626
Asset	−16.6233	10.9469	0.1397	−19.1275	12.3252	0.1323
Firm age	19.6618	19.1379	0.3127	19.5424	20.1693	0.3412
Concentration	−21.5062	16.2057	0.1948	−25.97	17.392	0.1470
Dummy sector 1				−0.229281	0.336473	0.5014
Dummy sector 2				−0.430348	0.32152	0.1919
R^2	0.166689			0.223139		
P-value(F)	0.242856			0.293984		

Table 91 - Relation between long run 1 year and equity market distance among firm and VC/PE

VC/PE Long Run 3y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.81012	1.81195	0.6581	1.6046	2.06715	0.4444
Equity Market Distance	−0.00930599	0.00547381	0.0998*	−0.00986632	0.00563652	0.0914*
Asset	11.0807	10.2835	0.2901	7.52531	11.8279	0.5300
Firm age	−13.7899	17.978	0.4493	−11.1635	19.3555	0.5689
Concentration	−33.5304	15.2236	0.0357**	−33.5109	16.6903	0.0548*
Dummy sector 1				−0.241996	0.322897	0.4601
Dummy sector 2				−0.260156	0.308548	0.4065
R^2	0.212179			0.23353		
P-value(F)	0.128381			0.2618		

Table 92 - Relation between long run 3 years and equity market distance among firm and VC/PE

VC/PE Long Run 5y-EMD	Regression 1			Regression 2		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	5.05006	2.09999	0.0228**	−1.14581	3.87781	0.7699
Equity Market Distance	0.00624804	0.0101634	0.5435	−0.00564005	0.0105737	0.5981
Asset				29.2592	22.1883	0.1984
Total sales	8.51104e-06	9.95908e-06	0.3998			
HIM	−1.01018	0.367091	0.0101**			
Firm age				−45.5044	36.3095	0.2209
concentration	−57.6497	25.7916	0.0333**	−40.981	31.3097	0.2016
Dummy sector 1				−0.0748782	0.605731	0.9025
Dummy sector 2				0.216732	0.578813	0.7110
R^2	0.287035			0.187342		
P-value(F)	0.038222			0.423279		

Table 93 - Relation between long run 5 years and equity market distance among firm and VC/PE

Taking into consideration the relation between "Equity Market Distance" and long run performance, we can notice that: after 1 year from the IPO the p-value is high in both the regressions; after 3 years the regression coefficient of the variable is negative with a high level of meaningfulness; after 5 years the p-value is high again.

Summing up the results, we can say that **hypothesis 5.2 is rejected** mainly due to the absence of meaningfulness of the variable after 1 year.

Hypothesis 5.2 – VC/PE cultural distance

VC/PE Long Run 1y-CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	6.41142	1.8517	0.0019***	6.45616	1.7268	0.0008***
Cultural distance				−0.0021343	0.00149439	0.1632
ΔPDI	−0.0253273	0.064392	0.6973			
ΔIDV	−0.025786	0.021328	0.2375			
ΔMAS	0.0147299	0.0290212	0.6160			
ΔUAI	0.0103404	0.0205703	0.6194			
ΔLTO	0.0200875	0.017065	0.2498			
ΔIND	−0.0098011 1	0.0173217	0.5764			
HIM	−0.0791074	0.20851	0.7075	−0.136503	0.187322	0.4716
Participation	0.960188	0.600909	0.1222	0.815531	0.60153	0.1850
Offering	−33.5277	10.3399	0.0032***	−29.6022	9.66359	0.0045***
Concentration	−2.96505	16.1546	0.8558	−12.2363	15.3582	0.4317
R^2	0.495788			0.374754		
P-value (F)	0.026577			0.009454		

Table 94 - Relation between long run 1 year and cultural distance among firm and VC/PE

Considering the variable "cultural distance" as the sum of the 6 elements identified by Hofstede, we can notice that its coefficient is negative. This result confirms our hypothesis and if we take a look at the p-value, it demonstrates a weak correlation. Considering these two facts, we can **accept the hypothesis 5.2**.

