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Master Thesis

The IPO phase in the Internet industry: study and analysis of information asymmetry in the market, before and after the dot.com Bubble.

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Abstract

This thesis analyzes the behavior of Internet firms in the last two decades. The paper studies the connection between financial accounting variables and values assigned issuers and investors to Internet shares during different stages of the IPO. After examining the market conditions in this particular industry and after asserting the gap of information that create information asymmetry between issuers and investors, the paper questions if the market could face another Bubble phase, as similarly happened in the 2000. Concluding that the burst of the bubble changed the conditions in which the market is not operating efficiently, the study demonstrate that is not probable that this industry will face another bubble phase, due to the fact that the prudence and knowledge towards Internet firms is different after the brake-down of the market. The study leaves room for improvement suggesting that future studies could incorporate web metric variables that apparently drive the price of the shares for this particular industry.

Report

My hypothetical report for a possible investor/issuer that is asking for advice in this type of investment would be the following: the market presents some anomalies; due to the fact that is not easy to assess the real value of certain companies that not account revenues or incomes. Because of this is worth taking into consideration, as complementary analysis, those web metric variables that shed light on the abstract value of certain companies. However, this does not disprove that financials can report the real value of the company and that can be used as interpretation of Internet firm performances. It is worth to mention that the market nowadays work more efficiently and can better interpret the real value of a dot.com firm. I believe that it can also be useful understand in which business the company is operating (B2C, service provider, etc.) in order to better understand which are the possible value drivers for the .company. Moreover, it is worth to mention that, as for other brick and mortar companies, Gross Profit and Net Incomes reflect less noisy value drivers than Revenues that can be pushed easily by the management of the company. Thus, concluding my analysis, it can be very profitable investing in Internet firms, although it requires a 360 degrees analysis that considers also non-financial variables and the structure of the firm.

Key words: Internet IPO, economic fundamental, valuation, information asymmetry

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I. Introduction

1.1 The Internet era

Nowadays the Internet is one of the most important sources of information. Different categories of people use it for diverse tasks. It represents a new media able to provide any sort of data. It is also capable to transmit information all over the world. Because of this, Internet companies became more and more important and their value increased drastically during the last 20 years. Hence, analysts started looking at this new industry more and more carefully. Moreover, the burst of the dot.com Bubble, during 1999-2001, interested several investors operating in the market. The overconfidence in investing in this kind of market drove the mispricing of Internet shares, and raised new questions related to identifying real value drivers for companies that are hardly valuable and assessable. In this unclear environment, analysts, traders and researchers tried to shed lights on this controversial subject. Since 1995, when first Internet companies, as Amazon.com, started operating in the financial market, various actors, conscious of the value and the opportunity that these companies represented, began believing that a clearer environment was necessary. This necessity increased after the burst of the Bubble.

The internet boom was partly caused by the fact that institute an Internet company before the burst of the Bubble did not require an elevated amount of capital, ensuring great profits with small investment. The mere nature of the firm sometimes is reduced to few computers and one algorithm at the beginning. Typical example is Google during its early stage. Thus, is complicated and tricky to identify correct value drivers for these companies. A considerable amount of research has focused on the comprehension of how dot.com firms create value and what are the distinctive characteristics for a successful Internet firm.

It is widely believed that Internet firms represent the new frontier in term of profitability. For instance as Alibaba's IPO that achieved to collect huge amount of capital (around 25 billion \$). However, it is also wide spread the general knowledge that these firms are very risky and surrounded by a high degree of uncertainty. Expectations and consideration in this market changed drastically before and after the Bubble. In particular, behavioral finance studies have proved a consistent level of overconfidence in Internet companies, leading the market to the collapse. Moreover low entry barriers, that were a peculiar aspect of the "young phase" for this market, allowed the creation of impressive number of company in this sector. Financial system has faced several problems with the introduction of brand-new industries. However,

only the Internet sector has been able to generate a unique capacity of attracting huge amount of capital and investors in such a short period of time.

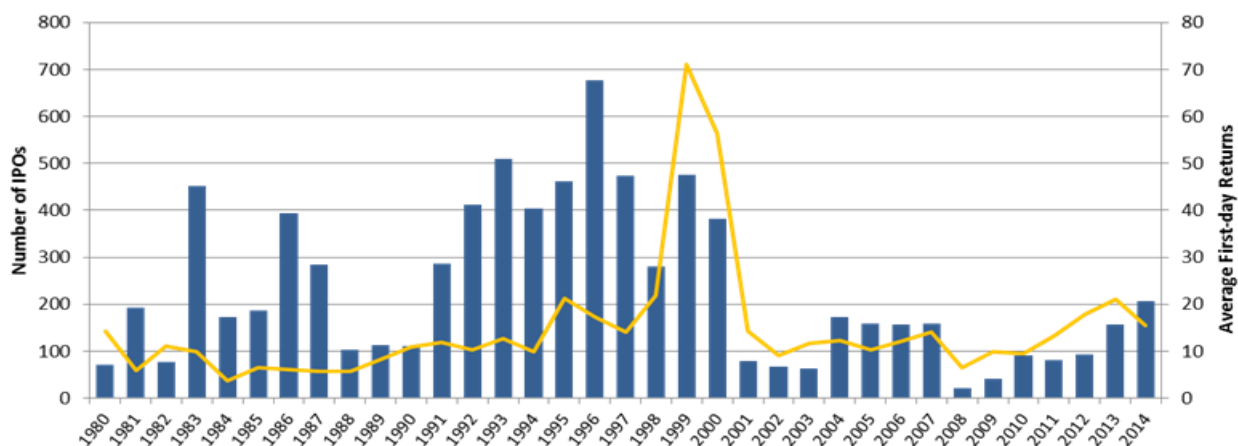
Aim of the research is investigating in different period of time how the Internet firms evolved, which are the characteristics that more influence stock prices, especially during the IPO phase that result be a great opportunity for investors to collect capitals. In fact, central target for this research is identifying whether there are similarities among different period of time regressed, and suggest if another Bubble will be possible Thus the following research question will be analyzed in this study:

RQ: is there a possibility of facing a new dot.com Bubble?

It is interesting evaluate whether the market, after the Bubble, has increased its efficiency in assessing correct price for Internet stock prices. The thesis is divided in six sections: The goal of this second section of the study is analyzing all of those theories and insights presented in the last two decades of study relating to Internet firms and dot.com Bubble. The third section presents the development of the hypotheses and the theoretical framework; the fourth section present the sample and data collected; the fifth section evidence outcomes, and lastly, the sixth section conclude the study summing up the findings and discussion possible bias and limitations.

Number of Offerings (bars) and Average First-day Returns (yellow) on US IPOs, 1980-2014

The number of IPOs excludes closed-end funds, REITs, SPACs, natural resource limited partnerships, ADRs, bank and S&L IPOs, IPOs with an offer price below \$5 per share, unit offers, small best efforts deals, and IPOs that are not CRSP-listed within six months of the IPO.



Source: Jay Ritter, University of Florida

II. Literature Review

This section analyzes and revises the most important papers related to Internet industry and its development. In particular, the analysis of trends that Internet industry has faced in the last 20 years, which were the main reasons that could have caused the burst of the dot.com Bubble, how main actors performed and faced the market breakdown.

2.1 The IPO procedure

The Initial Public Offering represents an important step in the life-cycle of a company. As Ljungqvist (2004) stated, firms go public for several reasons: it is possible to have access to equity capitals, lowering down cost of funding for the company; it provides to possibility of being traded for the company, allowing stakeholders to diversify investments and achieve capital gains from the company. The IPO can be structured in different ways, via an auction, fixed price or book building method. In the auction method issuer decides a minimum price; consequently investors make bids on that offer, in which they specify also the number of stocks that they want to buy. In the fixed price methodology the issuer is divulging in advance to the investors involved the offering price of the IPO. In the book building methodology, underwriter and issuer set a range price to which they willing to sell shares; after that, the underwriter presents to investors the offer that may express a non-binding interest for the offered shares. The last methodology result to be the most used nowadays and especially in the US market. Following phases for this methodology are important in order to define actors operating in the market and the possible spot in which information asymmetry plays a determinant role. In fact, when the board of the company has decided to issue equity, an investment bank is hired to be the underwriter, support and consult the company during the whole process.

Also the Security and Exchange Commission participates in this process. SEC requires to the company to a registration statement (part of this document is the preliminary prospectus described hereafter). At this point, the firm in accordance with the underwriter prepares a preliminary prospectus which is filled in with several types of information as for example financials, the kind of shares issued and the specification for the offer (as for instance the range of the offering price). This process is done under Security Exchange Commission vigilance that checks that all information is included in the prospectus and the company is reporting fairly. The preliminary prospectus may circulate among investors before the offering price is decided. After the SEC review and if the company agrees, SEC approves the

public sale for the IPO. At last, the company prepares a final prospectus of the IPO that contains all the information necessary for the equity issue, including the final offering price.

As it can be easily noticeable, and Ljungqvist (2004) reported in his study, the entire process takes time and already the difference in time between the preliminary and the final prospectuses can create information asymmetry issues, due to the fact that new information may be available after the preliminary prospectus is published. However, this will be discussed more in detail in the next sections.

2.2 Market characteristics

The next step of this analysis is defining the environment where Internet companies issue their shares. As a matter of fact, the market and the number of investors attracted from this industry have changed during the last two decades, partly due to the bubble. The industry analyzed in this research presents some peculiar aspects. According to the case study that Wang (2007) presented, different possible scenarios are shown, after the introduction of a brand new technology. Fascinating insight discussed in this research lies in the fact that the author try to define how Internet spread out in such a fast and efficient way. As a matter of fact, using Jovanovic and MacDonald (1994) model, where the innovation opportunity pushes firms to make an optimal decision assessing the best option among three possible scenarios: 1) the new firm operating with the new technology can enter in the market; 2) old firm can leave the market; 3) existing firms can integrate the new technology. Companies point at reaching the optimum, which is determined by the demand curve. Hence, after the introduction of the new technology, the company needs to forecast if is profitable paying to integrate the technology a being still part of the market, or if the new entrants are able to take the position of existing firms. The author proved that the equilibrium in a specific industry depends on the capability of creating synergies between the new technologies and the existing firms. This is the case of the retail industry, where existing companies used the Internet to create new distribution channels. Therefore, they are able to maintain their competitive advantage among other new peers adopting the new technology.

At the beginning, the system was not able to identify the precise value drivers for these companies. Hence, there was a discrepancy between the market value of Internet shares and the efficient value. Researchers have been analyzing causes and effects of this problem under different views. The first area of interest that we are going to analyze is developed under behavioral finance assumptions. It is widely believed that Internet companies where

overvalued during and before the burst of the Bubble. One of the plausible explanations is the over-optimism behavior that investors had for this industry. Ofek and Richardson (2003) assert that the Bubble burst because shares of Internet companies were not more traded during the lock-up restriction period¹. It is widely accepted that if the investor is not able to short-sell (selling before physically having the stock) or trade the share during the lock-up period, only those investors, who are optimistic about the company, will take part in the IPO. Consequently, stocks will be over-valuated. Authors corroborate this theory proving that, after the expiration of the lock-up period, the number of shares traded increase and the stock price decrease. This might evidence that after the end of the period where the shares were protected by the lock-up agreement, the market start valuating them more efficiently, counting also those pessimistic investors that were affecting stock prices by trading directly these shares or short-selling them. The most relevant consequence of this coverage mechanism is that the market was not able to fairly price stocks because the absence of pessimistic investors that could have balanced out, without external intervention, the price of Internet shares. Moreover, over-optimism created a snowball effect on forecasting performances of Internet firms, leading to a greater degree of discrepancy of the share prices.

In their previous study, Ofek and Richardson (2002) studied the rationality of internet firms' market. In this study authors aim at evidencing the rationality of the market according to three basic value drivers: the fundamental valuation metrics, how much stock prices are affected by information-based events and the price volatility of Internet sector. Even though it is not easy proving the irrationality of the market, there are some evidences that should demonstrate it. Several specific findings that jeopardy market rationality are worth to be mentioned: first of all, the asset values do not reflect fundamental values, hence in this market asset are mispriced. Second, authors report cases in which holdings are worth more than the parent company leading to a fail in the arbitrage. This is another signal of inefficiency. Third, previous results suggest that actors operating in this market were over-optimistic, causing an inflation in the level of prices. Hence, volatility in the bubble period was difficult to measure and categorize. These facts contributed to the burst of the bubble, although there may be other reasons that contributed to the market breakdown.

¹ The share operating under lock-up restriction cannot be short sell during the IPO. By doing this, operators involved in the investment need to wait for the expiration of the lock up period, that usually goes from 90 to 180 days.

Another study conducted by Chan (2014) stated that “*retail sentiment at the time of the Offering is positively related with IPO prices in the early aftermarket and negatively related with IPO prices in the long run*” (Y.C. Chan 2014; p. 235). This casual relation point out that investors’ sentiment, especially during the “hot period₂” of the market, was able to drive the price during the IPO, but at the same time, might lead to poor performances in a long-term view. The study also proves that this sort of over-optimism disappears after the market breakdown, consequently the volatility for these shares decreases. Another relevant intuition brought to light by the study is that the demand acts as a basic driver for the return volatility during the first trading day, especially for the issuers of Internet firms during the dot.com Bubble. This hypothetical insight will be used in this research evidencing that the underpricing, as reflection of the volatility can also be affected by forces that are not linked to financial variables. Likewise, the author evinces that, shares with a relevant marked retail demand during their first day of trading, are more inclined to suffer poor price performances in a long-time view. This partly corroborates the theoretical construct that shares issued by Internet companies during the Bubble were overpriced and the investors’ sentiment, which may have affected the retail demand, represent a possible explanation. Therefore, previous literature provided us the bases to split effect of the market from environmental condition of IPO, which surely contributed to mispricing and overvaluing the stock price during the “hot period”. On the other hand, it might have influenced negatively the valuation and the forecasting process after the Bubble. The research presented by S. Aaij and D. Brounen (2002) scrutinizes the differences between European and American IPO market for high-tech firms and it provides possible explanations for the number of IPO that took place right before the burst of the Bubble and the excellent initial-day performances. It is worth to mention that high-tech firms, although are slightly dissimilar from Internet company, present characteristic and behavioral aspects that market values as analogous. We may also define Internet as a cluster of the high-tech industry. However, the correct definition used to individuate and define an Internet firm will be discussed at later stage. The paper presented in 2002, per se, compares the two markets under the view of the “hot market theory”, according to which the market is characterized from different cycles called “hot” and “cold”. During these cycles shares are treated differently. More specifically, the willingness to issue equity during the hot period is dramatically high because the issuer aims at taking advantage of the favorable momentum of the cycle in which was possible rise a great amount of capital. Consequently,

₂ During the Bubble

this increased the number of IPOs and a higher level of underpricing. The research corroborates the theory that industries with a high percentage of uncertainty on future returns are more sensitive to market conditions. Another possible explanation for these irregularities lies in the fact that underpricing is a technique used by issuers in order to collect capital and attract different kind of investors. This will be the main construct of the theoretical framework for this thesis. Hence, it is possible to assert that the market influenced the price and the number of shares issued, especially during the Bubble.

Another study presented by Schultz and Zaman (2001) try to shed lights on causes of a sharp increase of IPO during 1999-2000. In this paper the authors believe that actors close to Internet firms, such as venture capital, managers, and underwriters, push dot.com companies to go public for two reasons: grabbing market quotes in order to achieve the “first mover advantage”, or rushing to go public because prices are irrationally overpriced. First of all, the study gives us precious insights related to the industry that is examined. Companies operating in this market go public at an earlier stage. The great level of underpricing observed corroborates this hypothesis. Thus, Internet firms are inclined to undertake an IPO process previously in their life-cycle. As matter of fact, during the first phase of market developing, which goes from 1996 to 2000, it was easily observable that market capitalization was irrationally high compare to earnings or revenues, and the number of IPOs was incredibly voluminous. Important evidence that this study points out is that shares of Internet firms are not cashed out. Hence an overoptimistic behavior is observed in this case. Although this widely observed phenomenon, outcome of this research support the other hypothesis, that Internet companies go public to grab market share. This theory is corroborated by the observation of mergers and alliances among Internet firms.

Other important aspect that characterized this market is the high level of underpricing of Internet IPOs. Ariosto, Giudici and Paleari (2000) tried to shed light on possible reasons that caused this phenomenon in the European Secondary market. Authors define underpricing as the gap between the closing share price during the first day of trading and Offering price. Furthermore, they report also the amount of “money left on the table”. This amount is defined as the price established at the end of the first trading day multiplied by the number of shares that have been offered without counting overallocation option, following ‘the prospect theory’, which asserts that underpricing is sort of underwriters’ compensation because issuers, after that they have been analyzed, are wealthier than expected. Thus, the issuer prefers pointing his attention at change in wealth, rather than the level of wealth. The proxy to measure the

wealth of the company is the price established during the preselling period. This price is subsequently compared with the one decided by the market after the IPO. Authors prove that if the underpricing is positive, the wealth gained by controlling shareholders is greater than the “money left on the table”. After that, authors consider the relation between underpricing and market conditions, proving the existence of two “hot issue” periods: January-March 1999 and November 1999-March 2000. Consequently, authors want to examine the relation with book building activities that hypothetically should give investors more information and reduce the level of underpricing. Furthermore, researchers investigate the relation of initial returns and specific determinants for the firm. Outcomes for this research show us that variables as sales and profits are relevant to determine the price of the stock, thus influence the underpricing. On the contrary, accounting data, as assets values and debt ratio, is not relevant to assess underpricing level. This brings authors to state that the information asymmetry that surrounds the equity issue is reduced by procedures of book building. Moreover, they assert that IPOs are influenced by market volatility and industry overall performances.

Dermer and Lewellen (2003) studied the role of IPO for Internet firms. In fact they wanted to shed light on the reason why Internet stocks were more inclined to go public. In their research they measured the relation between underpricing, which measures the initial return for the IPO, and website traffic, which is considered to be a proxy for Internet firms' performances. Moreover, authors take into consideration the media mentioning variable, in other words in how many media the firm is reported. By doing this they want to assess the gain of reputation acquired in the market during the IPO. Outcomes evidenced that proxy performances for the long term and underpricing are positively related. Additionally, they evaluate the efficiency of this strategy stating that Internet firms received market benefits from it. Secondly, they consider the pure “marketing role of the IPO” taking into consideration the media exposure after the IPO. Also in this case the theory proposed by the two researchers is corroborated pointing out that higher is underpricing level for the Internet firms, greater will be the media exposure, thus marketing benefits.

Another research proposed, similarly to the previous one, by Ducharme, Rajgopal and Sefcik studied the possible reasons for the unusual level of underpricing for Internet firms according to three possible explanations: 1) the media promotion, 2) the goal to achieve more easily future financing offers, 3) the IPO is seen as a “brand event” where stakeholders become more and more informed on the Internet company. The media exposure is analyzed according to different sources. Overall results corroborate the theory proposed finding a positive and

significant correlation between underpricing and the first two explanations given. In relation to the first hypothesis, outcomes evidence a positive correlation with both media analyzed: press and electronic. Moreover, overall results point out that managers may underprice the IPO on purpose, in order to attract more investors and consequently involve higher amount of capital.

Corr (2006) presented a study where he used different theories related to the behavioral finance domain to explain mechanisms under which market operated. One of the possible explanations for the overpricing of Internet shares is the “Great fool theory”. This theory states that is worth buying overvalued shares because there will be another investor (the greater fool) who wants to purchase the stock for a higher price. This leads inevitably to a Bubble, due the fact that the market crashes when the price becomes irrationally high. This momentum represents the burst of the bubble.

This first glance at the structure of the market may help us in the analysis of the conditions that can influence or could have influenced the IPO for Internet firms. Describing a unique law, under which firms operate, is a utopic insight. However, trying to identify and rough out similarities and common aspects may be worth to increase the efficiency and the validity of the research presented.

2.3 Governance aspects influencing IPOs

There has been considerable discussion regarding the influence of several characteristics connected with governance that could have affected the level of underpricing for Internet firms. Thus, the IPO of a dot.com firm can be influenced by some relevant attributes. Liungqvist and Wilhelm (2003) published a study in which the format of the ownership, the capital structure, and selling behavior adopted by insiders were related to the level of underpricing measured as initial return. According to the standard principal-agent theory and other theories related to it, the effort that an agent put in controlling and revising a procedure, as an IPO, is smaller if the agent does not have any interest, in term of ownership, in controlling that precise procedure. Moreover, the possibility of an issue related to moral hazard is bigger whether the ownership is more fragmented. A similar theoretical framework can be adopted for the inside selling behavior (measured as secondary purchases done by insiders). The study partially sheds light on this controversial topic. Theories presented are corroborated and it has been proved that, during the Bubble, the effect of the underpricing was definitely stronger than previous periods. It is broadly believed that during that period the

market, due to lack of the capability in detecting solid value drivers, was affected by these variables connected with the corporate governance structure. Also Bhattacharya, Demers and Joos (2009) proved with their analysis that managers' ownership concentration has perceived as positive signal of stability and safety by the market.

Other insights have been developed during last decades of research. In particular, theories connected with behaviors of actors involved in the high-tech market. In fact, main investors operating with Internet companies are venture capital firms. This particular form of company are mainly oriented at financing the start-up firms with high risks, but also greatly rewarded if successful. Thus, this form of organization is relevant and may have modified the perception of a certain investment. It is commonly accepted that whether venture capital firms are involved with the company, the investment will be valued as less risky; hence the value of the IPO is higher. However, the complex study proposed by Johnstone and Madura (2002) investigates the possibility that some particular characteristics of the firm related to the governance, as for instance either the importance of the underwriter during the IPO, or the involvement of venture capitals, might affect the level of underpricing during the IPO phase of an Internet firm. In order to make the process involved clearer, it is worth to mention that the level of underpricing is considered to be strictly and positively connected with the long-term profitability. As a matter of fact, it has been largely corroborated that long-term returns are connected significantly a positively with the underpricing level during the equity issue. Turning now to the process used in this paper, the two authors firstly take into consideration different measures for the importance of the underwriter according to Carter-Manaster ranking method, because it is considered to be the most efficient. Additionally, the paper builds a sample that considers a period of time that goes from 1996 to 2000. Subsequently, this period of time is divided in three sub-periods: pre-, during-, and after-Bubble. Focusing on the outcomes that are inherent with venture capitals, the market condition and the number of variables involved in the process change the relation and the significance with involvement of venture capitals. As aforementioned, the theory according to which authors developed their model states that venture capitals involvement reduces the level of uncertainty around the IPO. The research partly disproves this theory. In fact, the variable VENTURE, which in the model measures the involvement of venture capitals, losses its significance during the "cold period" of the market. As a consequence, the market does not perceive any longer as a positive signal venture capitals. Hence, when the market started recovering part of its efficiency, this variable is not significant for the model. This variable will be considered

during the research design for this study. Moreover, another governance-related variable, which is broadly considered being capable to reduce the uncertainty around IPO, is the percentage of member of the board that is also owner of a certain amount of shares (called insiders). In fact, if the number of insiders that are shareholders is high, it is a signal that the project is profitable. Consequently, the market will consider it as a positive signal that might decrease the level of uncertainty for Internet companies. However, outcomes of the study conducted by Johstone and Madura (2002) show us that the measure of this variable has a lack of significance.

Bowen, Davis and Rajgopal (2002) with their study investigate the use of earning management strategy In order to attract a higher number of investors and thus collect a greater amount of capital. More specifically, authors investigate the capability of Internet firms of pushing up revenues performances via two techniques: advertising barter sales and grossed-up revenues level. Outcomes show that firms with higher cash burn rates, which is calculated as the sum of amount of cash coming from investing and operations activities scaled by the total amount of cash and equivalents, are more incline to boost their performance with the aforementioned strategies. Furthermore, the research analyzes a side effect of entering into a barter transaction. In fact, with this tactic the company creates solid and efficient networks that allow it to generate alliances that can give competitive advantage to the firm. As this research will discuss later, this phenomenon is evidenced from the results of the regression, pointing out that before and after the bubble there is a shifting of value driver for Internet companies

Another study presents interesting variables related to governance aspects and ownership that might be useful for this analysis. Jain, Jayamaran and Kini (2008) propose a case study based on agency theory, where researchers are interested in assessing the path-of-profitability of Internet companies after their IPOs. Therefore, they aim at capturing value drivers for Internet companies. The point of the departure for the case study lies in the fact that the long –term profitability is negatively related to the profitability subsequent the IPO. The first group is linked to the governance structure. Variables analyzed in this section follow the framework of agency theory. In fact, authors want to measure behavior of managers around the IPO. Hence, they gauge the change in ownership during this phase. The first hypothesis takes into consideration the number of outsiders present in the board. As matter of fact, greater is number of outsiders, better will be performance of monitoring and controlling and consequently lower costs for agency theory. However, the insiders can be useful for the

direction of the company because they have acquired the technical skills and experience. Hence, the study wants to observe if insiders are positively related with long-term profits or the other way around. Outcomes show us that outsiders are positively related to profitability for the long-term. The second governance variable analyzed is the insider ownership. Agency theory asserts that insider ownership is a signal of profitability because investors, who are also part of the company, hold a number of shares. Thus, agency costs will be lower because the level of uncertainty is narrowed. The study measures the change in percentage of shares owned by the top three managers. Results corroborate this hypothesis stating that the market absorbs as positive signal if there are any important directors holding a percentage of shares leading to a long-term profitability.

Likewise, the study proposes brand new insights related two CEO and CFO characteristics; in particular authors analyzed the possibility that CEO and CFO background, age and experience on internet industry might be value drivers for the market. Overall results demonstrate that hypotheses build on this framework are not supported, because they are not significant. Thus, long-term profitability is not related to directors' qualities.

Furthermore, also this paper consider the theory that venture capitals can be considered as a certification and authors therefore assume that there is a positive relation with probability of profitability and negative relation with time-to-profitability. However, the paper proves that venture capital involvement is positively and significantly related to the long-term profitability.

To sum up, several insights has been brought at our attention during these last decades, however only few of them are reasonably valuable for this thesis.

2.4 Underpricing and Offering Price

The variable "Underpricing" is defined as the percentage of the difference between the stock prices after the first day of trading and the Offering price that underwriters set as point of departure of the IPO. This technique is used as "starting strategy" in order to collect a higher amount of capital and for branding purpose by the underwriter and the company. The important focus of this section is defining the Underpricing as a proxy of risk. Central point for this research is the definition of Underpricing given by Ljungqvist (2004). As matter of fact, the researcher in his study evidenced how the level of Underpricing around the IPO phase (especially for an Internet firm) is the consequence of information asymmetry between issuers and investors; in fact, issuers, in order to make the IPO more attractive lower down at

their minimum the Offering prices. Thus, according to the study, the higher is the level of underpricing the worse are the financial for the company and consequently the riskier is the IPO. Similarly, Johnstone and Madura (2002) stated that higher underpricing leads to higher volatility for the stock and consequently, higher but riskier returns. Beatty and Ritter (1986) stated that higher underpricing measurements lead to an increase on the uncertainty around the IPO. In this paper the two researchers evidenced that investors are less certain about the real value of the company when there is a considerable gap between the Offering price and the price after the first day of trading. Moreover, authors proved that there is equilibrium between the ex-ante uncertainty, defined as the level of uncertainty surrounding the Offering price of the stock, and the Underpricing of the IPO. Per se, it seems logic that this might lead to a riskier transaction. As a matter of fact, it has been widely proved that underwriters underpriced their stocks at Offering price for several reasons. The point of this research is detecting those financial actors that systematically mispriced the stock and consequently create irrationality around the IPO. Hence, the underwriter that often uses this technique will be labeled as more volatile. It is also worth to mention that prices after the first day of trading, thus underpricing level, can be influenced also from the volatility of the market. This is part of the forces that can jeopardy the casual relation between underpricing and accounting variables, as discussed by DuCharme et al. (2001).

Bhattacharya, Demers and Joos (2010) consider the value of the accounting information during the dot.com Bubble. They proved that even during the Bubble, accounting information is considered to be a value driver if correctly interpreted. The aspect of this research that is valuable for this thesis is that they consider the underpricing as risk proxy. Although they do not provide significant result, it is logical to think that irrational level of underpricing can be related with failure risk of the company. Especially during the Bubble period where the rationality of the market was partly biased, the level of Underpricing was not reflecting the expectation of underwriters in a possible long term growth. On the other hand, they provided strong result in stating that Offer price can be considered as proxy of wealth for the IPO. In fact, it seems reasonable to expect that higher Offer prices will lead to a higher profitability during the long-term. Due to the fact that conditions of the market extremely and irrationally influenced this value during the Bubble period, it is correct to define the underpricing as a proxy of risk. However, this research will explain more in depth this part in the hypotheses development section.

