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The Impact of Venture Capital on IPO Success and Post-IPO Growth in Western Europe

A Comparative Study of VC-Backed and Non-VC-Backed Companies

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Abstract

This thesis researches the influence of venture capital (VC) backing on the success of initial public offerings (IPOs) and the post-IPO performance of companies listed on Euronext in Western Europe over the past fifteen years. Drawing on several theories, the research explores whether VC involvement affects IPO pricing accuracy, long-term market performance, and firm-level financial outcomes following public listing. In addition, it examines whether the strength of this influence is moderated by the size of the VC stake and the size of the IPO.

The analysis is based on a dataset consisting of 198 IPOs between 2010 and 2023. Firms were classified as VC-backed if venture capital investors held a minimum 25% equity stake at the time of listing. Six hypotheses were tested, relating to IPO underpricing, long-term stock performance, revenue and profit growth, and the moderating roles of VC stake and IPO size. Quantitative methods such as regression analysis were employed to compare VC-backed and non-VC-backed firms across the multiple dimensions of IPO success.

The findings indicate that VC backing does not significantly impact IPO pricing accuracy as measured by the phenomenon of underpricing or improve long-term stock performance and market capitalization growth. Similarly, no evidence was found to support the notion that VC involvement leads to stronger post-IPO profitability. However, VC-backed firms did demonstrate significantly higher revenue growth following their public listing, suggesting that venture capital contributes positively to firms' capacity to scale operations. No moderating effects were found for either the size of the VC stake or the size of the IPO.

These results imply that, within the Western European market context, VC backing offers operational rather than market-based advantages. While venture capital does not guarantee superior IPO pricing or shareholder returns, it appears to support business expansion in the critical post-IPO phase. This highlights the selective effectiveness of venture capital as a mechanism for enhancing firm growth trajectories after going public and may suggest that macroeconomic factors play a more significant role in IPO outcomes.

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1. Introduction

1.1 Background Information

Financing is seen as one of the most crucial aspects in business, as it involves raising capital to ensure growth and sustaining the continuation of operations. Therefore, the selection of financing options prior to an initial public offering (Hereafter: IPO) is a strategic decision that significantly shapes a company's growth trajectory, market positioning, and potential success in the public market. Among these options, venture capital (Hereafter: VC), has emerged as a particularly influential form of financing because VC provides capital and strategic support to companies (Gompers & Lerner, 2002).

VC-backed firms receive a lot of value besides capital through the VCs mentorship, market connections, and expert management (Brown & Mason, 2017). This support system made up of multiple factors is a key competitive advantage because VC backed firms are known to have better growth prospects, better IPO readiness and higher market credibility than firms that are not backed by VC (Brown & Mason, 2017). The extensive network that most VCs have can also greatly influence a firm's direction, especially during the period when the company is preparing for an IPO. Additionally, Megginson and Weiss (1991) propose that due to the fact that VC's offer not only capital but also credibility, and therefore VC-backed companies are more likely to go public.

In contrast, non-VC backed firms tend to rely on other sources of funding. Such sources may not be as helpful as what VCs can bring to the table. Therefore, these companies might face challenges with IPO readiness or reaching the same growth rates as VC-backed companies. The difference in support and resources between VC-backed companies and non-VC backed companies may lead to significant differences in IPO success. This underlines the need for companies to understand the several financing options that are available to them because the choice of the funding type can influence the firm's growth path, IPO likelihood and its future performance once the company conducts an IPO.

There are several other options in financing apart from VC for example equity financing, where a company raises capital by selling shares, debt financing, where money is borrowed and must be repaid with interest, and angel investing, where wealthy individuals invest in early-stage companies as stated by Global, (2023). To begin with, VC will be explained in greater detail.

VC is a type of financing that is offered to firms by VC firms. VCs often fund startups, which are usually unable to obtain funds through other conventional methods such as bank loans or through the public markets. Therefore, VCs play a crucial role within the entrepreneurial ecosystem in providing essential funding needed to transform early-stage firms into successful businesses (Gompers & Lerner, 2002). In addition to financial support, VCs can help firms with mentorship and advice. They bring a wealth of experience and skills to the table, offering business development, positioning, and

operational management advice. Such mentorship can be critical for the growth and expansion of such businesses. Thus, through their industry knowledge and contacts, VCs assist firms with challenges and the realization of growth opportunities (Hellmann & Puri, 2002). However, there are disadvantages to VC investments. One of the major disadvantages is the dilution of ownership, as VC funding requires a company to give up a stake in the business. For this reason, the original founders may lose control of the organization. Furthermore, VCs frequently pressure their companies to go public in order to maximize their return on investment (Hellmann & Puri, 2002).

Equity financing is a way of financing in which the firm sells shares in the business to generate funds. It is a strategy that can be employed by the business to fund its activities without incurring any form of debt. This type of financing consists of the selling of shares, which are parts of the company owned by the investors (Banton, 2024). Equity financing has an advantage due to its non-recourse nature, meaning that the money is not required to be paid back. While debt financing involves paying regular interest on the amount borrowed and repaying the principal in the future, equity financing offers capital to firms with no financial costs. This can be helpful in the cases of new ventures and companies with volatile cash flows (Berk & DeMarzo, 2019). However, equity financing also has its disadvantage in the form of dilution of ownership. This is because the stake of the existing shareholders is reduced which may have an impact on their control of the business. VC and Private equity are two equity financing options, but they have differences. VC firms tend to focus on early-stage companies with innovative ideas, often in technology or high-growth industries, whilst Private equity firms invest in mature businesses. (Jones & Rhodes-Kropf, 2003).

Debt financing is the method of obtaining capital through borrowing funds that have to be paid back after a certain period with an additional amount of interest. This involves the use of debt securities such as bonds and loans, for instance a bank loan. Lenders do not receive equity in the business, so firms use debt to maintain complete control of their business. (Chen, 2024). Debt financing is advantageous because it provides businesses with the necessary funds without requiring the company to give up any percentage of ownership (Berk & DeMarzo, 2019). In addition, interest rates and repayment terms are often fixed, and thus debt financing can be more of a predictable cost. However, there are also disadvantages of using debt financing. It may affect a company's cash flow because the company has to pay back the principal amount plus interest. Additionally, it may reduce the company's ability to fund growth opportunities and debt can increase the risk that the company is unable to repay its obligations when revenues are low. Debt financing can be obtained from banks, financial institutions and other private lenders and it is usually in the form of a loan. Interest rates and other conditions of the debt agreement are negotiated based on the borrower's credit standing and the current market conditions. Lenders usually offer better loan terms to companies with better credit ratings while firms with poor credit ratings may be charged a higher interest rate and other strict borrowing terms (Berk & DeMarzo, 2019).

Angel funding is a type of financing in which wealthy individuals, known as angel investors, invest capital into companies in return for securities that can be converted into equity. Angel investors are usually successful individuals who invest their own money and use their connections and experience to develop a company (Ganti, 2023). The benefit of angel investment is that a large amount of funding can be provided to start-ups that may not yet be eligible for bank loans or VC. Moreover, the business can benefit from the experience and contacts of the angel investor besides just the funding (Politis, 2008). However, there are some drawbacks to angel investments as well. A negative aspect of angel investment is that ownership is diluted hence the company partly loses control over their business. Additionally, angel investors have high expectations and want to see returns on their investment which may lead to exerting pressure on the start-ups to grow at a fast rate or even sell the business (Wong et al., 2009). Angel investment can be obtained from individual angels, angel groups and through online platforms that bring together start-ups and investors. Angel investor networks are groups of investors who pool their resources to invest larger amounts in startups, often providing more substantial support and diversified expertise (Wong et al., 2009).

An IPO is an alternative way to raise capital, and it is considered to be an important milestone for companies. A private business can go public by making its shares available to the general public for the first time through an IPO. The capital raised by an IPO can lead to growth. Ritter (1991) states the following: *"IPOs represent significant turning points for businesses because they cannot only potentially raise a significant amount of money, it can also boost visibility, enhance market valuation, and give current shareholders liquidity".*

Before pursuing an IPO, there are several financial options that companies can use in order to raise capital as mentioned in the beginning of this chapter. These pre-IPO financing strategies are important in building credibility, showing financial strength, and preparing the company for a successful IPO (Berk & DeMarzo, 2019). Through the appropriate leveraging of these funding sources, companies can strengthen their market position, increase their valuation, and increase their attractiveness to investors as stated by Chemmanur and Paeglis (2005). The effective use of these financing methods builds a foundation for companies to meet short-term capital requirements as well as long-term strategic goals, thus equipping them for the public market (Ritter, 1991).

The decision that a firm makes in these financing options before going for an IPO can influence the results of the offering. These options are important to consider because they can influence investor perception, and act as a signal on the company's financial stability and growth potential to the public market (Berk & DeMarzo, 2019). Chemmanur & Paeglis (2005) argue that capital structure and financing history are some important factors that determine the value of a company, investors' confidence, and overall IPO success. In addition, strategic use of pre-IPO financing can enhance the company's reputation and enhance the demand of the company's shares, which in turn can help to

secure better prices for the shares during the IPO (Ritter, 1991). Ultimately, it is critical to manage financing options in the pre-IPO stage in order to achieve the best results in the IPO and continue the company's growth in the post-IPO period.

1.2 Research Proposition

VC has become an important source of funds for new businesses and has played a crucial role in supporting the growth of new businesses in competitive markets according to Gompers and Lerner (2001). In addition to capital, VCs provide management advice and support, business experience and networks, all of which enhance a firm's chances of success (Hellmann & Puri, 2002). The journey from private ownership to public markets through an IPO represents a pivotal milestone in the evolution of VC-backed firms, often serving as a validation of the firm's value and future prospects (Barry et al., 1990). However, despite the several advantages of VC backing, existing literature on the impact of VC on IPO success has notable limitations, leaving critical research gaps.

One such gap in the literature is the limited amount of research on VCs in different regions, particularly within Europe. The role of VC in IPOs has been researched widely in the context of the U.S. market, where VC markets are well established and play a significant role. However, there is a lack of research on the European market, where market structure, regulatory environments, and VC activities differ (Hege et al., 2008). This geographic difference may suggest that the impact of VC backing on IPO performance may differ across Europe and therefore, more contextual research is required. Hege et al. (2008) indicate that VC's influence in Europe is heterogeneous, with differences in regulations and market structures, therefore examination of VC-influence must have a smaller scope than the whole of Europe.

A second gap in the literature is the narrow focus on short-term IPO performance. Prior research tends to focus on short-term consequences in the first few days, weeks, or months after going public, while the long-term impact of IPOs on firm growth and performance is less well understood (Bottazzi & Da Rin, 2002). There is a lack of research in understanding the long-term effects of VC on firms' paths and performance after a longer period, such as 1 to 5 years after the IPO.

A third gap relates to the extent of VC involvement, which is often treated as a binary variable—firms are either VC-backed or not. Few studies investigate whether the size of the VC ownership stake affects IPO outcomes. Larger VC stakes could imply more intensive VC involvement beyond the IPO stage, which could be beneficial for post-IPO growth, while smaller stakes imply less intensive involvement (Barry et al., 1990). This effect has not been given as much attention, particularly in European countries where ownership structures are different to those in the U.S., thus may impacts IPO outcomes in a different way Cumming & Johan, 2008). Filling this gap might help explain the nature of the relationship between different levels of VC ownership and IPO success.

To address these research gaps, this study conducts a comparative analysis of VC-backed and non-VC-backed companies that completed an IPO in Western Europe since 2010. The primary objective is to examine the influence of VC backing on IPO success and subsequent firm performance. Adopting a quantitative research design, the study evaluates firms listed on Euronext across key indicators such as stock price performance, revenue growth, profit growth, and market capitalization. In doing so, this research aims to contribute empirical evidence on the strategic role of VC in shaping IPO outcomes beyond the U.S. context and over a longer post-IPO horizon. Accordingly, the following research question is formulated:

How does venture capital backing influence the success of companies during their IPO and their growth and performance post-IPO in West Europe in the last 15 years?

1.3 Relevance

From a scientific perspective, this research contributes to a broader understanding of the role of VC in financial markets. In the United States, the relationship between VC backing and IPO success has been extensively studied (e.g., Megginson & Weiss, 1991; Barry et al., 1990). These studies show that VC-backed firms in the U.S. tend to benefit from more accurate IPO pricing, stronger governance, and better post-IPO performance. However, the larger sum of studies focusing on this topic remain largely U.S.-centric, despite significant differences in market structures, regulatory environments, and investor behavior between the U.S. and Western Europe.

By focusing on Western Europe, which is less frequently researched in this context, this research addresses an important gap in literature and contributes to the geographical diversification of VC and IPO research. Moreover, the study adds to the broader understanding of IPO performance as it goes beyond IPO pricing and examines long-term post-IPO growth and performance, helping bridge the gap between short-term IPO success and sustainable value creation.

From a practical standpoint, this research offers valuable insights for entrepreneurs, investors, and policymakers operating within the European financial ecosystem. For entrepreneurs and company founders, the findings clarify the potential strategic advantages of VC involvement during the IPO process. VC backing can influence not only the credibility and visibility of the firm but also its IPO pricing and long-term performance. By understanding these dynamics, entrepreneurs can make more informed decisions about whether and when to seek VC funding, and what trade-offs to consider in terms of ownership and control.

For investors, this study offers region-specific evidence whether or not VC involvement can serve as a quality signal and a predictor of more favorable post-IPO outcomes. This can help investment

decisions by reducing information asymmetry and improving confidence in young, high-growth firms. For policymakers and regulators, the research provides insights into how VC participation can enhance capital market outcomes by promoting healthier, more stable IPOs and supporting the scaling of innovative firms. This knowledge can guide the development of targeted policies that foster VC activity, improve access to public capital for startups, and encourage sustainable market growth across Western Europe.

1.4 Structure of the Thesis

This thesis is structured into six main chapters, each designed to build a comprehensive understanding of the research topic. Chapter 2 reviews the relevant literature on IPOs, what is considered to be a successful IPO, what factors influences IPO success, and the role of VC. It discusses theoretical frameworks such as information asymmetry, market conditions, and behavioral finance, and explores empirical findings on IPO pricing and performance. This chapter concludes with the development of the study's hypotheses.

Chapter 3 outlines the research design, including the data collection process, the operationalization of dependent, independent, and control variables, and the empirical strategy employed. The methodology includes regression analysis, correlation analysis, and comparative analysis to evaluate the formulated hypotheses. Chapter 4 presents the dataset, sample composition, and descriptive statistics. It provides an overview of firm characteristics and financial performance indicators such as revenue growth, net income, stock price movements, and market capitalization at various points in time.

Chapter 5 discusses empirical results, structured around the key performance metrics. It addresses the impact of VC backing on short-term and long-term stock price growth, market capitalization, and both revenue and profit growth. In addition, it explores the moderating effects of VC stake and firm size on these outcomes. Chapter 6 concludes the thesis by synthesizing the main findings and discussing their implications. The chapter also acknowledges the study's limitations and suggests directions for future research.

2. Literature review

The literature review starts with a detailed description of the IPO process. The following section discusses the concept of a "successful IPO" is discussed from multiple academic perspectives, highlighting both quantitative and qualitative determinants. It then examines various variables that influence an IPO. Following this, the review focuses on the role of fair pricing in IPOs, examining theoretical models of IPO pricing and reviewing empirical studies. The VC investment process is then introduced, along with theories exploring the impact of VC involvement on IPO performance and pricing. Additionally, empirical evidence is reviewed to illustrate the suggested influence of VC participation on IPO pricing and success, with an additional focus on the moderating role of VC stake. Lastly, the literature review proposes a conceptual model that identifies the factor that influences IPO success. This model positions IPO success as the dependent variable that is influenced by several independent variables. Finally, building on this conceptual framework, the study develops hypotheses for empirical testing. These hypotheses are integrated into a hypothesized model which is part of the broader conceptual framework.

2.1 Overview of IPOs

An IPO refers to the first sale of shares in a private company's stock that can be purchased by the public, thus enabling such companies to access a large pool of capital. This process turns the company from being privately owned to public ownership.

To have a smooth transition into EU markets via listing on an exchange, several essential steps must be considered during IPO. At stage one of the pre-IPO procedure, the business should determine if it intends to go public. The first stage involves comprehensive financial audits, legal reviews as well as creating a strong framework for corporate governance. To help firms go through this process, they generally interact with investment banks and financial consultants. These advisors help companies develop attractive equity storylines, choose their optimal capital structure, and put together the required paperwork (Ritter & Welch, 2002).

The filing phase starts as soon as the company is judged ready. This involves sending a prospectus to the relevant regulator. In Europe this is for instance the autorité des marchés financiers (AMF) in France or the financial conduct authority (FCA) in the UK. The prospectus is an extensive document that provides potential investors with all the necessary information about a company's financial situation, business plan, shareholder dispersion, and strategy. The regulatory body examines the prospectus to make sure it satisfies all disclosure obligations and accurately depicts the company's situation (Pagano et al., 1998).

The price phase is up next after the prospectus is accepted. One of the most important steps in an IPO is figuring out the share price. Investment banks play a crucial role in this because they make critical decisions based on their understanding of the market and investor interest. Business executives travel to different European financial centers to present their case to institutional investors. The feedback gained from these displays, help in establishing a price range for the shares. Institutional investor demand and the company's expected valuation are the two main factors that determine the final offer price (Benveniste & Spindt, 1989).