If we consider each variable alone, we can notice that: no one of the variables presents a low p-value; half of the variables have a coefficient negative and half positive. Summing up the results we have to **reject the hypothesis 5.2**.

Now we consider the six variables separated:

VC/PE Long Run 1y-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	6.57648	1.70204	0.0005***	6.4191	1.76174	0.0010***
ΔPDI	−0.0235734	0.0132422	0.0849*			
ΔIDV				−0.00579305	0.00609855	0.3495
HIM	−0.121481	0.181991	0.5094	−0.133166	0.193662	0.4968
Participation	0.899384	0.596701	0.1419	0.727548	0.60742	0.2401
Offering	−30.4868	9.49471	0.0031***	−30.2178	9.8249	0.0044***
Concentration	−11.6826	15.0363	0.4431	−10.9353	15.5803	0.4880
R^2	0.395417			0.352461		
P-value (F)	0.006014			0.015057		

Table 95 - Relation between long run 1 year and PDI/IDV

VC/PE Long Run 1y-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	6.37774	1.77805	0.0011***	6.42599	1.74206	0.0009***
ΔMAS	−0.00476032	0.0071814	0.5123			
ΔUAI				−0.00710653	0.00585433	0.2340
HIM	−0.124002	0.197065	0.5338	−0.077242	0.18571	0.6803
Participation	0.723036	0.612078	0.2465	0.802299	0.607066	0.1960
Offering	−30.7435	9.92991	0.0041***	−29.1613	9.77618	0.0055***
Concentration	−9.48924	15.6259	0.5481	−13.8606	15.7797	0.3865
R^2	0.342926			0.363851		
P-value (F)	0.018246			0.261247		

Table 96 - Relation between long run 1 year and MAS/UAI

VC/PE Long Run 1y-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	6.20543	1.77528	0.0015***	6.11372	1.66705	0.0009***
ΔLTO	0.00156274	0.0083949	0.8535			
ΔIND				−0.0102858	0.00504303	0.0500**
HIM	−0.0745345	0.199748	0.7116	−0.0847479	0.178337	0.6380
Participation	0.698939	0.61561	0.2649	0.903741	0.586404	0.1334
Offering	−30.5049	10.0884	0.0050***	−29.463	9.3658	0.0036***
Concentration	−8.90898	16.0987	0.5840	−8.78289	14.7806	0.5567
R^2	0.334357			0.412457		
P-value (F)	0.02161			0.004076		

Table 97 - Relation between long run 1 year and LTO/IND

Taking alone each one of the six variables that compose the cultural distance, we have obtained a meaningfulness for the variables "ΔPDI" and "ΔIND", both with a negative coefficient. The other variables have no meaningfulness. For these reasons we can say that after 1 year from the IPO exist a relation between the cultural distance and the performance of the firm. So we can **accept the hypothesis 5.2**.

The second period analysed is after 3 years from the moment of the listing.

VC/PE Long Run 3y-CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	0.0100954	1.94751	0.9959	1.78117	1.90002	0.3558
Cultural distance				−0.000437487	0.0016443	0.7920
ΔPDI	0.121676	0.0677235	0.0840*			
ΔIDV	−0.0279252	0.0224315	0.2243			
ΔMAS	0.00525795	0.0305227	0.8646			
ΔUAI	0.00763406	0.0216346	0.7270			
ΔLTO	−0.00596226	0.017948	0.7424			
ΔIND	−0.0486495	0.0182179	0.0129**			
HIM	−0.421695	0.219298	0.0655*	−0.382368	0.206113	0.0731*
Participation	0.328843	0.631999	0.6072	0.41165	0.661874	0.5385
Offering	6.35469	10.8749	0.5640	0.963265	10.633	0.9284
Concentration	−14.0694	16.9905	0.4152	−24.6972	16.8989	0.1540
R^2	0.436287			0.234902		
P-value (F)	0.074134			0.122274		

Table 98 - Relation between long run 3 years and cultural distance among firm and VC/PE

Considering each variable alone, we can notice that: "ΔPDI" has a low p-value, but a positive coefficient; "ΔIND" has a negative coefficient and a high level of meaningfulness; the other variables do not show any correlation with the performance of the firm after 3 years. Summing up the results, giving the fact that for the majority of variables there is not a correlation, we can **accept the hypothesis 5.2**.