On the other hand, it has been widely proved that Offering price represent a valid proxy for the wealth of the company during the IPO phase. Higher is Offering price, greater and more healthy is considered the firm that is issuing equity. Results of the research proposed Bhattacharya et al. (2010), where Offering price was regressed in relation with failure risk within the first five years of activity, pointed out that Offering price can be considered a proxy of safety for the firm. Furthermore, they proved that even during the Bubble, the market was signaling this correlation, which unfortunately was ignored by investors. Furthermore, it is logical to believe that Offering price represents the initial measurement of solidity for the company. In fact, during the IPO phase the underwriter, after that it has reviewed the book keeping of the company and evaluated the possible demand, states the ideal Offering price from where the market will, consequently, start trading and exchanging the stock of the firm. Thus, it is logic to think as Offering prices as the basic form of solidity for the company. Moreover, it has been widely proved that Offering price represents a profitability value driver also in the long term, although economically there is not a direct connection between the two measures. Hence, the study expects that Offering Prices for IPO of Internet firms will be the central focus for this analysis.

2.5 Underwriters' reputation

This variable is broadly considered as excellent value driver for the IPO of internet firms. As a matter of fact, the raking assigned to the bank or the institution that take care of the equity issue for the company. According to agency theory, the presence of an important underwriter ensures that the investment is safe and profitable. Taking into consideration the most recent examples as Facebook, Google or Alibaba, we may notice as only high ranking underwriters were involved in these operations. The previous statement is also confirmed by the recent literature on this topic. One of the first studies conducted by Carter, Dark and Singh (1998) analyzes if the involvement of an important underwriter is able to affect performances of a company in the three years following the IPO. Although this is a generic study and is not specific for Internet industry, could be useful and relevant take it into consideration in order to clarify and define which method of ranking is the most efficient and the relevance of the underwriter after the IPO stage. As a matter of fact, the paper presents three different models used to measure the correct ranking according to the importance of the underwriter. Among method presented, the study recognizes as more efficient the Carter-Master. In this methodology, the tombstone of the IPO is measured and then a ten scale ranking is build according to the aforementioned measurements. In order to prevent possible bias, the paper

examines also the size and the age of the firm, due the fact that bigger and older firm are considered to be less risky. The study confirms hypothesis, the importance of the underwriter is considered to be positively by the market and is a consistent value driver for the profitability of the company.

Kotha, Rajgopal and Rindova (2001) aimed at gauging the value of the most important internet companies (top-50) and the three reputation building variables: marketing investment, reputation borrowing and media exposure. The academic study focuses in the variable defined as reputation borrowing, because firms, which issue equity, borrow their reputation from the underwriter. More specifically the research proves that the variable influences firms' performances during the IPO and post this phase, as sales and market value. Bharat, Narayanan and Omesh (2008) evidenced that underwriters' prestige is not significant, therefore not affecting the probability of profitability during the IPO. Hence, it is logic to think that this particular variable has not certain effect during the equity's issue.

Even though this variable has been taken into analysis several times during the last decades, it has been excluded from this research because the reputation borrowed during the Bubble phase may be biased, according to the behavioral finance theories aforementioned.

2.6 Venture capitals' involvement

An important aspect of Internet firms is represented by the fact that companies tend to involve specific investors and assume peculiar modus operandi. That is the case for venture capitals. These forms of financing, per se, represent a source of capital for the Internet companies, which often are start-ups. Moreover, in order to gain the competitive advantage of "first mover", they build strategic alliances. Several studies tried to shed lights on this controversial topic. Kotha, Rajgopal and Randova (2001) used the venture capital involvement as a "reputation borrower". In fact, they believe that venture capitals might decrease the level of uncertainty of Internet firms, because venture capital companies support Internet firms in case they do not have managerial competences. Results corroborate this theory, thus venture capital firms' involvement is perceived as a positive signal by the market.

Similar framework is used by Johnstone and Madura (2002). They assert that level of underpricing is lower for those internet companies in which venture capitals are invested because venture capital firms may offer their know-how to companies that want to go public. They found out that the relation is significant during the Bubble, but not after it. Hence, they

proved that the market does not evaluate venture capital participation as positive signal during the “weak phase”, thus before the market becomes more efficient.

Adverse selection may extend the role of venture capital. In fact, venture capital firms aim at controlling and legitimizing the production process of the company. In this way, they narrow the adverse selection risk. It is widely believed that venture capitals involvement is not only a signal of certification, but also an indication that the company has excellent position among peers and can consequently grab market shares easily. Bharat, Narayanan and Omesh (2008) used this theoretical framework for their research. However, results disproved their expectations of post-IPO profitability.

Chang (2004) conducted a study in which he analyzed the affection of venture capital financing in profitability. The author uses the IPO of these firms as a proxy for performances. Venture capital financing influences firms’ performances in two different ways: first of all, it provides as resource, as cash or assets, to the company; secondly, the venture capital firm may be seen as signal that is worth to invest on that firm. Venture capitals’ reputation is measured in three different ways: first, it is taken into consideration the number of investments done in previously in other startups by venture capital companies. This variable is assessed as the number of investment done in related industries, as computer and communication, before starting investing in Internet firms. The second variable captures the success rate of IPO reached by venture capital companies. This is gauged as the number of startups that went public, scaled by the amount of investment done in the same industry by venture capital firms. The third variable measures the total amount raised from Internet startups firms, adjusted with inflation. Outcomes collected prove partly the theory developed by Chang. In fact, the amount of capital invested in startups previously is not significant in the model. On the other hand the IPO success, for the same previous investment, is significant and positive. Hence, results state that investors retain a positive signal for investing, via venture capital firm, those companies with pretty successful past performances. The total capital raised was significant and positive in the relation with IPO likelihood, meaning that the company goes public faster, if it is able to raise more capital.

Therefore, this thesis will consider venture capital firms in our model and the different effect of their involvement in different period of time as a control variable.

2.7 Financial variables

Financial variables are considered to be essential value drivers for firms. In particular earnings, net income, market value and book values are fundamental in order to assess the value of a certain company. One of the most important studies presented by Hand (2000) investigate the relation and the affection of financial and non-financial variables as value drivers for Internet stock prices. The author proved that economic values and usual financial variables can be relevant for stock prices. Applying a log-linear regression, he stated that pricing of stocks in the market are related to forecast for financial variables, as for instance long-run earnings growth and one-year projected earnings. These findings give us the first insight to develop the theory that stock prices in this market are driven by forecasted values of financial variables. Moreover, consistent with other researches, losses recorded for current years are perceived as investment in intangible assets, thus they are positively related to the stock price. On the other hand, forecasted losses are registered as a negative value driver due to the fact that the negativity is not more related to an investment in intangible asset. Consequently, Hand proposed a second study focusing his attention on financial variables and decomposing net incomes in the difference between revenues and other value drivers for expenses. Considering value recorded in the income statement and the balance sheet, the author tried to understand in which term various net income (NI) components, as cost of goods sold (COGS), special items (SPEC) and selling general administrative expenses (SGA), influence stock prices. Results for this paper corroborate the aforementioned theory that net income losses are registered as positive investment in intangible asset. As a matter of fact, R&D and marketing expenses create a concave and increasing function whether the company performs negative net incomes. Other important insights are represented by the fact that R^2 increases its significance when net incomes are decomposed and elasticity of negative and positive incomes in relation with the stock prices are different.

Those are part of initial studies on the Internet market, which nowadays still are important and can help us to shed light on this debatable market.

Conversely, literature has proved that earnings are not related to values for IPO in Internet firms and their performances. Bartov, Mohanram, and Seethamraju (2001) took into consideration several of these financial variables. According to their analysis earnings are not fundamental for the value of the IPO. From the point of view of the issuer the size of the Offering sales growth, sales and cash flows are considered to be valuable. In particular they state that the IPO is seen as an investment, therefore also the negative component of cash

flows are important. From the point of view of investors the size of the Offering and sales growth are the financial variables influencing the IPO value.

Another controversial issue is defining whether R&D affects performances of the Internet firms positively. Tokic (2003) presented a study where he build a model using a Pareto efficiency theory and the method defined as data-envelopment analysis. The paper demonstrates that, right before the burst of the Bubble (1999-2000 reports), only three out of twenty firms were able to use efficiently investment in R&D. Moreover, he suggested that at least 57% of the company analyzed should have started reducing the R&D expenditures. This phenomenon has been evidenced by this research as misleading for the evaluation of the solidity of the company and it will be discussed more in detail in the next chapters.

This represents a central point for this research, as it is stated in next sections, R&D expenses were perceived as a value driver during the Bubble period and before. However, this effect is not present in the regression of the second period, leading to the conclusion that R&D affected the efficiency of the market.

Kotha, Rajgopal and Rindova (2001) also studied the relation of marketing investment in reputation. They gauge this value evaluating the sales and general administration expenses (SGA) scaled for the amount of total assets and measuring the affection on market value and sales growth. Outcomes show us that market value is influenced by the expenditure in SGA; on the other hand they are significant for the sales growth in the same time period. However, the lack of significance disappears and the lagged SGA influences up to the third quarter. A possible explanation for this phenomenon lies in the fact that often Internet firms are start-up, thus this costs are related to the type of organization analyzed.

The study proposed by Bhattacharya, Demers and Joos (2010) investigates the extent to which accounting information was providing reliable value drivers for Internet stocks during the Bubble period. After that, researchers harmonize the sample collecting data of IPOs that have similar ranking in underwriter's prestige and venture capital involvement. The study point out that accounting information, which was bad performing, was interpreted in the wrong way by investors during the Bubble period. Hence, authors assert that investors were ignoring market signals proving that, in the end, accounting performances were a red flag about risk of failure of specific firms, but the market was not able to perceive these signals. It is clear how this study evidence a situation that is diametrically opposed to Hand and Bartov et al. researches that did not give this interpretation to bad performances.

The more recent study proposed by Botman, Roosenboom and van der Goot (2004) examines and measures the degree to which financial information, as EBIT, net incomes, sales and book value of equity in the year before the IPO, affects offer price set by the underwriter and the issuer and the stock price at the end of the first day of trading. Again researchers want to investigate which are the correct value drivers for Internet companies. It is worth to mention that the period of time analyzed goes from 1998 and 2000 (the Bubble period goes from the 1st of January, 1999 to the 31st of March, 2000) and peculiarity of the paper is the comparison between European and American markets. Results prove that bottom-line financial values are not positively related to the market value. In particular NI has a strong affection and is significant. A possible explanation given for this unusual result lies in the fact that negative NI is perceived by the market as an increase in R&D expenditures in order to create a competitive advantage for the company. Turning now to the other dependent variable, outcomes gathered present similar behavior NI is negatively and significantly related the issuing price. Thus, fascinating insights may be derived by this paper. The market and the actors in charge to decide IPO prices recognize NI as value drivers but with a negative meaning. Another research conducted by Trueman, Wong and Zang (2000) observed that the part of income defined as gross profit was positively related to the market value of the company.

To sum up, it is hardly definable asserting the influence of usual value drivers with Internet firms. Moreover, the market momentum affects the way of analyzing financial variables. Thus, this thesis will try to investigate differences among these parameters in before and after the Bubble.

2.8 Introduction of non-financial variables

During last decades, several studies have been conducted on Internet firms in order to identify correct value drivers for companies operating in this particular industry. The point of departure for this study is the research proposed by Bartov, Moharnam, and Seethamraju (2001), where authors investigate on the valuation of Internet firms during different stages of the IPO. Moreover researchers introduced a control sample in the study in order to evidence those differences between what we consider “brick-and-mortar firms” and Internet firms. Interesting is evaluating the methodology used by the authors and results achieved with their study. Additionally, this paper assessed the importance of different variables under two different views: underwriter and issuer, both market and small investors. It is fascinating that authors introduced, as value driver variables, some parameters that cannot be considered

financial. By doing this, they wanted to prove that values assumed by shares during the IPO were not related to financial values, but part of this price was connected with other factors. This is, per se, an innovative way of reasoning that lead to new method of valuation for this particular sector. More specifically, authors introduced as non-financial variables: FLOAT which measures relative Offering size and PARTIAL, which is measured as “*the final offer price scaled by the midpoint of the anticipated offer price’s range disclosed in the preliminary prospectus*” (E. Bartov, P. Moharnram, and C. Seethamraju, 2001; p.324). Outcomes of this study provide some preliminary notions. Under underwriters’ and issuers’ view, the size of the Offering, the level of sales and the amount of cash flows generated, negative or positive, are important in order to assess the right value for Internet stock prices. In particular, negative cash flows are significantly valuable because the IPO for these companies is recognized as a sort of investment. This insight recurs often during the academic literature related the Internet industry. The second bunch of results provided by the study reflects the view of the market and investors. Growth of sales and information gathered by underwriters are the performances that, according to the study, can be recognized as value drivers. However, one of the most important results achieved by this study is defining the main differences between the two samples. As a matter of fact, earnings are considered to be nugatory when we need to measure the right value for IPO. This represents another basic insight for the literature of Internet company valuation. However, even though the study provides interesting results, it does not show the value drivers that more can be associated with an Internet company.

Botman, Roosenboom and van der Goot (2004) proposed alternative variables in order to identify correct value drivers for the market value and the offer value established by underwriters and issuers. The first value, similarly to the aforementioned research, measures free float, in other words the number shares sold during the IPO divided by the amount of shares in the post-IPO phase. The second non-financial variable gauges the percentage of share hold by the largest shareholder. Results are different according to the period of time analyzed. First of all, during the Bubble period, both of the independent variables have a significant and negative value in the relation with the market value. This means that the supply and demand were establishing the stock price and the lower was the number of shares sold during the IPO, the greater was the value of the market. On the other hand, after the Bubble, the independent variables lose their significance. Thus, the relation that was linking float and percentage of shares owned by the largest investors and market value disappeared. The results in which the other dependent variable, the price decide by issuer and underwriter,

present similar behaviors. In fact, there is a negative and significant correlation during the Bubble, but not after it. This means that actors of the American market relied on a narrow supply of shares in order to explain the great level of Offering prices.

So far we have taken into consideration parameters that were partly related to financial variables. Now, it is worth to consider those studies that analyzed pure Internet parameters and the casual relation with shares' performances. Trueman, Wong and Zang (2000) elaborated a brand new model trying to study whether there is a connection between the two independent variables: the number of visitors of a specific website or the "pageviews", and the market value of the firm as dependent variable. In this study authors divided Internet firms in different categories as for instance portals, community providers and e-tailers. The analysis period runs from 1996 to 31st of January 2000. Outcomes for entire sample demonstrate that market value is positively related with number of "unique visitors" and pageviews. Furthermore, after splitting the sample according to the three macro-categories of Internet firm aforementioned, the unique visitor variable becomes insignificant for the e-tailers segment. In other words, the visitor needs to spend time in the website looking for the good to acquire. That is the reason why market does not perceive the variable as significant. However, this differentiation needs to be carefully done according with the identification of the company.

Another study that presents some similarities was conducted by Demers and Lev (2001). In this study, researchers focus on business-to-consumer companies, or B2C. In these firms the transaction is performed directly with the consumer without intermediaries. The authors present three new variables that hypothetically can be used as value drivers for Internet companies. The first, defined as "reach" variable measures the website capability of attracting new unique visitors. The second variable, "stickiness", denotes how long visitors stay in the website and customer's loyalty, measured as number of times that the visitors access the website in the defined time period. The analysis is conducted during 1999-2000. Outcomes are more significant during the Bubble period, but overall results corroborate authors' theory that web matrix variables are positively related to the stocks return of Internet firms. This relation is particularly stronger for the variable "stickiness".

Rajgopal, Venktachamalan, and Kotha (2003) developed another study focusing on networks that are value drivers for stock prices. In this study authors use theory presented by Shapiro and Varian (1999), which states that the network has value only if utilized by several users;

For instance, auction websites (the paper center the study on e-commerce), such as Ebay, where the number of people that are subscribed in the website is determinant. Consequently, the website is able to collect data from users, thus it can elaborate attractive products and services for customers. This might lead to an increase in forecast revenues. Hence, the network is considered to be valuable for the company. The value of network is measured using the Metcalfe's formula $nx(n-1)$, where n is the number of users. Outcomes corroborate authors' theory that network are positively and significantly correlated. This postulate has value also for future earnings and performances. Hence, networks might create a competitive advantage.

Kotha, Rajgopal and Randova (2001) with their studying the influence of media exposure, proved that this variable as positive and significant influence in market value of Internet firms and sales growth. As a matter of fact the sample created in this research collect data from the most important 50 companies. Hence, it is logical that media exposure result to be fundamental, although the impact is effective only in the short time period.

Another study took into consideration of media for Internet companies. Bhattacharya, Galpin, Ray, and Yu (2009) presented a research where is gauged the affection of news, which can be neutral, good or bad, and IPO of the Internet firm. More specifically, following theories that Shiller (2000) postulated, the paper analyzes whether media promoted Internet stocks and, as consequence, the promotion was main cause of the Internet Bubble. The first part of the investigation measures the media coverage for internet firms, firstly unconditionally and secondly according to price movements. Outcomes, at first glance, corroborate the first theory postulated that media coverage is higher for Internet firms. The effect is even more positive before and during the Bubble (1996-2000). After a more detailed analysis, results suggest that positive news were ignored after the burst of the bubble and negative news were ignored before the burst of the Bubble. The second part of the study is focused on proving that this promotion was the main cause of the market breakdown. The study is performed at singular firm level and portfolio level. However, results do not bring significant parameters for this analysis. Hence, it is not possible to prove that the media coverage was the most relevant cause for the dot.com Bubble. Indeed, it represented one factor that helped this process.

In the recent study Pinho M. & Sousa M. (2014) evidenced that after the burst of the bubble and consequent crash of the market the industry is heavily relying on these web-metrics

variable, assigning them the importance of value driver for the IPO prices in different stages of the procedure.

In a nut-shell, several ‘odd’ variables have been involved in order to identify correct value drivers for the Internet industry. Moreover, the results are different for type of industry. Hence, during the sample selection it is worth to pigeonhole and define either the firm or the sector analyzed.

III. Hypotheses development

In this section it will be explained the reasoning behind this research question and the major motivations made in this thesis.

Central point of this research is the evaluation of significance of value drivers involved and their interpretation. With this RQ the study wants to shed light on the possibility of facing a new dot.com Bubble and what in changed in the relation between dependents and independents variable. Braber and Odean (2001) evidenced three market circumstances that may lead to a speculative Bubble: 1) the availability of relevant amount of capitals; 2) high level of uncertainty for the firm evaluation; 3) although investors were not experienced, they were quite active in the market. These conditions seem to describe the market environment during the burst of the dot.com Bubble.

Although central point of this work is evidencing the possibility of facing a new bubble in this market, the point of departure is evidencing the presence of information asymmetry that involves issuers and investors. As Ljungqvist (2004), Ducharme et al. (2001), and Ariosto et al. (2000) discussed, this discrepancy influenced the market helping the burst of the dot.com Bubble. In order to identify and assessing if there is a possibility of facing a new Bubble in the new Internet era, the study evidence and analyzes whether there is information asymmetry around the IPO in this industry. The aim of these procedures is demonstrating that information asymmetry partly caused the burst of the bubble and proving that higher level of underpricing/lower level of offering price can lead to jeopardy the efficiency of the market.

Hence, the theoretical framework analyzes if:

“There is information asymmetry during the IPO phase of an Internet Firm “

In the section of the research it will be defined how underpricing, calculated as percentage of the difference between prices of the stock at the first day of trading and Offering prices, represent a proxy of risk for Internet IPO. Thus, higher level of underpricing leads to higher level of volatility for the stock, hence more risk. More specifically, this analysis discusses this in the first part of the regression. Aim of this section is evidencing that the underpricing was considered to be irrational and values reported in the balance sheet were indicating this discrepancy. Hence, the regression want to capture the explanatory power of accounting variables, as for instance R&D, net income and Gross Profit. Different reasons mislead the valuation of this kind of firm during the time frame that goes from 1992 to 2003. However,

this is discussed in section four, the forces that were driving the incorrect valuation for Internet stocks. Central point of this analysis is evaluating the level of underpricing with the financial variables that the literature assumes to be valued drivers for Internet firms. Thus, studying the connection between accounting financial variables and underpricing in the two different samples, can measure if the underpricing level was affected by the bubble, thus if there was a shifting in the significance in the two samples regressed.

The second analysis conducted in this research investigates what is the dependence of financial variables and Offering price. As Battacharya et al. (2010) stated major level of Offering prices are inversely related to the failure risk and decrease the level of information asymmetry around the IPO. Moreover, the high level of the Offering is the reflection of good financial indicators in the balance sheet. This is the normal function in order to establish the Offering price during IPO phase. The underwriter and other operators analyze the financial of the company that aim at going public and establish a price that on average is in line with amount reported in the balance sheet for that company. Thus, it is interesting analyzing this connection and evidence the irrationality level behind this variable in the two different period of time.

Consequently, the research focuses on the differences between the two samples, evaluating the possibility of facing a new Bubble by splitting the sample in two different period of time. Hence, measuring the level of Offering prices, it can be investigated whether the connection of value drivers with stock prices is irrational comparing the first sample, where clearly shares prices are affected by irrationality. Central part of this analysis is the comparison between the two samples. In fact, this thesis wants to prove that although the underpricing level is similar in the two samples, only the stock prices of the first section are considered to be biased by irrationality and if the significance of independent variables changes between the two periods. This represents a central assumption for this research; in fact it is logic to think that the efficiency of the market increased after the burst of the Bubble. Hence, the study will demonstrate that there is a shift in the statistic relation between dependent and independent variables.

3.1 Considerations on the market and firms irrationality during the dot.com Bubble

This section aims at justifying irrationality that was affecting Internet stocks. The period of time that goes from 1999 to middle of 2001 is affected by several forces that led to mispriced values of Internet stocks, and consequently the burst of the dot.com Bubble. The analysis

focuses at this point on the description of these forces and the explanation of the reason why this Bubble has been widely studied in the last 15 years.

As aforementioned in the previous section, which was describing market characteristics, several behavioral finance theories were used to explain the irrationality of actors of Internet stock prices during the Bubble. Nevertheless, the correct point of departure is explaining some mechanisms that are may be helpful in the correct evaluation of this sample.

During the first years when Internet firm performances started involving a considerable amount of capital and number of investors, the Internet industry was completely unknown. Because of this, investors and intermediaries evaluated Internet companies with traditional methodology in first place. However, the various method applied were not able to capture the correct valuation of this high-tech industry. This was the spark that in few years directed the market to its brake-down.

Wang (2007) studied that the introduction of a new form of technology may change the structure of the market and can make obsolete other existing technologies. Hence, old technologies either integrate with the new one; either they are substituted by it. In this specific case, the new technology can be easily integrated with other existent business, thus there was not a complementary substitution. This made the identification of the new technology harder and more difficult to evaluate, hence increasing the uncertainty of investors and financial actors. Moreover, the introduction of a new technology undermines the entry barriers for a specific market, creating more opportunities to penetrate the market to new entrants. This consideration may represent another possible explanation of why during 1997-2000 there were a consistent number of IPOs in the Internet industry.

Other important attribute that is worth to consider in this analysis is the “hot theory market”. As it has been mentioned before several studies used this theory in order to justify the number of IPO that during the Bubble was significantly higher, as Chan (2014) evidenced. In this theory the aspect that more is relevant for this specific research is that during the “hot period”, stocks of a specific industry is overvalued and highly traded. Thus, even stocks that are considered to be very risky can be effortlessly traded. By doing this, the market ignored the intrinsic risk that the market suffer when a high amount of junk titles are traded. This influence, together with the incapability of detecting the correct value drivers for the firm, created the enormous level of discrepancy between the real stock value and the traded one. Other fundamental theory is the “fad theory”, which states that investors, pushed by an over-

optimistic set of conditions and environment, are more inclined to trade stocks, even though they are considered to have great risk. This theory may provide another possible explanation of the burst of the dot.com Bubble.

Alternatively, other behavioral finance theories were used to analyze this industry. Among others, it is worth to mention the “Great fool theory” according to which there is an investor available to purchase the stock at higher price. This theory particularly fit with the crash of the internet market. In fact it states that when there are no more investors willing to pay higher price for the stock the market brakes down. Corr (2006) used this assumption to research which methodology could have been the less biased in the evaluation of Internet firms.

Schultz and Zaman (2001) tried to explain the dramatic increase in the number of IPOs for internet firms during 1999 and 2000. In their research, authors evidenced two main reasons: the company is trying to grab market in order to achieve the first mover advantage or they want to rush in going public because the price are irrationally high. Outcomes of this paper show us that Internet firms are going public earlier. In fact, level of underpricing is higher for Internet firms. Hence, underpricing may evidence an environment in which the life-cycle of the company is shortened by the surrounding environment. It is widely believed that those firms that go public at earlier stage present greater level of underpricing. By doing this, authors use underpricing as proxy to measure the maturity of the company during the IPO. Regarding the second hypothesis proposed, authors analyze if the theory that Internet firms are going public at this great pace in order to create a competitive advantage and grabbing quotes of the “cyber” market. Thus authors propose different combination of mergers, finding out that in case of a merger between two “pure” Internet firms results are higher. For this case outcomes point out that mergers for these companies are definitely superior for number and amount of capital corroborating the proposed theory. Thus, also companies assume a particular behavior in this market during its first decade.

Venture capital involvement and start-up structure were also considered being part of forces that were pushing companies to issue equity earlier. Per se, it is logical to think that innovative companies are more inclined to adopt particular structures for their firm in order to be more flexible and adaptable to different situation. More in deeply, start-up structure allow them to present an innovative service and starting a business, even though the market classifies it as risky. By doing this, firms consent to venture capital firms to be part of the process. Hypothetically, when venture capitals are invested, they decrease the level of risk for

an investment. Consequently, the company is able to collect more easily capitals and involve a higher number of investors. Chang (2004) studied this phenomenon. Results of this research corroborated the aforementioned hypothesis, hence venture capitals involvement was perceived as positive signal and then the company was considered to be safer. Therefore, it is reasonable to state that all the system was biased by an overoptimistic valuation of this kind of firms.

3.2 Analysis of the Underpricing level

Following the theoretical framework the hypotheses are divided in two sections according to whether the sample is regressed as a whole or split in two sections. In this part this study measures the dependency between underpricing level as percentage and financial variables in the whole sample. Thus the first hypothesis is the following:

H1: is there negative dependency between financial variables and Underpricing%?

The information asymmetry around the IPO will lead to higher level of Underpricing. As stated in the study presented by Beatty and Ritter (1986) the IPOs surrounded by higher level of uncertainty will lead to consequent higher level of Underpricing. Likewise, Aij and Brounen (2002) stated that uncertainty around the IPO leads to underpricing due to lack of information. This uncertainty result to be endogenous thus can be reduced by disclosing voluntarily information (as for example higher level of Offering prices). Additionally, following the information asymmetry theory proposed by Ljungqvist (2004), issuers of IPOs that are considered riskier might have to underprice IPO share prices in relation to the actual value of the shares, in order to induce investors to take part in the IPO, inducing the underpricing. It is important to evaluate this aspect in order to detect if the market suffered, or is still suffering, of this discrepancy. On the other hand, it is worth to remind that, according to behavioral finance theories, the market was affected by an investment frenzy before the Bubble. This may have assisted the creation of this information asymmetry, leading to the creation of actors that were operating in market, investing capitals without taking care of the real value of the company. However, some studies as the one presented by Ariosto et al. (2000) pointed out that even though there is a level of uncertainty around the IPO, there is connection with financials, even if it is weak.