The company's shares are formally traded on a stock exchange during the listing phase, which is the last step. The London Stock Exchange (LSE), Euronext, and Deutsche Börse are some of the major exchanges in Europe. The company formally becomes a public entity on the listing day when its shares are made available to investors in the general public. On the first day of trading, the share price may vary greatly, which reflects the market's initial response to the IPO.

Ensuring transparency and protecting investors is crucial during all these phases. Therefore, there are European directives and regulations like the Market Abuse Regulation and the Prospectus Regulation. Chemmanur & Fulghieri (1999) mention that an effective IPO gives the business new funding for development and expansion, enhances reputation, and creates liquidity for its stock, all of which are advantageous to the company and its investors.

2.2 When is an IPO successful according to the literature

A number of factors, including the amount of capital raised, the response of the market to the IPO, and the company's post-IPO success, determine whether an IPO is successful. When assessing an IPO and its subsequent performance, fair pricing, revenue growth, and profit growth are three critical quantitative metrics whilst there are also qualitative factors.

One of the primary indicators of a fairly priced IPO is its performance in the immediate aftermarket. A fairly priced IPO generally experiences a moderate initial rise in its stock price, indicating that the IPO was not overpriced but rather slightly underpriced (Ritter & Welch, 2002). Therefore, A successful IPO typically involves raising the intended amount of capital or exceeding it (Ritter, 1991).

A company’s performance post-IPO is another important consideration in determining its success. The expansion of profits and revenue are two indicators of this performance. Businesses that show steady revenue growth after going public indicate that the market has accepted them well. Growth in profits is a sign of increased market competitiveness and operational efficiency. Studies show that firms with higher revenue and profit growth post-IPO tend to have more sustainable success and long-term investor confidence (Jain & Kini, 1994).

The long-term performance of an IPO is another critical factor. Research indicates that IPOs should ideally align with the broader market and their industry peers over time (Loughran & Ritter, 1995).

Underperformance in the long term may signal that the IPO was initially overpriced. Studies by Ritter (1991) demonstrate that, on average, IPOs tend to underperform comparable firms in the years following the offering. Therefore, consistent, or superior performance compared to the market and industry benchmarks can be an indicator of a fairly priced and therefore successful IPO.

In addition to fair pricing, revenue growth, and profit growth, other research has pointed out the importance of investors demand and institutional investors in shaping the IPO success. Strong investors' interest is usually linked to a successful IPO, which results in immediate aftermarket performance and a favorable first day increase in price (Aggarwal, 2000). There can be an increase in liquidity due to the presence of institutional investors, which can be important in the long run. These findings of positive association between institutional participation and IPO success imply that the sentiment of investors and market reception are some of the non-financial factors that determine the initial and future success of an IPO (Michaely & Shaw, 1994).

Lastly a successful IPO is frequently followed by growth in both stock price and market capitalization in the subsequent years. When an IPO is well-received by the market it often leads to upward momentum in the company's stock performance. Ritter and Welch (2002) highlight that firms with successful IPOs tend to benefit from increased visibility and investor confidence, which can drive sustained stock price growth. Additionally, market capitalization, as a function of share price and outstanding shares, tends to expand alongside stock performance, reflecting the market's valuation of the company's potential. According to studies such as Pagano et al. (1998), firms that maintain or improve operational performance after going public are more likely to experience substantial growth in market capitalization, making these two metrics strong indicators of long-term IPO success.

In this study, IPO success will be assessed based on these determinants: fair pricing, revenue growth, profit growth, stock performance, and market capitalization growth. These factors offer a comprehensive framework for evaluating IPO outcomes, capturing not only the immediate market response but also the company's financial trajectory and investor sentiment over time. Together, they allow for a balanced assessment of both short-term IPO effectiveness and sustained post-IPO success. The operationalization of these metrics and their role in the research methodology will be further explained in Chapter 3.

2.3 Factors influencing IPO success

This chapter explores the key elements influencing the success of an IPO. Drawing from extensive academic literature, it examines how market conditions, underwriter reputation, company fundamentals, investor sentiment, pre-IPO financing types, fair pricing, and IPO size affect both the immediate performance of an IPO and its long-term outcomes

2.3.1 State of the market

The state of the market is a major factor in IPO success. Good market conditions, sometimes called "windows of opportunity," can improve the success of an IPO. Bullish market sentiment often results in strong investor demand for new issues, which drives up valuations and improves post-IPO performance. However, even solid businesses may find it difficult to draw in investors and fetch the prices they are worth in bearish markets (Lowry & Schwert, 2002).

2.3.2 Reputation of underwriters

The reputation of underwriters also impacts IPO success. Reputable underwriters are perceived to have better market knowledge, extensive investor networks, and the ability to price the IPO accurately. Research by Carter et al. (1998) claims that IPOs managed by renowned underwriters usually perform better over the long run. Investors view the involvement of high-quality underwriters as a sign of credibility.

2.3.3 Company fundamentals

How well an IPO does is influenced by the company's core strengths, which include financial health, growth potential, and soundness of its business strategy. These factors facilitate raising funds for a company and achieving a good IPO price. Jain & Kini (1994) discovered that firms which had higher earnings and sales growth prior to going public did better in their IPO than those that did not have good fundamentals.

Size, age, and industry of the company all have a big impact on post-IPO performance. Larger companies can perform better after an IPO than smaller companies because they frequently have more established market positions and resources. Alongside this, companies that have been in business for a longer period of time have greater experience and stability and therefore they generally perform better after going public (Ritter, 1991).

Another aspect examined by various studies is the impact of corporate governance and information disclosure on IPO success. Companies that adopt good corporate governance practices like independent management and board of directors are likely to deliver better performance in the future. Higher governance is linked with low agency costs and higher congruency between management and shareholders, resulting in improved performance after the IPO (Filatotchev & Bishop, 2002). Other factors that also work in favor of IPOs include transparency and good disclosure practices since they reduce the problem of information asymmetry. A study done by Beatty & Ritter (1986) indicated that firms that provide specific financial forecasts and risk factors are considered more credible and this increases investor confidence which in turn results in better short- and long-term price and performance.

2.3.4 Investor sentiment

Investor sentiment plays a role in IPO results. Positive investor sentiment, which is frequently influenced by macroeconomic indicators, industry trends, and the market's overall outlook, can drive demand for new issues. Derrien (2005) claims that investor sentiment affects the pricing and aftermarket performance of IPOs with positive sentiment leading to higher IPO success and better long-term performance.

In addition, timing and market conditions have been established as critical external factors that determine investor sentiment and therefore influence IPO success. IPOs that were launched during 'hot' markets are likely to be successful since investor confidence is generally higher during these periods (Ibbotson & Jaffe, 1975). IPOs that enter what Ibbotson & Jaffe (1975) call 'cold markets may experience more problems in terms of capital and stock performance regardless of internal conditions of the company. It also means that the timing of the IPO can affect the further performance of the IPO, if the market conditions are favorable, the initial interest and subsequent demand for the shares will have a positive effect on the price and the IPO's future development. Therefore, an IPO can be affected by market conditions which can positively or negatively influence the IPO success.

2.3.5 Type of financing prior to the IPO

The choices a company makes in its pre-IPO financing can have a significant impact on the success of the IPO process as well as the performance of the company after the IPO. Several financing options have been discussed in the introduction and in this chapter their respective influence on IPO success will be briefly explained.

Equity financing refers to the sale of company shares to the public before an IPO, which can make the company more credible and attract investors because it will expand the shareholder's base. Additionally, Chemmanur and Paeglis (2005) reveal that reputable pre-IPO equity investors positively influence post-IPO operating performance and market capitalization. On the other hand, debt financing entails borrowings which are paid back with an agreed interest. Too much debt is viewed as negative because investors may be wary of the solvency of the business while moderate amounts of debt may be perceived as good management. The trade-off theory by Kraus and Litzenberger (1973) suggests that firms weigh the debt tax shield against the cost of financial risk, which influences investor perceptions during the IPO. VC-backed companies often benefit from advice, contacts, and enhanced credibility. Barry et al. (1990) pointed out that VCs had a positive effect on IPO preparation, and Megginson and Weiss (1991) claimed that VC participation decreases perceived risk because of strict governance that most often comes along with VC. Furthermore, Gompers and Lerner (2002) noted that VC backing signals quality thus reducing information asymmetry for investors. Angel investors can also provide market experience and reputation to companies. While not as large as VCs, substantial

pre-IPO angel investment can enhance the IPO reception through the signaling of growth prospects and credibility (Spence, 1973). In chapter 2.6.2 the influence of VC on IPO will be further discussed.

2.3.6 Fair pricing

Fair pricing is an important concept in the context of IPOs for multiple reasons. It affects the first few days' returns on stock, the reputation of the issuing company, and the stock's performance in the aftermarket. Mispricing in the form of underpricing or overpricing can lead to substantial consequences for both issuers and investors. Underpricing may result in "money left on the table," where the company forgoes potential capital due to an offer price set too low, while overpricing can damage investor confidence if the stock performs poorly immediately after listing. This study investigates IPO fair pricing by analyzing the phenomena of underpricing using this as an observable outcome to determine whether an IPO was fairly valued at issuance. It is important to note that this study does not attempt to assess the specific pricing methodologies employed by underwriters or issuers during the bookbuilding process. Instead, the focus is placed on the market's initial response to the offer price as a proxy for pricing fairness.

2.3.6.1 Underpricing

From the issuer's perspective, underpricing is preferred because it raises the chance that the IPO is fully subscribed, thus ruling out the chances of an IPO failure. Additionally, underpricing can create a positive image in the market due to the first day price rise which may attract media and investors. (Ritter & Welch, 2002)

Moreover, investors generally prefer underpricing because they can make an instant profit if the price of the stocks rises after the IPO. This initial rise can also be a reward for the perceived risk in investing in a new public company. In addition, constant underpricing may attract more investors in future IPOs, hence creating a healthy market.

Research has revealed that underpricing is employed in various markets to a certain level. For instance, as study done by Ritter and Welch (2002) show that IPO underpricing is a universal experience that has been observed for many years. They suggest that underpricing is a mechanism that is used by the firm to attract the less informed investors and therefore reduces the effects of information asymmetry.

2.3.6.2 Overpricing

The problem of overpricing may lead to the failure of the IPO for the issuing company. There may be an undersubscription if the shares are overpriced, which means that people are unwilling to buy the shares. This situation may harm the company's reputation because it indicates a lack of demand. Moreover, the stock price often declines in the aftermarket to the actual market price, after the IPO. In

case of overpricing the share will be lower than the offering price. This negative sentiment may create a longer-term negative outlook on the company's stock among investors (Ritter & Welch, 2002).

In the eyes of investors, overpricing is something that has certain risks that are rather severe. If the stock price goes down as soon as trading begins, those who bought the stocks at the IPO lose money immediately. This may lead to a negative investor sentiment in the future.

In the financial literature, the consequences of overpricing are widely researched and described. For instance, Ljungqvist (2007) notes that overpricing has a detrimental effect on the aftermarket that may offset any short-term advantages of issuing more capital. The study reveals that overpricing may lead to poor long term stock performance and this may be damaging to the investors and the market reputation of the issuing firm.

Moreover, the historical IPO data shows that overpriced IPOs have lower aftermarket returns than underpriced IPOs. Such a pattern was noted in a study by Aggarwal et al. (2001) where they noted that overpriced IPOs tend to underperform in the long-term compared to underpriced shares.

2.3.7 IPO Size and Its Role in IPO Success

An IPO's size serves as a fundamental factor which affects investor confidence and underpricing and determines post-listing stock performance. The measurement of IPO size focuses on the percentage of shares being offered versus the total amount of existing company shares. Leland and Pyle (1977) in their signaling theory state that companies which distribute more shares during their IPOs convey lower market risk. A large IPO float size attracts institutional investors and strengthens underwriter support which reduces information asymmetry to build market confidence and minimize market price volatility (Ritter, 1991). Research findings indicate that companies which distribute 25% or more of their total shares achieve these benefits (Ritter, 1991).

The study of Loughran and Ritter (2004) showed that larger IPOs experience lower underpricing, due to the fact that more liquidity stabilizes price fluctuations in the aftermarket. Their study also found that IPOs offering at least 25% of total shares saw an average underpricing of 10-15%, whereas those floating less than 15% experienced underpricing at a level that exceeded 30%. In a previous study done by Megginson and Weiss (1991), they concluded that IPOs with a higher percentage of shares offered exhibited stronger investor demand and more stable pricing dynamics compared to firms that float a smaller proportion of shares. Furthermore, Loughran et al. (1994) highlight that firms offering a small percentage of their total equity in the IPO often face higher initial underpricing, as limited supply increases short-term speculation. Gompers (1996) further supports this by showing that larger IPO floats backed by VC benefit from higher long-term stock returns, as investors recognize the credibility and oversight provided by VC firms.

However, the relationship between IPO size and success is not strictly linear. While offering a greater percentage of shares enhances market liquidity and reduces price volatility, excessively high float levels can lead to ownership dilution concerns and weaken long-term stock performance (Bhabra & Pettway, 2003). Firms that offer too large a proportion of their shares may struggle with future equity financing and controlling shareholder influence, potentially affecting governance stability. Additionally, research by Cao and Lerner (2009) suggests that firms that increase the percentage of shares offered too aggressively by offering more than 50% may face greater post-IPO underperformance, particularly in markets where investors prefer insider retention as a signal of confidence in the firm's long-term potential.

Beyond its direct effects, IPO size can additionally act as a moderating variable in the relationship between VC backing and IPO success. VC-backed firms tend to offer a higher percentage of shares in their IPOs, as VCs seek to fully or partially exit their investments while ensuring high firm valuation (Gompers & Lerner, 2001). On average, VC-backed IPOs float 25-35% of their total outstanding shares, whereas non-VC-backed IPOs typically offer 15-20% (Murgulov & Mogilevsky, 2012). The percentage of shares offered influences how VC backing impacts IPO success, with larger offerings benefiting more from VC involvement due to increased investor confidence in governance and financial stability (Megginson & Weiss, 1991).

Ritter and Welch (2002) argue that VC-backed IPOs with a higher percentage of shares offered attract stronger institutional interest, leading to higher analyst coverage, greater trading volume, and reduced-price volatility. This dynamic enhances the credibility of VC-backed firms in the public market. Similarly, Ritter (2015) reported that VC-backed IPOs generally offer a larger proportion of total shares outstanding, facilitating greater market liquidity and reduced underpricing.

However, Ljungqvist (2007) suggests that in smaller IPOs, where a lower percentage of shares is offered typically under 20%, market sentiment plays a larger role than governance factors, making VC involvement less effective in mitigating underpricing. These smaller IPOs often exhibit higher short-term price volatility and weaker long-term stock performance, as speculative demand distorts initial pricing.

Interestingly, while larger percentage offerings reduce short-term underpricing, some studies argue that they may also reduce insider ownership incentives in the long run. Loughran and Ritter (2000) discuss how IPOs that release a high percentage of shares to the public may limit the ability of founders and early investors to retain control, impacting strategic decision-making. This suggests that while a higher percentage of shares offered improves IPO pricing efficiency and liquidity, firms must carefully balance insider retention with public float size to maintain long-term stability.

2.3.7.1 Size of the Offer: Extension of Overallotment and Ordinary Shares

In the context of an equity offering, the size of the offer refers to the total number of shares made available to investors. Typically, a company issues new ordinary shares which is standard equity representing ownership in the company. These ordinary shares do not possess any preferential rights over dividends or liquidation proceeds, distinguishing them from preference shares or other hybrid instruments.

To provide greater flexibility in the offering process and to respond effectively to investor demand, an extension mechanism known as the overallotment option is often included. The overallotment option grants the underwriters the right, but not the obligation, to purchase and allocate up to an additional amount of the initial number of offered shares at the offering price (Ritter, 1991). This mechanism serves a dual purpose: it allows the offering size to be increased if demand exceeds expectations, and it provides the underwriters with a tool to stabilize the stock price post-listing by covering short positions created through initial overallocation.

Overallocation occurs when underwriters allocate more shares to investors than are initially being offered. By allocating more shares than available, the underwriters create a short position, which can be closed either by exercising the overallotment option to purchase new shares from the company or by purchasing shares in the open market. If market demand remains strong and the stock price rises post-offering, the underwriters typically exercise the overallotment option to obtain additional new shares at the offer price, thereby covering the short position without incurring a loss. Conversely, if the stock price falls, the underwriters can buy shares in the open market at a lower price to close their short position, thus supporting the price.

In this study, only new ordinary shares are considered, and any increase in the offering size through the extension or exercise of the overallotment option will consist exclusively of new ordinary shares. No preference shares, convertible securities, or existing shareholder disposals are included in the offer.

2.4 Theories and Models of IPO Pricing

Several theories and models have been proposed to explain and guide the pricing of IPOs. Literature can be broadly categorized into three main areas: Information Asymmetry, Market Conditions, and Behavioral Theories.

2.4.1 Information Asymmetry

According to Rock (1986), the Winner's Curse Hypothesis suggests that uneducated investors are more likely to buy shares in overvalued IPOs and lose out on undervalued ones. The idea behind this theory is that investors who do not have insider information are at a disadvantage. In order to reduce this risk,

IPOs are often priced below market value, which incentivizes participation from even the least knowledgeable investors.

The signaling theory introduced by Allen and Faulhaber (1989), is another important theory concerning IPO pricing. This theory states that high-quality companies purposefully underprice their IPOs as a sign of their quality. This is justified by the idea that only businesses with a high level of confidence in their future performance could afford to leave money on the table. These companies give a clear indication to the market about their value and future potential by underpricing their shares.