Considering the variable "cultural distance" as the sum of the 6 elements that compose the cultural distance we can notice that its coefficient is negative, but the p-value explains that no correlation exists. Considering these two facts, we can **accept the hypothesis 5.2.**

Now, we consider the six variables in a separate way:

VC/PE Long Run 3y-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.79221	1.90453	0.3540	1.70528	1.90653	0.3780
ΔPDI	−0.00393103	0.0148176	0.7925			
ΔIDV				0.000800672	0.00659978	0.9042
HIM	−0.377937	0.203643	0.0730*	−0.365535	0.209579	0.0910*
Participation	0.42132	0.667691	0.5327	0.385083	0.657343	0.5622
Offering	0.792616	10.6243	0.9410	0.840545	10.6324	0.9375
Concentration	−24.5021	16.8252	0.1554	−23.9548	16.8609	0.1654
R^2	0.234892			0.233519		
P-value (F)	0.122293			0.124889		

Table 99 - Relation between long run 3 years and PDI/IDV

VC/PE Long Run 3y-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.61637	1.90422	0.4025	1.80355	1.89801	0.3493
ΔMAS	0.0035157	0.00769099	0.6508			
ΔUAI				−0.00244245	0.0063784	0.7044
HIM	−0.344055	0.211049	0.1132	−0.36899	0.202334	0.0779*
Participation	0.37349	0.65551	0.5729	0.422755	0.66141	0.5274
Offering	1.23481	10.6345	0.9083	1.19882	10.6513	0.9111
Concentration	−24.1906	16.7347	0.1583	−25.6282	17.1923	0.1462
R^2	0.238289			0.236765		
P-value (F)	0.116059			0.118823		

Table 100 - Relation between long run 3 years and MAS/UAI

VC/PE Long Run 3y-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	1.67624	1.88148	0.3798	1.65255	1.83755	0.3754
ΔLTO	0.00602174	0.0088971	0.5035			
ΔIND				−0.00775714	0.0055588	0.1728
HIM	−0.327428	0.211697	0.1321	−0.37101	0.196576	0.0685*
Participation	0.374081	0.652437	0.5705	0.540147	0.646378	0.4097
Offering	−0.305953	10.6919	0.9774	1.40081	10.3237	0.8929
Concentration	−21.6797	17.0618	0.2133	−23.5685	16.2922	0.1580
R^2	0.244321			0.278479		
P-value (F)	0.105637			0.060242		

Table 101 - Relation between long run 3 years and LTO/IND

Taking alone each one of the six variables which compose the cultural distance, we can notice that no one of those have a correlation with the performance of the firm after 3 years. So we can **accept the hypothesis 5.2** for the time horizon of 3 years.

Finally, we consider a time horizon of 5 years:

VC/PE Long Run 5y-CD	All Variables			Sum		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	−1.65585	3.08021	0.5954	2.27148	3.20278	0.4835
Cultural distance				−0.00158438	0.00277172	0.5717
ΔPDI	0.150931	0.107113	0.1707			
ΔIDV	−0.074314	0.035478	0.0461**			
ΔMAS	0.0516407	0.0482752	0.2946			
ΔUAI	0.0580332	0.0342176	0.1018			
ΔLTO	−0.0360564	0.0283868	0.2153			
ΔIND	−0.0938181	0.0288137	0.0031***			
HIM	−1.21869	0.346845	0.0016***	−0.962862	0.347435	0.0094***
Participation	0.665709	0.999581	0.5113	0.80384	1.11569	0.4766
Offering	24.149	17.1999	0.1721	12.0258	17.9236	0.5072
Concentration	−28.7146	26.8724	0.2951	−53.3647	28.4856	0.0705*
R^2	0.580252			0.352887		
P-value (F)	0.004199			0.014927		

Table 102 - Relation between long run 5 years and cultural distance among firm and VC/PE

Considering the variable "cultural distance", there is no correlation between it and the long run 5 years performance due to the high p-value (≃0.57), and so we can **accept the hypothesis 5.2.**

If we consider each variable alone, we can notice that the variables "ΔIND" and "ΔIDV" have a negative coefficient and a high level of meaningfulness. The other variables show a very weak correlation with the performance of the firm after 5 years. Summing up the results we can **accept the hypothesis 5.2**.