This research introduces also control variable in order to make the model more explicative. The first control variable introduced is GDP level that is used to control the effect of the economy for the whole sample. The second control variable introduced is whether or not

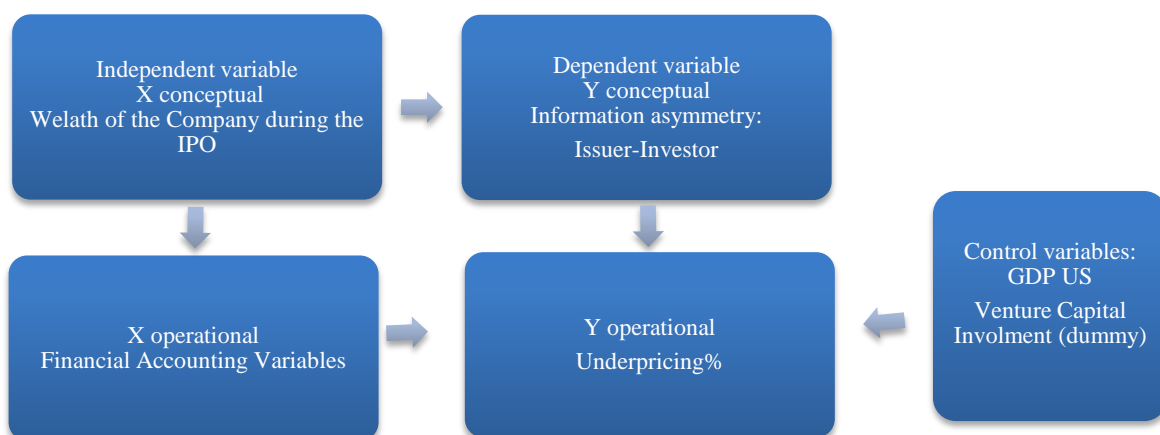
Venture capitals were involved during the IPO. In fact, it is logical to think that involving venture capitals should lead to a negative relation with the Underpricing%, thus lower information asymmetry. Several studies attempted to analyze the causes of unusual level of underpricing for Internet firms. Demer and Lewellen (2003) studied the relation between IPO underpricing and website traffic, which is considered to be a proxy to gauging performances of the Internet firm. In this paper, authors structure their analysis around the IPO event and the degree to which this event can lead to marketing benefits. Point of departure for this research is considering company and brand promotion as target of the IPO. Authors concentrate in the first section of the analysis the hypothesis that initial returns are positively related with media interest. In fact, it is rational stating that the more is hype covering for the IPO, easier will be for the company collect higher amount of capital. Results for this research evidenced that there is a positive and significant relation between the traffic growth after the IPO and the initial return. However, authors specify that these results might be biased because firm with high level of underpricing can attract the majority of media attention. Moreover authors assert that underpricing is economically efficient because it is less costly than the amount of money left in the table during the IPO. This research take the cue that companies over-underpriced their IPO in order to achieve better result during this phase. Aim of this thesis is studying if the underpricing level of Internet firms can be considered to be irrational, thus proxy of risk.

Thus, it is important differentiating those IPOs that were underpricing at level definable as “rational”, in other words connected with financial value drivers of Internet firms, and those IPOs jeopardized by forces as overconfidence or the desire to take advantage of the irrational evaluation of stocks. Similarly, the Offering price level could be influenced from the structure of the market or the over-optimism of the investors. Likewise, a high demand for internet stocks could push their price leading to a wrong pricement.

DuCharme et al. (2001) provided three possible explanations in order to justify the odd underpricing level: 1) media promotion influence underpricing, 2) Internet companies leave money on the table because after the underpriced IPO, they can achieve financing offer, and 3) equity issuing is a branding event, in which consumers become more informed of the company. Following this theoretical framework, this study wants to evidence that these strategies adopted have influenced negatively the Internet Industry, leading to an inevitable Bubble. Creating an environment, in which irrationality is leading and defining stock prices, modifies reasoning and methodology for stock valuation. Nevertheless, during those years

investors and intermediaries did not attempt to adapt or modify their valuation models for this new industry. Even though it has been proved that accounting values and signals were indicating an imminent crisis, the system and its actors were not able to read these “red flags”. Consequently, this study aims at investigating if the market value level in the present Internet industry, which is similar in absolute value with the Bubble period, may suffer the same crisis. As a matter of fact the average level of underpricing results to be similar in the two samples analyzed. However, as it has been already mentioned in the hypothesis development, this research will demonstrate that same actors that faced the dot.com Bubble 14 years ago, are now able to detect and identify “irrationality” in the Internet IPOs. It is worth to state that according to the review proposed by Berger (2002) on the paper “Valuation of Internet firms-an IPO prospective” Underpricing is theoretically more biased by other ‘forces’ operating in the market than Offering price. This is also mentioned by Kim and Ritter (1999). They state that additional information revealed during the IPO and the first phase of trading might influence the price of the share that will be consequently less dependent from accounting financial variables. Moreover, the underwriter may be interested in setting an Offering price that is not truly reflecting accounting financial variables in order to collect capital. This may raise an agency conflict between issuer and underwriter that can partly explain the higher amount of IPO during the first period regressed. The next section will evidence part of these behaviors. Hence the libby box for the first hypothesis is the following:

Libby box hypothesis 1:

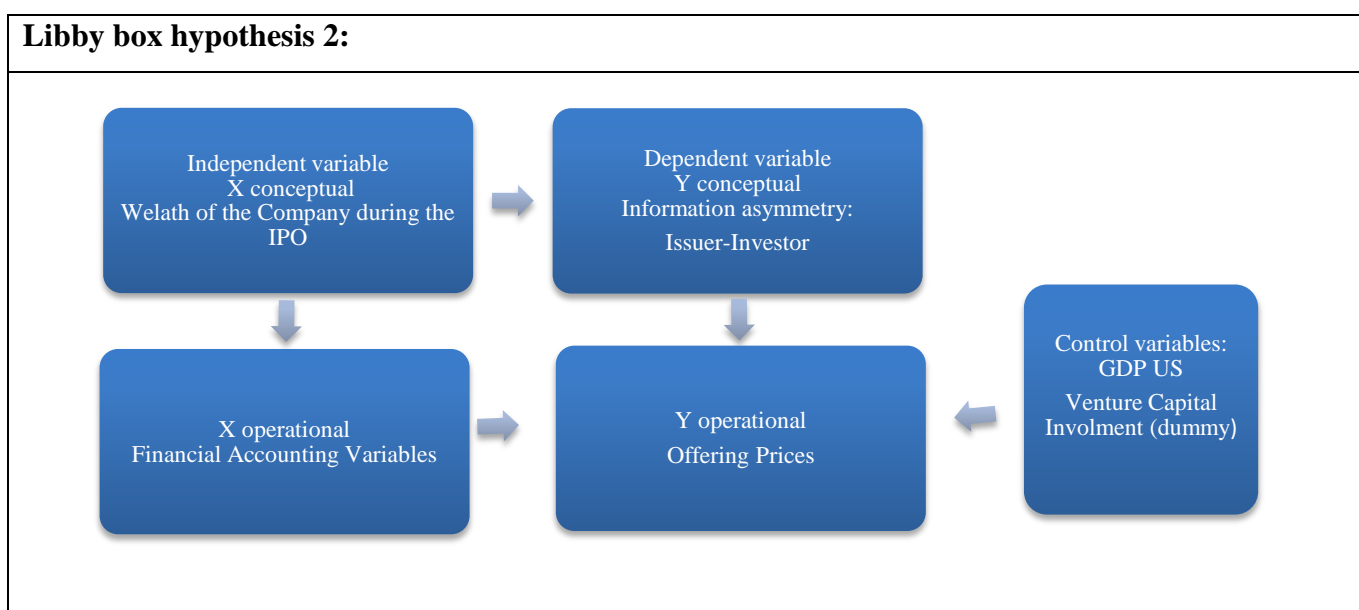


3.3 Analysis for the Offer prices

The second section aim at proving the Offering price can decrease the level of risk around the IPO. As a matter of fact, it has been extensively proved that higher is the Offering price, lower is the level of risk around the IPO as the price should reflect profitable financial values reported in the balance sheet. As stated by Battacharya et al. (2010) and Ariosto et al. (2000), higher level of offering prices should reduce the uncertainty level around the IPO. Moreover, higher is the Offering price, lower will be the possibility for the company to underprice and consequently creates information asymmetry around the IPO. Hence, the first hypothesis, similarly to the previous analysis, is:

H2: is there a positive dependency between Offering price and financial variables?

Likewise the first hypotheses development framework, the research finalizes its result, that hypothetically should move in the opposite direction due to the fact that higher level of Offering prices should decrease the level of uncertainty around the IPO, than the information asymmetry. The aim of this section is similar to the previous one. Thus, the libby box for the second dependent variable is the following:



3.4 Second part of the analysis

The central point of this research is, given the assumption of that determines the role of the dependent variable, analyzing which independent variables are considered to be explanatory for the two different periods. This theoretical construct has the aim of being explicative for the possibility of a future Bubble. As matter of fact, the research points out at proving the there was a shifting between value drivers that affect the two dependent variables. As will be

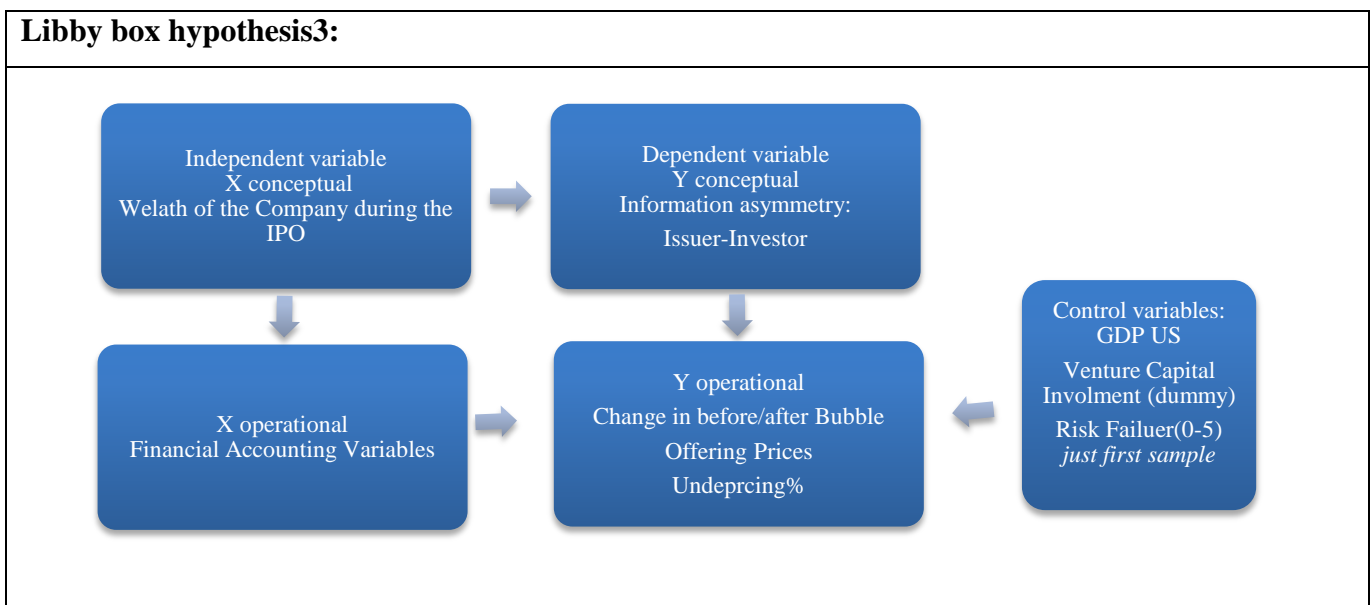
discussed more in detail in the sections, the research pointed out that the bubble positively influenced the perception of certain financial variables for Internet firms. This part is directly connected with the research question. In fact, in this section the paper analyzes and discusses the effect of the Bubble and changes after the break down of the market. Central point is evaluating if the level of information asymmetry around the IPO decreased after the Bubble and if the investors became more conscious. Using the same dependent variables, this research now focuses its attention on the comparison of the samples. Hence the third set of the hypothesis is:

H3a: are the value drivers for Underpricing level different after the burst of the Bubble?

H3b: are the value drivers for Offering Prices level different after the burst of the Bubble?

In order to enforce the significance of this model, thus proving that the first sample was affected by higher level of irrationality, this thesis will apply a mediating variable that measure the level of company failed within the first five years after the IPO. This variable is only applicable to the first part of the sample regressed due to the fact that is not possible to state for companies operating in 2011 if they will fail or not within 5 years.

Hence this is the libby box for the third hypothesis:



It is worth to mention that another control variable is introduced in this section of the analysis. The dummy variable, risk failure in the first 5 years after the IPO should partly confirm that

IPO was not reflecting the financial of the company, thus there was high level of information asymmetry for the issuing company.

IV. Data and Sample Description

This thesis point at measuring the impact of major value drivers for Internet companies on their IPOs. In order to create a sample that can provide reliable results, some aspects of the Internet industry need to be clarified.

4.1 Definition of an Internet Firm

It is widely believed that an Internet firm is defined as a company where the majority of the incomes are provided by an Internet source. More precisely, if 51% of revenues are involved with the Internet, as Hand proposed, the firm is considered to be an Internet firm. This classification could jeopardize outcomes of this research, however it is believed that is the most valuable and reliable definition of an Internet company. Hence, the first database used is www.internet.com³. It is also worth to mention that the Internet industry is divided in several clusters that are pigeonholed according to their primary function. Knauf, Roosenboom and van der Goot (2003) studied the Internet sector. In this research they identified six sub-categories for the Internet industry as reported in Table 1: E-commerce, Portals, Service, IT-infrastructure, Software and Internet Service Providers. Although we will focus our research in Business to Consumer (B2C) companies, this study wants to propose a scheme that synthetize the structure of the Internet industry. The decision of using a generalized sample lies on the fact that they represent the majority of the sample and financial and non-financial variables have more affection on firm's performances, hence in the IPO of the company.

³ This is a broadly used database, especially during the Bubble period. On the other hand, it is worth to mention that this website does not provide anymore this type of information. Thus we will use it just for the part of the sample related to the first period of time.

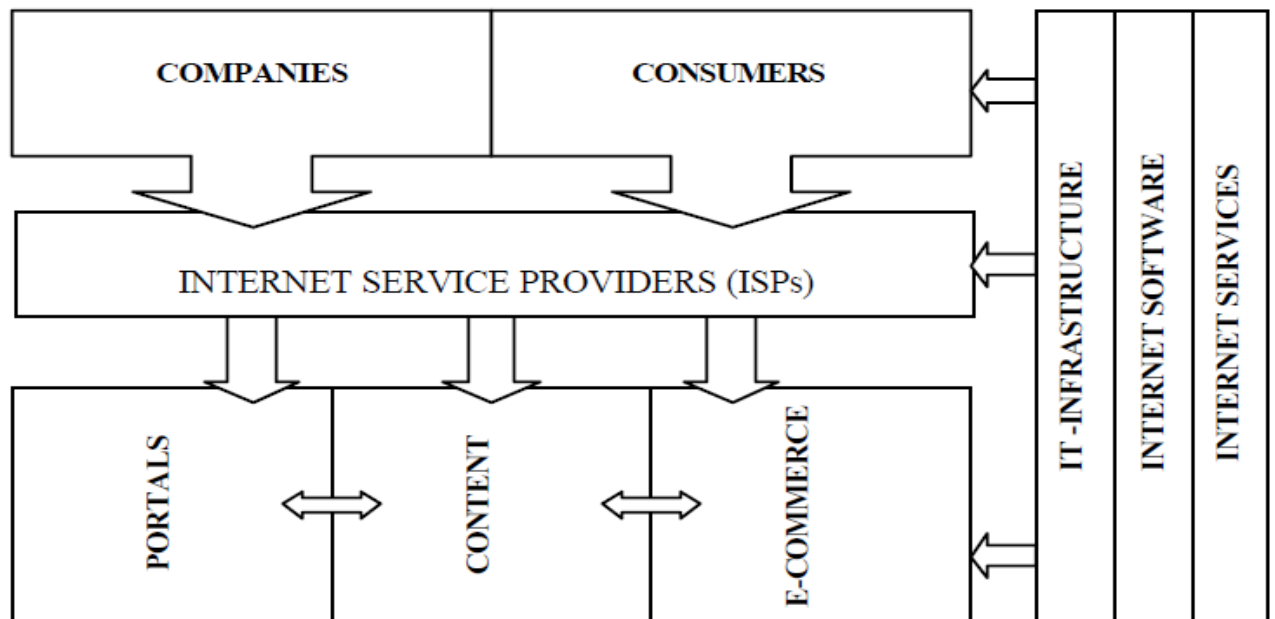


Figure 1- The Internet Industry. Source: Knauf, Roosenboom and van der Goot (2003)

The sample is composed by 250 firms. The starting sample was comprehensive of 791 firms. Due to lack of data financial data the sample has been reduced. Three codes have been used during this analysis: SEDOL, CUSIP6 and CUSIP9. Parts of the observations were dropped because codes' lists were incomplete or the same lists were not matching between the databases utilized (Thomson One and Compustat). The sample for this research was created using Thomson one database, where is possible to define the target industry that the researcher wants to analyze. In fact, this sample gathers companies as internet service providers (ISPs), e-commerce (B2B), IT consulting and services, software development and several financial services. Thus, as it has been aforementioned, the sample involved different realities of Internet industry in order to provide results that could be valid for the entire sector. The financial data is collected from COMPUSTAT database, GDP for the United State of America from world bank database⁴.

4.2 Regression periods

Internet industry faced different trends and crisis during its development. Hence, the sample is differentiated in order to provide more reliable results. As aforementioned, one of the most relevant events, which strongly biased the stability of the market, was the Bubble that this

⁴ <http://www.worldbank.org/>

industry encountered in 2000. As a matter of fact, value drivers during the period and before were strongly influenced by investors' over-optimism, investors that were active but with a weak knowledge about the brand new market and the availability of huge amount of capitals (Bhattacharya et al., 2010).

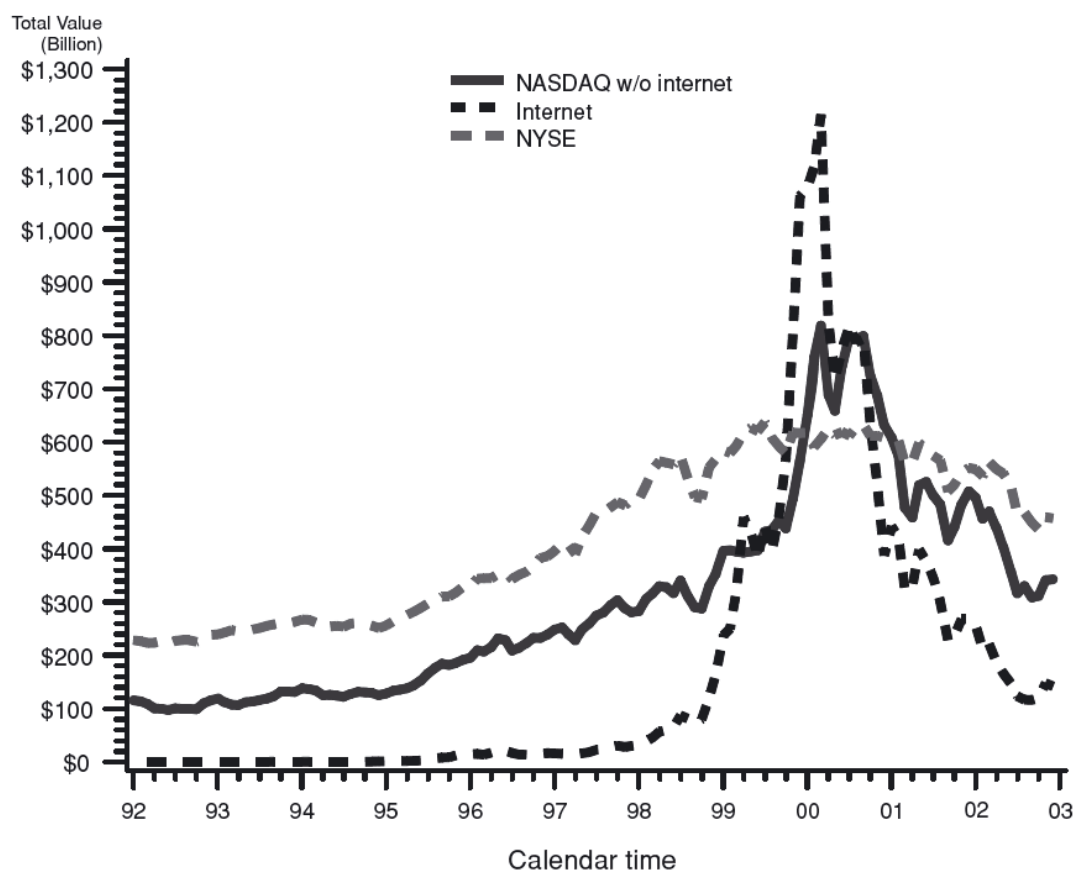


Figure 2- Total Market Capitalization: Internet Industry versus Nasdaq and NYSE. Source: Bhattacharya et al. (2010) Notes: Nasdaq without Internet represents the market capitalization of all NASDAQ firms excluding Internet firms, scaled by a factor of 10. NYSE represents the market capitalization of all NYSE firms scaled by a factor of 20. All dollars amount are inflation-adjusted and stated in January 2003 dollars.

As we can notice from Figure 2, the market capitalization of internet industry during the Bubble was incredibly high, reaching its pike in the first months of 2000. Several studies have been conducted in order to identify the reason of this phenomenon, most of them proved that inability of investors in detecting correct value drivers and the over-optimism surrounding the IPO phase for Internet firms. Hence, the thesis takes into consideration as first period for our regression IPOs that took place from 1992 to 2003.

As a matter of fact, the following period is characterized from a different environment. As we can notice at first glance from figure 2, the collapse of the Internet market changed

completely the behavior of investors, who were now acting with austerity. Moreover, after the burst of the Bubble, the “aura” of optimism, which was partly driving the amount of capital invested in the market, vanished. Because of this, the market capitalization of Internet companies, and consequently the value of Internet IPOs decreased dramatically bringing to a recession period that goes from 2001 to 2004.

Consequently, from 2004 until 2014 is second time frame taken into consideration in this research. This period the Internet market is influenced by the global crisis, hence there is scarcity of capitals. Even though in first stage of 2008 there was a critical situation, Internet IPOs in the last 5 years were able to collect a considerable amount of capitals. For instance, IPOs as Facebook and Alibaba have raised several questions. Investors and actors that take part in this industry, are concerned whether the measurement of the IPO’s at the end of the first day of trading is reliable, or it is possible to face a second phase of over-optimism and over-valuation that inevitably will lead to a second Bubble. In order to justify this choice, it is worth to consider the economical level of Nasdaq that recently (2014) reached the same value of 2000. This is the central point in the creation of this analysis. As matter of fact, the path of entire economy is similar in the two samples. Point of strength in this research is analyzing what has been changed in the two samples and why. The following table shows the value of Opening prices for Nasdaq Index from 1st of January 1999 to 31st December 2013. Thus, it is worth analyzing any possibility of facing a new Bubble.

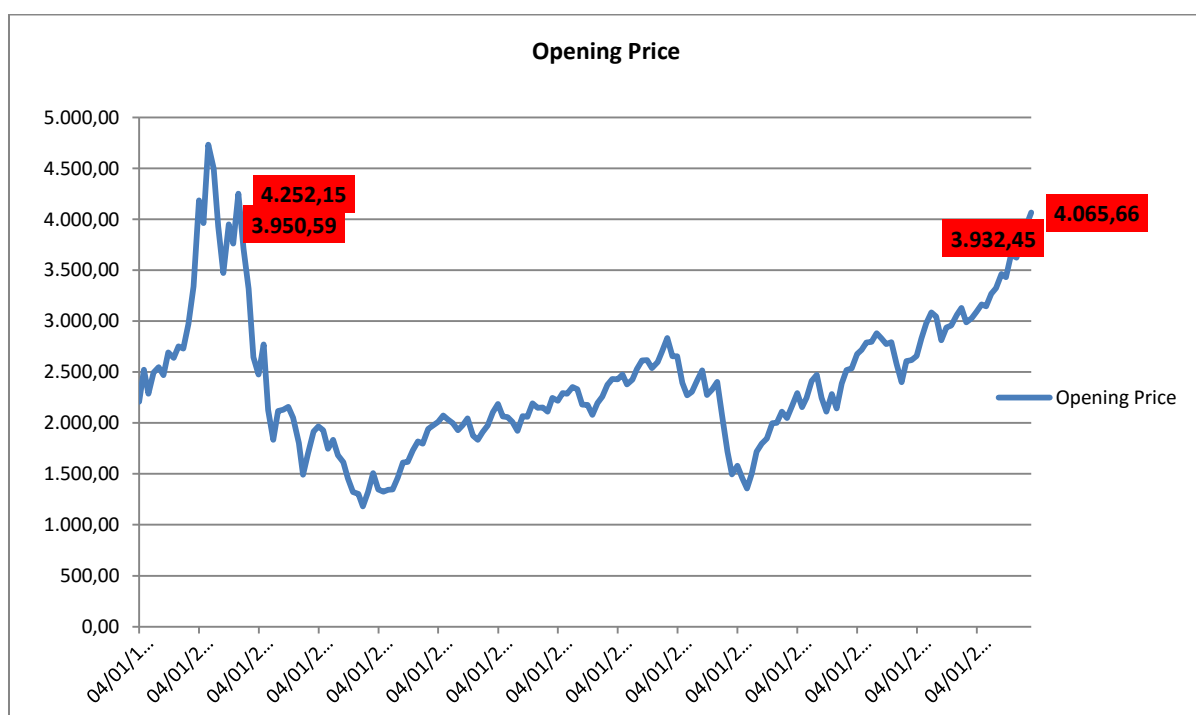


Figure 3- Opening Prices for Nasdaq value: source Yahoo Finance.

Concluding this section of the thesis, the summary table with all values assumed by the variables is presented hereafter:

TABLE A**Descriptive Statistics of the Regressed Variables**

Variable	Count	Mean	Var	Min	Max	Sum
Underpricing%	250	1.815	7.574	-0.918	93.153	45373%
Offering Price	250	14.659	37.431	3	45	3664.75
Assets	250	6.08e+08	8.23e+18	1324000	3.50e+10	1.52e+11
Cost of Good sold	250	9.09e+07	8.69e+16	9000	3.16e+09	2.27e+10
Net Income	250	-1.99e+07	1.44e+16	-1.06e+09	8.04e+08	-4.98e+09
Gross Profit	250	1.17e+08	1.46e+17	-2.97e+07	4.37e+09	2.93e+10
Revenues	250	2.08e+08	3.76e+17	144000	6.26e+09	5.21e+10
LogRev	250	7.729639	0.5247563	5.158362	9.796782	1932.41
R&D Expenses	250	3.05e+07	1.35e+16	120000	1.40e+09	7.62e+09
LogR&D	250	6.900434	0.4171114	5.079181	9.145818	1725.108
Venture-backed(0-1)	250	0.624	0.236	0	1	156
Dummy Period(0-1)	250	0.356	0.230	0	1	89
GDP	250	40891.13	1.10e+07	33199.82	45710.25	1.02e+07
Failure within 5 years(0-1)	161	0.379	0.237	0	1	61

Failure risk is used a mediating variable for the first part of the sample. Thus, it involves only 161 observations.

V. Research design

The following section explains the methodology adopted and, recalling theoretical assumptions, operationalizes hypotheses.

5.1 Regression for the whole period

The first model that is regressed in this research puts underpricing as dependent variable. Underpricing level (UNDERPR%) is calculated as the percentage of the difference between stock prices at the end of the first day of trading and the Offering price decided for the IPO, as it is mentioned in Ljungqvist (2004) research paper, where are summarized several motivations of why shares are underpriced during their IPO (peak of this phenomenon is dot.com Bubble that this thesis is analyzing). Expectation for this research is that this variable could be considered as a risk proxy, especially for the first period of the sample. The reasoning behind this hypothesis lies on the fact that due to information asymmetry, riskier company will tend to issue at lower price in order to attract more investors. Thus, higher level of underpricing is the reflection of a company with lower performance in the financials. As It has been mentioned in previous sections, it is rational believing that the bigger is the gap the more uncertainty, hence risk, the IPO suffers. Consequently, the model measures the correlation between independent financial variables and the dependent one. Among the independent variables, we can find R&D expenses (R&DEXP), which often for this kind of firm represents a value driver for the profitability of the company. Cost of Good Sold (COGS) can be interpreted as a variable that captures whether the company is cost-efficient. Thus, the lower is COGS the more profitable is the company. In order to involve Revenues that often has been used by researchers and Gross Profit (GROSSP) calculated as revenues minus cost of good sold, which also may behave as proxy of wealth for the company. Moreover, the study considers the amount of total assets (ASSETS), which represents a safety approximation for brick-and-mortar companies. Lastly, the paper analyzes Net Incomes (NETINC) effect that has been broadly analyzed during the last two decades. However, researchers have not established yet whether net incomes may be evaluated as a measure of profitability for Internet firms. R&D and REVENUES have been transformed in logarithm functions in order to provide data more harmonized for the regression. Additionally, to differentiate the period in which companies were going public (before/after the Bubble), the regression considers a dummy variable which assume the value 0 in case data is assigned to the first period regressed, 1 otherwise. Hence, it is not possible stating before the analysis the relation with these variables.