The signaling theory assumes that market participants understand and correctly interpret the signal. Underpricing must be interpreted by investors as a sign of the company's promising future, which could result in a higher post-IPO price. As a result, the initial underpricing is a strategic move to boost investor confidence and the firm's reputation, which eventually may improve long-term returns.

In addition, the behavior of various kinds of firms can also be explained by signaling theory. Reputable companies can afford to underprice their IPO because the expected gains from lower stock prices and greater investor confidence will exceed the initial loss. These firms also have a higher chance to have favorable future outcomes. In the contrary. Lower-quality firms are unable to afford underpricing because they cannot absorb the loss of underpricing without endangering their financial stability.

2.4.2 Market Conditions

The state of the market also has an impact on IPO pricing. The price at which an IPO is set can be affected by the market, investor sentiment, and general economic conditions. Ibbotson and Jaffe (1975) recognized the existence of hot and cold IPOs. IPOs are typically underpriced in hot markets because of strong investor demand and optimistic market circumstances. Conversely, because of decreased demand and pessimistic attitudes, cold markets experience less underpricing.

Studies have shown that macroeconomic factors such as interest rates, inflation, and economic growth can impact IPO pricing. For example, a strong economy with low interest rates can lead to higher valuations and potentially higher IPO prices (Ritter & Welch, 2002).

2.4.3 Behavioral Theories

Loughran and Ritter (2000) used Prospect Theory developed by Kahneman and Tversky to analyze the setting of IPO pricing. Prospect Theory shows that people make irrational financial decisions because they have different values for gains and losses. According to Loughran and Ritter (2000) investors and issuers have a distorted perception of the gains and losses of IPOs. In order to have a successful floatation, the issuers might be willing to intentionally underprice the stock by placing the initial price

below the possible market price. Despite the fact that the company will make a relative loss, underpricing can attract investors to the IPO and reduce the possibility of an IPO not selling out.

Baker and Wurgler (2007) examined the effects of investor sentiment on IPO pricing. News, trends, and other economic factors can influence the investors' sentiment. According to their study, this has a bullish undertone because positive investor sentiment indicates that investors are more likely to buy at higher prices due to their optimism. However, even in bullish markets companies may still choose to underprice their IPOs. With this tactic, businesses can take advantage of the high demand resulting from positive sentiment. This will increase the chances of a fully subscribed IPO and a strong aftermarket performance since the underpricing will attract more investors and push up the stock price after the IPO.

2.5 Empirical Evidence on IPO Pricing

In various markets and across different time periods, numerous studies have found IPOs to be often underpriced. For instance, Ritter (1991) empirical investigated the U.S. IPO market and provided evidence that IPOs had an average first-day return that was significantly positive, indicating underpricing. Since IPOs are often offered at a lower price than their actual value at the time of issuance, initial shareholders can immediately benefit from this positive IPO return on the first trading day.

Additionally, Ritter and Welch (2002) conducted a large-scale study to investigate the short and long run performance of IPOs. According to their research, there is a contradiction in IPO performance: despite the fact that they often demonstrate high first-year performance and are relatively cheap, IPOs often lag behind long-term market indices. This implies that the early underpricing which is used to compensate early investors is not always a sign of success for the business in the long run. IPO stocks might not be as rewarding for long-term investors as they are for those who buy the stocks at the IPO price.

Loughran et al. (1994) indicated in a comparative study that there are significant regional differences in the level of IPO underpricing. Based on their findings, they identified that Asia and Europe have higher level of IPO underpricing than in the US. This means that the level of IPO underpricing might differ from one geographical region to another due to differences in the regulatory environment, investors' behavior, and market conditions.

2.6 Venture Capital

In chapter 1.1.3 VC is explained as private equity financing provided by VC firms to companies. VC firms aim to generate significant returns on investment and is crucial for companies that lack other financing options. VCs offer strategic advice, mentorship, and assistance in growing companies, but

may also lead to ownership dilution. In this chapter we will dive deeper into VC in order to understand the process, theories surrounding VC and its influence on IPO and IPO price.

2.6.1 The Venture Capital Investment Process

VC investment follows a structured pathway from seed funding to exit strategies. Understanding these stages provides insight into how VCs select and support their portfolio companies.

In the seed funding stage, VCs provide initial capital to startups to develop their products and business models. This funding is typically used for market research, product development, and building a business team. At this stage, VCs take high risks on unproven concepts but also secure significant equity if the company succeeds (Gompers & Lerner, 2002).

Once a startup has a product and initial market traction, it enters the early-stage funding phase, which includes Series A and B rounds. The focus during this stage is on scaling the business, refining the product, and expanding the customer base. VCs provide more substantial funding to support these activities and often take a more active role in strategic decision-making and management support (Gompers & Lerner, 2002).

The growth stage follows, where companies that have demonstrated significant growth potential receive additional funding (Series C, D, and beyond) to further expand their operations, enter new markets, and achieve profitability. At this stage, VCs continue to offer strategic guidance and leverage their networks to help the company scale effectively (Gompers & Lerner, 2002).

Finally, the exit stage is where VCs realize their returns on investment. This can occur through various exit strategies, such as IPO, mergers and acquisitions, or secondary sales. In the contrary, VCs often retain their stake in a company even after it goes public. This retention can provide continued growth opportunities and a gradual exit strategy. According to research by Gompers & Lerner (2002), VCs frequently hold a substantial portion of their equity stakes in companies even after an IPO, often due to lock-up periods and strategic and financial interests.

2.6.2 Theories of Venture Capital Impact on IPOs and IPO pricing

Market conditions and external theories suggest that VC backing significantly influences market perceptions and IPO outcomes. A popular external theory is the signaling theory which postulates that VC investments are a signal to the market on the quality of the company. VCs can help to signal to investors that a business has a relatively high likelihood of succeeding. Therefore, there is reduced information asymmetry which often enhances IPO performance (Megginson & Weiss, 1991).

Market conditions have an important influence on the IPOs' performance as well. Market conditions such as bullish stock markets and high investor sentiment can have a positive effect on an IPO. Since

VCs plan their exits to coincide with a favorable market environment and hence, the firm's IPO and the VC firm's success, the VC backed firms tend to do well in these conditions (Gompers, 1996).

Besides the funding, VCs provide operational assistance, connections, and guidance. This involvement can greatly influence an IPO's pricing in several ways. VCs have an interest in the IPO to be priced fairly in relation to the company's value since they are big shareholders. However, this can sometimes lead to conflicts of interest since VCs may demand higher valuations in a bid to earn bigger profits immediately, which may lead to overvaluation.

Secondly, VCs are known for their extensive due diligence and active involvement with the businesses that they fund. This could enhance the perceived quality and reputation of the company, which may lead to better conditions on pricing during the IPO as stated by the certification hypothesis. Megginson and Weiss (1991) opine that VCs provide a type of certification to the market. This eliminates information asymmetry and stimulates investor confidence in the quality of the firm which might influence IPO pricing. Based on this certification hypothesis, VCs enlighten the quality of the businesses that they fund.

Another factor that has been identified to influence the pricing of IPOs is information asymmetry. In the case of VC-backed IPOs, information asymmetry can be minimized by VCs through their active involvement and transparent reporting practices. This reduction in information asymmetry can help towards improving the accuracy of the price since investors have better information to use in valuing the share (Barry et al., 1990).

The pricing of IPOs supported by VCs is also influenced by market sentiment. A favorable attitude towards VC can influence pricing dynamics and lead to higher valuations, especially in times of economic growth. According to Gompers and Lerner (2002), market perceptions of innovation and technology, which are frequently connected to VC-backed companies, can cause spikes in demand and possibly inflated IPO prices.

2.6.3 Empirical evidence of Venture Capital Impact on IPOs and IPO pricing

Empirical studies provide mixed evidence on whether VC-backed companies experience fair pricing during their IPOs. Loughran and Ritter (2004) built the foundation for understanding the influence of VC on IPOs however, their research was concentrated on American markets. According to their study, VC-backed companies often experience higher IPO underpricing than their non-VC-backed counterparts. Although considered an expense for the issuing company, IPO underpricing is frequently accepted because of the benefits of VC certification and reputation.

In Western Europe, the relationship between VC and IPO underpricing has been further explored. Bertoni et al. (2011) examined the Italian market and found that VC-backed IPOs experienced significant underpricing. According to their research, the presence of VCs mitigates investor concerns

regarding the quality of the issuing company, which in turn may increase initial demand and result in underpricing.

However, in the contrary Megginson and Weiss (1991) found that VC-backed IPOs are generally underpriced less than non-VC-backed IPOs. Their study indicated that the presence of VCs reduced information asymmetry and provided a certification effect, leading to more accurate pricing. Additionally, Ljungqvist (2007) found that the presence of reputable underwriters in VC-backed IPOs further enhances the fair pricing of these offerings.

In addition, Hua et al. (2016) found that VC financing enhances innovation that has positive effects on the firm's financial performance. From their research, they discovered that firms that are funded by VCs tend to spend more on research and development, hence producing products and services that generate revenues. This innovation edge puts VC backed firms in a better position in the market and as such, they record consistent revenue growth after IPO.

Lehnertz et al. (2022) offered further support to the above by demonstrating that firms with a great deal of VC funding are more likely to outperform and be financially healthier in the market after their IPO compared to non-VC firms. This higher performance can be attributed to the fact that VCs provide significant support and expertise, which are crucial when engaging with the public markets and maintaining growth rates.

2.6.4 Influence of VC stake on IPO

Zhang and Zhang (2020) investigated the effects of pre-IPO growth and post-IPO performance and the moderating role of VC. Based on their research, they indicate that although high pre-IPO growth is beneficial, the management and management advice offered by VCs are important in maintaining this growth after going public. This is in line with the resource-based view of the firm, which posits that the resources and capabilities offered by VCs, including management experience and access to networks, are critical for sustainable success.

There are multiple reasons that may explain the moderating effect of VC involvement; First, VCs introduce professional management practices and operational efficiencies that may help to improve the firm's performance after the IPO. Second, the strategic supervision and management given by VCs are useful in avoiding risks and useful for the company towards sustainable development. For instance, Krishnan et al. (2011) noted that firms backed by VCs had improved corporate governance mechanisms and operational effectiveness, which corresponded to improved post-IPO performance. Also, credibility and the established networks of VCs could help obtain more capital and market opportunities, which would enhance post-IPO performance.

Moreover, Lehnertz et al. (2022) focused on the companies which received large VC investments, known as 'mega-deals. The authors discovered that 'mega-deals exhibit better IPO success. The study

also shows that greater VC investments are associated with better resources and advice, resulting in improved financial position and performance after the IPO. This means that the level of VC investment can be an important source of variation in the degree of the impact. `

2.7 Conclusion

Market conditions are important since favorable market conditions, also called 'windows of opportunity,' improve investor demand, valuations, and post-IPO performance, whilst bearish markets may have opposite effect (Lowry & Schwert, 2002). Fair pricing is important in IPOs since it influences the initial returns on stock, the reputation of the company and its performance in the period after the offering. Underwriters' reputation is also important, because famous underwriters signal credibility due to their market knowledge and investor networks (Carter et al., 1998). A company's fundamentals, including the firm's financial performance, its growth rate, and its business model also play a role. Businesses with high pre-IPO earnings and sales growth are more likely to succeed according to Ritter (1991). Investor sentiment affected by macroeconomic indicators, industry trends, and general market performance also affect IPO pricing and aftermarket performance as positive sentiment drives demand (Derrien, 2005). Additionally, financing before the IPO has an impact on the success of the IPO with varying impact from one financing source to the other. These factors collectively shape the outcome of an IPO.

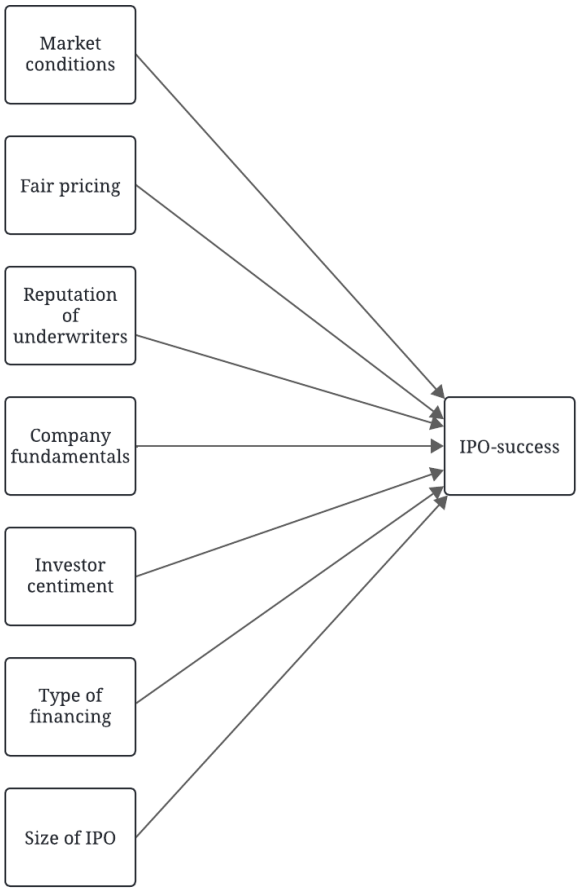

Figure 1, Conceptual Model.

There are several theories on IPO pricing, which include information asymmetry theory, market conditions, and behavioral theory. Rock's (1986) Winner's Curse indicates that IPOs are underpriced to attract passive investors and Allen and Faulhaber's (1989) signaling theory indicates that high quality firms underprice to signal confidence. Market conditions also affect underpricing; for example, higher underpricing is observed in hot markets (Ibbotson & Jaffe, 1975) and macroeconomic factors such as interest rates also affect the valuations (Ritter & Welch, 2002). Behavioral theories like the Prospect Theory by Kahneman and Tversky and analyzed by Loughran and Ritter (2000) suggest that issuers underprice the shares to attract investors despite potential short-term losses. Empirical evidence

reveals that IPOs are often underpriced, resulting in high first-day returns but mixed long-term performance, with regional variations in underpricing (Loughran et al., 1994).

Various quantitative factors define the success of an IPO. Key quantitative measures are fair pricing which can be measured through underpricing, revenue growth and profit growth and the stocks growth over time. A fairly priced IPO usually experiences a slight rise in stock price after the IPO, which shows that the IPO was not underpriced or overpriced, which is often considered a sign of success. Additionally, the ability of a company to raise the intended capital, or exceed it, is another critical indicator of a successful IPO (Ritter & Welch, 2002). Post-IPO performance, especially in terms of revenue and profit, which is significant as it shows market acceptance as stated by Jain and Kini (1994). Firms with consistent revenues and profits after their IPO are considered to have good market reception and operational performance, which can lead to enhanced investor trust.

VC provides crucial funding to companies lacking other financial options, offering strategic guidance and resources at the cost of ownership dilution (Gompers & Lerner, 2002). The VC process includes seed capital for development, first round capital (A & B) for expansion, and later rounds capital (C & above) for market penetration with exits through IPOs or acquisitions. VCs influence IPOs by signaling quality to the market and reducing information asymmetry. Empirical studies have shown mixed results, some of which suggest that VC-backed IPOs are underpriced because of increased demand (Loughran & Ritter, 2004), while others indicate that underpricing is reduced by certification (Megginson & Weiss, 1991). VCs frequently hold a big portion of their equity stakes in companies even after an IPO and studies have shown that greater VC investments are associated with better resources and advice, resulting in improved financial position and performance after the IPO

IPO size serves as both an independent determinant of success and a moderating variable in IPO performance dynamics. Larger IPOs benefit from greater stability and stronger investor confidence, while excessively large offerings risk overvaluation and long-term underperformance. At the same time, IPO size significantly influences the effectiveness of VC backing, amplifying its advantages in larger offerings while limiting its impact in smaller IPOs. However, firms must carefully balance public float size with insider retention to maximize post-IPO performance and long-term growth (Loughran & Ritter, 2000).

Figure 1 has shown the conceptual model on the basis of various independent variables on the dependent variable, IPO success. This study will be conducted within the framework of the proposed conceptual model, focusing specifically on the influence of pre-IPO financing, in particular VC as a determinant of IPO success.

2.8 Hypothesis development

In this study the dependent variable, IPO Success, is quantified through key indicators, including underpricing, growth in revenue and profits post-IPO, and the stock's long-term performance linking it to market capitalization. This multi-dimensional measurement of success allows the study to capture both short-term financial outcomes and sustained post-IPO growth.

The independent variable of this study is VC backing, distinguishing IPOs supported by VC from those that are not. FasterCapital (2024) posits that on average, VCs invest in companies and get an equity stake of between 20% and 50% depending on certain factors such as the stage of the business and the risk level. This is consistent with other trends seen in the VC industry where large blocks are usually required to gain control and mitigate risk. On the other hand, Robot Mascot (2022) observes that VCs tend to take a smaller stake of about 15% of the company's equity. Considering this range, this study will define VC-backed companies as those in which VCs have at least 25% equity stake.

2.8.1 Hypotheses on stock price

VC backing has been established to be a driver to fair pricing. VCs provide firms with a wealth of market knowledge, valuation information and strategic advice on IPO timing, often helping companies to avoid the extreme variants of underpricing or overpricing (Barry, 1989). According to Barry (1989), the expertise of VC firms in company valuation means that the firms can set a more accurate IPO price. VC-backed companies may therefore be more fairly valued compared to non-VC-backed companies by supporting fair valuation practices. Additionally, Loughran and Ritter (2004) noted in the literature review, appropriate prices foster post-IPO growth that increases investors' confidence in the stock's future performance.