In the following tables there is a regression for each one of the six variables:

VC/PE Long Run 5y-CD	PDI			IDV		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.34199	3.20534	0.4705	2.13222	3.22727	0.5137
ΔPDI	−0.0162549	0.0249381	0.5193			
ΔIDV				−0.0010472	0.0111717	0.9259
HIM	−0.949843	0.342732	0.0094***	−0.93396	0.354763	0.0131**
Participation	0.855702	1.12373	0.4521	0.724564	1.11271	0.5197
Offering	11.3839	17.8808	0.5290	11.5745	17.9979	0.5249
Concentration	−52.841	28.317	0.0715*	−51.6205	28.5411	0.0802*
R^2	0.354908			0.346252		
P-value (F)	0.014323			0.017072		

Table 103 - Relation between long run 5 years and PDI/IDV

VC/PE Long Run 5y-CD	MAS			UAI		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.03091	3.23269	0.5344	2.19605	3.21486	0.4996
ΔMAS	0.00197323	0.0130566	0.8809			
ΔUAI				−0.00344456	0.0108038	0.7520
HIM	−0.909748	0.358287	0.0163**	−0.921155	0.342714	0.0115**
Participation	0.711634	1.11283	0.5272	0.768352	1.1203	0.4979
Offering	11.7984	18.0537	0.5182	12.0836	18.0413	0.5080
Concentration	−51.3948	28.4097	0.0801*	−53.4597	29.1204	0.0760*
R^2	0.346548			0.348204		
P-value (F)	0.01697			0.016414		

Table 104 - Relation between long run 5 years and MAS/UAI

VC/PE Long Run 5y-CD	LTO			IND		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	2.05086	3.20273	0.5267	1.92784	3.05719	0.5329
ΔLTO	0.00483405	0.015145	0.7517			
ΔIND				−0.0162832	0.00924835	0.0882*
HIM	−0.889642	0.36036	0.0193**	−0.923295	0.32705	0.0082***
Participation	0.708479	1.11061	0.5282	1.03835	1.0754	0.3417
Offering	10.6571	18.2002	0.5624	12.7553	17.1758	0.4633
Concentration	−49.3898	29.0434	0.0990*	−50.157	27.1059	0.0738*
R^2	0.348209			0.405514		
P-value (F)	0.016412			0.004785		

Table 105 - Relation between long run 5 years and LTO/IND

Also considering the variables separated, no relation exists between them and the long run performance after 5 years, so we can **accept the hypothesis 5.2**. An exception is given by the variable "ΔIND" for which exists a robust negative correlation with the performance 5 years after the IPO.

Hypothesis 5.2 – VC/PE - Overall Long run performance

The last analyses contain all the independent variables of interest:

VC/PE Long Run-Mix	1 year			3 years		
	Coefficient	*Std. Error*	*p-value*	*Coefficient*	*Std. Error*	*p-value*
Constant	7.20209	1.95239	0.0014***	−0.273015	2.16407	0.9008
VC/PE age	−0.00121496	0.00208155	0.5657	−0.00122904	0.00230722	0.5998
Geographical distance	0.000159677	0.000127279	0.2234	−8.41057e-05	0.000141078	0.5574
Equity market distance	−0.00255634	0.00711266	0.7229	−0.00214588	0.0078838	0.7881
Cultural distance	−0.00377304	0.00301262	0.2242	0.000517378	0.00333924	0.8783
Firm age	2.98869	11.4056	0.7958	−8.52696	12.6421	0.5074
Participation	1.18765	0.601968	0.0618*	1.37457	0.667232	0.0520*
Offering	−40.5076	11.8488	0.0026***	1.02916	13.1334	0.9383
HIM	0.0521889	0.252289	0.8381	−0.374296	0.279642	0.1951
R^2	0.479769			0.303736		
P-value (F)	0.049971			0.375534		