Hereafter, the paper proposes the first regression as:

$$UNDERPR\%_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \varepsilon_{it}$$

After this step, the analysis wants to investigate the association among the same financial variables and the Offering Price (OFFERP) that should represents a safety proxy. As a matter of fact, the greater is the Offering Price, the lower is the uncertainty level during the IPO because it reflects a more profitable picture of the financials. Hence, the second regression for this model is the sequent:

$$OFFERP_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \varepsilon_{it}$$

Results for this first multivariate regression are shown in Table B

TABLE B- Regression for the whole sample						
<i>Test without control variables</i>						
Variable	Underpricing%			Offering Price		
	Coefficient	P.value	t.value	Coefficient	P.value	t.value
Constant	8.722	0.246	1.160	-14.60***	0.006	-2.78
LogRD	1.916	0.126	1.530	2.932***	0.001	3.350
LogRV	-2.609**	0.027	-2.230	1.248	0.129	1.520
COGS	3.65e-09	0.245	1.170	-1.59e-09	0.468	-0.730
GROSSP	-1.12e-09	0.615	-0.500	3.91e-09**	0.013	2.520
NETINC	-1.22e-08**	0.011	-2.550	4.39e-09	0.190	1.320
ASSET	1.09e-10	0.776	0.290	1.21e-10	0.651	0.450
Period (0-1)	-1.326	0.260	-1.130	-2.569***	0.002	-3.13
	R-sq	Observations				
Underpricing%	0.070	250				
Offering Price	0.301	250				

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

It is easily noticeable as value drivers for the two different dependent variables are not coherent. In fact, the level of underpricing calculated as the percentages is negatively related to revenues and Net Incomes. As Rajgopal et al. (2002) stated, Net incomes are negatively

related with the market value of the Internet firm. Underpricing% is the expression of the first day of trading, thus the value that investors (the market) give to the share. This is the result of the presence of information asymmetry between issuer and investors. Also Hand (2000) stated that market value of the shares was negatively related to positive component of Net incomes. Moreover, Shultz and Zanam (2001) found a negative relation between market value and revenues of Internet companies.

Despite this fact, following studies (Bhattacharya et al, 2010) have proved that the market, even during the bubble, perceived “usual” accounting variables as correct. Hence, it is possible to believe that underpricing was the reflection of bad financial variables as for instance revenues that were largely consider as first indicator of wealth for the market. Thus, this confirms the hypothesis done that IPOs are underpriced in order to attract a higher number of investors but that actually are reflecting bad financials for the Internet firms and investors were not able to identify these discrepancies acting as irrational investors.

Bowen et al. (2002) stated revenues are positively linked to the market value Internet shares. This is corroborated by the negative relation between Underpricing% and revenues that will represent a fundamental point for the first part of this analysis. Similarly, Bartov et al. (2001) evidenced how sales are the first value indicator for companies surrounded by high level of uncertainty.

Regarding Offering prices as dependent variable, the research wants to evidence the interaction effect with the independent variables. Battacharya et al. (2010) evidenced how the higher level of Offering Prices decrease the level of information asymmetry during the IPO. In fact, it is simply observable that in the first regression for the entire sample LogRD is positive and significant, as Gross Profit. These variables corroborate the hypotheses done in this research. In this side of the table actors involved in deciding the Offering price were issuers and underwriters. Thus, it is logic to think that LogRD is still effect of the pre-Bubble period. However this will be discussed more in depth in the second part of this analysis. Another interesting result is the negative relation with the dummy variable Period. This is the first signal that the market after the bubble started operating more efficiently. This means that Offering prices in second period sample analyzed are higher that the first period. This is logical because after the burst of the bubble, the regulation of the market was more strict and severe. Another possible explanation can be given by the fact that the amount of capitals available during the first sample was greater. As a matter of fact, after the Bubble, Investors

are less willing to provide capitals in the market. Hence there is a lack of capital within the system. Moreover, lower prices could be also explained as an effect of “more efficiency of the market” because, after the bubble, the evaluation of the firm during the IPO phase is more prudent and crucial, as the investors became more cautious (Dermer & Lev, 2010). This can be also interpreted as an increase on the efficiency of this market. Considering the fact that the level of the NASDAQ is close the one reached during the bubble, thus there is a similar availability of capital, and that the Offering price of IPOs is definitely lower during the second period regressed, it is logic to think that the market is better regulated after the bubble. However, results for the different regression will be discussed more precisely outcomes of the model in the next section of this research.

5.2 Introduction of GDP as control variables

In order to harmonize the sample created, the research introduces the GDP per capita as a control variable. The target of this implementation is providing outcomes with a higher level of R-square. As a matter of fact, including GDP in the regression should control the sample according to the level of the economy in that specific year, mitigating those effects that are linked to the general economy of the country (in this case US). Thus, hereafter it is provided the table with statistics relative to the regression with this first control variable and the equations:

$$UNDERPR\%_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \beta_8 \text{GDP}_{it} + \varepsilon_{it}$$

$$OFFERP_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \beta_8 \text{GDP}_{it} + \varepsilon_i$$

TABLE C- Regression for the whole sample						
<i>Test with GDP as control variable</i>						
Variable	Underpricing			Offering Price		
	Coefficient	P.value	t.value	Coefficient	P.value	t.value
Constant	4.917	0.681	0.410	-24.36***	0.004	-2.930
LogRD	1.756	0.182	1.340	2.520***	0.006	2.760
LogRev	-2.531**	0.034	-2.130	1.448*	0.081	1.750
COGS	3.61e-09	0.252	1.150	-1.71e-09	0.436	-0.780
GROSSP	-1.06e-09	0.634	-0.480	4.06e-09***	0.010	2.610
NETINC	-1.20e-08**	0.013	-2.500	4.84e-09	0.149	1.450
ASSET	1.05e-10	0.783	0.280	1.12e-10	0.673	0.420
Period (0-1)	-1.933	0.308	-1.020	-4.127***	0.002	-3.130
GDP	0.000111	0.682	0.410	0.000284	0.133	1.510
	R-sq	Observations				
Underpricing%	0.071	250				
Offering Price	0.307	250				

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

As it is easily noticeable the significance of the model has increased for both the independent variables. Although overall results present a similar behavior compared to the previous regression, there are some differences that is worth to discuss. The first important result that this table shows us, is the negative and significant relation between the level of prices during the Offering stage and the dummy variable indicating the time period regressed. The most probable explanation for this relation lies on the fact that, during the second period of time regressed Offering prices were lower due to the post-Bubble effects as less availability of capital and more investors' consciousness. The other important difference is that LogREV becomes marginally significant for the model proving this opposite relation between Underpricing and Offering Price. As aforementioned, overall results follow the same path of the previous regression, increasing the significance and R^2 of the model.

5.3 Introduction of Venture capitals involvement as control variable

The second control variable chose for this model is the involvement of venture capitals during the equity issuing. According to the aforementioned theory, the possibility of a venture capital involvement represents a sort of ensure for the company that is issuing. Hence, it is expected

that this dummy control variable will be positively related to Offer prices, and negatively with Underpricing%.

Hereafter, it can be found the results for the regression and new equations after the introduction the second control variable:

$$UNDERPR\%_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \beta_8 \text{GDP}_{it} + \beta_9 \text{VENTURE}(0-1) + \varepsilon_{it}$$

$$OFFERP_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{TIME}(0-1) + \beta_8 \text{GDP}_{it} + \beta_9 \text{VENTURE}(0-1) + \varepsilon_{it}$$

TABLE D- Regression for the whole sample

Test with GDP and VENTURE as control variable

<u>Variable</u>	<u>Underpricing%</u>			<u>Offering Price</u>		
	<u>Coefficient</u>	<u>P.value</u>	<u>t.value</u>	<u>Coefficient</u>	<u>P.value</u>	<u>t.value</u>
Constant	4.737	0.693	0.400	-23.63***	0.005	-2.840
LogRD	1.831	0.174	1.360	2.217**	0.018	2.380
LogREV	-2.601**	0.034	-2.140	1.730**	0.042	2.050
COGS	3.56e-09	0.239	1.130	-1.52e-09	0.488	-0.690
GROSSP	-1.05e-09	0.638	-0.470	4.01e-09**	0.010	2.590
NETINC	-1.21e-08**	0.013	-2.310	5.45e-09	0.106	1.620
ASSET	1.05e-10	0.784	0.270	1.15e-10	0.666	1.620
Period (0-1)	-1.973	0.300	-1.040	-3.964***	0.003	-3.010
GDP	0.000120	0.660	0.440	0.000245	0.197	1.300
VENTURE(0-1)	-0.280	0.789	-0.270	1.133	0.120	1.560
	R-sq	Observations				
Underpricing%	0.071	250				
Offering Price	0.314	250				

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

After the introduction of this variable the model increased the R-square. The introduction of the second control variable enforces the significance and the relation between the Offering prices and the independent variable Log Revenues that are now significant also for the offering price. Hence, also these results corroborate the postulated hypothesis that proves the

presence of information asymmetry in the market. As proved by Bartov et al. (2001) and Bowen et al. (2002), sales represent a reliable value driver for Internet companies and in this regression corroborate the hypotheses the Offering prices and Underpricing% relate to financial variable with opposite significance. This means that revenues can be considered efficient value drivers also for Internet companies. This furtherly confirm that revenues are quite explicative for the regression of the whole sample and can define characteristic of the IPO during different phases. However, the second dummy variable introduced is not significant for the model.

As aforementioned, overall results increase their significance for the model proving the path followed is expressing interesting insights for the regression.

5.4 Overall Results for the regression of the whole period

Outcomes for this first regression show us interesting results. First of all, LogRev strongly corroborates hypothesis done due to the fact that it assumes opposite value for the two samples. As a matter of fact, previous literature evidenced Revenues as the most common value drivers for several firms in this market (Bartov et al., 2001).

Information asymmetry and Underpricing level calculated as percentage represent a point of departure for this analysis. In fact, the first day of trading represents a branding opportunity for the issuing firm. Moreover, also the R^2 results to be evident of the level of information asymmetry, hence uncertainty, surrounding the IPO of the firm. As stated by Ljungqvist (2004) in his research, issuers were on purpose underpricing their shares in order to attract a higher number of investors. However, this was the reflection of poor financial performances as it is shown in the table. On the other hand, Offering price result to be positively connected with this variable, leading to the conclusion that wealthy companies that were issuing IPOs surrounded by lower level of information asymmetry. This confirm another assumption postulated by Ljungqvist (2004): issuers of riskier IPOs might have to underprice their IPO share prices relative to the fair value of the share, in order to encourage investors to participate in the IPO, inducing the underprice. Likewise, Aij and Brounen (2002) stated that the high underpricing level can be caused by the uncertainty around the IPO phase and the difficulty to evaluate the performances of the company.

As Berger (2002) stated in his reviewing study a valid interpretation for the different outcomes between offering price and end price could lie on the fact that the information spread during the book-building phase can modify the price of IPO. Another interesting

insight brought up from this research is that the underwriter is trying to set a price that is not reflecting the right value for the price of the IPO because of information asymmetry with the issuing company (phenomenon that involve an explorative auction by underwriters in order to test the sentiment investors).

Secondly, as expected, LogR&D can be defined as a value driver for Internet firms. As a matter of fact this hypothesis is in line with several studies conducted in the last two decades. In particular, Hand started studying the relation between financial variables and performance of Internet firm in the stock market, due to the fact that R&D expenditure is perceived as an investment on a critical asset for the Internet company. Among other studies conducted, Botman, Roosenboom and van der Goot (2004) justified the positive relation of negative Net Income and stock prices for Internet companies with the involvement of R&D expenses. In fact, they stated that R&D expenses were absorbing the majority of outflows produced by the core business of the company. By doing this, the firm was able to create value for the company and being a leader in the market achieving good performances for future years. However, the R&D expenses are considered and analyzed controversially. In fact, if they are not considered and used efficiently, R&D can decrease the value of the firm. This represents the turning point for this analysis. The market before the bubble was not able to detect this possible bias, thus R&D expenses were perceived as positive signal for the IPO of an Internet firm.

The other financial variable that is considered valuable in this regression is Gross Profit calculated as Revenues minus COGS. This variable represents the ability of the firm of being profitable. As a matter of fact, this variable is considered to be an efficient value driver also for brick-and-mortar firms. Trueman, Wong and Zhang (2000) in their research proved that gross profit is positively related to market value of the company. This connection, according to the authors' view, is relevant because Gross Profit indicate a less distorted proxy for the profitability, considering only costs and revenues comprehend in the core business. Thus, we can assume that firm also gross profit represents an efficient value driver for Internet firm. The last financial variables that has been found being consistent for the model is LogRevenues. As it has been stated and studied during the last decades, the amount of sales can represents an effective value driver for the performances of the company. Botman, Roosenboom and der Goot (2004) already proved that sales can be positive related and significant with Offering price. The relation of these financial variables with Offering price

corroborates the hypothesis that the Offering price can be perceived as an indicator of wealth for the company.

After the analysis for the significance of financial variables, it is worth focus the attention on the significance of control variables. As it is easily noticeable, the dummy variable that differentiates the sample in two samples is negatively and significantly related to Offering prices. As it has been aforementioned, the more consciousness of investors and lack of capitals due to the bubble effect could justify this relation (Dermev and Lev, 2003).

5.5 Hypotheses H1-H2 Discussion

This paragraph presents the discussion on hypotheses developed in the previous section. The first hypothesis developed was the following:

H1: is there negative dependency between financial variables and Underpricing%?

Answer: Yes

The answer is clearly yes. As results prove, financial accounting variables in the complete model after the introduction of the two control variables asses a negative relation with the independent variable. The interpretation and explanation of this behavior lies on the fact that the market, although was operating under a certain degree of uncertainty, captures the essence of the nature of this firms. Moreover, as it was postulated in the hypotheses section, underpricing level is reflection of information asymmetry between investors and issuers. Thus, riskier companies present higher level of underpricing. This is corroborated by the negative relation with Net Income and Revenues; although they have been interpreted in different ways during the las two decades of research in this field, represent the basic value driver for companies. Concluding, Underpricing% expresses the level of uncertainty around the IPO of an Internet firm as consequence of information asymmetry between issuers and investors.

The second hypothesis presented is the following:

H2: is there a positive dependency between Offering price and financial variables?

Answer: Yes

For this hypothesis, the connection with the independent variables lies in the fact that, higher level of Offering prices are the expression of better financials that consequently if fairly

reported increase the level of information disclosed by issuers, decreasing the level of information asymmetry. As it can be easily noticed, Gross Profit (Battacharya et al., 2010) and Log Revenues (Bartov et al., 2001) are positively related to the Independent variable corroborating the hypothesis done. Also, Log R&D is positively related to the dependent variable. In fact, this variable at least for the period preceding the burst of the Bubble, was considered as an important value driver for Internet firms.

Interesting result for this dependent variable is also the negative and significance relation with the dummy variable of the period. This represents the point of departure for the second part of the analysis and also expresses an important concept: the market after the burst of the Bubble perceives Internet firm more efficiently and cautiously as reported by Dermev and Lev (2001).

Concluding, it is worth to remark that there is a different perception of the Internet firms from the two sides: Issuers' behavior that is captured by the regression that measures with the offering price the dependent variable. Investors' behavior that is captured by Underpricing% as dependent variable. The difference between the two perceptions evidences the presence of information asymmetry.

5.6 Regression 1992-2003 (Underpricing% Price as dependent variable)

This part of the research analyzes separately via an OLS regression the variable of those companies operating from 1992 to 2003.

As point of departure for the second section of the analysis that will lead to evidence if the market could face another dot.com Bubble this research will perform a separate regression for the first part of the sample. By doing this, this study want to evidence the impact of the event dot.com Bubble in the Internet industry hoping to show a change in accounting variables that are value drivers for the IPO phase. Moreover, in the first period, the model introduce a mediating variable following the theoretical framework proposed by Bhattacharya, Demers and Joos (2010), where they measured the association between the failure risk within the first five years of activity from the IPO and accounting information. It is expected that the regressions will show some 'shifting value' in order to evidence the effect caused by the burst of the bubble, similarly to the paper presented by Botman et al. (2004). Hence, hereafter the paper shows the regression with percentage of difference between prices at the end of the first day of trading and Offering prices. Addition for this section is the dummy variable Failure Risk as mediating variable that should evidence a positive correlation with the dependent

variable, due to the fact that higher levels of underpricing are the reflection of riskier companies for the aforementioned theoretical constructs. Thus the first regression of the second section of this analysis is:

$$UNDERPRICING\%_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COGS}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{GDP}_{it} + \beta_8 \text{VENTURE}_{it} + \beta_9 \text{FailureRisk}(0-5)_{it} + \varepsilon_{it}$$

TABLE F- Regression for the first sample

OLS test with the introduction of the mediating variable Failure Risk

Variable	Underpricing%		
	Coefficient	P.value	t.value
Constant	4.027	0.812	-0.24
LogRD	2.519	0.196	1.30
LogREV	-2.991*	0.091	-1.70
COGS	1.68e-09	0.850	0.19
GROSSP	-3.80e-10	0.974	-0.03
NETINC	-2.04e-08**	0.011	-2.59
ASSET	2.54e-10	0.936	0.08
GDP	0.000109	0.761	0.31
VENTURE(0-1)	-0.617	0.716	-0.36
Failure Risk 5 (0-1)	-1.420	0.367	-0.91
	R-sq	Adj.R-sq	Observations
Underpricing%	0.079	0.024	161

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

It is easily noticeable that LogRev is marginally significant for the model corroborating that before the burst of the bubble the market was giving important signals to the investors and the presence of information asymmetry that was leading to a miss-evaluation of IPOs of Internet firm by investors. However, stronger is the negative relation with the Net Incomes, which reflect the results of the regression for the whole period and corroborates the hypotheses done that links information asymmetry with riskier company that present bad performances in financials. On the other hand, investors pushed by several factors were ignoring this signal, as Battacharya et al. (2010) discussed. Moreover, they were investing capital on firms with high

level of Underpricing because they were considered attractive and profitable, as Ljungqvist asserted in his study (2004).

5.7 Regression 1992-2003 (Offering Price as dependent variable)

This section follows the precedent framework analyzing what was the perception of Offering Prices during the first period regressed.

Hereafter we can find the new model for this step of the research proposed:

$$OFFERP_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{GDP}_{it} + \beta_8 \text{VENTURE}_{it} + \beta_9 \text{FailureRisk}(0-5)_{it} + \varepsilon_{it}$$

TABLE G- Regression for the first sample			
<i>OLS test with the introduction of the mediating variable Failure Risk</i>			
	Offering Price		
Variable	Coefficient	P.value	t.value
Constant	-28.45***	0.026	-3.09
LogRD	2.682**	0.011	2.58
LogREV	2.159**	0.027	2.23
COGS	-9.16e-09*	0.063	-1.88
GROSSP	-1.91e-09	0.756	-0.31
NETINC	2.37e-09	0.588	0.54
ASSET	1.50e-09	0.220	1.23
GDP	0.000231	0.242	1.18
VENTURE(0-1)	-0.414	0.622	-0.49
Failure Risk 5 (0-1)	0.626	0.469	0.73
	R-sq	Adj.R-sq	Observations
Offering Price	0.2262	0.1801	161

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

As we can easily notice, the accounting variables, which were relevant during the previous step of the analysis (the regression of the sample taken as whole), maintain their significance.

Moreover, Cost of Good sold captures a significant negative relation with Offering price, confirming again that the Offering captures the wealth of the company. Moreover, 61,47% of the company analyzed failed within the first five years. Hence, although the regression does not show statically that the dummy variable failure is significant; this represents important information that corroborates the irrationality and the uncertainty of the market.

It is worth to evidence two factors in the result of this regression: first of all LogRev is positively connected with the dependent variable, confirming that revenues were considered also by issuers as a positive signal for the value of the IPO of Internet firms, confirming Battacharya et al. (2010) study. This additionally corroborates the hypotheses done in previous sections. Higher level of Offering prices, that lead to lower level of information asymmetry, are the reflection of wealthy financial. Secondly, however more important for this section, is the positive significance of LogRD. This means that issuers perceived as positive signal and that R&D expenses were increasing the value of the stock of Internet firms. Controversial is the interpretation of this variable. It has been widely proved, Hand and Bartov et al. that R&D investments were fundamental value drivers for Internet companies. However, it is important to evidence that R&D expenses should be used efficiently, than there is a certain turning point in which R&D expenses start to represent a negative value for the wealth of the company (Tokic, 2003). The comparison with results of the second section of the analysis will discuss more in depth this outcome.

5.8 Regression 2004-2014 (Underpricing% Price as dependent variable)

This section takes into consideration the second part of the sample regressed; hence it should show peculiar changes due to the burst of the Bubble. The model proposed is similar to the previous one, however the mediating variable has been removed from the model because cannot be measured with companies operating since 2011. Thus the regression is the following:

$$UNDERPRICING\%_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{GDP}_{it} + \beta_8 \text{VENTURE}_{it} + \varepsilon_{it}$$

TABLE I- Regression for the second sample			
<i>OLS test</i>			
Underpricing%			
Variable	Coefficient	P.value	t.value
Constant	-16.08*	0.055	-1.02
LogRD	-0.0486	0.927	1.20
LogREV	0.657	0.271	0.61
COGS	-1.21e-09*	0.056	-0.45
GROSSP	-1.11e-10	0.788	2.46
NETINC	3.41e-10	0.808	1.75
ASSET	0	0.599	-0.47
GDP	0.000247	0.157	0.50
VENTURE(0-1)	-0.245	0.406	0.37
	R-sq	Adj.R-sq	Observations
Underprice%	0.1024	0.0126	89

Multivariate regression model. *** p<0.01, ** p<0.05, * p<0.1

As it is easily observable results shows a total different prospectus compared to previous ones. As a matter of fact, Underpricing after the burst of the bubble cannot be linked anymore to information asymmetry because probably investors nowadays are more conscious of the fact that issuers during the first 5 years, in which the market was growing, were underpricing their stocks in order to attract and greater number of investors and collecting capitals although the company had bad performances. It is interesting to notice that after the burst of the Bubble, revenues are not anymore considered as value drivers. As discussed by Berger (2002) in his review of the research proposed by Bartov, Mohanram and Seethamraju, it might be possible that issuers were also inflating revenues due to the fact that they were considered as the principal value driver, as it has been proved and aforementioned, for Internet firms. Thus, this represent a 'shifting of significance' that partly corroborates the hypothesis that the market and investors are nowadays operating efficiently or at least more than they used to do before the break down of the market.

Several studies proved that web metrics has been considered as more and more important during the last decade. For instance the recent study presented by Sousa and Pinho (2014) proved the huge affection of this metrics in the market value of the company. Hence it is

logical to think that this lack of significance can be partly caused by this variable deficiency and can represent point of departure for future studies.

5.9 Regression 2004-2014 (Offering Price as dependent variable)

This stage of the thesis analyses the second part of the sample that goes from 2004 until 2013. Central part of this section is the comparison and the examination of differences between the two samples. The model regressed presents similar variables to previous equation that I have already aforementioned.

Hereafter we can find the model regressed:

$$OFFERP_{it} = \alpha + \beta_1 \text{LogR\&DEXP}_{it} + \beta_2 \text{LogREV}_{it} + \beta_3 \text{COSG}_{it} + \beta_4 \text{GROSSP}_{it} + \beta_5 \text{NETINC}_i + \beta_6 \text{ASSETS}_{it} + \beta_7 \text{GDP}_{it} + \beta_8 \text{VENTURE}_{it} + \varepsilon_{it}$$

The period of time analyzed is comprehensive of the financial bubble. Nevertheless, it is widely believe that this industry was not heavily affected by this dramatic phenomenon. Hence, it is per se logical to assume that the crisis does not bias the sample. Furthermore, GDP control variable is comprehended in the model in order to measure any possible effect that the surrounding economic environment might causes. Table I reports all the outcomes in this last part of the analysis.

TABLE I- Regression for the second sample			
<i>OLS test</i>			
Offering Price			
Variable	Coefficient	P.value	t.value
Constant	-38.928	0.311	-1.02
LogRD	2.938	0.234	1.20
LogREV	1.679	0.542	0.61
COGS	-1.31e-09	0.652	-0.45
GROSSP	4.70e-09**	0.016	2.46
NETINC	1.13e-08*	0.084	1.75
ASSET	-1.46e-10	0.639	-0.47
GDP	0.000403	0.615	0.50
VENTURE(0-1)	0.497	0.715	0.37
	R-sq	Adj.R-sq	Observations
Offering Price	0.437	0.381	89

OLS regression, *** p<0.01, ** p<0.05, * p<0.1

At first glance, it is easy to notice the relevant differences with the first sample regressed. LogRD and LogRev lose their significance. The effect of this drastic change in the model could lie in the fact that the consciousness of investors has been influenced by the dot.com Bubble. Hence, the variables that before were considered to be value drivers for internet firms, are not affecting anymore the Offering price level during the IPO. Several reasons can justify these variances. The sample is not solely formed by companies that usually make of sales their indicator of wealth. For example, performances for B2C companies can be easily associated with the level of sales. However, we cannot do the same with a company that produces software. Moreover, Bartov, Mohanram and Seethamraju (2001) proved that neither earnings nor sales are relevant for stock prices for these companies.

Other explanation can be given for R&D. In fact, it is generally believed that R&D expenses were perceived as value driver because Internet firms had to invest massive amount of capital in order to keep the competitive advantage among peers. This difference between the two periods partly corroborate the inefficiency of the first period analyzed, as reported by Tokic (2003) who presented a study where only a few in percentage were able to efficiently use R&D expenses. As a matter of fact, the regression taking into consideration the second period

does not rely on this value driver, proving the increased efficiency of the market and the actors who are operating in it. It is easily noticeable that there is a shifting of value drivers between the two periods. In fact, it is widely believed that Gross Profit represents a less noisy value driver for high-tech or Internet firms, where is hardly definably the value of property (Trueman et al., 20000). Moreover, also Bhattacharya et al (2010) proved that Gross Profit represent a positive value driver for Internet firms. The same reasoning lies behind the fact that net income has a positive correlation with the level of Offering price. This evidences a change in the behavior for the investors and other operator of the financial market. The Bubble was able to point out the weakness of the market, transforming it in an efficient system. The research will discuss the overall results of the analysis in the further section.

5.10 Hypotheses H3a-H3b Discussion

The second part of the paper analyzes the difference of the dependent variables for the two samples before and after the burst of the bubble. The hypotheses developed in this section are the following:

H3a: are the value drivers for Underpricing level different after the burst of the Bubble?

Answer: Yes

H3b: are the value drivers for Offering Prices level different after the burst of the Bubble?

Answer: Yes

This section aims at evidencing the effect of the bubble on the sample collected. As it can be easily noticed, results are different for the two samples analyzed. This is caused by the burst of the Bubble that involved the market in February-March 2000. Outcomes evidence a change in affection of the independent variables. Moreover, they reflect the result already presented in the previous section. However, it is worth clarifying this second section of the analysis: indeed regression with offering prices provides a better view on the bubble effects. As matter of fact, there is a shifting of significance in the variable. In particular, R&D and Revenues are significant for the first section and Gross Profit is significant for the second period. It is logically think that issuers do not rely anymore on R&D as value driver after the burst of the Bubble. Moreover, Gross Profit represents a less noisy profit variable than revenues, stating that the efficiency of the market and of actors operating in it increased. Moreover, the three conditions that may ignite a bubble situation are not present anymore in the second period regressed, first of all because the level of Offering prices and Underpricing is lower, asserting

that the amount of capital invested in market is definitely lower. Additionally, the investors are more aware on the nature of the company (not directly measured in the model, but low significance of accounting variable with the underpricing level during the period 2004-2014 may be caused by the involvement of web metrics variables).

On the Underpricing side it is worth mentioning that probably the regression for the second period of time analyzed does not evidence significance because of the other market forces or non-accounting variables that after the burst of the bubble acquired an increased significance in the evaluation of this industry.

To sum up, it is clear the effect of the burst of the bubble in the market. Thus, it is logical to assert that nowadays, although the level of the economy in this industry reached a similar level of wealth, after the burst of the bubble the perceptions of the company and value drivers have changed corroborating the hypotheses done. However it is also correct to assert that the information asymmetry did not disappear after the burst of the bubble. Thus, uncertainty around firms that are built around intangible assets hardly quantifiable can sometimes lead to prices that can be considered biased. On the other hand, it is hard to evidence the possibility of facing a new bubble in this industry.

VI Bias and Conclusions

6.1 Conclusions

Internet market and Internet firms have become more and more important since this new technology was developed. Nowadays, all the most important corporation and entities use Internet as sharing tool and as a source of information. But how is correct valuating and Internet firm? Did the Bubble establish a certain degree of efficiency in the market after its brake-down? This study aims at analyzing this problematic and controversial issue.