The literature review emphasizes the importance of fair pricing in determining IPO success. IPO fair pricing is a situation where an IPO is priced fairly in that it attracts initial demand while at the same time not overpricing it in a way that will discourage potential buyers. This is illustrated by a moderate first day of trading price rise, which indicates a small level of underpricing but also indicates that the IPO was fairly priced in relation to the market demand and the firm's intrinsic value. Therefore, no excessive capital is left on the table through underpricing and at the same time no market instability due to overpricing. Based on this relationship, the first hypothesis is formulated.

To further strengthen the empirical investigation of IPO pricing efficiency, this study does not only focus on first day returns but also examines stock price performance over multiple short-term event windows: the second trading day, one week, one month, six months, and the end of the IPO year. Analyzing these intervals provides a broader understanding of whether initial pricing was sustainable beyond the first-day trading enthusiasm, and whether VC backing continues to exert a stabilizing influence in the immediate post-IPO period. Consistently moderate returns over these horizons would

suggest that VC involvement contributes to long-term fair valuation and aftermarket stability, aligning with prior findings by Megginson and Weiss (1991) and Brav and Gompers (1997).

Hypothesis 1: IPOs of VC-backed companies exhibit lower levels of underpricing, reflected by more moderate first-day trading price increases and sustained moderate stock price growth over the first year post-IPO, compared to IPOs of non-VC-backed companies.

Jain and Kini (1995) indicated that long run stock performance is not only a measure of a firm's performance but also a measure of investor sentiment and market strength. The sustained ability of a company to perform well on the stock market suggests good corporate governance, strategic management, and favorable perception among investors. Megginson and Weiss (1991) built on this by arguing that firms with VC have better market due to their access to better financial expertise, enhanced credibility during the public offering process, and improved post-IPO performance Additionally, Gompers (1996) noted that due to the discipline exercised by VC firms on the portfolio firms, to optimize their resources and help in strategic decision-making, both are factors which can lead to investors' confidence. As such, the advantages provided by VC might lead to stronger long-term stock performance and heightened market capitalization. These insights form the basis for the second hypothesis.

Hypothesis 2: VC-backed companies experience better long-term stock performance than non-VC-backed companies, contributing to higher market capitalization growth

2.8.2 Hypotheses on financial metrics

Besides fair pricing, this study will include post-IPO success measures, such as the growth of revenues and profits as indicators of the company's successful adaptation to the public market environment. Similar to the findings of Jain and Kini (1995) and Brav and Gompers (1997), these metrics suggest not only financial health but also the company's ability to grow in a competitive market. By assessing these growth dimensions post-IPO, this study takes a holistic approach to defining IPO success, which includes both the financial returns at stock level, but also at the company's financial performance level.

Revenue growth after IPO is another measure of market adaptation because it shows how well a firm can expand its operations, capture new market segments, and sustain customer demand. VC support is usually found to be an accelerator in such growth. VC firms, as mentioned by Gompers (1996) offer their portfolio companies not only capital but also managerial help and guidance to prepare them for

further market aggression. Kaplan and Strömberg (2003) note that firms receiving VC funding often benefit from strategic partnerships, as well as an innovation pipeline that is faster than that of competitors, adding to the competitive advantage of the firms. Megginson and Weiss (1991) analyzed the impact of VC firms on the IPO firms and concluded that the firms backed by VC firms have relatively higher growth rates of revenues after the IPO because of the suggested growth strategies and efficient resource deployment that VCs put into place. Therefore, the following hypothesis is formulated:

Hypothesis 3: VC-backed companies exhibit stronger post-IPO revenue growth compared to non-VC-backed companies.

Profit growth is another measure of post-IPO performance, which reflects the effectiveness and financial viability of the firm. Firms that have received VC support tend to have better profit growth because they are managed according to extensive financial control and accountability standards set during the pre-IPO stage. Gorman and Sahlman (1989) suggest that VCs are instrumental in enhancing disciplined cost control and targeting high-margin opportunities that lead to improved profitability. Moreover, according to Barry et al. (1990), VC-backed firms are likely to be more efficient at achieving scaling profitability because of their privileged access to high-quality managers and market intelligence. These advantages put together indicate that firms backed by VC firms can achieve better sustained profits than firms that are not backed by VC. Therefore, the fourth hypothesis is as follows.

Hypothesis 4: VC-backed companies achieve greater post-IPO profit growth relative to non-VC-backed companies

2.8.3 Hypothesis on stake of the VC

Besides VC backing as a determinant of IPO success, this research also looks at the proportion of ownership by VCs at the time of IPO as a moderator. The literature reviewed indicates that where VC ownership is high, it is an indication of a firm's commitment to long-term success, given that VCs have an interest in the firm's stability (Barry et al., 1990). As mentioned by, Lehnertz et al. (2022), greater VC share may improve the VCs' control over strategic management, governance, and IPO timing and can improve the post-IPO performance. On the other hand, low VC stake may suggest the need for early exit. This research examines the VC ownership stake as a moderating factor to assess whether the level of VC investment influences IPO success. Based on these considerations, the final hypothesis is:

Hypothesis 5: The proportion of VC ownership at the time of IPO moderates the relationship between VC backing and IPO success, such

that higher levels of VC ownership increase the positive impact of VC backing on IPO success indicators.

2.8.4 The impact of Size

Drawing from both theoretical frameworks and empirical research, the following hypothesis is formulated to examine the relationship between IPO size, IPO success, and the moderating role of VC backing. Firstly, the Signaling Theory (Leland & Pyle, 1977) and asymmetric information models (Ritter, 1991) suggest that firms offering a higher percentage of their total outstanding shares in an IPO signal greater financial stability and lower investment risk, attracting institutional investors, and reducing information asymmetry. Empirical studies indicate that IPOs with a larger percentage of shares offered experience lower underpricing, higher post-listing liquidity, and stronger long-term stock performance, as they generate greater investor demand and reduced-price volatility (Loughran & Ritter, 2004; Ritter & Welch, 2002). Furthermore, firms that float a higher proportion of shares relative to total ownership benefit from enhanced trading liquidity, which stabilizes stock prices and supports sustained market performance (Megginson & Weiss, 1991). However, the relationship is not entirely linear, as IPOs that release an excessively high percentage of shares may dilute insider control, create governance challenges, and lead to weaker long-term stock performance (Bhabra & Pettway, 2003).

Secondly, the relationship between BC backing and IPO success is influenced by IPO size, as firms offering a higher percentage of their total outstanding shares may experience greater benefits from VC involvement than those with smaller offerings. VC's serve as certifiers of firm quality, reducing asymmetric information and strengthening corporate governance mechanisms (Megginson & Weiss, 1991). In IPOs where a larger proportion of shares is floated, VC backing amplifies market confidence, attracting institutional investors, lowering underpricing, and increasing analyst coverage, leading to stronger post-IPO performance (Ritter, 2015). However, in smaller IPOs that float a lower percentage of shares, the benefits of VC backing are less pronounced, as market sentiment and timing play a more dominant role than governance considerations (Ljungqvist, 2007). Additionally, Cao and Lerner (2009) argue that smaller IPOs face liquidity constraints and heightened post-listing volatility, making VC certification less effective in mitigating investor uncertainty. This implies that IPO size not only directly influences IPO success but also moderates the impact of VC backing, with larger IPOs maximizing the advantages of VC involvement. Based on the aforementioned, the final hypothesis is formulated:

Hypothesis 6: The effect of VC backing on IPO success is greater when the size of the IPO increases.

2.8.5 Hypothesized model

While the conceptual model presented in Figure 1 provides an overview of the various factors that influence IPO success, this study narrows it down to a specific set of relationships of theoretical interest. The hypothesized model, depicted in Figure 2, is derived from this broader framework and centers on the impact of VC backing on IPO success in Western Europe. Europe The dependent variable, IPO success, is operationalized by measures such as underpricing, revenue growth post IPO, profit growth post IPO, and long-term stock performance along with market cap. The independent variable is VC backing, with significant VC backing being a VC stake of at least 25% as this represents a major commitment.

This research assumes that VC-backed firms are better priced at the IPO and therefore experience less underpricing than their counterparts (H1). This study also expects better stock performance of VC-backed companies due to the benefits that a VC can bring to the table (H2) Additionally, the firms receiving VC are expected to have higher growth rates after the IPO in terms of revenues (H3) and profits (H4). The effect of VC backing on IPO success might be moderated by the size of the VC stake, where a larger stake can be associated with the long-term interest in a company and its pricing and growth strategies, while the small stake might be associated with the short-term orientation towards the IPO performance (H5). The effect of size as percentage of shares offered opposed to outstanding capital will be tested through the hypothesis that size has a moderating role on the effect of VC. This model will be tested in the context of Western Europe:

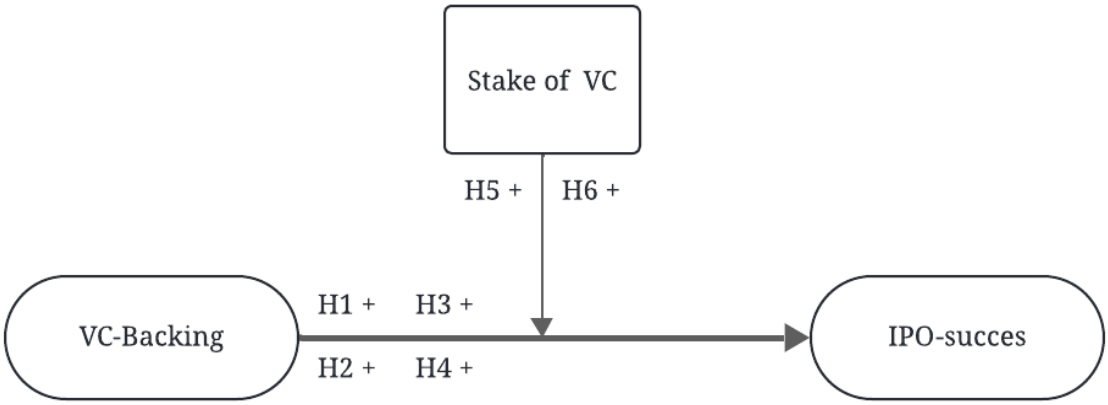

Figure 2, Hypothesized model.

Although not all variables from the conceptual model are directly tested in the hypothesized model, several are incorporated into the empirical analysis either through control variables or as part of the targeted hypotheses. Specifically, firm age, firm size, and industry classification are included as control variables, as they reflect key elements of a company's fundamentals and have been consistently

identified in the literature as important predictors of IPO outcomes. In addition, underwriter reputation is included as a control variable, given its influence on investor confidence and IPO performance through its role in pricing and market signaling. While these control variables are not depicted in Figure 2 for reasons of clarity, they are integrated into the regression models and discussed in detail in Chapter 3.

Fair pricing is tested directly through Hypothesis 1, which posits that VC backing leads to lower underpricing. This hypothesis is grounded in literature (e.g., Megginson & Weiss, 1991; Ritter & Welch, 2002) suggesting that VC involvement helps reduce information asymmetry and supports more accurate IPO valuation. Likewise, IPO size is formally tested as a moderating variable in the hypothesized model (H6), based on prior research that connects float size with market liquidity, investor interest, and pricing dynamics.

However, not all elements of the conceptual model are included in the analysis. Market conditions, for instance, are not accounted for due to their external, time-dependent nature and the difficulty of consistently quantifying them across multiple years and countries in a Western European dataset. Including such macro-level variables would complicate the firm-level focus of this research and reduce comparability across cases. Similarly, investor sentiment is not directly tested, as it is a subjective, market-wide factor that is difficult to isolate and quantify at the individual IPO level without access to detailed sentiment indices or proprietary investor data. These exclusions are deliberate and help preserve the analytical focus on firm-specific characteristics and VC involvement.

3. Research design

Chapter 3 outlines the research design and methodological approach employed to investigate the impact of VC backing on IPO performance and post-IPO firm growth. This chapter details how data was collected, how the core variables were defined and measured, and which empirical techniques were applied to test the study's hypotheses. By clearly defining the dependent, independent, moderating, and control variables, and by employing a robust statistical framework, this chapter ensures that the research is methodologically sound and capable of generating reliable and meaningful results. The chosen design allows for a comprehensive analysis of both market-based and financial performance outcomes across a sample of IPOs in Western Europe over the past 15 years.

3.1 Data collection

This study is based on a manually constructed dataset comprising 198 companies that conducted an IPO on the Euronext stock exchange between 2012 and 2023. Euronext operates multiple regulated and multilateral trading platforms across Europe, including Euronext Growth and Euronext Access, making it a central hub for IPO activity in the European market. The firms included in this sample were selected based on data availability, completeness of prospectus information, and relevance to the scope of this research.

The data collection process began with the identification of companies that went public on Euronext during the observation period. These were gathered through official Euronext listings and financial databases. Once identified, IPO prospectuses for each firm were obtained and systematically reviewed. These prospectuses served as the primary source of firm-level and offering-specific information. From each document, key details were extracted and recorded, including the company's name, country of origin, IPO date, founding year, and its calculated age at IPO. Industry descriptions, underwriter details, and share issuance structures were also extracted and recorded in a structured Word document before being put into the main dataset.

Each company was subsequently entered into a final Excel spreadsheet. The dataset includes a range of variables related to firm characteristics, offering structure, and ownership configuration. Specifically, the data includes initial shares offered, overextension and overallocation shares, total shares offered, total new shares issued, and total shares outstanding post-IPO. Additionally, data on pre-IPO capital in shares and any additional shares issued or redeemed outside of the IPO itself was also extracted. From these figures, key variables such as the percentage of new shares offered relative to total shares outstanding post-IPO, and the firm's size were computed.

To determine the extent of VC involvement, each company's pre-IPO shareholder composition was analyzed. The shareholders listed in the prospectuses were manually researched using Crunchbase, an

industry-recognized platform providing detailed information on private equity, VC, and startup ecosystems. Shareholders were classified as VC-backed or non-VC based on their investment history and firm type as reported on Crunchbase. Two variables were generated for each company: the percentage of shares held by VC investors, and a binary indicator for VC backing (1 if VC-backed, 0 if not).

Firms were also classified into one of eight macro-industry categories. These categories were developed based on the firm's self-described business model, and general industry literature. The eight sectors used for classification were:

(1) Healthcare & Life Sciences,

(2) Technology & Software,

(3) Energy & Environmental Solutions,

(4) Financial Services & Real Estate,

(5) Industrial & Manufacturing,

(6) Consumer, Retail & Lifestyle,

(7) Media, Entertainment & Communications,

(8) Agriculture, Natural Resources & Specialized Industries.

This classification was applied manually and consistently across all companies to ensure comparability in the empirical analysis.

In order to measure firm performance following the IPO, secondary data was retrieved from the ORBIS database, provided by Bureau van Dijk. ORBIS is a widely used international financial database offering standardized historical information on private and public companies. For each firm, yearly data was collected on operating revenue, net income, market capitalization, and year-end stock prices spanning up to eleven years post-IPO, depending on the firm's listing date and data availability. These values were extracted from the fields "Operating revenue (Turnover)," "P/L for the period (Net income)," "Market Capitalization (m EUR)," and "Market Price – Year End (EUR)."

Using these raw values, several calculated metrics were generated to assess post-IPO performance, including annual revenue growth rates, net income growth rates, market capitalization growth, and stock price growth over different holding periods. Since IPOs were conducted in different months and years, all post-IPO growth metrics were aligned manually by year to maintain consistency across firms.

Finally, an additional variable, underwriter reputation, was created to assess the role of intermediary quality in IPO outcomes. Each company's lead underwriter was coded as either "1" (top-tier) or "0" (non-top-tier). A top-tier designation was assigned based on the underwriter's presence in global or regional IPO markets, frequency of deals on Euronext, and visibility in investment banking rankings. The classification will be explained in chapter 3.4.

3.2 Dependent variable

IPO success is the dependent variable, and this dependent variable is measured by 5 variables: underpricing, stock performance, market cap, revenue, and profit growth. Each metric has established methods of calculation, enabling a rigorous approach to evaluating IPO outcomes. Each metric will be calculated in a percentage in order to compare both groups properly. The following measures are central to the study.

3.2.1 Underpricing

Fair pricing will be evaluated based on cases of underpricing. Underpricing will be calculated as the offer price minus the closing price on the first trading day. Underpricing is valuable in determining the extent to which the IPO was priced in relation to market conditions. This approach has been adopted from Loughran and Ritter (2004), who carried out a study on the consequences of IPO pricing strategies.

The degree of underpricing can have differing implications depending on the stakeholder's perspective. From an investor standpoint, higher underpricing, typically above 20% is favorable, as it offers immediate gains upon the IPO's market debut. However, from the issuing firm's perspective, excessive underpricing may be unfavorable, as it indicates that a substantial portion of potential capital was not captured, often referred to as "money left on the table." According to Ritter and Welch (2002), a moderate level of underpricing, generally in the range of 10% to 20%, is considered optimal. This range balances the need to attract investor interest and ensure IPO success, while minimizing the issuer's capital loss. Their review of IPO activity suggests that moderate underpricing tends to generate positive aftermarket performance without severely compromising the issuer's fundraising objectives.

$$Underpricing\ (\%) = \frac{First\ Day\ Closing\ Price - Offer\ Price}{Offer\ Price} \times 100\%$$

Figure 3, Underpricing.