Table 106 - Relation between long run 1 year/3 years and independent variables related to VC/PE

VC/PE Long Run-Mix	5 years		
	Coefficient	*Std. Error*	*p-value*
Constant	−2.3566	3.812	0.5431
VC/PE age	−0.00246045	0.00406417	0.5514
Geographical distance	−0.000257798	0.000248509	0.3114
Equity market distance	0.0123701	0.0138873	0.3832
Cultural distance	0.00260203	0.00588207	0.6627
Firm age	−22.6627	22.2691	0.3204
Participation	2.2374	1.17533	0.0708*
Offering	15.8779	23.1344	0.5000
HIM	−1.09464	0.492589	0.0374**
R^2	0.345544		
P-value (F)	0.259067		

Table 107 - Relation between long run 5 years and independent variables related to VC/PE

Looking at the results we can notice that no one of the four variables of interest is correlated with the performance of the firm after the IPO, also after 1 year. So we have to **reject the hypothesis 5.2**.

We can notice that other variables are strictly related with the long run performance of the firm. They are: after 1 year “offering”; after 3 and 5 years “HIM” and “concentration”

7 Conclusions

In this thesis, we have investigated the impact on IPOs of same characteristics of institutional investors belonging to the ownership structure of the company at the moment of the listing. We have considered a sample of Italian firms that made an initial public offering between 1997 and 2015. In a first moment, we have done analyses considering all types of institutional investors and after we concentrated on a specific category of institutional investors: venture capitalists and private equity funds.

The variable that we have considered are: the age of the institutional investor that belongs to the listing firm at the moment of the IPO; the geographical distance that exists between the headquarter of the target company and the headquarter of the institutional investor; the equity market distance between the country of the listing firm and the country of the institutional investor; only for venture capitalists and private equity funds, the cultural distance between the firm and the VC/PE.

The literature about the institutional investors in the ownership structure of a company is ample, but it is not specific how this fact influences the different phases of the listing process. For example, Erenburg et al. [2016]; Aghion et al. [2013]; Brav et al. [2008] explained that the presence of institutional investors in the ownership structure of a company affects managerial decisions, while Karpoff [2001] affirmed that the engage in activism of institutional investors can lead to change in the governance structure of the company. Moreover, Denes et al. [2016] demonstrated the positive effect of institutional investors on the value of the firm.

We have investigated the impact of the presence of institutional investors in the ownership structure at the moment of listing not in general terms, but referred to the valuation made by investment banks, the underpricing after the first listing day, the overvaluation and the long run performance 1, 3 and 5 years after the IPO.

In order to analyses the effects, we have conducted univariate and multivariate analysis, considering different control variables related to the listing firm and the market at the moment of the IPO.

Firstly, we made univariate tests in order to evaluate the general impact of institutional investors on the different phenomena of the initial public offering. In particular, we found out that companies that have institutional investors in the ownership structure at the moment of the IPO obtained a higher valuation made by investment banks, while the underpricing is lower as a consequence of the higher offering price set by institutional investors to "raise more money". The total oversubscription and the one generated by retail investors are lower in the case of institutional investors' backed companies, but the oversubscription generated by institutional investors is the same as the case of no institutional investors in the ownership. In the long run the performance, calculated with the BHAR, are the same between the two samples, except during the first year after the IPO in which the firms without institutional investors at the moment of the listing perform better than the others: this can be due to the loss of a leader into the firm, in this case, the institutional investor.

After, we have conducted multivariate analysis in which for each phenomenon of the IPO we evaluate the impact of the institutional investor's age, the geographical distance, the equity market distance, and, for VC and PE, the cultural distance.

Regarding the valuation, we found out that both the age and the institutional investor at the moment of IPO and the equity market distance between the firm the institutional investor has no impact on the valuation of the firm. This disagrees with our hypotheses in which we assumed a positive correlation between the two variables and the valuation of the company.