Overall and remarkable conclusions for this study are the following: outcomes of regressions for the entire sample are in line with the literature that has been developed during the last two decades. In fact, it is easy to notice how net income is negatively related to Underpricing%. This represents the point of departure of two of the most important studies conducted in this filed as Hand (2000a) and Botman et al., although the two studies does not use directly the definition of underpricing as dependent variable. However, the important meaning of this result is that Underpricing% represents the variation that the market imprint on the stock price after those issuers (the company and/or underwriters) has decided the fair price. Hence, the first target of the thesis is defining and pointing out all the differences between the perceptions of IPO value between the two entities. As it is easily noticeable in the first regression, value drivers between Offering Price and Underpricing% are very different (especially for Revenues that influence positively Offering prices and negatively Underpricing%). This represents an important conclusion for this thesis corroborating the hypothesis of information asymmetry between issuers and investors (as reported also by Ljungqvist, 2004) that consequently lead to Underpricing. As a matter of fact, higher is the uncertainty around the IPO of the company (especially before and during the bubble), greater is the underpricing that is reflecting this information asymmetry (Beatty and Ritter, 1986). Vice versa, higher level of Offering prices should reflect better financial for the company that decide to go public, thus decrease the level of uncertainty around the IPO, consequently the information asymmetry around the IPO, as stated in Ariosto et al. (2000).

The second part of the study focus on differences between the two periods by splitting the sample in two parts. With this splitting this study wants to prove that the perception of the actors operating in the Internet market changed with the bubble, and that is not probable that the market will face a future bubble. Most relevant results are brought up using Offering price as dependent variable. In fact, it is clear the shifting the hit the interpretation of financial

statement in this market during the IPO phase. Also Johnston and Madura (2002) asserted that investors require a more solid business model after the burst of the bubble due the high level of uncertainty that was governing the market during its first operational phase. Additionally, R&D expenses are seen as a value driver in the pre-bubble sample. As stated by Tokic (2003), only a few were able to use efficiently R&D investments. This has led to an increase in uncertainty around the company, thus around the IPO. As it is easily noticeable, after the burst of the bubble R&D loses its significance corroborating the hypothesis the efficiency in evaluating this company has increased. Second important result is the “shifting” between the significance of value drivers. As a matter of fact, if in the first section of the sample, the significant variable is Revenue, in the second one the significance “shift” to Gross Profit and Net Income (Botma et al., 2004). The perception that less noisy profit variable could represent a value driver for these companies is the logic reflection of an increased efficiency on the perception of the real value of the company (Trueman et al., 2000).

It is also important to mention that several complementary theories can be used to justify discrepancies in the valuation of this firms, as for example behavioral theories that widely described this market during the bubble phase as surrounded by over-optimism due to the lack of knowledge of the product by investors. Hence, evidences pointed out in the thesis are completely exhaustive to display and explain all issues that the Internet market has faced so far. Bhattacharya et al. (2010) stated that even though financial were showing red flags during the bubble period investors and other actors operating in the market were ignoring these signals. This could be another reason why there is a gap between the two dependent variable and why also the regression involving the first period there is a significance between dependent variables and financials.

Concluding this study, it is worth to mention that unfortunately due to the lack and availability of data, it was not possible including that non-accounting variable that may be even more explicative to explain the behavior of share prices for Internet firms during the IPO phase and evidence if the burst of bubble really changed the perception of value drivers that were considered significant for share of these companies. However, the thesis proves that the market is not in the point to face another Bubble and there is a connection between ‘usual’ financial value drivers and share prices, at least in the Offering price side. Thus, it is possible to assert that the industry will not face another bubble in the future, even though there is still information asymmetry due to the nature of the firms.

6.2 Hypotheses and overall Findings

Hereafter it presented to table that summarize the outcomes of this thesis compared with the ones presented in the literature:

Congruent	10
Partly Congruent	12
Not Congruent	8
N/A	3

In appendix 1 and 2 it is possible to find specification with tables that summarizes all the papers used in this thesis.

As aforementioned, the research question of the thesis was the following:

RQ: is there a possibility of facing a new dot.com Bubble?

Answer: NO

After the analysis of literature involved and the outcomes presented, it is possible to assert that the new Internet era is not going to face another Bubble, even though result for underpricing are partly controversial and the presence of information asymmetry is still part of this industry. However, as it has been aforementioned, the underpricing level, thus the market value of the firm can be influenced by several forces and actors in the market. Useful for next researches could be including web metric variables that can partly explain the underpricing level for this kind of companies. Hence, it is logical to assert that the interpretation and the analysis for this kind of firm should a 360 degrees analysis involving accounting variables and non-accounting variables.

It clearly easier to analyze a company that can report revenues and incomes, as Ebay, Google or Facebook, but is way more difficult to understand the value of a company like Twitter (in fact lately they are facing several issues in order to stay in business). However this study relies on the possibility for the company to analyzed and valuated efficiently by investors, although several behavioral theories may jeopardy this assertion. It is logic to think that old vision of negative incomes that increase the value of company can be considered naïve and outdated, unless this negative amount of incomes are not supported by R&D expenses (that also should be cautiously interpreted) or supported by web metric variables. For these types of analyses that do not to want to involve this kind of metrics, the suggestion is that the company

should be valued according to level of Net Income, Gross Profit and Revenues that are the usual wealth indicator.

6.3 Possible Biases and Limitations

This section will evidence the possible biases and limitations that may jeopardy this study. First of all, the lack of availability for web metric data did not allow having a complete view in the research field. It would have been interesting and fascinating being able to include all those variables classified as ‘non-financial’. The major provider of this data is not operating anymore, and the only available data cannot be reconnected with the IPO years for all the firms. Thus, this leaves room for improvements for future research, in order to evidence and underline the possibility of facing another dot.com Bubble in the Future..

Other possible claimable bias can be represented by the fact that it was not possible evidence a relation between financial variables and Underpricing% (calculated percentage of difference between the price after the first day of trading minus Offering price) for Internet firms in the second period regressed. As aforementioned, Also Berger, reviewing the study proposed by Bartov, Mohanram and Seethamraju, pointed out that none of the financial variables has been found connected with the ending price after the first day of trading. Hence, it is logical to believe that ending price, thus underpricing, are influenced by other ‘market forces’ or dependency with web metric variables present in this market (Ofek and Richardson, 2002). This might be an interesting for future research.

Moreover, although the reasoning behind the Offering Price is as an ideal measure of solidity for a company during the IPO, it might be possible that the price established is led by other forces and the number of shares requested by investors (Ofek and Richardson, 2002). This could lead to a possible limitation for the research. However, the research believes that prices during IPO phase are mostly driven by the financial performance of the company in the few years antecedent the IPO.

It is worth to mention that Underpricing% (in particular for prices at the end of the first day trading) can be influenced by all these complementary forces that are influencing the stock price of the Internet firm as soon as it starts to be treaded (Ofek and Richardson, 2002). As behavioral complementary study reported, the “hot market” is the one that is better fit, help in explaining the number of Internet IPOs and the discrepancy with the financials. Hence, part of the significance for that regression is absorbed by these components in which this thesis is not focusing, but that can be considered as complementary.

Furthermore, the research takes into consideration several businesses under a unique cluster. although all the firms are considered to be Internet firms according to the rule aforementioned, this might hypothetically lead to a bias because it is logical to think that B2C company measures its profitability and its efficiency differently than a company that provide a service of Internet banking. Due to a lack of that, the research does not take into consideration this possibility. This is another point for improvements that can be developed in future researches on this topic, creating different results that are applicable to a restricted business. The study has been built to be applicable at Internet industry in general in order to not compromise its external validity. Other possible bias was the inclusion in this research of part of variables discussed in the literature review, as governance aspects that may influence the IPO. The path of this study chose to focus on those variables that can be considered as ‘strong accounting variables’ in order to avoid any possible bias. By doing this, the study might have omitted some theoretical aspects, leaving room for possible improvements. Moreover, the sample is comprehensive of companies with different structures, as for example start-up. Mostly due to a lack of data, the research was not able to categorize and differentiate companies according to their internal structure. This may represent another point of departure to be improved for future researches on this field.

Appendixes

Appendix 1

Author	Year	Subject	Research question	Variable	Method	Period	Outcome	Results
1)S. Aij, and D. Brounen	2002	The paper analyzed differences of IPOs for High-tech firms in the European and American market. Authors try to explain what are the mechanisms that drive particular market and whether investors sentiment affect IPOs' prices and how.	Are number of IPOs and initial returns affected by strong/we ak market environm ent?	Initial day of return as dependent variable; free-float, size, three day pre-offer market return, market return on the day of the issue	Quantitat ive analysis	1998-2001	Results try to confirm that uncertainty around IPO of high-tech firms. Authors find out that in markets characterized by a higher level of uncertainty, the effect of the "hot marker theory" is stronger. Moreover, greater accounting performances tend to have better after-market returns.	Underpricing is not regressed with free-float variable. However, this research confirms that high level of uncertainty leads to greater level of underpricing.
2)Ariosto , R., Giudici, G., & Paleari, S	2000	This paper analyzes Internet IPOs in the secondary European stock market. The target of the study is to understand causes of Underpricing and why Internet firms leave "money on the table".	Which are determin ants of "money left on the table", thus underpricing?	Amount of money left on the table (Underpricing multiplied by number of shares sold) as dependent variable; three sets of independent variables : 1) Market and investors sentiment (market performance and volatility, number of IPOs and average underpricing of the three pervious IPO); 2) Accounting variables (Assets, Intangible ratio, sales, profit and leverage). 3) IPO's specific data (Offering price, Float, standard deviation and dummy variable revision measuring if there is a revision during the book-building activity)	Quantitat ive analysis - survey	1998-2000	Authors confirm that book-building activities are useful to decrease the level of uncertainty around the IPO (by reducing underpricing); hence, it is possible to state that investors are capable to extract information by checking revisions and reducing asymmetry. Market sentiment results to be significant for the regression (positively performance and volatility, negatively with the number of IPO issued). This corroborates the theory that investors are affected by market momentum; the role of accounting variable is confirmed but still unclear (in fact sales are negatively related with underpricing but incomes are positively related). Possible interpretation given lies on the fact that sales can be perceived as a cash source (thus decrease uncertainty around the IPO), but income are resources that are not efficiently utilized (hence increase uncertainty). For the third set of variables Offering price and Revision are negatively related (due to the fact that they lower the level of uncertainty, and standard deviation is positively related).	Outcomes of this paper work confirm that issuer and investors perceive differently value drivers for the IPO leading to and information asymmetry. Moreover, Sales is reported to be negatively related with Underpricing, as confirmed in this thesis. Another interesting insight brought up from this study is the negative relation with the Offering price, confirming that speculation, thus information asymmetry is more probable at lower of Offering price.
3)Barber, B.M. & Odean, T	2001	The paper describes the influences of the Internet on information that could be delivered to investors and the way they can utilizes them.	What circumsta nces could investors face after the higher amount of informati on available, thanks to the Internet?	The paper describes the introduction of the Internet as source of information and the perception of this "new tool" by actors that operate in this market. In particular the paper describes: how the new technology created new kind of service financial providers, how investors reacted to the higher availability of data, the affection of investors in the market and how the adoption of this	Descripti ve paper	1962-2000 1995-2001	Summarizing insights from several studies, this paper evidences that the availability of information, thanks to broad utilization of the Internet, can create advantages and disadvantages. The first section points out how service providers decreased their expenses and created a new form of company, making all the market more atomized and technologically efficient. The second section discuss the investors prospective stating that investors who need less technical advice can invest directly in the market, increase the number of them, due also to the fact that investors will	Although there are not empirical results provided by this paper, it is interesting summing up how, after the introduction of the Internet several aspects were influenced. Explicative for this study are the three circumstances that could lead to a speculative

				technology affected Corporate Governance functionalities.			become more sensible to costs services provided to them. The third section evidences that the higher amount of information available push investors to be more active also in market in which they do not have a precise expertise and experience. This represents a crucial point for the creation of circumstances that could lead to a possible Bubble. The last section discusses about the increased partition to Corporate governance meetings thanks to Internet	bubble: 1) availability of relevant amount of capitals; 2) high level of uncertainty for the firm evaluation; 3) although investors were not experienced, they were quite active in the market.
4)Bartov, E., Mohanram, P. S. , & Seethamraju, C.	2001	The paper investigates the valuation of Internet firms in different stages of their IPO and from two different perspectives. Firstly authors study the relation between financial or non-financial variables and IPOs values. At further stage the paper analyzes differences between Internet and non-Internet firms in different IPOs stages.	What are differences between Internet and non-Internet firm in the regression between financial and non-financial value drivers and IPO prices during different steps of the process?	The amount of variable taken into consideration in this paper is high: first of all authors create a control sample of non-internet firms for comparison purpose than the analysis start taking into consideration as dependent variables: prospectus prices, Offering Prices and end prices. Following step is the definition of independent variables. The first group is comprehensive of financial variables such as: earnings per share, operating cash flow per share, sales per share, book value per share, annual sales growth and R&D expenses per share. Additionally authors consider also: 1) FLOAT, as the percentage between the share sold during the IPO and the number of shares outstanding; and PARTIAL (just with Endprice as dependent variable), as final offer price in comparison with the expect price during the first stage of the IPO. The analysis performs three different regressions first with earnings, than with cash flows and lastly with sales.	Quantitative study	1996-1999	Results of this paper show that taking prospectus prices as dependent variable: earnings are not significant for the Internet sample but are positively related to Internet firms. Negative cash flows are negatively related to internet firms and positive cash flows with non-Internet firms and lastly sales earnings per share are positively related to both samples, although the effect on non-Internet firms is higher. Regarding non-financial variables FLOAT is negatively and significantly related with the Internet sample. The second bunch of results takes into consideration Offering prices as dependent variables: results are similar to the previous regression. In fact, internet firms are negatively related to negative cash flows and FLOAT (for the variable FLOAT as it was before in three specifications of the independent financial variables). However, non-Internet sample loses its significance with positive cash flows. Sales per share are still positively significant for both samples. Last group of results involve price after the first day of trading. In this group The non-financial variable FLOAT maintains its significance with the dependent variable within the Internet sample. Also PARTIAL is positive and significant for both samples and within the three specifications. Earnings and cash flows are not significant for the regression. Positive book value is marginally significant with the dependent variable for Internet firms. The paper continues putting as dependent variable the difference in price calculated as the difference between IPOPRICE and ENDPRICE. Results are similar to the previous section; in fact FLOAT maintains its significance. On the other hand, sales growth is significant for Internet samples and within the three regressions. Other important point is the positive relation within the three regressions for R&D expenses.	This paper represented the point of departure for the thesis presented; although the complexity of the analysis, the thesis results presented are partly confirmed and in line with Bartov et al analysis. For example Sales represent a fundamental value driver for Internet company as also the study proves. However, Earnings represent still a turning point for these analyses presenting controversial results. R&D expenses results are in line with results reported in the thesis.

<p>5)Bhattacharya, U., Demers, E., & Joos, P.</p>	<p>2010</p>	<p>Accounting information is useful for different reasons: stock and performance evaluation, failure forecast. However, during the Bubble, some accounting practices resulted to be naïve and therefore contributed to misevaluating the emerging Internet industry. Aim of the paper is hence assessing if the accounting data is valuable and informative in evaluating stock price. Authors want to verify the failure prediction ability for Internet IPO, evidencing the efficiency of accounting information system.</p>	<p>Is accounting information useful to anchor investors' evaluation, even during high volatile times as during Bubble?</p>	<p>The first regression uses a dependent variable the failure within five years after IPO ('92-2000); as independent variables the research proposes an accounting model: LogSales, Gross profit Margin, Log R&D, Log Advertising, Leverage and Log Accumulated deficit. The second bunch of variables is defined as non-accounting: Offer price, IPO day initial return, Hot issue market, Log IPO vintage, LogAge, Big6 Auditor, Venture backed, CM rank (underwriter prestige), Strategic Investors and Inside Ownership. The second is a logistic regression on a moving 10 years period for companies that were able to operate in 10 years before the year of the IPO reported in the table. Independent variables regressed are those significant for the previous model: CM rank, Offer Price, Leverage, Log R&D, Log Accumulated deficit Log Sales.</p>	<p>Quantitative study</p>	<p>1982-February 2000</p>	<p>Overall outcomes suggested that investors driven from euphoric behavior ignored red flags of the accounting information system. Turning now the attention of accounting related variables, Internet sample presents no profit during the IPO, as expected. Furthermore, R&D and SGA are coherent with Internet industry definition, which is focus on technology and B2C retail-oriented. The second set of results is related to the analysis of the logistic regression that aims at measuring the failure realization. Results are divided in three columns: the first consider only accounting information, the second one the other variables involved that are IPO related or 'intermediary' related, and the third one analyzes the full model. Regarding the first column, five out of six variables are significant for the model. LogSales, LogRD and LogAccumdeficit are negatively related to the dependent variable corroborating the authors' Hypotheses. Hence, firms with higher sales or higher R&D expenses are perceived as less risky, therefore less inclined to fail. On the other hand, LogAdvertising is positively related to failure measurement. Thus, it is more likely that heavy investment on advertising could lead to the firm's bankruptcy. According to previous literature also leverage is positively related to the dependent variable.</p>	<p>This study points out interesting insights for the thesis. First of all Sales, again is considered as positive value driver and is negatively related with the possibility of Failure. Also the other accounting variables are marginally significant, as Gross profit for example. Among non-accounting variables, also Offering price result to be marginally negatively related with the failure possibility. This supports the hypotheses done in this thesis, confirming that Offering prices can reduce uncertainty around IPO, due to the fact that are negatively related with the dependent variable.</p>
<p>6)Bhattacharya, U., Galpin N., Ray R., & Yu X</p>	<p>2009</p>	<p>The paper investigates on the level of affection that news, good, bad or neutral, have on IPOs of Internet firms. Moreover authors include a control sample of non-Internet firms to compare and tests differences</p>	<p>Is the hype media different between Internet sample and non-Internet sample? Did the hype have an effect on risk adjustment on returns for the two samples?</p>	<p>The first part of the paper analyzes whether media cover Internet and non-Internet sample differently in the three period of time assessed (entire, Bubble and post-Bubble). Firstly, unconditional media coverage is taken into consideration. By doing this authors do not link the coverage to media to other variables. After that they use a proxy defined as the difference between good and bad news, called "net news". The second step of this study is focus on investigating if media coverage depends on price movements. The structure of the analysis follows the previous one assessed</p>	<p>Quantitative study</p>	<p>1996-2000</p>	<p>Results for the first part as authors forecasted show that the amount of news related to internet sample is higher. After the burst of the Bubble, the trend changes and the level of bad news greater for the Internet sample. The outcomes presented state that in both times (calendar and event) media optimism is influenced from firm values. This correlation is significant only for the Internet sample. Outcomes from the second step of the analysis are the point of departure for the rest of the paper. As a matter of fact, results prove that the extent of daily correlation market capitalization and lagged net news is larger than the same relation but casually inverted. This means that are the news the value driver for market capitalization and not the other way around. Result of the measurement of marginal effect of media coverage on abnormal returns. Frist results show that the contemporaneous media impact is higher for the internet sample</p>	<p>Media coverage could be a possible responsible for the burst of the bubble. Although this interesting insight, this thesis do not regress this type of variable. However, this could represent a possible explanation of the reason why the amount of IPO increased drastically during that period of time that was preceding the Bubble.</p>

				<p>in the first part. Next analysis introduced from the author is developed in results of the previous one. In fact, authors investigate if media affects future and current returns. After this first test, authors implement to study of this relation with a multivariate regression. Next section of the paper utilized OLS regression to measure the media affection on abnormal returns. Authors follow Jorda's (2005) model where dependent and independent variables are regresses simultaneously. After that, another regression that takes into consideration the lead value of the dependent variable and the contemporary performance for the independent variable. Consequently the method is repeated. By doing this, authors can measure how today variables interact with future performances and for how long in the future the effect stays. Equation links the current level of ABRET with the present measure of NN and previous level of ARBET. Portfolios analysis follows the same structure base on Jordan's model.</p>			<p>before the burst of the Bubble. Next bunch of results are related also with the next period abnormal returns. The next section takes into consideration portfolios. Value-weighted portfolio outcomes are similar to the firm level. Daily news impact is less positive for Internet sample. For the equity-weighted, results are not significant. This means that media impact is relevant for big size firms, because bigger companies attract more the media attention. Last section of the paper measures the cumulative return instead of marginal. First group of results are related to the actual cumulative return. In this case, authors measure that Internet IPO group intensely outclasses the other group. The next step is measure set of predicted cumulative returns. Final results after the introduction of control variables show that news progress the explanation power for the Internet stock prices, however the increase is not valuable. Results state that investors retain a positive signal for investing, via venture capital firm, those companies with pretty successful past performances. The total capital raised was significant and positive in the relation with IPO likelihood, meaning that the company goes public faster, if it is able to raise more capital. Likewise, also the cumulative count of those alliances considered strategic is positively related to IPO.</p>	
7) Beatty R. P. & Ritter J. R.	1986	The paper aims at demonstrating the role of information asymmetry during the IPO and consequences on the underwriter that does not report fairly information during the IPO	Is there a significant relation between underpricing and uncertainty of investors? Do Underwriters whose Offerings have average initial returns that are not commensurate with their ex ante uncertainty	Performing a Weighted least square regression, this paper starts analyzing initial return as dependent variable and considering as weighting factor $\text{Log}(1000+\text{sales})$ where the sales are relative to 1 year before the IPO. As independent variable the model uses $\text{log}(1+\text{number of proceeds})$, reciprocal of gross proceeds, $\text{log}(1+\text{age})$, $\text{log}(1+\text{sales})$ and $\text{log}(1+\text{number of risk factor})$. In order to test the second RQ the paper computes the market shares of underwriters that follow 4 or more	Quantitative studying	1977-1981	This paper proves that the IPOs surrounded by higher level of uncertainty will lead to consequent higher level of Underpricing. This uncertainty result to be endogenous thus can be reduced by disclosing voluntarily information. Moreover, investment bankers have to find it in their interest to retain the underpricing equilibrium; thus, three conditions are necessary. 1) the underwriters are not efficient forecasters of aftermarket prices, 2) each underwriter must have reputation capital on which it is earning returns and 3) any underwriter who cheats on pricing 'off the line' have to lose clients. The paper confirmed that investment bankers pricing 'off the line' in one sub-period lose market share in the subsequent sub-period,	This paper represents a point of departure for the thesis presented. As a matter of fact all the hypotheses developed are corroborating this study. The uncertainty around the IPO is leading to higher level of underpricing during the IPO. Moreover, this information asymmetry can be mitigated by disclosing information. That justifies

			ty lose subsequent market share?	IPOs. After that the analysis involves predicted initial returns with actual returns calculating residuals that will be used to categorize underwriters. Consequently residuals are regressed with market capitalization of underwriters as dependent variable			although this relation is noisy. Authors consider these empirical findings as supporting the hypothesis that an investment banker should enforce the underpricing equilibrium.	the utilization of Offering prices as proxy of safety because they reflect financials of which IPO price is build.
8) Berger P.G.	2002	The paper discusses concerns expressed by authors on the paper "Valuation of Internet firms- An IPO prospective". By doing this, Berger brings up interesting insights as the difference of value drivers for Offering prices and End prices.	See Bartov, E., Mohanram, P. S. , & Seethamraju, C.	See Bartov, E., Mohanram, P. S. , & Seethamraju, C.	Discussion on quantitative study	See Bartov, E., Mohanram, P. S. , & Seethamraju, C.	The author concludes his study asserting that a valid interpretation for the different outcomes between Offering price and end price could lie on the fact that the information spread during the book-building phase can modify the price of IPO. Another interesting insight brought up from this research is that the underwriter is trying to set a price that is not reflecting the right value for the price of the IPO because of information asymmetry with the issuing company (phenomenon that involve an explorative auction by underwriters in order to test the sentiment investors).	In this discussion it is confirmed the discrepancy that surround IPOs during their phases. In particular, it is worth to mention that also in this thesis value drivers differs a lot in the different stages of the IPO.
9)Bharat, A. J., Narayanan, J., & Omesh, K.	2008	The paper analyzes the specific case of technological firm that are inclined to go public before the maturity. Thus, the study wants to investigate which are those variables that are considered to be value drivers for Internet firms, The theoretical framework is developed on agency and signaling consideration in order to identify the affection of aforementioned theories on post-IPO path-of-profitability for Internet companies	Under the signaling theory, what is the impact of factor as the quality of the management, third party certification and investors demand with the path-to-profitability of Internet firms during the IPO?	Profitability (dependent variables)is measured using Cox Proportional Hazard model that compares profitability pre-IPO and post-IPO. Independent variables are categorized according to the hypothesis developed. H1 model: proportion of Directors considered as outsiders. H2 model: Change in the top three directors of officers. H3 model: CEO/CFO worked for a reputable firm. CEO/CFO has experience in the industry. H4 model: venture capital involvement or underwriter prestige. H5 model: valuation of uncertainty and pre-IPO demand.	Quantitative study	1996-2000	First outcomes reported from the paper are related to the correlation among variables, reported in table two. Than authors, dividing the sample among profitable and not-profitable companies measures correlation with independent variables. It is worth to mention that unprofitable companies have a higher number of venture capitals involved. Other variables do not present particular differences. Results of model one asserts that the greater is the size of the IPO or the risk factors and more narrow is the likelihood of profitability. The other way around is valid for the age of the firm and number of employees. Model two repeat the test adding the gauge of valuation of uncertainty and the institutional request for IPO's shares. VUNC is negatively correlated at ten per cent, this means that an increase in uncertainty leads to a decrease on the probability of profitability, corroborating partly hypothesis five. The variable DEMAND is positive and significant. Model three introduces the underwriter reputation and venture capitals participation. Outcomes for UNDERP are not significant, thus HP related to model 4 are not proved. Moreover venture capital participation is negative and significant at ten per cent, disproving hypothesis 4. Hence, the underwriter reputation does	This paper brought up interesting insights for the thesis presented, although the focus of the thesis is not the ownership of the Internet firm, outcomes show that signaling theory could mitigate the effect of information asymmetry among operators in this market. One interesting finding is the of Venture capital involvement variable, that is not considered to be significant in the thesis. In this paper the variable is negatively related with the dependent variable stating that third party involvement (Venture capital) does not increase the profitability of the company, hence does not

							<p>not affect the possibility of profitability and participation of venture capitals is even negative. Authors include the portion of outsiders (POUT), the change in percentage ownership hold by top managers (CHTOP3), the CEO's age, reputation and industry experience (CEOAGE;CEOREP;CEOIND) and in the end CFO reputation and industry experience (CFOREP;CFOIND). PUOT is negatively correlated and significant stating that higher is the number of outsiders, lower will be the profit post-IPO for the company. This supports hypotheses of model 1. CHTOP3 is positively related and significant at one per cent asserting that greater is the change in ownership, in percentage, for the top three managers, higher will be the likelihood of profitability. This corroborates Hypothesis 2. The experience acquired in a certain industry is significant and negative related. CFO characteristics are both negatively related but only the reputation is significant for the analysis. Model five is comprehensive of all the variables analyzed. Overall results are similar with some exceptions. The variable CEOIND is slightly insignificant at ten percent. These results disprove the hypotheses related to the management quality. Hypotheses model 3 is not confirmed</p>	<p>decrease information asymmetry.</p>
10) Botman, M., Roosenboom, P., & van de Groot, T	2004	The study analyze how accounting and other types of information influence internet stock price during the IPO for the USA and EU market during the years 1998-2000. Thus they analyze this particular industry before, during and after its "shakedown	Are accounting or non-accounting variable information significant for offer equity? And for market value?	Using Ohlson model (1995) in which market value of the equity is function of book value and residual earnings author build this log linear regression. As dependent variable: Market value of the equity calculated as number of shares after the IPO multiplied by price at the end of the first day of trading; and Offer value of the equity, calculated as final offer price multiplied by the number of shares after the IPO. As independent variables: EBIT, Net income, ISP that differentiate internet service provider companies, revenues, book value of the equity, the free float and the ownership of the largest shareholder.	Quantitative study	January 1998-December 2000	The model presents 7 different regressions according to specification of the single variables and also according to the dependent variables regressed. Model one and two consider accounting variables Net income, revenues, book value and Internet service provider (with the difference that model two split negative incomes from positive incomes in line with Hand study). Model three and four include EBIT (model five split EBIT in negative and positive component). Model five considers non-accounting variables (FLOAT and TOPSH). The last two models regress all the variables making a differentiation with before and after the Bubble. Results using market value as dependent variable are the followings: there is a negative relation between negative income and market value in both markets; ISP is positive and significant in both markets, although the effect is lower in the US market; book value is positive and significant only for the US market. Using	This paper evidences differences of the impact of value drivers analyzing different market and different stages of the IPO. Similar to this thesis authors proved that there is shifting point in value drivers' perception before and after the bubble and in different stages of the IPO. Moreover, negative income are perceived as negative for the market value in model 6 and 7, stating that these two models link negatively, negative incomes and