Extended analysis of IPO underpricing suggests that focusing solely on the first trading day might not provide a complete picture of price dynamics, as price adjustments and investor behaviors often unfold over a longer period. For example, Aggarwal and Rivoli (1990) state that underpricing effects can

persist beyond the initial day, with significant variations observable over two-week or even month-long intervals. This extended time frame allows for the consideration of market adjustments, trading volume changes, and liquidity impacts that influence an IPO's aftermarket performance. Therefore, this study will take into account, the IPO day, the second trading day the performance after, one week, one month, six months and at the end of the IPO year.

3.2.2 Stock growth

From this point forward, this study will analyze data on an annual basis, focusing on year-specific timestamps to ensure a more granular and time-sensitive examination. This metric reflects the growth in stock value and indicates the performance of the stock overtime with higher growth percentages representing better stock performance during the evaluated period. Two variations could be considered, for example stocks growth per year and stocks growth since the offering.

$$Stock\ Growth\,(\%) = \frac{Ending\ Price - Starting\ Price}{Starting\ Price} \times 100\%$$

Figure 4, Stock growth.

3.2.3 Market capitalization growth

Market capitalization is the total value of the company's floating stock as perceived by the market and is used to gauge the investor's perception and the company's value over the period. It is calculated by multiplying the company's share price at the end of the specified period by the total number of outstanding shares:

$$Market\ Capitalization = Share\ Price_{End\ of\ Period} \times Total\ Outstanding\ Shares$$

Figure 5, market capitalization.

Higher market capitalization after IPO can be regarded as a sign of positive investor attitude and might indicate further growth and good results in the public environment (Berk & DeMarzo, 2019). Consequently, it could be interesting to examine market capitalization at the IPO level and market capitalization after the IPO in percentage.

$$Market\ Capitalization\ Growth\ (\%) = \frac{Market\ Cap_{End\ of\ Period} - Market\ Cap_{IPO}}{Market\ Cap_{IPO}} \times 100\%$$

Figure 6, Market capitalization rate.

3.2.4 Revenue growth

This measure gives information on the performance of a new public company in terms of revenue growth. Revenue growth offers information about the market need for the firm's goods or service and shows operational expansion. It is calculated by comparing revenue at the end of a specified period to

the revenue reported at the time of the IPO:

$$Revenue\ Growth\ Rate = \frac{Revenue_{End\ of\ Period} - Revenue_{IPO}}{Revenue_{IPO}} \times 100\%$$

Figure 7, Revenue growth.

3.2.5 Profit growth

Profit growth is a measure of the trend in which a company earns profit over a period of time as a sign of its financial performance. Profit growth reflects operational efficiency and cost management and is calculated by comparing profit at the end of a specified period to the profit at the time of the IPO:

$$Profit\ Growth\ Rate = \frac{Net\ Income_{End\ of\ Period} - Net\ Income_{IPO}}{Net\ Income_{IPO}} \times 100\%$$

Figure 8, Profit growth.

3.3 Independent and moderating variables

3.3.1 Independent variable

In this study, the sample will be divided into those that have received VC funding and those that have not. This involves subjecting the hypothesis that firms funded by VC act differently from those that are not funded in regard to IPO success. VC Backing is a binary variable, and this binary variable will differentiate between companies that have received VC funding (coded as 1) and those that have not (coded as 0) whilst keeping the minimum required stake of the VC in mind. This will make it easier to compare the success factors of IPOs between the two groups.

3.3.2 moderating variable

VC stake, which means the proportion of equity owned by VC investors at the time of IPO, acts as a moderator variable. This variable may either intensify or change the nature of the relationship between VC backing and IPO success. Increased VC ownership might suggest more commitment from the VC and thus enhance the benefits associated with VC support for IPOs. On the other hand, lower VC stakes may lead to a lower impact of VC involvement which may reduce the strength of the relationship (Brav & Gompers, 1997).

VC Stake is a continuous variable, and this will measure the proportion of the ownership that the VC has at the time of the IPO. Analyzing the size of this stake, the study can consider the moderating impact of VC involvement on IPO performance, with the focus on the positive impact of high VC stakes.

Additionally, this study examines the impact of IPO size on the relationship between VC backing and IPO performance. IPO size, defined as the proportion of new shares offered in an IPO relative to the total outstanding shares, acts as a moderating variable. Larger IPOs may experience more benefits from VC backing, as larger offerings signal greater financial stability, reduce perceived investment risks, and attract more institutional investors. Conversely, smaller IPOs may not benefit as significantly from VC backing, as they may not effectively capture institutional investors' attention or signal sufficient firm stability. IPO size is a continuous variable that reflects the scale of a firm's capital raising effort and influences the relationship between key offering characteristics and market outcomes.

New share issuance directly affects ownership structure, signaling, and capital structure, all of which are critical factors in determining the success of the offering as stated by Berk, J., and DeMarzo, P. (2019) Therefore, size serves not only as a fundamental firm characteristic but also as a moderating factor that can shape how other offering variables influence investor behavior and market performance. By analyzing the size of the offering, this study can explore how IPO size moderates the relationship between VC backing and IPO performance.

3.4 Control variables

Control variables are crucial in empirical research because they allow for isolating the actual relationship between independent and dependent variables by controlling for other variables that would affect the outcome of the research. There is a possibility of omitted variable bias without the proper control variables, which result in ambiguous conclusions and misinterpretation of causality (Wooldridge, 2016). In the context of IPO research, the following factors such as the firm characteristics, industry conditions, and external parties related to the IPO can have a significant impact on the IPO outcomes. Through the use of proper controls, this study establishes that the variations of IPO success are not caused by confounders but by the key independent variables of interest. This enhances the reliability, validity, and robustness of the study’s findings, which can be generalized more easily and theoretically.

Firm age is the number of years since the formation of the company and is used as a control variable. Older firms tend to have more stable business models, well-established reputations, and are less risky as compared to the young firms going for IPOs. Mature firms are generally seen as less risky compared to young firms due to their experience and the fact that they have been in operation for some time; this can help them to get better IPO pricing and lower underpricing (Loughran & Ritter, 2004). On the other hand, young firms are seen as risky and hence, they are underpriced, and their stock prices tend to be more volatile after the IPO. Firm age is measured in years since founding, ensuring that the study accurately captures its effect on IPO performance.

Firm size, measured as the natural logarithm of total shares outstanding at the IPO, is another important control variable. Larger firms typically benefit from economies of scale, higher market visibility, and stronger financial stability, which contribute to greater investor confidence and better IPO pricing (Ritter & Welch, 2002). Studies show that firm size is negatively correlated with IPO underpricing, as bigger firms tend to be more transparent, reducing information asymmetry between investors and issuers (Beatty & Ritter, 1986). Conversely, smaller firms often struggle to gain institutional investor attention and may experience higher price volatility post-IPO due to their perceived riskiness. By controlling firm size in the form of outstanding shares at the IPO, this study ensures that variations in IPO success are not simply due to differences in firm scale.

Industry classification is also included as a categorical control variable since firms operate in different sectors with varying growth potentials, competitive environments, and risk profiles. For example, technology firms often experience higher investor demand and greater underpricing due to their innovation-driven growth potential, while firms in mature industries such as manufacturing may exhibit more stable but less aggressive IPO pricing patterns (Pastor & Veronesi, 2003). By including industry classification, this study accounts for sector-specific factors that could otherwise skew the analysis.

The reputation of IPO underwriters is another key control variable, measured as a dummy variable where 1 represents a top-tier underwriter and 0 a non-top-tier underwriter. Underwriter reputation serves as a strong signal of IPO quality, as highly reputable underwriters conduct rigorous due diligence and have stronger investor networks, leading to better pricing and lower initial volatility (Carter & Manaster, 1990). IPOs managed by prestigious underwriters tend to experience lower underpricing and greater long-term stability compared to those underwritten by lower-tier firms, which may face higher uncertainty and weaker investor demand (Ljungqvist, 2007). By including this control variable, the study ensures that the results are not confounded by the credibility and experience of the underwriters. Furthermore, the dummy variable approach offers a simplified method for quantifying underwriter reputation in empirical IPO research. By classifying underwriters into binary categories such as top-tier versus non-top-tier, the model captures the signaling power of financial intermediaries. This classification is grounded in the established role of top-tier underwriters, often referred to as "bulge bracket" firms according to Carter and Manaster (1990), these firms do not only certify the quality of the issuing firm but also leverage their extensive investor networks to ensure wider distribution and more efficient price discovery. The reputation of underwriters helps reduce information asymmetry between the issuer and the market, a known issue in IPO pricing theory (Beatty & Ritter, 1986). Additionally, high-reputation underwriters signal lower risk, increasing investor confidence and potentially reducing adverse selection problems (Booth & Smith, 1986).Lastly, prior studies have shown that IPOs led by such underwriters are associated with lower underpricing, reduced aftermarket volatility, and superior long-term performance (Carter et al., 1998).

By incorporating these control variables, this study accounts for firm-level and market-related factors that might otherwise introduce bias into the analysis. This methodological rigor ensures that the findings accurately reflect the impact of the main independent variables on IPO success, strengthening the robustness and credibility of the research.

3.4.1 Underwriter classification

To evaluate underwriters in Western European IPOs, 75 different underwriting firms extracted from the prospectuses of the 198 companies are put into a three-tier system based on their role and reach during 2012–2023. Tier 1A (International Top-Tier) comprises the global bulge-bracket firms that consistently lead large IPOs across Europe (and often globally). Tier 1B (Regional/National Top-Tier) includes strong regional players dominant in a specific country or sub-region but lacking the global breadth of 1A. Tier 0 (Non-Top-Tier) denotes boutique and niche players with limited, localized roles. The sections below discuss each tier's characteristics, providing league table rankings, industry data, and insights from academic literature.

3.4.1.1 Tier 1A – Global Bulge-Bracket Underwriters

Tier 1A consists of internationally prestigious investment banks that sit at the top of the IPO league tables year after year. These are big names and in the list of the 75 underwriters these are: Goldman Sachs, J.P. Morgan, Morgan Stanley, Bank of America Merrill Lynch (BofA Securities), Citigroup, as well as leading European-origin banks like Deutsche Bank, Credit Suisse, Barclays, UBS, and HSBC. They regularly act as global coordinators and bookrunners on the largest Western European IPOs, leveraging worldwide placement capacity and top-ranked research analysts to attract institutional investors. In fact, underwriters with influential analysts can command higher fees from issuers, since companies value the enhanced visibility and investor confidence that comes with coverage by a top analyst (Ritter, 2003). These banks typically dominate IPO league tables by deal value; for example, in a recent year HSBC was a global coordinator on 8 of the top 20 EMEA deals, tied for first place with Citigroup. This reflects how bulge-bracket banks are involved in virtually all mega-deals.

From an academic perspective, Tier 1A underwriters correspond to the highest prestige levels identified in the literature. For instance, Carter and Manaster's (1990) seminal ranking method assigned top-tier investment banks the highest prestige scores (8–9 on a 0–9 scale) based on tombstone placement hierarchy. These prestigious banks provide a valuable certification effect as their involvement signals that an IPO has been through extensive due diligence. Empirical studies find a negative relationship between underwriter prestige and IPO underpricing, meaning elite underwriters tend to price offerings closer to fair value as mentioned by Carter et al. (1998). This led to smaller price jumps on the first of these IPOs. Overall, Tier 1A underwriters are distinguished by their international reach, large deal record, and prestige, which together afford them a special status in the

IPO process. Issuers often pay higher fees to enlist these banks, in exchange for better pricing and global investor access, a dynamic consistent with the "reputable intermediary" theories of IPO pricing (Booth & Smith, 1986).

3.4.1.2 Tier 1B – Regional and National Champions

Tier 1B underwriters are those that, while not global powerhouses, are dominant players within a specific country or regional market in Western Europe. These include large European banks, whose influence is strong domestically, as well as a few transnational mid-tier firms that specialize in certain segments. They may often act as joint bookrunners or co-leads alongside the 1A banks in bigger deals, and sometimes even lead-manage IPOs in their home markets. However, their participation outside their core region tends to be limited.

For example, the French IPO market has long been dominated by several major domestic financial institutions, including Société Générale, BNP Paribas, Crédit Agricole CIB, and Natixis. These banks possess strong national distribution networks and long-standing relationships with both institutional and retail investors, enabling them to play lead roles in a significant proportion of French listings (Migliorati & Vismara, 2014). According to reputation metrics compiled over 1995–2016, Société Générale ranked first in France by proceeds-weighted prestige, with a score of 0.957, while BNP Paribas ranked first by number of IPOs, with a score of 0.850, particularly after acquiring smaller brokerage houses such as Fortis and Portzamparc. These banks are often joint bookrunners or global coordinators in mid- to large-sized French IPOs, though typically in collaboration with international bulge-bracket banks for the largest offerings (Ritter, 2003; Ljungqvist et al., 2003). Despite lacking the global coordination scope of Tier 1A banks, their extensive role in the French equity capital market justifies their classification as regional top-tier underwriters (Tier 1B).

Additionally, in the Benelux region, several domestic banks hold dominant positions in IPO underwriting, gaining a Tier 1B classification. In the Netherlands, ABN AMRO has long been a central player, leading a broad range of listings including its own IPO in 2015. ING through both its Dutch and Belgian divisions, is frequently involved in underwriting mid- to large-sized IPOs, often in partnership with international investment banks (Ljungqvist & Wilhelm, 2003). Similarly, KBC Securities and Belfius Bank are key underwriters in Belgium. KBC, in particular, has a significant presence on Euronext Brussels.

To summarize Tier 1B: these underwriters are dominant in specific regions or niches. They often partner with Tier 1A banks on large deals, contributing crucial local investor access. For smaller offerings, they may take the top role themselves. Their prestige is strong within their market, but their scope is largely regional. This Tier 1B status is reinforced by data as many of these banks have high

reputation scores or market-share in their regions as mentioned by Migliorati and Vismara (2014) but do not appear as leads in foreign IPO markets.

3.4.1.3 Non top tier

All remaining underwriters are classified as Tier 0 (Non-Top-Tier), comprising of boutique investment banks, minor brokers, and niche financial firms. These underwriters have limited roles, often confined to particular segments or subordinate positions in IPO syndicates. While they add width to the underwriting landscape, they do not generally lead major IPOs or command significant market share across multiple deals. Instead, their contributions might include underwriting small offerings or acting as co-managers in large offerings or serving as designated introductory agents on secondary market listings.

Crucially, Tier 0 underwriters lack the prestige that confers certification benefits. When an IPO is led by a non-top-tier underwriter, sophisticated investors may perceive higher uncertainty about the issuer's quality. This is consistent with the idea that top-tier underwriters avoid risky issuers, leaving lower-tier banks to bring potentially riskier or lower-quality firms to market (Chemmanur & Fulghieri, 1994; Carter & Manaster, 1990). In essence, Tier 0 underwriters operate in a space where information asymmetry is highest, and investor skepticism is not fully allayed by underwriter reputation. They collectively account for a small fraction of total IPO proceeds in 2012–2023.

3.4.1.4 Summary

In Western Europe's IPO markets, underwriting roles are hierarchical. At the top, Tier 1A global banks provide international distribution, deep capital pools, and prestigious certification which reduces uncertainty for investors and helps issuers maximize proceeds (Carter & Manaster, 1990). Tier 1B are regional leaders that leverage their local market knowledge and networks to dominate domestic IPOs, ensuring that even smaller markets have capable lead managers. Finally, Tier 0 boutiques fill in the gaps, handling the deals that fall below the radar of bigger banks, at the cost of higher information risk. This tiered ecosystem has implications for issuers and investors as the choice of underwriter tier signals the issuer's size and quality as mentioned by Chemmanur and Fulghieri (1994) and can affect

investor appetite and IPO pricing. Below in table 1 the final table plus dummy variables can be seen.

Underwriter	Tier	Underwriter	Tier	Underwriter	Tier
ABN AMRO	1B	Champeil	0	KBC Securities	1B
Aelian Finance	0	Citigroup Global Markets Europe AG	1A	Kepler Cheuvreux	0
Aldebaran Global Advisors	0	CM-CIC Market Solutions	0	KKR Capital Markets (Ireland) Limited	1B
Alegra Finance	0	Commerzbank	1B	Landsbankinn	0
Aurel BGC	0	Crédit Agricole Corporate and Investment Bank	1B	LCM (Louis Capital Markets)	0
Arkeon Finance	0	Crédit du Nord	0	MainFirst	0
Banca IMI	1B	Crédit Industriel et Commercial S.A.	0	Midcap Partners	0
Banca Intermobiliare di Investimenti e Gestioni	0	Credit Suisse Bank (Europe) S.A.	1A	Mizuho International	0
Banco delubac & Cie	0	Deutsche Bank	0	Morgan Stanley / Morgan Stanley Europe SE	1A
Banco Santander	1B	Dom Maklerski Banku Handlowego S.A.	0	Natixis	1B
Bank Degroof Petercam	1B	DSF Markets	0	NIBC Bank	1B
Bank Polska Kasa Opieki Spólka Akcyjna (Pekao	1B	Dubus SA	0	Oddo BHF (includes Oddo & Cie, Oddie & CIE)	0
Banque Delubac & Cie	0	Eumedix	0	Oppenheimer Europe Ltd.	1B
Barclays	1A	Genesta	0	Peel Hunt LLP	0
BBVA	1B	GFI	0	PORTZAMPARC (GROUPE BNP PARIBAS)	1B
Berenberg	1B	Gilbert Dupont	0	RBC Capital Markets	1B
Belfius Bank NV/SA	1B	Goldman Sachs International	1A	Rabobank	0
BIL Finance	0	HSBC	1A	Société Générale CIB	0
BNP Paribas	1B	ICF	0	Sponsor Finance	0
BofA Merrill Lynch / BofA Securities	1A	ICBC	0	Stifel	0
BRYAN GARNIER SECURITIES SAS	0	ING / ING Belgium	1B	Swiss Life Banque Privée	1A
BRYAN, GARNIER & CO LTD	0	Intesa Sanpaolo	1B	TP ICAP Midcap	1B
Bryan Garnier & Co	0	Invest Securities	0	UBS Europe SE	1B
CACEIS	0	Jefferies	1B	UniCredit CIB	0
CaixaBank	1B	J.P. Morgan	1A	Van Lanschot Kempen	0

Table 1, Underwriter Classification

Merging categories 1A and 1B into a single dummy variable (1 = top-tier underwriter, 0 = otherwise) offers both methodological and theoretical advantages, particularly in the context of regression analysis focused on IPOs. From a statistical standpoint, using a binary classification simplifies the model structure and enhances the interpretability of coefficients. This approach also aligns with established IPO literature, such as Carter and Manaster (1990) and Beatty and Ritter (1986), which have employed a binary prestige variable to capture underwriter reputation. Theoretically, both international bulge-bracket banks (1A) and regionally dominant investment banks (1B) fulfill similar functions in IPO as they act as signals of quality, perform rigorous due diligence, and have access to strong institutional investor networks. While global banks may have broader distribution channels, regional leaders often provide notable effective placement power within their domestic markets. Finally, in empirical research prior studies typically do not differentiate between global and regional top-tiers. Instead, they prioritize the presence of underwriting prestige as a proxy for issuer quality, making the merged dummy a valid approach to modeling underwriter reputation.