On the contrary, between geographical distance and the valuation, as we hypothesized, there is a negative correlation: increasing the distance as the crow flies between the headquarter of the institutional investor and the one of the listing firm, the valuation decreases.

Another interesting result is the correlation between the valuation and the cultural distance, in particular, considering the variable "indulgence versus restraint": a positive correlation coefficient demonstrates an unexpected result.

During the analyses, we found out other correlations between the valuation and some control variables. In particular, it exists a negative correlation with the variable "firm age", that represents the age of the listing firm at the moment of the IPO, and with the "ASII", that is the allocation of shares to the institutional investors in the prospectus. On the contrary, a positive correlation connects the valuation with the dilution and with the presence of hot issue markets. It could be interesting in future thesis investigating these phenomena and the related correlations.

The second group of regressions is related to the underpricing at the end of the first listing day. No correlation exists between the geographical distance and the underpricing of the firm, while we found out an interesting relation with the age of institutional investor and with the equity market distance. Contrary to our expectations, an older institutional investor generates a higher underpricing. As we expected, instead, an institutional investor located in a country with more developed equity market leads to a higher

underpricing. This last relation does not hold for the subcategory of venture capitalists and private equity funds.

Another interesting result is the correlation between some variables that compose the cultural distance and the underpricing. In particular, we found out that for the "uncertainty avoidance index" the coefficient is positive, while for "individualism versus collectivism" and "long term orientation versus short term normative orientation" the coefficient is negative.

If we consider the control variables some relations exist between them and the underpricing. In the case of venture capitalists and private equity funds, there is a negative correlation between underpricing and the variables "IPO scaling" and "revision", while in the case of the whole institutional investors there is a positive correlation with the "Tobin's Q" and the "volatility".

The next block of analyses concerned the oversubscription of shares created by retail investors, institutional investors and the two categories together. One interesting result is the relation between total oversubscription and equity market distance; we noticed that an institutional investor situated in a country with a more developed equity market generated a higher oversubscription. This result confirms our hypothesis. This outcome is confirmed also considering only the retail investors' oversubscription, while it is not true for the oversubscription generated only by institutional investors.

There is no evidence of correlation, instead, between oversubscription and the institutional investor age, and between the oversubscription and the geographical distance.

Another interesting result is the correlation between the oversubscription of shares generated by retail investors and some variables that form the cultural distance. The correlation coefficient for the "indulgence versus restraint" variable is positive, instead the ones of the "power distance index" and of the "long term orientation versus short term normative orientation" are negative. On the contrary, if we take into consideration the total oversubscription and the one generated by institutional investors there are no correlations among them and the oversubscription.

Considering the control variables, some interesting results have come out from the analyses regarding the oversubscription. There is a strong correlation between oversubscription and the variables “offering”, “Hot Issue Markets”, and “Assets”, and a weak correlation between “Tobin’s Q” and “firm age”. Considering only the oversubscription generated by retail investors, the results are slightly different: there is a strong correlation with the variables “offering”, “Hot Issue Markets”, “allocation of shares to retail investors” and “firm age”, and a weak correlation with “assets” and “concentration”. Regarding the institutional investors’ oversubscription, there is a strong correlation with “offering”, “Hot Issue Markets”, “firm age” and “assets”, and a weak correlation with the variable “sector”.

If we take into considerations the analyses related only to venture capitalist and private equity funds, the total oversubscription has a strong correlation with the variables “Hot Issue Markets” and “concentration”, while there is a weak correlation with the “offering”. For oversubscription related to retail investors, the correlation is strong with “Hot Issue Markets” and “allocation of shares to retail investors”. Finally, the oversubscription of institutional investors has a strong correlation with “offering”, “Hot Issue Markets”, “concentration” and “assets”

The last analyses are related to the correlation between the variables of interest and the long run performance of the listed company, in particular, 1,3 and 5 years after the IPO.

As we have hypothesized, there are no correlations between the variables of interest and the performance of the firm in the years following the initial public offering.