						<p>model 3, Ebit is negative related with the market value in the European Market; in model 4 negative ebit is significant for the European market and positive ebit are marginally significant for the US market. FLOAT and TOPSH are negatively related only for the US market. For the European market Neg Income are negatively related with the market value only before the bubble, while ISP is positively related in both models. Also for the US market negative net income loses its significance and ISP is positive and significant in both markets. However in the next model FIOAT and TOPSH are positive and significant while BVE is significant only after the burst of the bubble. Results for the analysis of with the second dependent variable, the stock price at the end of the first day of trading. At a first glance it is easy to notice that LNI and LEBIT have the same relation with values. After that, authors split the variables in two components, results are similar to previous analysis. A difference may be recognized in the fact that offer value and sales are positively correlated. Results for model 3 and for are similar to the previous analysis. After including non-accounting variables, outcomes show us that FLOAT is negatively related to the dependent variable. The other variable has not significance. During the Bubble (6) result for the US do not change and FLOAT is still negatively related to offer in both markets. In the end the results are still similar to previous steps. .</p>	<p>offer values. This is also partly corroborated in the thesis proposed. Also revenues are positively correlated with the Offering value in the first four models of the paper.</p>	
<p>11)Bowen, R. B., Davis, A. K., & Rajgopal, S.</p>	<p>2002</p>	<p>Aim of the paper is measuring the relation between revenues and market capitalization. Specific interest of this paper is studying the managerial decision to embrace revenue-recognition strategy that can be considered as aggressive. For instance, two techniques are analyzed in this study: advertising barter revenue and grossed-up sales level</p>	<p>Are Internet firms reporting barter or Grossed-up revenues ?</p>	<p>First authors define if the Internet companies are willing and able to report barter or grossed-up revenues, proving that revenues cover and important role in this market. Central part of the study is the evaluation and decision to use this mechanism. Hence the model presented is the following: as dependent variable, dummy variable Gross or Barter that is equal to one in case revenues have been bartered or grossed-up. As independent variables the paper proposes this variables: cash from operation plus cash from investing activities scaled by the</p>	<p>Quantitative study</p>	<p>The sample of internet firms is collected from Internet.com on August the 31st 2000</p>	<p>Frist bunch of results is used to confirm the general knowledge that revenues are a value driver for Internet companies. Moreover, It is easy observable that this relation is strong and significant also after controlling for a size proxy (assets). After that, authors investigate if revenues are more relevant for those firms that record a loss. With second relation, which is positive and significant, authors, however, point out that even losses are value drivers for firms' market value. Univariate regression results show us that firms which report barter revenues (44) records higher cash burn rate, more involvement with the Motley fool text boards, higher number of alliances, greater usage of stock options and more possibility of M&A than the other sample (68) in which barter is not utilized. BIG5 is does not present any</p>	<p>Even though the analysis of the thesis does not aim at evidencing which factors are more likeable to be related with grossed-up or barter revenues, it is worth put in evidence that this mechanism is more spread among Internet firms, stating that revenues represent and important value driver for this kind of companies. This is logically linked with the results presented in the</p>

				<p>amount of cash and equivalents at the end of the fiscal year; the average of messages posted on firm's board during the IPO time, the number of marketing, content and distribution alliances, the number of offered stock option scaled by the number of outstanding shares, number of acquisitions, dummy variable for Big5 auditor and Underwriter, the percentage of shares held by insiders and industry dummy variable for internet sector.</p>			<p>difference between the two samples. However, the variable UW does not follow the behavior predicted from the authors, in fact there is no difference between the sample even though high quality intermediaries are the underwriters. Turning now to the other dependent variable, cash burn measurement corroborates the hypothesis done by authors. However, the number of acquisition is higher for the sample that records more gross-up revenues. Moreover, UW is not linked to the sample in which companies are not boosting revenues. The analysis of the correlation among variables shows us that UW and BURN are highly related to other independent parameters, but not with OPTINT and MFRANK. Analyzing now outcomes related to the multivariate regression, the variable BURN is significant and negatively related to estimated dependent variable. Hence, companies with higher cash burn rate, use more barter revenues. Likewise, firms that attract more often interest from active individual investors are more inclined to record barter revenues. Also ALLIANCES is positive and statistically significant. However, OPTINT and ACQ are not significant for model. Authors assert that this could be caused by the size of the sample. The last analysis provides result corroborates results of the univariate regression UW and ACQ are negatively and significantly related with the dependent variable.</p>	<p>thesis. Other interesting insight is represented from the fact that, especially during the bubble investors, considered as not fully conscious of real value of companies, were attracted from aggressive revenue-accounting practices.</p>
12) Chan, Y. C	2014	<p>The paper wants to investigate the relation between the abnormal return registered in the long-run period after the IPO stage and the retail demand level. Hence the aim of the paper is investigate the influence that investor sentiments have in the stock price of a going public company.</p>	<p>How long-run abnormal returns and IPO's return volatility are affected by retail sentiment ?</p>	<p>The author define retail demand variable as a consequence of Chan(2010) theory which asserts that it is possible to measure the level of retail trade activity as the difference between the volume of dollar used from buyer minus the initiated small trades (<\$5000 or <500 shares) on the first trading day. This difference is consequently divided by the total amount of dollar traded during the first trading day. Additionally the researcher evaluates not-retail demand, substituting small trades with not-small ones. In the first step volatility is measured following the Parkison theory which asserts</p>	Quantitative study	1994-2004	<p>Results of the regression show us that retail investors are able to excessively bullish on the IPO market. On the other hand non-retail investors are not able to do that. Another important findings is the relation between investors demand and IPO price volatility for the first day of trading, that results be positive especially for Hot IPO issuers (during the bubble period). The main outcome is that IPOs during bubble suffer of poor price performance on the long-run period. In fact the relation is robust and persistent with intra-industry adjustment. In particular data shows us that for a negative retail sentiment effect is stronger in the second year after IPO (the positive effect stays more than three years). It is also worth to mention that the paper shows all the intra-relation among single control variables, dependent and independent variables.</p>	<p>The most important finding that this study evidences is the fact that during the Bubble prices after the first of trading were biased by investors' retail sentiment. This is partly corroborated by the different relation of value drivers with Offering prices. Moreover, they proved that higher volatility leads to poor performance in the long-term. Thus, there is a negative relation between retail sentiment and</p>

				<p>that volatility is a logarithm ratio between the highest and lowest trading price of the day. After that researcher measures the buying and holding abnormal return for IPOs.</p> <p>In order to avoid possible bias in multivariate regression Chan takes into consideration nine control variables as, for instance, the gap between Offering price and the opening price for the first trading day, the percentage of shares retained and the total amount of earnings raised with the operation.</p> <p>In the further stage the author start running the regression and calculate the volatility as a function of all the aforementioned variables, combined also among them in order to verify correlation bias and intra-model variable relationship. Lastly the paper investigates the relation for the long-run post-IPO return in order to verify the second hypothesis and the relation between independent, dependent and control variables.</p>			<p>long-term performance. The bubble and IPOs during bubble time were therefore conditioned by retail sentiment reflecting an inefficient environment.</p>	
13)Chang, S. J.	2004	<p>The research investigates the affection of strategic alliances and venture capital financing, on startups' capacity in acquiring resources for growth.</p>	<p>How the ability of collecting capitals is affected by venture capital financing and strategic alliances?</p>	<p>For the first section the author uses the time to IPO, assessed each month since the date of founding, as a profitability proxy. Therefore this represents the dependent variable of the model.</p> <p>Venture capitals' reputation is measured in three different ways: first, it is taken into consideration the number of investments done in previously in other startups by venture capital companies. This variable is assessed as the number of investment done in related industries, as computer and communication, before starting investing in Internet firms. Second, the success rate of IPO reached by venture</p>	Quantitative study	January 1994-June 2000	<p>First outcomes of this paper are related to descriptive statistics. Model1 is the point of departure for this analysis. The model assesses the influence of the two dichotomous variables (type of business), the covariates that are time-varying of the IPO market index and density values. The dependent variable of this first model build is the time that the company needs to go public. Outcomes show that companies assigned to the first dichotomous variable 1994-1996 achieved the IPO phase more quickly that the others. However, number of IPO founded in the second period of time taken into consideration is very similar to the number of startups founded up 1999. This means that first mover's advantage is relevant for Internet firms. Moreover the IPO market Index is positive and significant. Hence, the more favorable is the environment for IPO in that specific market, the higher will be the probability of going public for startups.</p>	<p>Hypothetically the thesis wanted to take into account the fact that venture capitals can be perceived, even during the bubble, as safety signal and helping to reduce information asymmetry. Moreover, the paper asserts that, according to hot market theory, companies are more willing to go public. This is confirmed by the higher amount of IPO in the first part of the regression and explains the pre-Bubble</p>

				<p>capital companies. This is gauged as the number of startups that went public, scaled by the amount of investment done in the same industry by venture capital firms. At last, the total amount raised from Internet startups firms, adjusted with inflation. Relating to strategic alliances, the researcher defines the prominence of alliance as the number of articles related to alliance partners that can be found in the Wall Street Journal. Likewise the author gauges the cumulative sum of alliance for each company and he classifies them according to marketing agreements, technical agreements, supply agreements, and joint R&D.</p> <p>As measure of first mover's competitive advantage, the researcher measures firm ages with two dichotomous variables: founded in 1994-1996 and founded in 1997-1998. To prevent biases they use Ritter proxy is modified. The author included also the density measured as the number of companies in market niche at certain time.</p>		<p>Turning now to Model2, where the authors added variables related to venture capital financing. The author observed that the amount of capital invested in startups previously is not significant in the model. On the other hand the IPO success, for the same previous investment, is significant and positive. Hence, results state that investors retain a positive signal for investing, via venture capital firm, those companies with pretty successful past performances. The total capital raised was significant and positive in the relation with IPO likelihood, meaning that the company goes public faster, if it is able to raise more capital.</p> <p>Model3 add the variables that are related to alliance. It is easily observable that importance of the alliance with partner is positively related to IPO event. Likewise, also the cumulative count of those alliances considered strategic is positively related to IPO. Model4 divided the strategic alliances into different areas of the same company (marketing, technical, R&D and supply). The results point out that no one of these variables is related, likely due to the high correlation among them.</p>	frenzy.	
14)Corr, T. A	2006	<p>The aim of the paper is evaluating, according to behavioral finance theories, whether actors in IPO market for internet firms' actions are biased from emotions and irrationality. Moreover the study also assesses principal securities and internet shares valuation during the Bubble. In the end the research tries to gauge if Google's market capitalization that anticipated its IPO was a cause for the second Bubble.</p>	<p>Discussion of behavioral finance theories impact on the Internet Bubble. Could Google IPO represent the point of departure of another Bubble?</p>	<p>Not supported by a quantitative analysis. Only data available are relative to Google IPO.</p>	<p>Theoretical discussion</p>	<p>1999-2004 (focus on Google IPO)</p>	<p>Outcomes for this paper are not supported from a quantitative analysis, however the researcher aims at theoretically explain which methodology can be the less biased. According to the research, ratio methodology (as for example P/E ratio) building up with new value drivers. For instance, new methodologies use the number of viewer of a web page or the number of subscriptions for the website. The study reports also that in order to analyze those companies that staid profitable and survived at the Bubble, it is useful to investigate also for cash flows. The result is that in case of positive cash flows is worth it considering them as value driver for the company. Biginshaw paper states that stocks are systematically overpriced; hence investors agree to overvalue them. To sum up, the author remarks that actors in this market</p>	<p>This paper represents a point of departure in understanding why IPO during the bubble were perceived wrongly. Asserting the presence of information asymmetry between investors and issuers, the paper analyzes traditional methods, which result to be naïve and not suitable for this task. Some of them adopted forecast perception, not considering that</p>

						are not fully rational. The third section of this research analyzes the possibility that Google IPO could lead to a second Bubble for internet companies. Firstly the study summarizes the process and development of Google company since 2002. Then the author starts processing how correctly valuate Google shares. The simplest way is using the same method that the most important competitor (Yahoo) as a measurement. Google adopt Dutch auction issuing two different types of securities: class A, with more voting power (ten times class B), thus more costly, and class B shares that have less importance on managerial decision but are less costly. Thus, after evaluating Google IPO with different methods: DCF, ratio comparison and Black and Scholes the researcher states the Google case is unique and very hard to compare. In particular with Black and Scholes method he is able to state that Google stock is overpriced. Hence, author states that the possible bubble area involved only search engines, although Google presents good performances for the entire period analyzed.	under behavioral theories as “The Greater fool theory”, the evaluation of these companies was biased. Analyzing Google IPO author asserts that, the Bubble that surrounded this IPO was just relative to research engine. Thus, this is not a red flag for a possible future Bubble for the Internet sector.	
15) Dermev, E., & Lev, B	2001	This paper analyzes which are value drivers for stock prices of Internet companies (specifically B2C) pre and during the correction applied because of the Bubble. The study presents a range of financial and non-financial variables in order to investigate which values are relevant for this kind of company. Authors also investigate the role of “cash burning” proxy during the Bubble period.	Are financial/ non-financial variable affecting stock prices of Internet companies before and after the Burst of the Bubble?	After several correlation analyses, authors propose the following model considering quarterly data. The first regression considers as dependent variable the market value of equity divided by Sales. As independent variable the regression considers these variables: Reach, stickiness and loyalty, which measure the non-accounting web metrics variable. Cash burn proxy (defined as cash from operation divided by revenues), Negative Cash burn dummy (equal to 1 if the cash burn ratio is negative), Cost of good sold, marketing expenses and R&D expenses represent the second set of financial variables. Last set of variables is figurative for strategic alliances: the first one (AOL) is dummy variable that is equal to one when the company has a strategic alliance, the second one (TOP10) is equal to one when the alliance is with one of	Quantitative study	1999-2000	Authors gauge the term in which financial and non-financial variables influence share prices. Outcomes corroborate the hypotheses developed by researchers. As a matter of fact, it is easily observable that web variables are significantly and positively related to the dependent variable. In particular it is worth to mention that “stickiness” disproves the precedent Hand’s theory that proved insignificance with the amount of time that a customer stays in the website. This is relevant for pre and post Bubble period. As mentioned before the financial variables taken into consideration (as cost of goods, marketing and products development). In 1999 the financial variables are positively and significantly correlated with the stock return, with the exception of cost of goods. On the other hand, after the burst of the Bubble and the consequent increase of market efficiency, the cost of goods is negatively linked to the dependent variable and marketing expenses loose its significance. In the end authors evaluate the amount of cash flows that companies burned in this period. Table five and six show us that the proxy is positive related and significant for our dependent variable. Regarding the part related to	This paper gives a good point of departure for the analysis of non-financial variables. As also confirmed in this thesis investment in intangibles is considered by investors as positive value driver, especially before the burst of the Bubble. Another important insight lies in the fact that investors changed perception on the value drivers of the company after the burst of the Bubble, as it is confirmed in this thesis.

				the top ten Internet-traffic generating and the last measures the total number of alliances. The last regression involve Price change in price-to-sale ratio as dependent variable and age, market value, dummy variable (ETAILE) stating if the company is in the e-tail and negative cash burn variable.			alliances and partnerships, results indicate that AOL and the TOP10 variables have lack of significance disproving the influence with the price of B2C businesses. On the other hand TOPAlliance is significant and negatively related to price-to-sale ratio. Last analysis presented in confirms the hypothesis that those companies which were overvalued, after the burst of the Bubble were hit more dramatically from this event.	
16) Dermev, E., & Lev, B	2003	The study investigates benefits that marketing could bring in case the company goes public. The target of this research is measuring the relation between IPO underpricing and website traffic, which is considered to be a proxy to gauging performances of the Internet firm.	How underpricing affect web metric variable?	The first step of the paper consists on measuring and observing main characteristics of samples created. We can recognize PROC measuring shares sold during the Offering, excluding those that are additionally traded (overallotment), ASSET gauging the amount of assets before the IPO, ROA, VC capturing the involvement of venture capitals (control variable), INSIDER the number of shares hold by insiders, RANK the percentage of IPOs' proceeds processed by the lead underwriter (control variable), scaled by the number of IPOs proceeds, IRET, which measures difference between closing price on the first day and , scaled by the Offering price. After that, authors take into consideration MED, which gauges the media mentioning in month t. The analysis take into consideration from t-2 to t+2, ALLIAN is dummy variable capturing the presence of alliances (control variable), and lastly TRAF, which also goes form t-2 to t+2, measures is the number of unique visitors in month t. The authors involve control variables in order to prevent possible biases. First of all, internet firms are more inclined to create strategic alliances.	Quantitative study	1995-2000	High level of underpricing can attract the majority of media attention. Due to possible bias with underpricing level authors substitute the initial return variable with a dummy variable that indicates underpricing that is higher than median value in the sample. However, more extreme level of underpricing tends to decrease their significance. Observing the other sections of the first regression, which use MED variable as independent variable, outcomes are still positive and significant. Due to the fact that, when both variables are included only initial return are significant, the authors assert that the media coverage involve also other media as TV, radio and the same Internet. Another explanation given is that initial returns might have a direct affection on consumer demand that does not involve publicity. Interpretation given about the positive relation between underpricing and changes in web performances are two. The first one is related to hypothesis done by the authors that initial returns of IPO improve the firm's reputation in the market. The second one assert that the high level of IPO's return anticipate the better performances for the company. In order to be valid, this interpretation needs the assumption that the market is able to anticipate movement of traffic after the IPO that other actors involved are not able to measure. Moreover authors do not find any prove of a possible bias related to endogeneity. The next section aims at analyzing cost involved in leaving the money in the table approximating a cost of 450\$ per customer. This method result very similar to the model applied for cost-per-customer in calculating direct marketing expenses. The authors assert that underpricing is economically efficient because it is less costly than the amount of money left in the table during the IPO. Consequently, outcomes relative to endogeneity test show us that the relation between traffic	This paper disproves theoretical framework for the thesis. In fact, they prove that underpricing might be a mechanism by which issuers attract higher number of investors, making their offer more convenient for them. Underpricing is considered marketing move (in fact growth of the firm has been found positively related to Underpricing). The central point lies on the fact that web metrics are positively related with Underpricing level. it is worth to mention although that in cases were the level of underpricing is irrationally high, thus the information asymmetry is high, growth of the firm is not linked with underpricing level, it decreases the value of the company, This confirms the hypotheses done in the thesis.

							<p>growth and initial returns is not expected. Thus, after the Hausman test, authors can prove that initial return variable is endogenous. It is also worth to mention that there is a possibility that the power of test aforementioned is too low to determine endogeneity problem. The last part of the research corroborates the theory proposed by authors. In fact, initial returns are positively and significantly related with the number of mentions in the most important newspaper. On the other hand, results present different persistence behaviors in the three different samples. The last test focuses its attention in differences among the three samples. Principal outcomes show us that B2C presents the higher results for media levels. Also the publicity has more value for this subsample.</p>	
17) DuCharme, L. L., Rajgopal, S. & Sefcik, S. E.	2001	<p>The study investigates the reason for the unusual level of Internet underpricing according to three different explanations: 1) media promotion influence underpricing, 2) Internet companies leave money on the table because after the underpriced IPO, they can achieve financing offer, and 3) underpricing is a branding event, in which consumers become more informed of the Internet company.</p>	<p>Given three possible explanations, what are causes of Underpricing for Internet firms?</p>	<p>This study takes into consideration in first place media exposure and underpricing. This exposure is measured as the number of time that the firm is mentioned in the popular electronic media within seven days before going public. This measurement is divided in two different source of information: press (PRT_7) and electronic media (ELEC_7). The second hypothesis states that in order to increase profit in the long term, the firm is willing to accept higher levels of underpricing during the IPO. Hence, authors predicted that firm with higher "burn rate", in other words the amount of cash flow from operating and investing operations divided by the amount of proceeds of the IPO (the type of product and the number of shares offered). In measuring the variable BURN, researchers consider cash flows before the IPO. They introduce the dummy variable B2C. Another role of the underpricing is creating an effective branding. Thus,</p>	Quantitative study	1 January 2000	<p>The first set of results collected analyzes the correlation among variables. As It is easily observable, this raw test corroborates H1 and H2 finding a positive relation among these variables and underpricing. Furthermore, BURN is negatively related to underpricing level. Under univariate basis (no control variables), H3 is not supported. Turning now to the most relevant outcomes for our model, we can easily observe in table three that both PRT_7 and ELEC_7 are positive and significant. This corroborates H1. The electronic variable results to be stronger. Among control variables, it is worth to mention the relation between underwriters' quality and underpricing. The positive and significant relation leads to the insight consistent with the "impresario" hypothesis developed by Shiller (1990), which states that underwriters can underprice the IPO on purpose, in order to attract more investors. Auditor and Venture capital variables are not significant for the model. H2, as aforementioned, is corroborated. Hence, it is correct asserting that firms with greater "burning" ratio have higher level of underpricing. In fact, these companies are able to attract more investors, also in the long-term. Outcomes show that investors are more inclined to associate B2C companies with greater underpricing because these businesses are more focused on the consumer space. Thus, they result to have higher underpricing. On the other hand, the combined variable B2C*SALCHQ is not significant. Applying the full model with the</p>	<p>The paper tries to shed lights on the reasons why companies perform underpricing during their IPO. Even though the first two hypotheses are confirmed, the paper does not prove a connection with performance of companies after the IPO. Thus, it is true that the thesis found its analysis on information asymmetry between issuers and investors; however it is confirmed a negative or an insignificant relation with performance of companies.</p>

				<p>underpricing should be related to an increase in sales after the IPO. This variable SALCHQ is gauged as a ratio of mean quarterly sales for the six weeks after the IPO, divided by the equivalent mean for the six weeks before the issuing.</p> <p>After that, authors introduce a set of control variables according to the literature review. The quality of the auditor and the underwriter could affect the success of the IPO. Therefore, authors introduce two dummy variables: AUC that is equal to one if the auditor is part of the big 5 and UWC that is equal to one if the underwriter is considered to be top quality. Authors measure with the variable TREG the registered Offering size predicting a negative relation with underpricing. The last variable is VCC that is dummy variable. This variable is equal to one if a top ten venture capital firms, listed in Venture economic magazine, invests in the Internet firm.</p>			<p>three different hypothesis most of the results do not change. However, it is worth to mention that PRT_7 and B2C become insignificant. Consequently, H3 is not supported, but H1 and H2 are corroborated also in this case.</p> <p>The last regression takes into consideration from the 3rd day up to 90th after the IPO (RET3_90). Thus, RET1 becomes and independent variable. Results do not seem to be significant, in fact the highest R2 is 3,5 %, which is a weak result.</p>	
18) Johnston, J. & Madura, J	2002	<p>The goal of the paper is gauging the level of underpricing for Internet firms during the IPO and further analyze if the cause of this phenomenon is related to the importance of the underwriter or it is connected to peculiar characteristics of the firm. Effect are measured before and right after the burst of the bubble</p>	<p>Are initial returns higher for Internet firms? Are prestigious Underwriters influencing initial returns? Underpricing. If not absorbed by initial return, could lead to an aftermarket positive effect?</p>	<p>Researchers start describing the variables utilized for the model and their expected prevision on results and the affection on stock prices during IPO. The first variable introduced is INTERNET that is a dummy variable indicating which firm is included in the internet sample and which is not. Subsequently the study analyze variables considered related to the issue. Underwriter rank (RANK) is the first variable taken into consideration by researcher. They assigned a rank according to Carter-Manaster method, where important underwriters avoid to take into consideration</p>	Quantitative study	1 January 1996 – 30 December 2000	<p>Outcomes for the analysis comprehensive of all the variables and the whole time period show us that INTERNET dummy variable is positive and significant. That due to the high level of uncertainty for Internet firms. This result corroborates the hypothesis that Internet firms are underpriced and have higher returns during the IPO. Also the variable OLT is positive related to return and significant. This confirms the construct that IR is greater when the overallotment level is higher. However, this does not imply that initial returns are higher because of overallotment. Also PHCG variable is positive and significant. This means that the underwriter adjust the price according to the demand from the market. Also the variable VENTURE result to be positive related and significant. The second analysis excludes some variables not significant in the previous one. INTERNET stays positive and significant. RANK</p>	<p>This paper justifies that Internet IPOs are surrounded by a higher level of uncertainty. Thus, it is correct to think that higher level of underpricing is the consequence of higher uncertainty around the IPO, especially during the Bubble period. In fact, investors require a more solid business model after the burst of the bubble. Another interesting insight that is brought up is that</p>

			<p>risky IPO. The possibility of an overallotment option is the second variable (OLT) introduced for the model. The third variable take into consideration by researchers is the type of book-building (PCHG) that issuers are creating for the IPO. This variable is considered when is positive and zero otherwise. Offering size is another variable analyzed in this paper. The size is measured as log of proceeds (PROCEED) and log assets (ASSETS). The variable (LOCK) is gauged as the percentage of restricted shares, scaled by total shares issued. Authors decided to consider it as possible value driver. The last variable considered as issue-related is the amount of ownership hold by insiders.</p> <p>After these variables, the study considers the group concerning market characteristics. The first variable analyzed is condition of the market during the pre-IPO phase. This variable (RUNUP) is measured as the return over the NASDAQ value, in the two weeks that precede the IPO. The second variable market related is the market downturn, which is the begging of the burst of the Bubble in March 2000. Thus, authors assigned the value of one if the offer is done in the 31st of March, and 0 otherwise. The last two variables taken into consideration in this study are Nyse and Amex.</p>		<p>does not follow the same behavior losing its significance. Other variables have similar result to the precedent analysis. For the third and the fourth analyses, researchers decided to split the sample in order to define a strong and weak cycle for the internet firms. By doing this, authors aim at investigating whether the methodology applied to analyze firms has some discrepancy. Likewise also investors may be more willing to invest in this market if the overall results are profitable. Regarding the strong internet cycle, INTERNET variable stays positive and significant. RANK variable more or less remain similar to previous analyses. OLT variable stays strong and significant, evidencing the role of underwriter as price balancer. VENTURE is significant and positive for the strong cycle. For the fourth period the INTERNET variable loose of significance. The cause of this variation is related to the lack of underpricing due to the collapse of the market. RANK variable is much less significant, compare to previous analyses. OLT remains positive and significant. As aforementioned, underwriters fix discrepancies between demand and offer. VENTURE loses its significance during the “weak” period. Market does not perceive anymore as a positive effect involvement of Venture capitalist. Regarding the introduction of DOT.COM variable, results show that the parameter introduced is not significant. Also the VENTURE variable is not significant in this model. The other variables have the same behavior of the previous analysis. Similarly, the narrow sample with the DOT.COM variable has analogous outcomes.</p> <p>Regarding the analysis that divides the sample in strong and weak period, the model presents the sequent results: RANK variable is positive related and significant for the strong period but not in the weak one. These results prove that investors rely on underwriter importance just when the market conditions are favorable. OLT and PHCG stay positive and significant in both cases. Lastly, RUNUP is significant and positive just for the strong condition.</p> <p>The last analysis, which takes into abnormal return, shows that internet and not-internet sample do not have difference behavior. Thus, the initial discrepancy between the two samples disappears. It is also worth to mention that the importance of</p>	<p>underpricing is not significant with venture capital involvement. This is, also, confirmed in the thesis. Moreover, the paper sates that strong demand could have driven the Bubble and other sector (like Biotech) could incur in the same trap. However, after the burst of the bubble values are considered to be more equal to other markets. The burst of the bubble made safer, thus less underpriced the IPO for the Internet industry.</p>
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							the underwriter loses its significance only in the last part of the analysis, when the Bubble bursts. RUN UP is significant and negative during the positive Internet cycle but it loses its significance after that	
19) Knauff, P., & van der Goot, T.	2001	The paper aims at testing the importance of financial information in determining the value of European internet companies that went public from 1998 to 2000	Is accounting information relevant for the market value of the IPO in the European market?	The value of the IPO for the specific company represents the independent variable for the study. Because of this the study needs to specify some characteristics of the value of the auction. The other parameter chosen as measure for the dependent variable is market value assumed from the stock in first day of trading. As independent variable the study focuses on those usual financial variables. In fact, authors utilized: SALES (amount of sales), OI (operating income), EBIT, NI (net income), OCF (operating cash flows), TA (total assets) and BVE (book value of the total equity). It is worth to mention that all values are taken in the year afore the IPO. Sub-sector and geographical distribution are introduced as control variables. Moreover in order to avoid any possible bias coming from the number of transaction in the market authors include as the dummy variable period. In the end, LISTING variable is included in the model. The variable inhibits the effect of exchange rates among different markets.	Quantitative study	1998-2000	First results collected by authors show that, in relation to the European market, earnings performances are significantly affecting market-to-book ratio. Specifically, SALES variable is positively related to the dependent variable and the others are negatively related. This corroborates also the second hypothesis studied by authors and in line with Hand (2000a) theory. Moreover they also find a negative and significant relation between debt-equity ratio and market-to-book ratio. Results disprove the theory developed by researchers. Analyzing control variables, it is easily noticeable that the geographical distribution does not affect the dependent variable. However, the period Q8 is positive and significant for the market value of the firm	This study shows that also market value can be linked to accounting information for Internet firms. Although the study regresses a European sample and differentiate Internet industry in several segments (according to the different functions) it is corroborated the strength and the positivity for sales as value driver for Internet firms.
20) Kim, M. & Ritter, J.R	1999	Accounting information is useful to evaluate IPO. However market values are less predictable and linked to this information without proper adjustments. Authors prove that market values are better connected with forecast earnings	Which methodology better capture market value during the IPO?	Paper aims at analyzing different procedures to capture the market value in the IPO phase; fundamental methodology proposed is the use of comparable approach that involves the usage of comparable profitability ratios (according to P/E, M/B and P/S). Moreover, authors differentiate the sample taking IPOs from the same industry according to	Quantitative study (comparison different methodologies)	1992-1993	Overall results show that the first approach presents a weak relation with the valuation of IPO market value. Even after the introduction of the comparability proxy the model does not result to be considered as efficient. This confirms that using past data in this model is not efficient. Second bunch of results that split the market value in three different moment of the IPO. The presented forecast path is respected ($Pop < OP < EP$). However, the absolute value of errors jeopardy the efficiency of the model. Last bucket of results show that involving forecast and including young firms that	This paper shows that IPO price is different according to the stage that is reached and also issuers are able to manipulate and differentiate Offering prices. This leads to information asymmetry between issuers and investors. Moreover, it is evidenced how Offering price