3.5 Conclusion measurement of variables

The measurement framework developed in this study ensures a comprehensive and multi-dimensional evaluation of IPO success, while carefully isolating the effects of VC backing and moderating influences such as VC stake and IPO size. The dependent variable, IPO success, is operationalized through four distinct yet complementary indicators: underpricing, stock performance, revenue growth, and profit growth. These metrics collectively capture short- and long-term market outcomes as well as internal operational performance.

The independent variable, VC backing, is defined as a binary indicator capturing whether a firm received VC funding prior to the IPO. VC stake and IPO size are moderating variables and allow for an investigation of the degree to which the strength or presence of VC involvement and IPO size alters IPO outcomes. Control variables including firm age, firm size, industry classification, and underwriter reputation ensure that external and firm-specific characteristics are accounted for in the analysis, thereby improving the reliability and internal validity of the results.

Together, these variables form a rigorous empirical structure that facilitates the testing of the central hypotheses concerning the impact of VC involvement on IPO performance in the European market. The final conclusion of measurement variables can be seen below in table 2.

Type	**Variable Name**	**Definition / Measurement**
Dependent	Underpricing (stock price growth short term)	% change in stock price over multiple time horizons (1, 2, one week, one month, 6 months, annually)
	Stock Price Growth	% change in stock price from IPO year to subsequent years
	Revenue Growth	% change in revenue from IPO year to subsequent years
	Profit Growth	% change in net income from IPO year to subsequent years
	Market Cap Growth	% change in market capitalization from IPO year to subsequent years
Independent	VC Backing	Dummy variable: 1 = VC-backed, 0 = Non-VC-backed
Moderating	VC Stake	Continuous variable: % equity held by VC investors at IPO
	IPO Size	% of new shares offered in IPO relative to total post-IPO shares
Control	Firm Age	Continuous variable: number of years since founding at time of IPO
	Firm Size	Natural logarithm of total shares outstanding at IPO
	Industry Classification	Categorical variable: 8-industry system applied to each firm
	Underwriter Reputation	Dummy variable: 1 = top-tier underwriter, 0 = non-top-tier underwriter

Table 2, Conclusion of measurement variables

3.4 Empirical strategy

The analysis of data in this study will be conducted using several quantitative techniques to thoroughly evaluate the impact of VC-backing on IPO success. This section details the methods and rationale for each analytical approach that will be used.

3.4.1 Descriptive Statistics

The descriptive statistics will be used in the analysis of the data collected in order to summarize the characteristics of the sample. This technique will be employed to give a brief on some of the variables like revenue growth rates, initial returns, and IPO offer prices. The descriptive statistics will involve the mean and median for the variables, as well as the standard deviation and range of the variables, which will provide information on the distribution and variability of these variables in the data set. For example, the mean and standard deviation of initial returns will measure the average and variability of the IPOs' performance in the first days of their public presence, while the median revenue growth rate will give the central tendency of the companies' revenues after their IPO. These summaries are useful in order to get a general picture and trends in the data before moving to more detailed analysis.

3.4.2 Regression Analysis

Regression analysis will be used to test the relationship between the size of the VC stake and IPO success metrics. This method enables to examine a number of variables at once, thus establishing the impact of the VC stake on IPO outcomes. In the regression model, the independent variable is the size of VC stake while the dependent variables include underpricing, stock growth, and annual revenue/profit growth. In this analysis, the regression coefficients will indicate how changes in the VC stake size are associated with changes in IPO success. For example:

IPO success = $\beta 0+\beta 1 +\epsilon$

- $\beta 0$: The intercept, representing the baseline IPO success when VC stake size is at the minimum of this study, so 25%.
- $\beta 1$: Control variables
- ϵ: The error term, capturing any unmeasured factors influencing IPO success.

For instance, if the regression model shows a positive sign of the coefficient of VC stake variable in relation to IPO success, then it will imply that firms with larger VC stakes have higher IPO success. By doing this analysis, it will be possible to determine whether and how VC involvement affects IPO success (Wooldridge, n. d.).

Univariate and multivariate analyses can provide complementary insights into the relationship between VC stake size and IPO success. The univariate analysis focuses on the relationship between VC stake size and each of the success factors, including underpricing, stock growth, and annual revenue/profit growth. This approach enables to assess the effects of VC stake size on each of the IPO success factors, thus enables the understanding how each factor behaves. In contrast, the multivariate analysis considers all the success factors simultaneously, enabling the assessment of the combined

effect of VC stake size. This method takes into consideration all the factors and therefore might give a better picture of the impact of VC involvement on IPO success. Thus, by performing both univariate and multivariate analyses the study can provide a comprehensive and more accurate assessment of the impact of VC stake size on IPO results, isolated and in comparison, with other factors.

3.4.3 Correlation Analysis

In order to establish the direction and the strength of the relationship between IPO success determinants and the size of the VC stake, correlation coefficients will be calculated. While it does not establish causality, correlation analysis helps to determine whether there is a statistically significant relationship between these variables. For example, the correlation between two variables, X (VC Stake Size) and Y (Initial Returns), is calculated as follows:

$$r_{X,Y} = \frac{\sum(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2}}$$

Figure 9, Correlation analysis.

- Xi and Yi are individual data points for VC Stake Size and the IPO success metric.
- $\bar{x}$ and $\bar{y}$ are the mean values of VC Stake Size and the IPO success metric.

If the correlation coefficient is for example r=1 this will indicate a perfect positive linear relationship between VC Stake Size and Initial Returns. Thus, the hypothesis that better IPO outcomes are linked to more VC involvement would be evidenced by a positive relationship. Correlation simply means that two or more variables are related but it does not necessarily prove causation, therefore it is crucial to interpret correlation results carefully as they could be impacted by other variables that were not taken into consideration during the analysis (Cohen, 2013).

3.4.4 Comparative Analysis

In order to test the hypothesis and to compare IPO success metrics between VC-backed and non-VC-backed companies, t-tests, and Analysis of Variance (hereafter: ANOVA) will be used.

The t-test is applicable when one wants to compare the means of two different samples, such as VC-backed and non-VC-backed companies. This test will help in finding out whether there is a significant difference in IPO success metrics like the fair pricing and the initial returns between these two groups. For instance, a t-test will compare the mean initial returns of companies backed by VC with that of companies not backed by VC. This comparison will assist in establishing whether VC backing has an influence on the IPO pricing strategies and market reception. If the calculated t-value in this test is greater than the critical value, we can state that there is a difference between the two groups.

If more than two groups are to be compared or if there is need to further categorize the groups, then ANOVA will be used. For example, if more detailed results by company size are required, ANOVA will let the comparison of means in more than two groups. This technique assists in determining whether there is a large disparity between VC-funded and non-VC-funded firms and sizes of firms. The ANOVA test will give a wider perspective on how different factors affect the success of IPOs and the subsequent performance (Field, 2018). If the F-statistic is greater than the critical value in this test this will indicate a significant difference among the groups.

4. Data

This chapter provides an overview of the dataset used to address the research question. It includes a sample of publicly listed firms from several selected European countries. Chapter 4.1 begins with a brief overview of the practical considerations, including the criteria for country and firm selection, along with the data cleaning procedures applied and how the regression analysis was employed. Section 4.2 presents the distribution of firms by year and country, followed by descriptive statistics of all variables used in the analysis. Finally, section 4.3 includes the correlation matrix for the key variables.

4.1 Practical considerations

This section outlines the key practical considerations that shape the empirical design of the study. It begins with a detailed description of the sample composition, including the distribution of VC-backed and non-VC-backed IPOs, industry sectors, underwriter reputation, and firm continuation status. The subsequent subsection addresses issues related to data availability over time and explains the rationale for restricting regression analyses to the first five years post-IPO, in line with sample size requirements and prior methodological guidance. Finally, the regression approach is discussed, including the decision to pool firm-year observations to increase statistical power and control for relevant firm-level characteristics. Together, these practical considerations ensure that the empirical analysis is grounded in both methodological rigor and the realities of working with longitudinal IPO data.

4.1.1 Sample Composition

This study's final sample consists of 198 Western European IPO firms, comprising 105 non-VC-backed and 93 VC-backed companies. As shown in Table 3, the venture backing status is evenly split in relative terms (approximately 53% non-VC-backed vs. 47% VC-backed). All sample firms were tracked for performance outcomes up to eleven years after their IPO, yielding a longitudinal dataset. The variable VC-backed is coded as a binary indicator (1 for VC-backed, 0 for non-VC-backed), and all descriptive tables distinguish the two groups using this coding.

VC backed = 1 Non VC backed = 0

		Frequency	Percent
Valid	0	105	53,0
	1	93	47,0
	Total	198	100,0

Table 3, Sample composition

Table 4A details the number of valid observations for each year post-IPO for the key performance measures: revenue growth, net income growth, stock price growth, and market capitalization growth. Each of these metrics was collected annually from the IPO year through the 11th year after IPO. Not all firms have data for every post-IPO year, as the number of valid observations steadily declines in later years for both VC-backed and non-VC-backed firms. For instance, in the first year after IPO, the majority of firms report revenue growth; 88 non-VC-backed and 73 VC-backed firms. By contrast, by Year 11 only a small subset of firms remains in the dataset, as shown in Table 4 just 3 non-VC-backed and 5 VC-backed firms still have valid revenue growth observations in the last year post-IPO.

	Revenue		Net income		Stock price long term		Market cap	
VC backed = 1 Non VC backed = 0	0	1	0	1	0	1	0	1
IPO - Year 1	88	73	93	74	82	74	74	69
Year 1 - Year 2	82	69	83	71	77	70	76	69
Year 2 - Year 3	64	58	64	60	57	55	58	55
Year 3 - Year 4	54	58	55	59	49	51	49	51
Year 4 - Year 5	44	54	45	55	42	48	42	48
Year 5 - Year 6	33	49	33	52	32	44	32	44
Year 6 - Year 7	25	43	26	44	26	36	26	36
Year 7 - Year 8	21	34	22	37	20	29	20	30
Year 8 - Year 9	12	19	13	19	13	15	13	15
Year 9 - Year 10	6	13	6	13	6	11	6	11
Year 10 - Year 11	3	5	3	5	3	5	3	5

Table 4A, Dependent variable residuals

A similar attrition pattern is evident for the other performance indicators. For example, for net income growth data: 93 non-VC-backed vs. 74 VC-backed firms report net income growth in Year 1, but this drops to 3 and 5 firms, respectively, by Year 11. Likewise, the annual stock price growth series shows 77 non-VC-backed and 70 VC-backed IPOs with data for the second year post-IPO dwindling to 3 and 5 firms by Year 10–Year 11. The market capitalization growth data follows the same trend, with 76 non-VC-backed and 69 VC-backed firms reporting market cap growth in Year 1–Year 2, declining to only 3 and 5 firms, respectively, in the eleventh year. These patterns underscore that data completeness decreases over the long post-IPO period, largely due to attrition by reason, for example due to . delisting, mergers, or data unavailability in later years, which is a common occurrence in longitudinal studies of IPO performance.

Table 4B shows the number of valid observations for short-term stock growth. The data sample consists of 185 IPOs, comprising 100 non-VC-backed firms and 85 VC-backed firms. Stock price growth was tracked across six key timeframes: the IPO day, 2 days, 7 days, 1 month, 6 months, and from the IPO date to the end of the IPO year. Both groups are well represented, allowing for a balanced descriptive comparison.

VC backed = 1 Non VC backed = 0	0	1
Stock price growth IPO day	100	85
Stock price growth 2 days	100	85
Stock price growth 7 days	100	85
Stock price growth 1 month	100	85
Stock price growth 6 months	100	85
Stock Price Growth IPO-Date vs end of IPO-Year	100	85

Table 4B, Short term

The dataset also provides information surrounding the aforementioned topic as table 5 presents. This table shows the continuation status of companies. Among the non-VC-backed firms, 83.8% remained active, while 16.2% ceased operations. In contrast, for VC-backed companies, 68.8% remained active and 31.2% were no longer listed or had gone bankrupt. This finding is somewhat unexpected, as prior research suggests that VC involvement often enhances firm survival due to improved governance and strategic oversight (Kaplan & Strömberg, 2003). The data from this sample, however, indicates a higher continuation rate among non-VC-backed firms, suggesting that the impact of VC support on long-term survival may be context-dependent. It is important to note that delisting can also result from successful exits, such as takeovers or mergers, which are often actively pursued by VC investors as part of their exit strategy (Gompers & Lerner, 2001; Barry et al., 1990). Therefore, the higher delisting rate among VC-backed firms may not necessarily indicate poorer performance.

Bankruptcy or Delisted, 1 is no, 0 is yes

VC backed = 1 Non VC backed = 0			Frequency	Percent	Valid Percent	Cumulative Percent
0	Valid	0	17	16,2	16,2	16,2
		1	88	83,8	83,8	100,0
		Total	105	100,0	100,0	
1	Valid	0	29	31,2	31,2	31,2
		1	64	68,8	68,8	100,0
		Total	93	100,0	100,0	

Table 5, Continuation of Companies

In addition to temporal data coverage, the sample's composition can be characterized by the industry sectors of the IPO firms. Table 6 presents the industry classification distribution for VC-backed and non-VC-backed IPOs across eight broad industry categories (coded 1 through 8). As shown in Table 6 the non-VC-backed firms are fairly evenly spread across industries because no single category dominates the non-VC sample. The largest industry category among non-VC-backed IPOs is category *3; Energy and environmental solutions*, which accounts for 19.0% of non-VC-backed firms (20 out of 105), followed closely by category *6; Consumer, Retail & Lifestyle* (18.1%) and category *2; Technology & Software* (15.2%). Several other industries (categories 4, 5, 8) each constitute roughly

10–13% of the non-VC group, indicating a well-diversified industry spread for non-VC-backed IPOs. In contrast, the VC-backed firms exhibit a more concentrated industry profile. Nearly half of all VC-backed IPOs (45.2%, or 42 out of 93 firms) fall into category *1 Healthcare & Life Sciences*. The next most represented VC-backed industry is category *2* at 18.3%, while categories *6* and *7* account for around 10% each of the VC-backed sample. Other industries are only marginally represented among VC-backed firms – for example, category *8*; Agriculture, Natural Resources & Specialized Industries, includes just one VC-backed company compared to 11 non-VC-backed companies. This contrast suggests that VC-backed IPOs in Western Europe tend to be concentrated in specific industries, whereas non-VC-backed IPOs come from a wider range of industries, including sectors less frequented by venture investors. The industry composition highlights an important structural difference between the two groups: VC-backed firms are not a random subset of all IPOs but rather are disproportionately drawn from certain sectors.

Industry Classification

VC backed = 1 Non VC backed = 0			Frequency	Percent	Valid Percent	Cumulative Percent
0	Valid	1: Healthcare & Life Sciences	8	7,6	7,6	7,6
		2: Technology & Software	16	15,2	15,2	22,9
		3: Energy & Environmental Solutions	20	19,0	19,0	41,9
		4: Financial Services & Real Estate	12	11,4	11,4	53,3
		5: Industrial & Manufacturing	14	13,3	13,3	66,7
		6: Consumer, Retail & Lifestyle	19	18,1	18,1	84,8
		7: Media, Entertainment & Communications	5	4,8	4,8	89,5
		8: Agriculture, Natural Resources & Specialized Industries	11	10,5	10,5	100,0
		Total	105	100,0	100,0	
1	Valid	1: Healthcare & Life Sciences	42	45,2	45,2	45,2
		2: Technology & Software	17	18,3	18,3	63,4
		3: Energy & Environmental Solutions	9	9,7	9,7	73,1
		4: Financial Services & Real Estate	3	3,2	3,2	76,3
		5: Industrial & Manufacturing	5	5,4	5,4	81,7
		6: Consumer, Retail & Lifestyle	10	10,8	10,8	92,5
		7: Media, Entertainment & Communications	6	6,5	6,5	98,9
		8: Agriculture, Natural Resources & Specialized Industries	1	1,1	1,1	100,0
		Total	93	100,0	100,0	

Table 6, Industry Classification

Finally, Table 7 summarizes the distribution of underwriter reputation for the IPOs in the sample. Underwriter reputation was recorded as a binary variable. As shown in Table 6 , the use of top-tier underwriters is almost evenly split in both subsamples. Among non-VC-backed IPOs, 57 out of 105 (54.3%) had a high-reputation underwriter, while 48 (45.7%) used a lower-tier underwriter. The VC-backed IPOs show a similar breakdown: 47 out of 93 (50.5%) employed high-reputation underwriters versus 46 (49.5%) with lower-tier underwriters. In other words, roughly half of the IPOs in each group were led by prestigious investment banks, and there is no substantial difference between VC-backed

and non-VC-backed firms in this regard. This finding indicates that, within this sample, venture backing does not dramatically influence the choice of underwriter prestige as both types of firms had comparable access to top-tier underwriters. The similarity in underwriter reputation distribution suggests that the overall quality of the IPO execution, at least as proxied by underwriter prestige, is comparable between the two groups, reinforcing the notion that any performance difference observed later is less likely to be driven by systematic disparities in initial offering characteristics.