Considering the venture capitalists and private equity funds, instead, there is a negative correlation with the institutional investor’s age, the equity market distance, and the cultural distance. In particular, for the cultural distance the main variables that show a correlation are: “power distance index” and “indulgence versus restraint” after one year, both with a negative correlation coefficient; after three years, “power distance index” with a positive coefficient and “indulgence versus restraint” with a negative coefficient; after five years, “indulgence versus restraint” and “individualism versus collectivism” both with a negative coefficient.

Also in this case, we found out a set of control variables correlated with the long run performance. In particular, for private equity funds and venture capitalists, the long run performance after one year are correlated with the "offering", while the ones after three and five years are correlated with "concentration" and "Hot Issue Markets". Regarding all types of institutional investors, instead, after one year there is a correlation with the variable "sector", after three years with "Hot Issue Markets" and "participation", and after five years from the IPO, in addition to the previous two, there is also a correlation with the "offering".

In general, we can say that the analysis related to all types of institutional investors are robust and the results underline the existence of a relation between the presence of an institutional investor in the ownership structure of a firm at the moment of the listing and all the phenomena typically related to the IPO.

On the contrary, the results referred only to venture capitalists and private equity funds are so stable due to the small sample of data that we were able to collect. However, also for this subcategory of institutional investors, some important correlations have emerged.

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Appendix

-Table A1: useful variables of the sample of Italian IPOs between 1997 and 2015

Name of the variable	Definition
Allocation of shares to retail investors	Ratio between the number of shares designed to retail investors in the prospectus and the total number shares in the IPO
Allocation of shares to institutional investors	Ratio between the number of shares designed to institutional investors in the prospectus and the total number shares in the IPO
Oversubscription retail investors	Ratio between the number of shares required by retail investors and the number of shares assigned to retail investors in the prospectus
Oversubscription institutional investors	Ratio between the number of shares required by institutional investors and the number of shares assigned to institutional investors in the prospectus
Revision	$(p_{offering} - p_{average})/(p_{max} - p_{min})$
Underpricing	Ratio between the return of the first listing day and the offering price
IPO scaling	Ratio between the expected number of shares in the prospectus and the actual number of shares allocated
Tobin's Q	$\frac{market\ value\ assets}{book\ value\ assets}$
BHAR	$BHAR = \left[\prod_{i=1}^{\min(T,delist)} (1 + R_{i,t})\right] - \left[\prod_{i=1}^{\min(T,delist)} (1 + R_{Market,t})\right]$
Participation	Number of secondary shares in the IPO deducted by the number of outstanding shares pre-IPO
Dilution	Number of primary shares in the IPO deducted by the number of outstanding shares pre-IPO

Concentration	Natural logarithm of Herfindahl index related to the ownership structure of the company
Assets	Natural logarithm of the assets of the firm
Offering	Natural logarithm of the offering size
Firm age	Natural logarithm of the age of the firm plus one
Privatization	Dummy variable equal to 1 if the IPO is a privatization, 0 in other cases
IPO volume	Number of IPOs 6 weeks before and 2 weeks after the target IPO
Reputation	Dummy variable equal to 1 if the lead underwriter is one of the best five Italian investment banks or it is an American one, 0 in other cases
Venture capitalist backed	Dummy variable equal to 1 if in the ownership structure of the target firm before the IPO there is a venture capitalist or a private equity fund, 0 in other cases
Market	Market index performance in the two weeks before the decision of the offering price
Volatility	Volatility of the market index performance in the two weeks before the decision of the offering price
Retail	Dummy variable equal to 1 if the main bookrunner has as the main activity the intermediation with the retail investors, 0 in other cases
Hot issue markets	Dummy variable equal to 1 if the IPO was made between 1999-2000, 2006-2007 or 2014-2015, 0 in other cases
Uncertainty	$\frac{p_{max} - p_{min}}{p_{middle}}$
Debt	Amount of debt in the balance sheet of the target firm
OP/IV Middle	$\frac{Offering\ price_{middle}}{Intrinsic\ value_{DCF}}$

Tobin's Q middle	Tobin's Q calculated with the average offering price
Sales	Natural logarithm of the revenues
Δ Sales	Difference between the revenues at time t and the revenues at time t-1
Total sales	Revenues of the target company