				<p>SIC codes.</p> <p>Definition of comparability is also the usage of firms that went public in the closets 12 months. This implement method uses also earnings before the IPO in order to prevent any possible bias. In the second stage author uses different variables in order to assess the market value of the equity: the preliminary Offering price, the final offer price and lastly the market price (price after the first day of trading). The last methodology used in this paper takes into account the aforementioned profitability proxy indexes. However, they use research report from Renaissance Capital, a company operating in the IPO market. This methodology incorporates forecast in calculating profitability indexes.</p>			<p>present odd value in the market. Authors report that the usage of forecast data is more efficient than using historical data. Moreover, the young firms are surrounded by higher level of uncertainty. They state that using midpoint for comparable methodology without further adjustments and that investment bank, when establish final Offering prices, are able to reach other information that are not available to other investors.</p>	<p>and Market price are different among them because they are sensitive to different source of information.</p>
21) Kotha, S., Rajgopal, S., & Randova, V.	2001	<p>This paper has the aim to measure the relationship among different reputation building activities (reputation borrowing, marketing investments and media exposure). Moreover, the study try to assess the influence of the aforementioned variables with market performances and accounting measurements</p>	<p>Are measures of reputation building influential for Internet firm performances?</p>	<p>The independent variables are the three parameters which are theoretically related to the reputation building. Thus the marketing investment in reputation is captured via SGA. The reputation borrowing is operationalized as a dummy variable VCDUM, that basically assign a one if the company is founded in cooperation with one of the best three partner venture firms according to FORTUNE ranking index for venture capital companies, otherwise 0. Lastly media exposure is defined as number of times that the company is mentioned in major newspapers. The market value of the company and sales performance are the economic indicators in this study and they represent the independent variables. As control parameters authors chose to take into consideration book value of equity</p>	Quantitative study on selected sample	1998	<p>Results achieved with this paper state that all variables involved have positive and statistically significant relationship with the dependent parameters. In particular, marketing investment reputation outcomes show us that that products and market value of the firm are influenced by the reputation in marketing investment. In fact companies spend 65% of their revenues in SGA. Media exposure is sensitive to both independent variables analyzed. The relation is working in both ways (positive and negative) but is defined as a short-lived relationship. Reputation borrowing and performance is the last dependent variable analyzed. Researchers state that the parameter influences firms performances (in term of both, sales and market value)</p>	<p>Although this analysis is not taken into consideration in the thesis, it is worth to mention that before the burst of the bubble, Internet firms were affected positively from reputation building variables. This may be the first signal of braking down of this market. In fact, the following frenzy that was driving the market might be a consequence of the phenomenon proven in this paper.</p>

				and net income before taxes and extraordinary items. Additionally dummy variables for industry firms and time-constant factors.				
22) Hand, J.R.M.	2000a	The paper presents a study in which the author pigeonholes three different cluster of independent variable: economic fundamentals, web traffic, and supply and demand forces. Applying a log linear regression the study wants to identify efficient value drivers for stock prices. Moreover, the research analyzes also differences with brick-and-mortar companies, including a sample of these firms for comparison.	Are economic fundamentals, web traffic and supply demand affecting Internet stock prices?	The main groups of variables assessed in this paper belong to three different categories. However, before starting the analysis, the author summarizes and compares the two samples according to EPS and revenues in order to harmonize these values. After that, the researcher gauges economic values. In this group we can recognize equity market value, book value, forecast earnings (one year), long-term forecasted earnings growth, forecast positive net income, and forecast negative net income. Regarding the second group labeled as web metrics, Hand measures four variables: DUM that is a dummy variable gauging if the variable VISITORS>0. The second variable VISITORS captures the number of unique visitors of the web page in January 2000. The second variable PAGEV measures the number of pages viewed by the specific panel. HOURS is the last web metric variable analyzed and it is measured as number of hours that a web property is utilized by web-active PC Data. The last group of variables analyzes supply and demand forces. All measures are calculated as percentages. FLT is the first variable and gauges the number of shares that are traded freely on the public, scaled by the total shares outstanding. SHTINT is the number of shares short sold, divided by the total number of shares outstanding. At last, INST is the number of	Quantitative study	Q1 1997- Q2 1999	Results of this analysis are important and fundamental for future researches. As a matter of fact, the study provides several insights in order to analyze those value drivers that are relevant for stock prices. According to the paper, shares of Internet firms are not affected by supply and demand forces, and web traffic variables. In fact, outcomes evidence that economic values explain the 51% of stock price values, 12% for web metrics, and 18% for supply and demand forces. Moreover, losses recorded represent investment for intangible assets, consistent with previous researches. However, negative forecasts affect negatively the stock price. The other independent variables are positively related with the dependent one. Regarding web metrics, the number of unique visitors is only partly related to the equity market value. Likewise, after that the author control for economic fundamentals, the other two web metric variables (HOURS and PAGEV) are not significant. Furthermore not reported regression, after controlling for web metric variable, evidence that income and visitors' gender of the web-site are not relevant for equity market value of the firm. A possible explanation is given from the fact that analysis of forecasts comprehends information related to gender and income of visitors. Regarding supply and demand, outcomes prove that market value of these firms is correlated with aforementioned independent variables. Hence, higher prices are connected with lower values of Float, higher percentage of short interest and greater amount of shares held by institutional actors. Moreover, the study points out that depending on whether the business is to consumer or not, effects of affection from supply and demand forces, and forecast earnings are stronger. On the other hand, the control sample is not related to variables inherent demand and supply. Dominance of economic values is really evidenced by results	This study represents a point of departure for all the literature developed on Internet firms. Although the paper analyzes a period that was taking data right before the burst of the bubble. In fact most of findings on web metrics will be disproved in next researches. It is worth to mention that Hand proved a connection with economic variables. However, it is cautious to consider these result as possible (in particular forecasted earnings), due to the period regressed. However, this paper proved that revenues considered as a negative value driver by the market especially during the Bubble and this is partly confirmed by the fact that in the thesis presented Underpricing is negatively related to revenues and negatively related with net incomes.

				<p>shares held by institutions (as pension funds), scaled by total shares outstanding.</p> <p>Table three defines all the variables involved in this study in the Income statement and the Balance sheet. Among these variables we can notice net incomes (NI), revenues (REV), special items (SPEC), cost of good sold (COGS), selling general administrative expenses (SGA) etc.</p> <p>Regarding the Balance sheet the author analyzes variables as net property plan and equipment (PPE), cash available (CASH), asset and debts divided in current and long term, equity book value (BV) etc.</p> <p>Moreover in table 4 he defines ratios utilized for the study. Relevant for the paper is the core net income for fiscals quarters (CNI) that is equal net income less special items and PIBV, in other words the equity book value at the end of the quarter before adding the net income of the following quarter.</p>				
23) Hand, J.R.M.	2000b	The paper tires to identify value drivers Internet stock prices. The study focuses its attention on accounting values	Which are the major value drivers for Internet firms?	<p>The variables involved in this study in the Income statement and the Balance sheet. Among these variables we can notice net incomes (NI), revenues (REV), special items (SPEC), cost of good sold (COGS), selling general administrative expenses (SGA) etc.</p> <p>Regarding the Balance sheet the author analyzes variables as net property plan and equipment (PPE), cash available (CASH), asset and debts divided in current and long term, equity book value (BV) etc.</p> <p>Moreover in table 4 he defines ratios utilized for the study. Amid others, the most relevant for the paper is the core net income for fiscals quarters (CNI) that is equal net income less special</p>	Quantitative study	Q1 1997- Q2 1999	<p>Outcomes bring relevant insights for the analysis of Internet firms. First of all, CNI is positive is strongly correlated with accounting variables and equity market value. Hence, this multi-collinearity might lead to biased estimations. It is the same for CNI negative although the magnitude is lower. Regressions' outcomes reject the hypothesis that accounting estimations are irrelevant for the equity value of Internet firms. Whether incomes are decomposed in revenues minus the expenses drivers (EXP-COGS-RD-MKTG) the R-square increases. Thus, the analysis results more efficient.</p> <p>Likewise, outcomes reject also the second hypothesis that revenues are the dominant value driver for Internet stock. As matter of fact, after that control variables as pre-income book equity and expenses the variable revenues losses its significance. The next results are one of the most critical in order to understand which role losses play for Internet firms. In fact, larger losses are cross-sectional</p>	<p>This second paper proposed by Hand states that revenues do not represent a value driver for stock of Internet company. However, as it has been aforementioned the validity of this paper has been discussed several times. It is interesting though as the study already perceived that stocks were mispriced during the period regressed. This confirms that market was not able to capture the right value of the firm. Another important insight,</p>

				<p>items and PIBV, in other words the equity book value at the end of the quarter before adding the net income of the following quarter.</p>			<p>correlated (in a specific point in time) with greater market values of the firm. Moreover, positive and negative incomes have different elasticity. Hence, respond differently to changes, but lead the relation in the same direction increasing the market value of the firm. Another fundamental result is the how marketing and R&D expenses are perceived by the market. In fact, these values are intangible assets and not expenses. This is partly corroborate and related to the interpretation given to losses, which increase the market value of the firm. Moreover, R&D and marketing expenses are concave and increasing in case that net incomes are negative. At last, another relevant set of results shows us that the majority of intercepts are positive. The author gives us two explanations: either a variable, which could be able to explain stock prices, has been not taken into consideration, either the stock are overpriced. A posteriori, we can say that stocks were clearly overpriced.</p>	<p>confirmed in the thesis with Offering price as dependent variable in the regression, revenues are not considered as the major value driver. In fact, income, that reflects a less "dirty" value driver. This may be a posteriori interpretation of the paper results.</p>
<p>24) Ljungqvist, A. & Wilhelm, W. J</p>	<p>2003</p>	<p>This paper analyzes the level of underpricing during the Dot-com Bubble (1999-2000). More in depth, the study tries to explain this particular level of prices, in relation to the ownership structure and insider selling behavior. The reason of the first variable lie in the fact that the smaller is the percentage of shares owned from CEO, lower is the effort that he will put in control the share and thus higher may be the underpricing. Similar hypothesis is done for the selling behavior. The analysis creates a sample in a period of time that goes from 1996 to 2000.</p>	<p>Are different type of ownership and specific selling behavior influencing Underpricing?</p>	<p>Variables taken into consideration in this paper can be divided in 4 macro-categories: Firm characteristics, Transaction characteristic, Changes in pre-IPO ownership structure of issuing firms and changes in insider selling behavior and post-IPO ownership structure. The first variable assesses most relevant characteristics of issuing firms for different years, trends and mean reverting variable. By doing this authors find out that mean book value of asset and mean revenues do not have a time trend. The second variable used to build the model try to capture the aspect of transaction. The table shows which variables are influent according to the researchers' view as: syndicate size, underwriter reputation ranking, withdrawal, %price revision and % Initial return. The third variable taken into consideration represents the measure of changes in every entity which owns</p>	<p>Quantitative study</p>	<p>January 1996 – December 2000</p>	<p>Results of the first regression follow the hypothesis that the investment is going at its final stage. It is worth to clarify that because usually investors withdraw offers when they are investing in young and risky industries if there are negative signs. At first glance it is possible to observe that the first three columns are positive related but insignificant. With the fourth model authors split the insider sales in VC, CEO investment banks and size of corporation. We can easily notice that VC and CEO are positively related and significant. Specifically the level of underpricing is higher when issuer's contemporary are received from investors more enthusiastically, because the pricing is more aggressive. The paper finds similar results in case of increase in industry index. Firm age is inversely related to revision. However this phenomenon is larger for Internet and High tech firms. The main cause is that young industries are considered to be risky. The bubble dummy variable is not significant thus the variables are not affected from the Dot-com Bubble. The last two model (5, 6) present result of a different cluster for the dependent variable. In fact model 5 presents as dependent control variable underwriter ranking. Researchers find out that those company are more inclined to work with companies that are in form of venture capital, older thus create</p>	<p>The paper gives an insight on what causes high level of underpricing and revision prices during the Bubble of the Internet market. Common insight for this thesis lies in the fact that Underpricing is consequence of information asymmetry, thus issuer are more informed than other actors of the market. However the thesis does not involves ownership variable in the regression.</p>

				<p>more than 5% of total stocks. Moreover is reported also the percentage of shares that all directors held. Those actors not represented on the board are not considered. Authors also specify if investment banks, venture capital or equity found (VC-baking).</p> <p>The last variable reported in this paper analyzes sales of existing shares after the IPO. In the second stage the paper gauges how much variables mentioned before affect firstly price revision, measured as difference between offer price and the mean value of the same stock category in percentage. This variable reproduces information that investors acquired. Database in order to create the sample of IPO's firms is Thomson financial's SDC database. After that authors analyze prospectus on the SEC EDGAR. Moreover researchers check first day price performances on the CRSP database. The methodology utilized in this paper is a OLS regression with which researchers are able to assess to influence in which terms firm and offer characteristics ownership, capital structure and insider selling behavior influence the level of underpricing (mentioned as initial return) and price revision. Moreover authors introduce the dummy variable "Bubble" in order to investigate effects on that precise period of time. After the analysis authors present also additional test for reverse causality, endogeneity and omitted variable bias.</p>			<p>more offer and with high uncertainty in them valuation. Model 6 presents a different regression 2SLS in order to measure the causal regression with the choice to work with a top underwriter. The last of the paper present a similar regression changing the dependent variable. At first glance we can notice that underpricing is more acute when shareholder concentration is lower. It is worth to mention that the importance of underwriter do not influence directly the level of underpricing. Thus authors assert that, according to results, level of underpricing is affected indirectly via price revision by the importance of underwriters. Combining underpricing and transaction and firm characteristics authors notice that all of them are negatively correlated. The only exception is CEO ownership which is not significant. Regarding dummy variable Internet with CEO ownership the relation become significant stating that in Internet industry CEO ownership is seen as the other variables as VC and investment bank. Comparing importance of ownership in different time periods researchers observe that pre-IPO equity and investment bank held have a stronger effect during the Bubble. No relevant changes are perceived for VC variable. Model 10 and 11 aim at analyzing more deeply insider sales at the IPO by splitting the variable in component previously mentioned. Outcomes show us that underpricing is significantly and negatively related to all the components but the effect is stronger for VC sales and CEO sale. To sum up authors noticed that after controlling for transaction and firm characteristics, ownership structure and insider selling the effect on underpricing level is sharply reduced.</p>	
25) Ljungqvist, A.	2004	This paper presents some possible explanation for Underpricing trying	What are possible theoretical	The paper presents several theories that can be gathered in four macro-categories:	Survey (description of theories	N/A	After a discussion and the collection of several empirical evidences, the author states that the difference of the information	This paper gives the most important input to justify the

		to explain theories behind this phenomenon	explanations for Underpricing?	information asymmetry, institutional explanation, ownership and control, and behavioral explanation. The information asymmetry category presents the following theories: The Winner's Curs, The information revelation theory, Principal-agent theory and Underpricing as quality signal. In the bucket of institutional explanation it is possible to find: legal liability and price stabilization. Ownership and control present the following theories: Underpricing as means to retain control and to reduce agency cost. At last, the group of behavioral theories with these three theories: cascades, investor sentiment and prospect theories	to justify underpricing)		among parts is the sparkling that "ignites" the underpricing level. In fact, most of IPO-related gains are achieved from investors, the underpricing level is higher if ex-ante uncertainty valuation of a firm performing a cross-sectional analysis and there is a broad evidence that also Offering prices are influenced by this information asymmetry (investment bank demand exploration to decide Offering prices). This study also questioned how, especially during the bubble, companies had left "money in the table", via underpricing their stocks, during the IPO process. Two theories are seen as causes for this issue: Benveniste-Spindt (1989) asserting that underwriters need to underprice if they want to extract information from issuers and maximize their proceeds. The second theory followed is presented by Jay Ritter stating that underpricing is the consequence of the nature of investment banks (under the agency theory). The discussion states that the correct interpretation could be in between the theories presented.	underpricing phenomenon. Although it is quite clear that the level of underpricing is related to several factors, especially during the Internet Bubble, it is also widely accepted stating that underpricing level are consequence of information asymmetry between actors. The theory that mostly fit with the thesis presented lies on the fact that issuers, being more aware of real value of the company, underprice their stocks in order to attract higher amount of investors. Thus, underpricing is a reflection of the uncertainty level surrounding the IPO of the Internet firm. More precisely, as a consequence of information asymmetry between issuer and investor.
26) Ofek, E. & Richards on M.	2002	This study analyzes the relation between market prices and conventional value drivers in the Internet industry during the period January 1998 to February 2000. Authors examine prices of Internet stocks according to fundamental valuation metrics, how much stock prices are affected by information-based events and the price volatility of Internet sector.	Was the market operation under "rationality" during the Bubble?	The paper is divided in three macro-sections. The first section inspects prices of Internet firms according to conventional evaluation metrics. The incredible rising of 1999 that led to the Bubble, and the consequent dramatic fall on march 2000 have been subject of studying during last decades. Particularity of the model is the fact that the growth rate is gauged in order to understand and justify the movement of P/E ratio. The methodology calculate P/E ratio assuming that the firm has a supernormal return (r*) over a time period	Quantitative study	January 1998 February 2000	Results for this first part of the paper show us that return are incredibly high. Moreover the existing growth rate interest the entire sector and the cost of capital assumed is equal to 0. Furthermore, authors assumed from results a sense of optimism for the growth opportunities in this industry. However, the evaluation done with the first equation may not be a good proxy. The second section analyzes those events that can affect the financial structure of the company or its structure. As proved from a florid literature authors first discuss about the change of the company's name. It has been proved that before the Bubble a company could increase the price of its stock, just changing its name. Thus, the market was responding not efficiently to relevant information released and the name was not change with the purpose of a	The paper tries to shed lights on why Internet stocks are not related with value drivers, and what cause the higher level of volatility in the market. As confirmed in the thesis, there is a high level of uncertainty around stock prices of Internet firms. As a matter of fact the high level of volatility could be a consequence of information asymmetry around Internet shares.

			<p>(t) for the part of earnings invested (k) in the 'high profitable project'. The earnings are assumed to move one-to-one with the margin increase. Furthermore, Turning now the second section, authors focus on those events that can actively affect the financial of the company. The first insight is the name change. Relevant fact is the mispricing of Internet subsidiaries. They state that the value of the parent and the subsidiary should have a relation of one-for-one, in other words values reported in the parent have to reflect values reported in the subsidiary. Authors take into consideration an example of 3Com's subsidiary, palm and its carve-out. After that, authors question the effect of the IPO performed by the subsidiary on parent's equity.</p> <p>The penultimate section of the paper analyzes the excess of volatility for companies operating in this industry. Authors summarize some reasons why Internet stocks have this high level of volatility. General believing, define the excess of volatility as the discrepancy between expected volatility derived from fundamental value and the actual one. The presence of excess of volatility often leads to the irrationality of the marker.</p> <p>The researchers try to explain the difference in volatility with the difference in availability of information. It is widely believed that Internet is young industry, the amount of private information is higher than the public one. However, analyzing the literature authors prove the contrary. The last section of the paper analysis the bubble of</p>		<p>changing of the company's structure.</p> <p>The Palm's case presented show us that the value of Palm was not existing in 3Com. After 4 months owners started giving values to this asset. The possibility of arbitrage was given from the fact that the investor could buy Palm instead of 3Com. The calculated difference multiplied by the day volume was around 3 billion dollars. However, previous paper confirmed that short selling and arbitrage were possible but not performable in huge number. Moreover they proved that the investment was not riskless. As a matter of fact, Palm's high volatility made the hedging very tricky requiring often rebalancing of position. Furthermore, the arbitrage assumed no value for 3Com. Related to the effect of the subsidiary's IPO on parent's equity, authors notice that 3Com's share value increases. The possible explanations given are two. The positive pattern of parent's shares may reflect positive expectations on the subsidiary, or investors are forced to invest on the parent in order to have part of the subsidiary's stake. Results presented show various measurements of volatility for the two samples. It is easy to observe the big gap between Internet (7.4) and non-Internet (3.5) volatility. Following the literature, the paper start comparing the volatility during trading and non-trading hours for the samples. Outcomes show us that high-low value (used as trading hours proxy) of Internet sample is definitely higher than non-Internet firms (9.9 – 3.25). The results are statistically significant and could affect the financing decision. Because the difference in volatility is irregular throughout the entire 24h period, the cause of this difference cannot be linked with volatility outside of the rational private information. Moreover, the intra-day volatility is by half the dominant one. Authors measure the influence of the availability of private information in volatility as the difference in bid-ask spread. In fact, the gap points out investors need to compensate if they want to trade with informed investors. Higher costs are the consequence of a higher discrepancy, thus higher amount of private information. Outcomes show us that median values are lower for Internet sample. Authors cannot provide a cause for the high level of volatility and low spread in bid-ask spread and define this anomaly irrational noise trading.</p>	<p>Moreover, the paper confirm that during the bubble, investors and the market were mispricing and over-valuing internet firms; Despite of this, authors are not able to clarify the causes of this, however it is widely believed that the market was surrounded by an investment frenzy for internet firms. This is justified also from the case in which a company only changing its name was able to increase share price. This is confirmed in the thesis by the turning point in regression value drivers that can be observed in the two samples. However, authors assert that this high level of volatility could be caused by several factors, not just a unique affection for the market. Also the thesis relies on this believing.</p>
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				<p>the Internet sector. The most common mechanism utilized to limit arbitrage is the short sale restriction. Following this theory, authors state that there are mainly two reasons why investors do not short sell: it is too difficult or they do not want. After that, researchers try to evidence why the unusual behavior was not mitigated by the intervention of rational investors.</p>			<p>Last part of the paper analysis the bubble that stroke the Internet industry. Following the theory developed by Chen et al. (2002), they are trying to explain part of the market inefficiency. Funds give stability in the market and within the Internet industry funds are almost absent. Moreover, authors give a few more reasons why it was hard to short sell. First of all, high returns block any type of short selling. Secondly, to short sell the investor need to borrow the share. Authors conclude this section stating that the number of short sell was higher for the internet sample, the float for internet share was lower and given the two aforementioned assertions limits in short selling were put for the internet sector. At last authors give three possible explanation of why the bubble hit the Internet industry. First, they say that there is heterogeneity among investors (pessimistic and optimistic). Thus, some investors are irrational and operate under irrationality. An alternative explanation is given from the fact that the Bubble could have been rational. In fact, they state that high prices were driven by future stock prices and not fundamental values. The last possible explanation is that the flux of investment, also by those investors considered judicious, brought huge amount of capital in this industry. Thus, It increased the importance of this industry.</p>	
27) Ofek, E. & Richardson M	2003	<p>The paper studies how agents, under the assumption that they are heterogeneous, have to face short sell restrictions and the consequently increase, persistence and decrease in stock prices. The theory which lies behind this model explains that only optimistic investors are present in this market because short selling restriction pushes pessimistic investors to leave the market. Hence, assets and their payoffs are overvalued by investors.</p>	<p>Has the end of restriction in trading Internet stocks influencing the market and consequently helped the burst of the Bubble?</p>	<p>As a point of departure authors create a sample in which they consider market value of equity, stock price, bid-ask spread and average return. In order to clarify which fact ignited the burst of the Dot-com Bubble, researchers follows the theory which states that only optimistic investors operate in this market due to short sell restriction. Consequently Internet companies are overvalued. Thus, authors classify short interests as total amount of stocks short sold scaled by total amount outstanding shares dividing Internet and non-Internet firms. Likewise authors also analyzed rebate rate on short sells comparing again the Internet sample with the non-</p>	Quantitative study	January 1998-February 2000	<p>Researchers proved that one of main cause for the burst of Dot-com Bubble might be related to the end of lock up period. Moreover the hypotheses. The first analysis states that there is an increase in the magnitude of abnormal return after expiration of the lock up period. Thus the theoretical framework presented is confirmed. In fact in this situation less optimistic investors are present in the market. Moreover there is an increase of stocks traded. Besides stock prices tend to decrease after the lock up period. This means that market starts perceiving these shares as overvalued that is considered to be as new result for non-Internet firms. Consequently pessimistic investors can start affecting stock prices directly by selling or indirectly short selling. Outcomes confirm this theory in particular for Internet firms. Increasing the horizon of time analyzed outcomes confirm us that the after the expiration, the introduction of pessimistic investors affect negatively stock prices. It is worth to mention that the analysis of the long-term</p>	<p>This paper gives a possible and complementary explanation for the burst of the bubble and the irrationality of the market during that time. Although this thesis does not focus on analyzing lock up expiration, it is worth to mention that the environment in which Internet companies were operating was not considered efficient. In fact, the paper proves that only over optimistic investors were operating in the market due to the lock-up restriction period. This is partly captured by the</p>

				<p>Internet one. An alternative measure proposed by the paper is the failure of the pull-call parity restriction. The main causes for this collapse are it is not allowed to short sell and although there is a portfolio that may provide better returns investors choose to hold stocks because option and equity markets are segmented. The second issue is to prove heterogeneity in order to develop the aforementioned model. Thus authors aim at defining who among investors holds Internet stocks and who does not between institutional investors and retail investors. Moreover they also analyze whether during IPO the type of investors change. They proved that internet companies were owned by retail investors and there were sell constraints.</p>			<p>results can be already being absorbed by the market. To clarify this authors provide data of insider selling month by month for Internet firms. They observed that the number of insider sells after the lock up period increased sharply and last for the first few months after the expiration. Authors believe that partly the over optimistic view of investors and the consequent lock up expiration that led to the entrance of new pessimistic actors operating in the market could have helped to its crash. Outcomes corroborate the aforementioned insider selling post lock period. According to these outcomes is logical to think that an increase in number of selling of transaction has risen offer Internet shares. Consequently marginal investors are pushed away from the market because of the high volatility and the presence of over optimistic investors. To sum up lock up period instead protecting share of internet industry from speculation, created a market where "pessimistic" investors, who were the one that could have decreased the stock price equilibrated and fair, were left aside.</p>	<p>difference valuation of Internet stock between Offering prices and market prices. However, as mentioned before this is not the only affection with which the market was dealing during the bubble.</p>
28) Rajgopal, S., Venkatasubramanian, M., & Kotha, S.	2002	<p>The study wants to prove the importance of network in the e-commerce industry. In fact authors believe that networks represent a competitive advantage that usually is not recognized in the financial statement, considering them as an intangible asset, able to create value.</p>	<p>Are networking or networks creating and added value for the company?</p>	<p>According to Shapiro and Varian (1999) a network has value, if there are already a consistent number of people that are using it. Typical example is an auction site, where the number of people subscribed is determinant for the function of the website. Collecting data from users allows to the website to increase the information, thus it is able to make it more attractive for customers. This affects the forecast revenues, because the website will be able to improve more and more its structure and consequently revenues. The variables presented belong to three different clusters. The first of non-financial variable. UNIVIS quarterly average of unique monthly visitors, thus according to Metcalfe's model NTWK that is value of correspond to</p>	Quantitative study	1 st quart 1999-3 rd quart 2000	<p>First outcomes collected are relative to the first equation which involves only financial variables. The coefficient of book value is positively related and significant. M&A is not significant in this first phase. However R&D is positive and significantly related. Results for the second regression, more relevant for the study, are comprehensive of non-financial variables. In this case NTWK is positive and significant, as authors predicted. It is also worth to mention that the introduction of this variable increase the explanation power of the model R-square is 77,58% (previously it was 58,67%). Earnings, in the second model, have a negative value R&D loses part of its positivity and significance. Thus, part of expenditures in R&D expenditures is used to develop the network. Results for this correlation analysis show that AOL and AFF are not correlated with NTWK, however is strong positively correlated with CASH variable. At first glance it is noticeable that the AFF coefficient is significant and positive. Moreover, as it was quite obvious to predict, media visibility is positively and significantly correlated. On the other hand, AOL and CASH are</p>	<p>The paper tries to introduce networks as valuable assets for the company. Empirical results show that networks are value drivers for the market value of internet firms. Moreover, the paper confirms that earnings are negatively related with MVE. This also confirmed in the thesis due to the fact that the Underpricing level reflects a market value and presents a negative relation with net incomes. Additionally, authors proved that networking value is dependent by that variables considered as non-traditional value drivers corroborating</p>