Underwriter Reputation

VC backed = 1 Non VC backed = 0			Frequency	Percent	Valid Percent	Cumulative Percent
0	Valid	0	48	45,7	45,7	45,7
		1	57	54,3	54,3	100,0
		Total	105	100,0	100,0	
1	Valid	0	46	49,5	49,5	49,5
		1	47	50,5	50,5	100,0
		Total	93	100,0	100,0	

Table 7, Underwriter reputation

In summary, the sample of 198 IPO firms is well-defined and balanced in terms of venture backing status, with comprehensive coverage of post-IPO performance data (particularly in the first several years) and a rich mix of industries and underwriter profiles. The VC-backed and non-VC-backed sub-samples exhibit clear differences in industry focus and slightly different patterns of data availability over time, while they are similar in terms of underwriter reputation. As shown in the previous tables, these characteristics illustrate the structure and quality of the dataset, providing a foundation for robust comparative analysis in subsequent sections.

4.1.2 Sample Constraints and Analytical Boundaries

In conducting regression analyses, it is critical to ensure that the number of observations per model is sufficient to yield statistically reliable and generalizable results. According to Green's (1991) widely cited guideline for multiple regression analysis, the minimum recommended sample size is $N \geq 50 + 8m$, where m represents the number of independent variables included.

The initial sample for this study comprises 198 IPO firms from Western Europe. However, the number of valid firm-year observations declines progressively over time as the previous chapter has shown, primarily due to firm exits from the stock exchange through mergers, acquisitions, delisting's, or bankruptcies and occasional missing financial data. Such patterns are consistent with findings in the IPO literature, where attrition effects naturally impact longitudinal data samples (Ritter, 1991; Brav & Gompers, 1997).

Examination of the available data reveals that during the first five years post-IPO, sufficient coverage is maintained to meet the minimum threshold recommended by Green (1991). From IPO-Year 1 through Year 4–5, the number of valid observations remains above or reasonably close to the suggested cut-off, supporting the validity of subsequent multivariate analyses. However, from Year 5–6 onward, the number of available firm-year observations declines sharply, often falling below 100 observations. This reduction raises concerns regarding the statistical power, precision, and generalizability of estimates derived from later years.

To maintain methodological rigor, this study restricts regression analyses to the first five years post-IPO across all performance measures. Limiting the analysis horizon ensures adequate statistical power, reduces the risk of small-sample bias, and aligns with best practices in empirical research (Field, 2018; Wooldridge, 2013). Regression analyses based on later years, where sample sizes are insufficient, are deliberately excluded to preserve the robustness and reliability of findings.

Although the sample size at the five-year mark declines to approximately 74 firm-year observations for VC-backed firms and slightly lower figures for non-VC-backed firms, this level of data availability remains acceptable for regression models aiming to detect moderate effect sizes. According to Cohen (2013), samples exceeding 50 observations are generally sufficient to uncover moderate effects ($f^2 \approx 0.15$) in multiple regression settings, provided that model complexity is manageable, and results are interpreted carefully.

Thus, the decision to include firm-year observations up to Year 5 is both empirically justified and academically supported. The short-term stock performance variables can be included in full because for each dependent variable regarding this subject due to the consistent sample size of 185. The final models leverage these observations to ensure analytical robustness, minimize biases due to sample attrition, and produce findings that are both statistically valid and meaningful within the broader literature on IPO performance and VC impacts.

4.1.3 Regression Modeling Approach and Data Pooling Strategy

In the last step of the empirical analysis, regression models are carried out using a pooling sample comprising firm-year observations during the first five years after each IPO. The reason for pooling the data over several post-IPO years is methodologically preferable since it increases the effective sample size, which in turn improves the statistical power and generates more reliable and stable estimates. Conducting separate regressions for each individual year would result in smaller sample sizes, higher standard errors, and a greater risk of unreliable inferences due to the high volatility and variability typically observed in firm growth rates immediately after IPO (Ritter, 1991).

By pooling the observations, the analysis captures the cumulative performance trajectory of firms over time, rather than being overly sensitive to year-specific fluctuations that may not reflect underlying structural differences between VC-backed and non-VC-backed firms. This approach is consistent with the underlying theoretical framework suggesting that VC support exerts a sustained influence on firm development, not just an immediate effect (Gompers, 1996; Megginson & Weiss, 1991).

However, even though pooling strengthens the data set overall, careful attention is still paid to the quality and sufficiency of data at the year level. In particular, this study restricts the pooled analysis to firm-year observations from Years 1 through 5 post-IPO. In addition, survivorship bias becomes more severe after Year 5, as weaker firms are more likely to have delisted, merged, or gone bankrupt (Brav & Gompers, 1997).

4.2 Descriptive statistics

This section provides a detailed overview of the key financial and structural characteristics of the 198 IPO firms in the sample, distinguishing between VC-backed and non-VC-backed firms. The focus is on post-IPO revenue growth, stock price performance, and firm-specific characteristics such as age at IPO and firm size. All variables are presented separately for VC-backed and non-VC-backed firms across up to eleven years after the IPO event. Where relevant, findings are contextualized with insights from existing literature on IPO performance and VC.

To provide a holistic view of the post-IPO performance landscape, descriptive statistics utilize the full eleven-year data set. However, regression analyses are confined to the first five years because the sample size diminishes markedly in later years, limiting the feasibility of drawing meaningful conclusions from those periods.

4.2.1 Revenue Growth Performance

Table 8 summarizes the annual revenue growth of firms from the IPO year through the 11th post-IPO year. For each year, descriptive statistics are reported for both VC-backed and non-VC-backed firms, including the number of valid and missing observations, means, medians, standard deviations, and extremes. The attrition of data is visible across the years, while 88 non-VC-backed and 73 VC-backed firms provide revenue data in Year 1, this number declines sharply to just 3 firms in each group by Year 11

A comparison of mean and median revenue growth reveals a divergence between typical and extreme outcomes, particularly for VC-backed firms. Over the first six years following the IPO, VC-backed firms consistently show higher mean revenue growth than their non-VC-backed counterparts.

However, when focusing on medians, a different pattern emerges. In multiple years, non-VC-backed firms actually have higher median revenue growth than VC-backed firms. For instance, in Year 1, the

median growth is 12.43% for non-VC firms versus 13.97% for VC-backed firms, but the gap narrows or reverses in later years. In Year 4, the median for non-VC firms drops to 7.53%, while for VC firms it rises to 24%. The fluctuation and eventual convergence of medians in the later years suggest that the typical performance difference between the two groups is modest and unstable over time.

This discrepancy between means and medians signals that VC-backed firm averages are being lifted by a small number of high-growth outliers, rather than reflecting broad-based superior performance. This is consistent with the pattern noted in prior studies, which highlight that VC performance is often skewed by a few "home runs" (Gompers & Lerner, 2001).

The standard deviations for VC-backed firms are substantially higher in almost every year. Similarly, the range and minimum/maximum values reinforce this picture of extreme dispersion. VC-backed firms reach maximum revenue growth values as high as 1,503.68% (Year 3) and show minimums well below –100% in several years. Non-VC-backed firms, by contrast, have narrower ranges overall, smaller standard deviations, and less dramatic outliers despite the extreme outlier in Year 9.This heightened volatility among VC-backed firms reflects their growth-oriented and risk-tolerant profile, where rapid scaling is often prioritized over consistent performance. It supports findings from the literature suggesting that VC-backed firms pursue aggressive growth strategies that can lead to both significant successes and failures (Hellmann & Puri, 2000).

Statistics

VC backed = 1 Non VC backed = 0			Revenue Growth Year ipo - Year 1	Revenue Growth Year 1 - Year 2	Revenue Growth Year 2 - Year 3	Revenue Growth Year 3 - Year 4	Revenue Growth Year 4 - Year 5	Revenue Growth Year 5 - Year 6	Revenue Growth Year 6 - Year 7	Revenue Growth Year 7 - Year 8	Revenue Growth Year 8 - Year 9	Revenue Growth Year 9 - Year 10	Revenue Growth Year 10 - Year 11
0	N	Valid	88	82	64	54	44	33	25	21	12	6	3
		Missing	17	23	41	51	61	72	80	84	93	99	102
	Mean		32,05	25,43	17,13	9,61	,20	14,96	15,77	5,98	22,80	1329,97	-22,43
	Median		12,43	12,78	10,99	7,53	5,35	8,70	12,32	9,49	15,59	19,56	9,88
	Std. Deviation		67,58	68,05	40,91	40,34	35,79	56,44	28,49	37,71	34,51	3218,66	67,49
	Range		562,05	459,94	314,67	266,07	206,75	352,94	109,05	177,16	134,61	7899,78	122,82
	Minimum		-65,28	-98,40	-48,67	-100,00	-93,76	-200,00	-31,30	-87,83	-14,03	,22	-100,00
	Maximum		496,77	361,54	266,00	166,07	112,98	152,94	77,75	89,33	120,59	7900,00	22,82
1	N	Valid	73	69	58	58	54	49	43	34	19	13	5
		Missing	20	24	35	35	39	44	50	59	74	80	88
	Mean		36,80	24,57	78,89	23,05	33,61	13,04	38,31	42,29	15,79	6,72	137,24
	Median		13,97	14,41	13,94	,24	7,79	4,97	4,37	8,09	6,13	-11,30	-10,56
	Std. Deviation		94,44	67,21	253,84	99,78	97,44	57,28	133,21	108,78	69,80	118,21	306,18
	Range		683,46	382,87	1553,08	540,16	466,29	265,91	778,32	616,05	289,85	458,68	736,94
	Minimum		-100,00	-77,07	-49,40	-100,00	-84,83	-92,59	-100,00	-40,03	-98,24	-87,00	-78,82
	Maximum		583,46	305,81	1503,68	440,16	381,46	173,33	678,32	576,01	191,61	371,68	658,12

Table 8, Descriptive revenue growth

4.2.2 Net Income Growth Performance

Table 9 presents the evolution of net income growth across the eleven years following the IPO. Similar to revenue trends, valid observations decline over time due to data attrition. In the first year post-IPO, 93 non-VC-backed firms and 74 VC-backed firms report net income growth data. By Year 11, only 3 and 5 firms respectively remain, reflecting the limits of long-term panel completeness. The descriptive statistics on net income growth indicate that both VC-backed and non-VC-backed firms tend to experience highly volatile and often negative profitability trajectories following their IPO. Across nearly all post-IPO years, median net income growth remains negative for both groups, particularly for VC-backed firms. This suggests that for the typical firm, profitability does not improve substantially in the years following the public offering.

Although VC-backed firms occasionally report higher mean net income growth in some years, this is largely driven by a small number of extreme outliers, rather than reflective of a broader trend across the group. The consistent gap between mean and median values, especially for VC-backed firms, highlights a skewed performance distribution—one where a few high performers lift the average while the majority experience stagnation or decline. This aligns with prior findings in the literature, which emphasize that VC portfolios are typically characterized by a "home run" dynamic, where a small share of firms drive most of the returns (Gompers & Lerner, 2001).

Additionally, VC-backed firms exhibit far greater variability in earnings, with wider ranges and larger standard deviations than their non-VC counterparts. This reflects the risk-intensive strategies often associated with venture-backed companies, which may prioritize rapid expansion over financial stability in the early years post-IPO (Hellmann & Puri, 2000; Kaplan & Strömberg, 2003).

Overall, the data challenges the assumption that VC involvement guarantees superior post-IPO financial performance. While VC may offer strategic and operational support, these findings suggest that it does not systematically translate into stronger or more consistent net income growth, especially when evaluated from the perspective of the median firm. The results reinforce the notion that post-IPO profitability is highly uncertain, even for firms that receive the backing of experienced venture investors.

Statistics

VC backed = 1 Non VC backed = 0			Net Income Growth Year ipo - Year 1	Net Income Growth Year 1 - Year 2	Net Income Growth Year 2 - Year 3	Net Income Growth Year 3 - Year 4	Net Income Growth Year 4 - Year 5	Net Income Growth Year 5 - Year 6	Net Income Growth Year 6 - Year 7	Net Income Growth Year 7 - Year 8	Net Income Growth Year 8 - Year 9	Net Income Growth Year 9 - Year 10	Net Income Growth Year 10 - Year 11
0	N	Valid	93	83	64	55	45	33	26	22	13	6	3
		Missing	12	22	41	50	60	72	79	83	92	99	102
	Mean		527,61	-27,13	-29,43	66,28	45,72	121,04	127,98	-65,71	-124,93	19,83	-40,53
	Median		-10,04	9,10	2,14	-4,74	,00	26,58	5,24	21,97	-9,91	-11,34	-76,69
	Std. Deviation		4669,36	352,50	193,12	723,88	758,42	1079,79	575,94	318,68	470,23	162,37	66,68
	Range		46261,33	3185,54	1182,20	5864,37	6300,95	7601,43	3326,05	1561,14	1894,87	408,87	117,75
	Minimum		-1961,33	-1982,05	-844,70	-1061,34	-2277,37	-3468,09	-559,01	-1266,51	-1381,82	-161,92	-81,33
	Maximum		44300,00	1203,49	337,50	4803,03	4023,58	4133,33	2767,04	294,63	513,05	246,94	36,42
1	N	Valid	74	71	60	59	55	52	44	37	19	13	5
		Missing	19	22	33	34	38	41	49	56	74	80	88
	Mean		-149,16	-59,70	-273,54	-34,82	33,36	29,92	566,07	-155,58	-546,68	4,31	-33,20
	Median		-28,89	-1,28	-,51	-6,95	-1,16	,24	-14,70	4,94	-34,84	-21,36	-4,65
	Std. Deviation		724,89	351,44	1680,04	499,98	818,54	218,84	4071,77	967,88	1960,53	180,51	98,75
	Range		6506,72	2548,42	13080,44	4407,67	7555,39	1798,06	27911,86	7243,82	8717,41	733,49	237,05
	Minimum		-5880,28	-2224,80	-12892,86	-1233,13	-2427,83	-449,66	-994,48	-4987,10	-8584,78	-184,29	-206,65
	Maximum		626,43	323,62	187,58	3174,55	5127,57	1348,40	26917,38	2256,73	132,62	549,20	30,40

Table 9, Descriptive Net Income

4.2.3 Short-Term Stock Price Performance

Table 10 presents descriptive statistics for short-term stock price growth following the IPO: from IPO day through various event windows, first day 2 days, 7 days, 1 month, 6 months, and end-of-IPO-year. The short-term stock price performance data show that both VC-backed and non-VC-backed IPOs tend to experience modest or negative returns in the immediate aftermath of going public.

Across all early time windows: IPO day, 2 days, 7 days, 1 month, 6 months, and the end of the IPO year the median stock price growth is negative for both groups, indicating that the majority of firms do not deliver immediate gains to investors. Contrary to the widely documented phenomenon of IPO underpricing as stated by Rock (1986) and Ritter (1991), the data show no evidence of substantial

first-day price gains. In fact, median and mean short-term returns are negative for both VC-backed and non-VC-backed firms across all early time windows, suggesting that underpricing is largely absent from this sample.

Interestingly, non-VC-backed firms generally show slightly better median returns across most time periods, suggesting that the typical non-VC-backed firm may perform more steadily in the short term. In contrast, VC-backed firms exhibit greater volatility, as reflected in higher standard deviations and wider ranges. These patterns lead to a more speculative investor response to VC-backed IPOs, potentially driven by hype, overvaluation, or differing expectations about growth potential.

The performance dispersion is also more pronounced among VC-backed firms, with more extreme minimum and maximum values observed in all short-term windows. While some VC-backed firms achieve large price surges shortly after IPO, others experience sharp declines, reinforcing the notion that VC affiliation amplifies both the upside and downside potential in early trading periods.

Overall, these descriptive results suggest that VC backing does not guarantee stronger short-term market performance. In fact, the data implies that VC-backed IPOs may be more exposed to investor sentiment and market volatility, leading to less predictable outcomes in the first few months of public trading. This challenges the view that VC serves as a stabilizing certification mechanism in the IPO process as Megginson and Weiss (1991) mentioned in their study and instead aligns with research that highlights market-driven volatility and early corrections post-listing (Aggarwal, 2000; Brav & Gompers, 1997).