			<p>UNIVIS2-UNIVIS. Other two non-financial variables are presented in this model: AOL that is a dummy variable representing those companies allied with American online and AFF also a dummy variable that assume the value of one in case the company has an affiliate program. The other variables measure different financial characteristics, as for instance E gauging net incomes, BVE that is the book value of equity, CC for the amount of contributed capital (the amount backed from shareholders plus face value of shares), TA is the amount of total asset, SALES for the sales revenues, MVE is the market value equity, MB the market to book ratio, R&D for research and development expenditure, M&A for marketing and advertisement expenditure and CASH is the amount of cash and equivalents. The third cluster presents forecasted values for the next two years. $FUTEARN_{t+1/t+2}$, $FUTSALES_{t+1/t+2}$, $FUTEXP_{t+1/t+2}$. The next part of the paper is dedicated at measuring the affection of the paper for models studied. POSTCRAH variable is introduced as dummy variable. It assumes the value of one if market value of equity is gauged after April 2000. After that, authors investigate the business model of the company, trying to assert if the nature of the firm can change results for the model previously presented. They divide NTWK variables in Content; Portal; Finser (financial service); Etail; Auction. The last section measures if present network advantages affect future earnings.</p>		<p>not significant for the model. Authors give the one possible explanation for these first results: strategies to create network advantages are not reciprocally exclusive. As matter of fact correlation among independent variables, as for example M&A and CASH is high (0.67). Results for equation five in which MVE is analyzed as dependent variable corroborate authors' theory, NTWK is positive and significant. This states that there whether components of NTWK change, consequently also MVE will change in correspondence of it. Likewise, and it is worth to mention that BVE and R&D are insignificant in this phase of the analysis, while M&A becomes positive and significant. Furthermore authors clarify that the method used to assess endogeneity lie on three important corrections. Firstly only NTWK and MVE are treated as endogenous variables. Secondly, variables measures contain a high percentage of error, indicating that standard errors and parameters may be inconsistent. Thirdly, the equation could incur in correlated omitted variable bias. Regarding the variable crash introduced in the next part of the model, NTWK stays positive and significant. However it is negatively and significantly related to the variable POSTCRASH. After that, authors analyze the influence of the type of business. Results corroborate most of the predictions of the authors. In fact, auction sites have a positive and significant relation with network advantage. On the other hand, financial services have not this strong relation with NTWK. The last part of the paper aim at measuring if the current network vantages will influence positively earnings. Results show that, as expected, NTWK is positive and strongly significance. This proves the theory developed that competitive advantage acquired in t, may influence future firm performances.</p>	<p>the hypothesis that the market value for internet firms during the bubble was not linked to financials. In fact, authors state that NTWK represent an important intangible asset that is not quantified in financials. This may be another possible explanation for the mispricing of Internet firms.</p>
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<p>29) Shultz, P. & Zaman, M</p>	<p>2001</p>	<p>This paper analyzes and investigates which is the main cause of the dramatic increase in the number of IPOs for internet firms during 1999 and 2000. Two possible explanation are given by authors : the company is trying to grab market in order to achieve the first mover advantage or they want to rush in going public because the price are irrationally high. The study try to shed lights on which is the reason of going public for main actors closet to this industry (VC, managers and underwriters)</p>	<p>Are Internet firms trying to grab market share by using economic scale (going public earlier)? Or are Internet firms rushing to go public when share prices are over-priced?</p>	<p>The first part of the analysis take into consideration a summary aspect of Internet IPOs and other IPOs taking into consideration relation of IPO prices with Underwriter spread, underpricing, EBIT, book value etc. The second part that summarize descriptive statistics on market cap, earnings and revenues in relation with the Internet sample. After that in order to verify whether managers think that shares are overpriced authors analyzes % of primary shares, percent of stock sold and percent retained by insiders between the two samples. After that, with a regression, authors investigate the relation between SEO gives the value of one at the dependent variable if the stock is sold. As independent variable researchers propose stock price, market value (log), EBIT etc. At this point authors analyze if after IPO, managers sell more SEO for internet company than for the other type of firm. Hence, in table for they create a sample with all IPOs, internet and not internet, that went public in the same period (three months at top), for just one time for every firm. That with a chi-square regression authors study the relation with the lon of proceed SEO/ proceed IPO and lon of return for the first three months. Analysis used for the step is repeated for VC. Hence, researchers study the relation among IPOs with VC and EBIT, book value, capitalization etc. Regarding underwriter authors analyze the percentage of involvement for these operations between the two samples. The last part of the study with a raw statistical analysis</p>	<p>Quantitative study</p>	<p>January 1996-March 2000</p>	<p>Main outcomes corroborate that Internet firm are going public earlier. In fact level of underpricing is higher for Internet firms. Another signal of this phenomenon, which the first table shows us, is that EBIT is negative related to the IPO price. It is also worth to mention that underwriter spread value is similar between the two samples. In relation to the second phase of the analysis authors easily prove that market capitalization is unusually high for the level of sales and losses There are two assumptions that drive the next step of the analysis: the first one discrepancy between fundamental values and IPOs' prices do not persist. The second one is that information from insiders is fully reflected in sale prices. Outcomes demonstrate that managers and insiders are unwilling to cash out stocks and retain a higher percentage of share compare to the other sample. The cause of these results may be that firms are at early-stage, thus managers do not want to sell these stock. Also the next regression in table three confirms the previous results. Regarding SEO analysis researchers do not find any significant statistical relation disproving the theory. Thus, SEO are not selling more among Internet company. One possible explanation is given from psychology. In fact may be possible that managers do not operate as usual because they believe in too optimistic way. The paper at this point study the other two actors involved (VC and Underwriters). Again outcomes do not prove that they considered as overpriced Internet IPOs. In the end authors analyze if the theory that Internet firms are going public at this great pace in order to create a competitive advantage and grabbing quotes of the "cyber" market. Thus authors propose different combination of mergers, finding out that in case of a merger between two "pure" Internet firms results are higher. For this case outcomes (table seven) show us that mergers for these companies are definitely superior for number and amount of capital corroborating the proposed theory.</p>	<p>The most important achievement with this paper lies in the fact that Internet firms were overpriced during the IPO and were trying to grab market share by going public at earlier stage. It is worth to mention that according to this paper revenues and market capitalization are negatively related as confirmed in the thesis Consequently this paper gives other possible explanation of those "forces" that were governing the market during the Bubble. In fact, the hypotheses done are confirmed. Hence, this partly justify the high number of IPO during the Bubble period. A difference in the results can be noticed when the paper finds significant venture capital involvement. This is not supported by the thesis presented.</p>
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				the mergers among companies for the two samples.				
30) Sousa M, & Pinho M.	2014	The study aims at analyzing if there is a possibility of facing a new Bubble by taking into consideration financial and non-financial variables that can capture the real value of Internet firms during their IPO.	Are financial and non-financial component determining the value of the IPO during different stages?	This study proposes a regression in which authors use different dependent variables according to the phase of the IPO. Hence, the first regression used involve IPO price/Sales; the second take into consideration the price after the first day of trading scaled by sales and lastly Underpricing (calculated as %). The set of independent variable is repeated in all the models. However, authors run separately some of the independent variables: the first model uses Net Income, marketing expenses, R&D expenses and gross margin. The second analyzes the media hype. The third takes into account the non-financial variable Unique Visitors and the last Page views	Quantitative study	2009-2012	The first regression takes into account the IPO price scaled by sales. Outcomes show that media hype is significant for the IPO price. After the involvement of web metrics Net Income becomes statistically significant and negatively correlated and Page views is positively related to this dependent variable. The second dependent variable is the price after the first day of trading divided by sales. Net income is negatively related to it for all the regression reaching the pick of significance with the regression that involves web metrics. Also media hype result positively related and significant to this dependent variable. Before the introduction of web metrics R&D are positive and significant for the model. Web metrics variable are both positively related and significant for the model. Analyzing underpricing as dependent variable it is possible to not the R&D are positively related to underpricing levels. Overall results that Internet companies and investors give a lot of importance to web-metrics in connection with financials, even though parts of them are ignored during the analysis.	The study represents an excellent point of departure for this thesis. Although the focuses of the thesis are web-metrics variables, it is possible to evidence some similar behavior of the variables regressed. For example, the negative net incomes are negatively related to price after the first day of trading stating that negative incomes are perceived as a stronger signal in this phase of the IPO. However, results present a different interpretation because are analyzed with web-metrics variables. Other important result in the positive relation between underpricing and R&D. This enforce the interpretation that still there is a certain degree of discrepancy in the market, even after the burst of the Bubble. It is worth to mention that the sample is relatively small, thus result might be partly biased.
31) Tokic, D.	2003	The study wants to assess if R&D and advertisement investment are taken into consideration in the stock value and volatility measurement of the company (in particular which is the turn over point between investing in R&D and return)	Were Internet firms efficiently translating R&D expenses in profitable value for the company	Tables in the paper show the percentage of invested capital in R&D and advertisements. From the data presented we can notice that on average internet firms invest 25% in R&D and 50% in advertising. Data are collected via Quicken.com website. Output data:	Quantitative case study	January 1996-2000 March	The results achieved with this analysis show us that only three out twenty firms are able to use efficiently the amount of capital invested. The author suggests that, for at least the 57% of companies, should be a reduction of investment. Due to market pressure and the particular industry, managers think that is worth to invest significant amount of money in R&D in order to achieve a competitive	The paper confirms the bucket of results reported in the thesis. In fact, the study asserts that Internet companies were not able to use efficiently R&D investments. This is also corroborated in

			?	Volatility is calculated as standard deviation of the stock price for the 52 weeks in which the study is developed			<p>advantage. Additionally advertising expenses can be drastically reduced. In fact publicity produced often does not reach target customers or the message is misunderstood.</p>	<p>the thesis because R&D expenses represent a turning point between the two samples with Offering price as dependent variable. The uncertainty around the project after the investment in R&D consequently led to higher level of uncertainty around the firm. Thus, the perceptions that negative values of R&D expenses were positive for the value of the firm were wrong. The author asserts that R&D perception brought to the breakdown of the market.</p>
32) Trueman, B., Wong, M. H. F., & Zhang, X.-J.	2000	The paper aim at studying the way in which accounting information, as net income and EBIT, and other kind of Internet usage parameters, as number of visitors and “pageviews” are utilized by the market for the valuation Internet stocks	Are accounting information and non-accounting information for market value of Internet stocks?	The types of Internet firms analyzed in this paper are: portals, which aim at providing a gateway for the Internet, community providers and the e-tailers that vend goods. Analyzing the model it is easy to observe that authors want to prove that traditional variables are not affecting MV of the internet company. In fact, after that they presented the model build, they run a regression king into consideration the variable NTING which represents net income available for shareholders for the first quarter. As it is noticeable, variables analyzed are financial, as for instance market value, book value, gross profit, R&D etc., and non-financial as number of visitors and pageviews per month. Consequently authors scaled, as described in modeling section, variables for BV in order to start the regression.	Quantitative study	January 1996-February 2000	The outcomes of the research help us to shed light on the tricky and complicated operation of valuating an Internet firm. It is easy observable that Internet firm value is strictly connected with the non-financial variable presented in this study. Deeper analysis of financial parameters presented. In fact, non-financial variables are excluded pointing out that net incomes are negatively correlated to the firm value. Moreover, also the variable sale in marketing (MKTG) is negatively correlated with firm value. On the other hand only gross margin is found to be positively related to MV/BV. A justification for it could be recognized in the fact that gross profits are seen as less distorted values in comparison to sales or net income for example. It is also worth to mention that during the analysis BV has an explanatory value whether they compare it at net income (the intercept is statistically greater than zero in first place), but it loses its significance if they take into consideration the gross profit. Looking at quarters section outcome reported show that gross profit and pageviews remain positive in this analysis, however unique visitors loses its significance in some of them. After that authors divide the sample, differentiating the	This paper gave interest insight for the development of the thesis, although results are partly different. At first glance it is easy to notice the accounting variable (if not properly decomposed) are not influent in the market price for internet firms. Thus, this results took some distance from the one presented in the thesis. On the other hand, non-financial metrics (that cannot be taken into consideration for lack of data) result to be influent for the market value. Interesting insight arise for the analysis of divided profit value driver in negative and

							different type of Internet companies. In fact they separate the e-tailers and portal/content firms. Some outcome shows that portal/content firms in first place act more as non-Internet firms. For example, they found a positive significant value for net income for these companies. Another point analyzed from the authors is the possibility of misclassifying e-tailers. As matter of fact authors state that assessing pure e-tailers(as Amazon.com) do not fit with the outcomes aforementioned but behave more like non-Internet company. Hence, part of the outcomes need to be read carefully.	positive components. As stated in the majority of the literature market value in negatively with negative income, as widely proved. More theoretical insight is given from the following regression in which Gross Profits are seen as positive signal for the market value, meaning that Gross Profit is a less noisy profit variable. This theoretical construct will be used also in the shifting analysis in the last part of the thesis. .
33) Wang, Z	2007	The paper analyses the relation between new and old companies of a certain market after the introduction of a new technology (in this specific case internet). In fact the paper aims at emphasizing the theory according to which a new entrant takes advantage of the introduction of the technology, which weaken entry barriers in the first stage. As second phenomena the study asserts that if the new technology is complementary, the integration between old and new technologies will give an advantage to existing firms, causing the exit from the market of some new firms.	Are market turbulences affected by synergies between entrant technology and existing technology?	The analysis examines, via a macroeconomic method where agents operates in a competitive market for homogeneous goods. On the demand side the author review consumers behavior as a sharply declining curve. For the supply side there is a fixed amount of unit produced, maximizing their profit according to the present discontinued value. After the introduction of a new technology in time t the firm chooses if stay in the industry. If the company agrees to stay in the market, it will be repaid with an amount of profit depending on market price and its own technology status. If not, it will get an alternative return of $\pi\theta$. The types of technologies among Internet firms that are analyzed in this paper are four. The first one called the primitive θ that is not able to produce in the specific industry, hence its return is zero (every firm is equipped with	Quantitative macroeconomic study	2004	The paper aim at explaining reasons for the last dot-com bubble and effects for the introduction of new technologies in a specific market. One of the major insights evidenced from this study is that the equilibrium industry depends on how much the new technology may be integrated with the existing one. Thanks to a macroeconomic analysis the study shows how the introduction of a new technology could lead to a different scenarios in which firms can choose if use the new technology as an competitive advantage or not integrate the technological development. Results provided from the analysis assert that multi-channel retailers use the Internet in order to create a brand new channel of distribution and definitely those companies that are able to integrate the new technology dominate, as reported in term of sales, the other kind of company	This paper is useful to describing the environment around Internet firms during the Bubble. However, the thesis does not focus on this type of behavioral study. Fascinating intuition brought up by this research is how and why internet spread out this fast in the market and as a new revolutionary technology.

				<p>this basic technology). The second one is b, or rather the brick-and-mortar firms. The third variable, c, represents the technological innovation (in this case the dot-com company). The last variable, h, symbolizes a hybrid firm able to integrate the new technology with the old one. Moreover every company is able to choose if paying and enter with the basic technology or paying and develop a new technology. The firm can also pay both cost prices to become a hybrid firm.</p>				
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Appendix 2

Author	Year	Results
1) Aij S. & D. Brounen	2002	Partly Congruent - The results confirm that higher level of uncertainty leads to greater underpricing
2) Ariosto, R., Giudici, G., & Paleari, S	2000	Congruent - Issuer and investors perceive differently value drivers for the IPO leading to and information asymmetry. Sales negatively related. Higher Offering price level reduces information asymmetry.
3) Barber, B.M. & Odean, T	2001	N/A - Circumstances that could led to a speculative bubble: 1) availability of relevant amount of capitals; 2) high level of uncertainty for the firm evaluation; 3) although investors were not experienced, they were quite active in the market.
4) Bartov, E., Mohanram, P. S. , & Seethamraju, C.	2001	Partly Congruent - Sales represent a fundamental value driver for Internet company; Income not significant for the paper; Differences between Offering Prices and End Prices. R&D positive value driver.
5) Bhattacharya, U., Demers, E., & Joos, P.	2010	Congruent – Sales positive value driver and is negatively related with the possibility of Failure; Gross Profit and Offering price marginally significant with reducing the risk of failure.
6) Bhattacharya, U., Galpin N., Ray R., & Yu X	2009	Not Congruent – Study analyzes media hype that is not taken into consideration in this thesis.
7) Beatty R. P. & Ritter J. R.	1986	Congruent - The uncertainty around the IPO is leading to higher level of underpricing during the IPO. Moreover, this information asymmetry can be mitigated by disclosing information
8) Berger P.G.	2002	N/A - value drivers differs a lot in the different stages of the IPO
9) Bharat, A. J., Narayanan, J., & Omesh, K.	2008	Not Congruent - the focus of the thesis is not the ownership of the Internet firm; outcomes show that signaling theory could mitigate the effect of information asymmetry among operators in this market. Venture Capital negatively related with the dependent variable, stating that not decrease information asymmetry.
10) Botman, M., Roosenboom, P., & van	2004	Congruent - Shifting point in value drivers' perception before and after the bubble and in different stages of the IPO; negative income are perceived

de Groot, T		negatively for the market value.
11) Bowen, R. B., Davis, A. K., & Rajgopal, S.	2002	Not Congruent – The analysis studies grossed-up or barter revenues; although this is not analyzed in the thesis, revenues represent an important value driver for this kind of companies.
12) Chan, Y. C	2014	Congruent - This study evidences the fact that during the Bubble prices after the first of trading were biased by investors' retail sentiment. Higher volatility leads to poor performance in the long-term.
13) Chang, S. J.	2004	Not Congruent - Results state that investors retain a positive signal for investing, via venture capital firm, those companies with pretty successful past performances.
14) Corr, T. A	2006	Partly Congruent – The study confirms the presence of information asymmetry between investors and issuers; Moreover, it provides a complementary theory according to which Internet stocks were overpriced: “The Greater fool theory”.
15) Dermev, E., & Lev, B	2001	Partly Congruent - Confirmed in this thesis investment in intangibles is considered by investors as positive value driver, especially before the burst of the Bubble; investors become more prudent after the brake-down of the market.
16) Dermev, E., & Lev, B	2003	Not Congruent - Underpricing might be a mechanism by which issuers attract higher number of investors, making their offer more convenient for them. However, when the underpricing is irrationally high, thus the information asymmetry is high, growth of the firm is not linked with underpricing level, and it decreases the value of the company.
17) DuCharme, L. L., Rajgopal, S. & Sefcik, S. E.	2001	Partly Congruent - The paper does not prove a connection with performance of companies after the IPO. Thus, it is true that the thesis found its analysis on information asymmetry between issuers and investors. Venture capital variables are not significant for the model.
18) Johnston, J. & Madura, J	2002	Congruent - Internet IPOs are surrounded by a higher level of uncertainty. Higher level of underpricing is the consequence of higher uncertainty around the IPO, especially during the Bubble period.
19) Knauff, P., & van der Goot, T.	2001	Congruent - It is corroborated the strength and the positivity for sales as value driver for Internet firms.
20) Kim, M. & Ritter, J.R	1999	Congruent - This paper shows that IPO price is different according to the stage that is reached and also issuers are able to manipulate and differentiate offering prices. This leads to information asymmetry between issuers and investors.
21) Kotha, S., Rajgopal, S., & Randova, V.	2001	Not Congruent - Marketing investment reputation outcomes show us that that products and market value of the firm are influenced by the reputation in marketing investment. Reputation borrowing influences firms' performances.
22) Hand, J.R.M.	2000a	Partly Congruent - This paper proved that revenues considered as a negative value driver by the market especially during the Bubble.
23) Hand, J.R.M.	2000b	Not Congruent - revenues do not represent a value driver for stock of Internet company. Negative Net Income is positive is strongly correlated with accounting variables and equity market value. However, R&D expenses concave function, this means that they decrease the value of the company in they are irrationally high.
24) Ljungqvist, A. & Wilhelm, W. J	2003	Partly Congruent - Underpricing is consequence of information asymmetry, thus issuer are more informed than other actors of the market. However the thesis does not involve ownership variable in the regression.

25) Ljungqvist, A.	2004	Partly Congruent - Although it is quite clear that the level of underpricing is related to several factors, especially during the Internet Bubble, it is also widely accepted stating that underpricing level are consequence of information asymmetry between actors.
26) Ofek, E. & Richardson M.	2002	Congruent - There is a high level of uncertainty around stock prices of Internet firms. As a matter of fact the high level of volatility could be a consequence of information asymmetry around Internet shares. This does not preclude other complementary theories regarding this analysis.
27) Ofek, E. & Richardson M	2003	Not Congruent - the paper proves that only over optimistic investors were operating in the market due to the lock-up restriction period. However, can be considered as a complementary theory.
28) Rajgopal, S., Venkatachalam M., & Kotha, S.	2002	Partly Congruent - Empirical results show that networks are value drivers for the market value of internet firms. Underpricing reflect a market value a present a negative relation with net incomes.
29) Shultz, P. & Zaman, M	2001	Partly Congruent - Internet firms were overpriced during the IPO and were trying to grab market share by going public at earlier stage. Revenues and market capitalization are negatively related as confirmed in the thesis.
30) Sousa M, & Pinho M.	2014	Partly Congruent - the negative net incomes are negatively related to price after the first day of trading stating that negative incomes are perceived as a stronger signal in this phase of the IPO. The paper focus on web metrics outcomes
31) Tokic, D.	2003	Congruent - Internet companies were not able to use efficiently R&D investments.
32) Trueman, B., Wong, M. H. F., & Zhang, X-J.	2000	Partly Congruent – Although the first analysis states that financial are not linked with the market value of the firm, Gross Profits are seen as positive signal for the market value, meaning that Gross profit is a less noisy profit variable.
33) Wang, Z	2007	N/A - This paper is useful to describing the environment around Internet firms during the Bubble

Appendix 3

Companies' List							
InfoNow Corp	Nyer Medical Group Inc	Intuit Inc	Pacific Sunwear of CA Inc	Steck-Vaughn Publishing Corp	Innodata Corp	LodgeNet Entertainment Corp	Deckers Outdoor Corp
Mercury Interactive Corp	Urban Outfitters Inc	Mecklermedia Corp	Copart Inc	Intl Lottery & Totalizator Sys	ITG Inc	RF Monolithics Inc	Netcom On-Line Communication
Smith Micro Software Inc	Rural Cellular Corp	Individual Inc	Lycos Inc	Excite Inc	Cost Plus Inc	Yahoo! Inc	NOVA Corp
Infoseek Corp	BroadVision Inc	FactSet Research Systems Inc	E Trade Group Inc	Diedrich Coffee Inc	QuadraMed Corp	ViaSat Inc	EarthLink Network Inc
Coldwater Creek Inc	Medialink Worldwide Inc	Go2Net Inc	Journal Register Co	Peapod Inc	MAXIMUS Inc	Galileo International Inc	Network Solutions Inc
SportsLine USA Inc	InterVU Inc	First Consulting Group Inc	DoubleClick Inc	PC Connection Inc	Ziff-Davis Inc(Softbank Corp)	Innotrac Corp	Verio Inc
Evolving Systems Inc	Ultimate Software Group Inc	Information Holdings Inc	GeoCities	Digital River Inc	24/7 Media Inc	eBay Inc	uBID Inc
Internet America Inc	Covad Communication	Prodigy Communication	Bottomline Technologies	Multex.com Inc	iVillage Inc	OneMain.com Inc	Autobyte.com Inc

	s Group Inc	s Corp	Inc				
priceline.com Inc	Critical Path Inc	Value America Inc	Log On America Inc	Launch Media Inc	Razorfish Inc	AppliedTheory Corp	Silknet Software Inc
TheStreet.com Inc	CareerBuilder Inc	OneSource Information Services	Juno Online Services Inc	ZipLink Inc	Edgar Online Inc	AppNet Systems Inc	CyberSource Corp
Juniper Networks Inc	US Search.com Inc	nFront Inc	Digital Island Inc	Salem Communications Corp	Art Technology Group Inc	MP3.COM Inc	Quokka Sports Inc
drugstore.com Inc	WatchGuard Technologies Inc	SplitRock Services Inc	1-800-Flowers.com Inc	Red Hat Inc	SilverStream Software Inc	MyPoints.com Inc	LookSmart Ltd
ImageX.com Inc	Garden.com Inc	Epiphany Inc	Cybergold Inc	Keynote Systems Inc	ITXC Corp	Internap Network Services Corp	TiVo Inc
Digital Insight Corp	DSL net Inc	Women.com Networks	PCTEL Inc	Martha Stewart Living	NaviSite Inc	Data Return Corp	Akamai Technologies Inc
Gaiam Inc	Tickets.com Inc	Collectors Universe Inc	SonicWALL Inc	Rainmaker Systems Inc	Digital Impact Inc	Getthere.Com Inc	SmarterKids.com Inc
Harris Interactive Inc	Plastic Surgery Co	Ebenx Inc	C-bridge Internet Solutions	HealthGate Data Corp	Centra Software Inc	Mediacom Communications Corp	FASTNET Corp
webMethods Inc	LendingTree Inc	DigitalThink Inc	iprint.com Inc	Selectica Inc	Digitas Inc	Uproar Inc	Partsbase.com Inc
ARTISTdirect Inc	Websense Inc	Telocity Delaware Inc	Saba Software Inc	LivePerson Inc	HealthStream Inc	iBeam Broadcasting	ClickSoftware Ltd
I-Many Inc	ValiCert Inc	WebEx Communications Inc	America Online Latin America	Avistar Communications Corp	At Road Inc	Riverstone Networks Inc	Instinet Group Inc
Weight Watchers Intl Inc	Netflix Inc	Overstock.com Inc	iPass Inc	Journal Communications Inc	Carter's Inc	Orbitz Inc	Knology Inc
Kintera Inc	TNS Inc	Marchex Inc	Blue Nile Inc	RightNow Technologies Inc	eCOST Com Inc	Callwave Inc	PlanetOut Inc
Iowa Telecom Services Inc	optionsXpress Holdings Inc	Odimo Inc	VeriFone Holdings Inc	Morningstar Inc	Eschelon Telecom Inc	WebMD Health Corp	Taleo Corp
IHS Inc	Dover Saddlery Inc	DealerTrack Holdings Inc	Liquidity Services Inc	Vonage Holdings Corp	LoopNet Inc	Golfsmith Intl Hldg Inc	Riverbed Technology Inc
Porter Bancorp Inc	Shutterfly Inc	eHealth Inc	Capella Education Co	Salary.com Inc	NYSE Euronext	Solera Holdings Inc	TechTarget Inc
Limelight Networks Inc	ComScore Inc	ShoreTel Inc	Dice Holdings Inc	Orbitz Worldwide Inc	VMware Inc	Constant Contact Inc	Internet Brands Inc
SuccessFactors Inc	K12 Inc	Visa Inc	Rackspace Hosting Inc	Rosetta Stone Inc	OpenTable Inc	Vitacost.com Inc	Archipelago Learning Inc
Global Defense Tech & Sys Inc	QuinStreet Inc	Meru Networks Inc	Convio Inc	ReachLocal Inc	BroadSoft Inc	RealPage Inc	CoreSite Realty Corp
FXCM Inc	GAIN Capital Holdings Inc	Demand Media Inc	Epocrates Inc	Ellie Mae Inc	Boingo Wireless Inc	FriendFinder Networks Inc	LinkedIn Corp
The Active Network Inc	Pandora Media Inc	HomeAway Inc	Zillow Inc	Teavana Holdings Inc	Carbonite Inc	Groupon Inc	Jive Software Inc
Zynga Inc	Greenway Medical Tech Inc	Brightcove Inc	Yelp Inc	ExactTarget Inc	CafePress Inc	Proofpoint Inc	EverBank Financial Corp
Facebook Inc	Trulia Inc	Shutterstock Inc	Professional Diversity Network	Gogo Inc	RetailMeNot Inc	QTS Realty Trust Inc	Mavenir Systems Inc
Twitter Inc	Chegg Inc						

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