Statistics

VC backed = 1 Non VC backed = 0			Stock price growth IPO day	Stock price growth 2 days	Stock price growth 7 days	Stock price growth 1 month	Stock price growth 6 months	Stock Price Growth IPO-Date vs end of IPO-Year
0	N	Valid	100	100	100	100	100	100
		Missing	5	5	5	5	5	5
	Mean		-1,17	-1,11	-,91	-3,25	-7,74	-9,69
	Median		-,47	-,68	-1,03	-2,20	-6,12	-6,67
	Std. Deviation		6,32	8,37	13,13	13,53	24,52	26,67
	Range		60,46	69,97	100,40	70,57	120,94	144,00
	Minimum		-30,00	-25,00	-37,40	-36,00	-71,15	-75,79
	Maximum		30,46	44,97	63,00	34,57	49,79	68,21
1	N	Valid	85	85	85	85	85	85
		Missing	8	8	8	8	8	8
	Mean		-2,08	-1,09	-,60	-2,12	-6,98	-7,12
	Median		-1,10	-1,25	-3,00	-5,49	-7,88	-8,25
	Std. Deviation		7,33	11,44	16,74	23,24	41,42	46,37
	Range		66,38	117,46	146,47	147,89	307,20	356,10
	Minimum		-40,49	-44,79	-39,26	-44,58	-77,85	-77,13
	Maximum		25,89	72,67	107,21	103,30	229,35	278,97

Table 10, Descriptive Short-term stock

4.2.4 Long-Term Stock Price Growth

Table 11 reports long-term annual stock price growth over eleven years post-IPO. Table 11 suggest that neither VC-backed nor non-VC-backed firms consistently outperform overtime. Median stock returns remain negative or modestly positive across most post-IPO years for both groups, indicating that the typical firm fails to deliver strong or sustained returns in the public market.

Although VC-backed firms occasionally report higher mean stock growth, this is largely driven by a few extreme outliers. The difference between the mean and median values, particularly for VC-backed firms, points to a highly skewed distribution, where a small number of firms experience significant gains while the majority underperform.

In terms of volatility, VC-backed firms exhibit greater dispersion in stock price outcomes, with wider ranges and higher standard deviations across nearly all years. This reinforces their higher-risk profile, with returns that are more variable and less predictable compared to non-VC-backed firms.

Overall, the data does not support the assumption that VC affiliation ensures better long-run stock performance. In fact, the small and inconsistent differences between the two groups suggest that VC does not systematically enhance public market success over the long term. These results align with prior research documenting weak or insignificant long-run performance differentials between VC-backed and non-VC-backed IPOs as studies by Brav and Gompers (1997) and Ritter and Welch (2002) have shown. However, just like previously in the short term descriptives, these findings question the lasting impact of VC certification once a firm enters the public market.

Statistics

VC backed = 1 Non VC backed = 0			Stock Price Growth ipo year - Year 1	Stock Price Growth Year 1 - Year 2	Stock Price Growth Year 2 - Year 3	Stock Price Growth Year 3 - Year 4	Stock Price Growth Year 4 - Year 5	Stock Price Growth Year 5 - Year 6	Stock Price Growth Year 6 - Year 7	Stock Price Growth Year 7 - Year 8	Stock Price Growth Year 8 - Year 9	Stock Price Growth Year 9 - Year 10	Stock Price Growth Year 10 - year 11
0	N	Valid	82	77	57	49	42	32	26	20	13	6	3
		Missing	23	28	48	56	63	73	79	85	92	99	102
	Mean		-9,67	1,33	5,05	-10,64	12,06	3,51	16,11	-8,64	-13,07	-10,19	-14,66
	Median		-16,73	-6,91	-10,17	-12,61	,51	-2,16	-4,52	-3,40	-16,91	-15,15	-21,33
	Std. Deviation		42,63	61,52	60,84	34,75	58,79	39,68	71,37	33,11	36,61	25,69	26,14
	Range		255,48	474,80	306,51	167,88	361,18	205,86	370,94	119,87	125,11	70,58	50,99
	Minimum		-82,98	-72,37	-87,16	-82,11	-82,56	-71,00	-85,43	-83,18	-62,50	-42,41	-36,81
	Maximum		172,49	402,43	219,35	85,77	278,62	134,86	285,51	36,69	62,61	28,17	14,18
1	N	Valid	74	70	55	51	48	44	36	29	15	11	5
		Missing	19	23	38	42	45	49	57	64	78	82	88
	Mean		-15,27	3,73	6,85	-8,20	9,30	19,07	-17,62	191,32	-30,69	-36,35	40,39
	Median		-25,65	-18,29	-8,94	-17,74	-7,26	-14,49	-29,22	-22,47	-40,55	-38,29	11,11
	Std. Deviation		56,75	106,77	86,09	62,40	93,50	145,29	85,88	1062,26	33,78	25,99	98,43
	Range		372,14	797,26	598,28	342,29	577,99	904,42	523,51	5792,50	130,43	74,76	232,71
	Minimum		-83,14	-87,70	-84,79	-90,57	-83,71	-79,79	-86,32	-93,68	-79,59	-71,92	-42,03
	Maximum		289,00	709,56	513,49	251,72	494,29	824,63	437,19	5698,82	50,83	2,84	190,68

Table 11, Descriptive Stock Price long-term

4.2.5 Market Capitalization Growth

Table 12 presents annual growth in market capitalization over the post-IPO period for both VC-backed and non-VC-backed firms. Similar to other performance indicators, the number of valid observations declines over time from 76 (non-VC) and 69 (VC) firms in Year 1, to just 3 and 5 firms respectively by Year 11.

The descriptive statistics for market capitalization growth indicate that VC-backed and non-VC-backed firms exhibit broad similar performance trends, with no consistent evidence that VC affiliation leads to significantly superior growth. In the early post-IPO years, both groups show fluctuating growth patterns, and while VC-backed firms occasionally report higher mean market cap growth, the medians tend to be modest or negative in several periods for both groups.

The frequent gap between mean and median values, especially for VC-backed firms, suggests that average outcomes are inflated by a few high-growth outliers, while the typical firm experiences much lower or even negative growth. This discrepancy reflects the skewed distribution of outcomes typical in venture-backed samples, where a small number of firms dominate overall performance (Gompers & Lerner, 2001).

Volatility is a defining feature of the data, with VC-backed firms exhibiting greater dispersion in market cap outcomes over nearly every year. Their standard deviations and ranges are notably larger, particularly in later periods, reflecting a high-risk, high-variance profile. In contrast, non-VC-backed firms tend to show more stable growth patterns with narrower value ranges, especially in the mid to late post-IPO years.

Overall, the data suggests that while VC backing may increase the potential for exceptional growth, it does not systematically translate into broader or more consistent market capitalization expansion. These findings align with previous empirical studies show that VC may raise initial investor expectations, but this does not necessarily lead to sustained valuation growth in the public market (Ritter & Welch, 2002; Cao & Lerner, 2009). The results underscore the importance of distinguishing between big successes and typical firm performance when evaluating the long-term value creation associated with VC involvement.

Statistics

VC backed = 1 Non VC backed = 0			Market Cap Growth 1po year - Year 1	Market Cap Growth Year 1 - Year 2	Market Cap Growth Year 2 - Year 3	Market Cap Growth Year 3 - Year 4	Market Cap Growth Year 4 - Year 5	Market Cap Growth Year 5 - Year 6	Market Cap Growth Year 6 - Year 7	Market Cap Growth Year 7 - Year 8	Market Cap Growth Year 8 - Year 9	Market Cap Growth Year 9 - Year 10	Market Cap Growth Year 10 - Year 11
0	N	Valid	74	76	58	49	42	32	26	20	13	6	3
		Missing	31	29	47	56	63	73	79	85	92	99	102
	Mean		-5,55	11,23	12,10	-8,13	19,10	71,27	20,51	-1,89	-12,41	251,28	-11,00
	Median		-14,09	2,98	-6,41	-12,61	4,98	9,59	-,51	4,18	-14,24	1,15	-20,14
	Std. Deviation		46,55	71,02	73,06	35,65	66,09	345,29	68,30	32,58	36,49	623,40	31,40
	Range		289,47	518,44	443,98	167,88	362,80	2020,02	323,26	122,14	123,47	1550,01	60,77
	Minimum		-82,98	-72,04	-87,16	-82,11	-82,56	-70,79	-37,74	-83,17	-60,16	-26,92	-36,81
	Maximum		206,49	446,40	356,82	85,77	280,24	1949,22	285,51	38,97	63,31	1523,09	23,96
1	N	Valid	69	69	55	51	48	44	36	30	15	11	5
		Missing	24	24	38	42	45	49	57	63	78	82	88
	Mean		-9,25	17,43	21,77	9,86	50,75	50,45	10,83	260,70	-23,74	-20,22	114,32
	Median		-20,70	-5,74	-1,23	-4,83	8,71	-2,97	-25,13	-14,90	-31,52	-28,97	138,32
	Std. Deviation		60,32	116,60	100,23	70,30	179,64	226,94	192,11	1268,35	37,50	40,86	168,70
	Range		392,12	796,18	611,85	338,79	1108,04	1466,42	1171,89	7043,35	131,44	147,85	409,21
	Minimum		-83,09	-85,71	-84,77	-81,52	-83,63	-79,79	-80,74	-93,68	-79,59	-71,93	-42,01
	Maximum		309,03	710,48	527,09	257,27	1024,40	1386,62	1091,15	6949,67	51,84	75,92	367,21

Table 12, Descriptive Market Cap

4.2.6 Firm Characteristics at IPO

In Table 13 two key firm characteristics are compared: firm age at IPO and firm size. Non-VC-backed firms are on average significantly older at the time of IPO (mean = 26.3 years) compared to VC-backed firms (mean = 16.5 years). This difference reflects the longer development trajectories often

followed by non-VC-backed firms, whereas VC-backed companies tend to IPO at earlier stages in their lifecycle. This is consistent with literature indicating that VC facilitates accelerated scaling and earlier public offerings (Hellmann & Puri, 2002; Barry et al., 1990).

Firm size shows a less pronounced difference, although non-VC-backed firms are slightly larger on average (log size = 16.05) than VC-backed firms (log size = 15.33). This suggests that VC-backed firms may enter public markets with lower absolute scale, supported by external financing and the certification of reputable VCs, as described by Megginson and Weiss (1991). The lower age and size at IPO for VC-backed firms also reinforces the role of VC in reducing information asymmetry and signaling firm quality to the market (Beatty & Ritter, 1986).

Statistics

VC backed = 1 Non VC backed = 0			Firm age at IPO	LogFirmSize
0	N	Valid	105	105
		Missing	0	0
	Mean		26,33	16,05
	Median		11,00	15,61
	Std. Deviation		36,72	1,83
	Range		191	9,88
	Minimum		0	10,78
	Maximum		191	20,66
1	N	Valid	93	93
		Missing	0	0
	Mean		16,54	15,83
	Median		10,00	15,69
	Std. Deviation		45,38	1,17
	Range		438	6,54
	Minimum		2	13,27
	Maximum		440	19,82

Table 13, Descriptive Firm characteristics

4.3 Correlation

All correlation analyses were conducted on the full sample of 198 IPO firms, combining venture-backed and non-venture-backed companies. Appendices A1 through A5 present the Pearson correlation matrices for the key variables associated with each of the five performance measures: Appendix A1 covers revenue growth, Appendix A2 net income growth, Appendix A3 short-term stock price growth, Appendix A4 long-term stock price growth, and Appendix A5 market capitalization growth. Examining these matrices provides insight into the linear associations between variables and serves as a preliminary check for multicollinearity. Below, we outline notable correlation patterns for each set of variables in turn, with an emphasis on the full 198-IPO sample.

The correlation analyses utilize data from the full eleven-year period in order to capture the most comprehensive set of relationships among the key variables across the entire post-IPO timeframe. This approach maximizes the available information and allows for the identification of longer-term associations that may not be evident in shorter time windows. Although data availability decreases in later years, the full-period analysis provides a broader perspective on variable interactions across different stages of firm development. It is important to note that, unlike the regression analysis, which is limited to the first five years due to a drop in sample size, these correlations are intended as

exploratory tools and are not used for causal inference. This distinction ensures the integrity of the regression findings while still leveraging the full dataset for preliminary pattern recognition and multicollinearity checks.

4.3.1 Summary of correlation analysis

Overall, the correlation analysis does not reveal any problematic relationships that would indicate severe multicollinearity. Across all five correlation matrices (Appendices A1–A5), the pairwise correlations among the key independent variables are generally low to moderate. The highest correlation between any two control variables is approximately 0.45 for example, between firm size and underwriter reputation, and most other correlations are substantially lower. No pair of independent variables approaches a correlation coefficient of 0.8 or higher, which is commonly cited in the statistical and econometric literature as the threshold beyond which multicollinearity may significantly distort regression estimates (Field, 2018; Wooldridge, 2013). As emphasized by Field (2018), correlations below this level are not typically cause for concern and allow for reliable multivariate analyses. Similarly, Wooldridge (2013) states that multicollinearity is only problematic when independent variables are nearly perfectly correlated, which is not the case in this dataset. In line with these standards, the data exhibits an absence of strong linear dependence among the regressors, indicating that multicollinearity is not expected to negatively affect the regression models.

Beyond its methodological function, the correlation analysis provides several broader insights into post-IPO firm dynamics. First, there is a general lack of strong univariate relationships between firm characteristics and post-IPO performance. Core explanatory variables, such as VC backing, firm size, firm age, and underwriter reputation show consistently low correlations with key outcomes, including revenue growth, profit changes, stock returns, and market capitalization growth. This suggests that no single characteristic can reliably predict success in isolation and that post-IPO performance is likely influenced by a more complex interplay of factors.

Second, a more pronounced pattern is found in the relationship between firm size and revenue growth, particularly in the early post-IPO years. Smaller firms tend to experience faster revenue growth, reflected in moderate negative correlations (ranging from –0.20 to –0.30) that align with theoretical expectations about scalability and growth potential. This trend also holds partially for younger firms, supporting the consideration of age at the time of the IPO as a relevant control variable.

Third, the correlation matrices for short-term stock price returns reveal strong internal consistency among cumulative return periods, indicating short-term momentum. However, this momentum is largely decoupled from firm fundamentals as variables such as VC backing, size, and underwriter prestige are only weakly associated with early stock returns. This suggests the influence of market sentiment, underpricing, and investor behavior in shaping immediate post-IPO performance, rather than structural firm attributes.

Fourth, in contrast to the short-term dynamics, both net income growth and long-term stock returns show little persistence over time and no clear association with firm characteristics. These performance dimensions appear unpredictable, underscoring the volatility and firm-specific nature of longer-term outcomes. For instance, a strong return or income gain in one year does not reliably translate into similar performance in subsequent years, pointing to the limitations of relying on observable IPO-time traits to forecast long-run success.

In summary, the full-sample correlation analysis confirms that while there are reasonable patterns of association there is no evidence of extreme collinearity that would violate regression assumptions. Furthermore, these insights reinforce the idea that simple pairwise relationships do not fully capture the complexity of post-IPO performance. Although certain patterns emerge, most observed correlations are modest in size and lack consistency across performance dimensions. Additionally, no single firm characteristic, including VC backing, shows a strong or reliable association with financial or market-based outcomes in isolation. These findings suggest that the factors influencing post-IPO success are multifaceted and often interact in ways that are not apparent in a univariate framework. As a result, a more comprehensive analytical approach is necessary. The following chapter introduces multivariate regression analysis, which can analyze multiple explanatory variables, control for confounding effects, and provides a more rigorous test of the hypotheses outlined earlier in the study.

5. Results

This chapter presents the empirical findings of the study based on the hypotheses and methodology discussed in earlier sections. The analysis is grounded in a dataset of IPOs observed across multiple financial and operational dimensions. It is structured to progressively examine the relationship between VC backing and IPO success, as well as the moderating effects of two key variables: the proportion of VC ownership and the relative size of the IPO.

The chapter begins with presenting the results grouped by dependent variable categories, starting with stock price growth, followed by market capitalization growth, revenue growth, and net income growth. Each performance indicator is analyzed in both short-term and long-term contexts where applicable. Subsequently, sections 5.5 and 5.6 explore the core moderation hypotheses of the study. The results are presented systematically across each success dimension, with a particular focus on the statistical significance, direction, and size of the interaction effects.

5.1 Stock growth

5.1.1 Short Term

This section presents the multivariate results for Hypothesis 1, which posits that VC-backed IPOs exhibit more moderate short-term stock price movements compared to non-VC-backed IPOs, indicating a lower degree of underpricing. This hypothesis is grounded in the literature that views IPO day and early post-IPO pricing behavior as proxies for fair valuation (Barry, 1989; Loughran & Ritter, 2004). Unlike post-IPO operating performance, which is typically measured over a span of time and can be meaningfully pooled to reflect sustained firm-level outcomes, stock price reactions immediately following the IPO represent distinct, time-specific market events. Pooling these individual stock return measures into a single variable would obscure meaningful variation across different points in time, each of which captures a unique aspect of investor sentiment and pricing efficiency.

Therefore, a multivariate General Linear Model (GLM) is employed to simultaneously examine the impact of VC backing on multiple short-term price performance indicators. This approach preserves the temporal granularity of the data, accounts for within-subject correlation among the dependent variables, and allows for a more precise evaluation of how VC involvement influences stock behavior across a range of short-term time frames.

The GLM regression was conducted, analyzing six separate stock price performance indicators: IPO day return, 2-day return, 7-day return, 1-month return, 6-month return, and return at the end of the IPO year. These dependent variables capture both immediate and early-stage market reactions to the IPO. Table 14 below summarizes the key coefficients for the VC-backed variable across each short-term

stock performance measure. The full GLM results, including interaction effects and Type III sum of squares for all predictors, are provided in Appendix A6.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
VCbacked1NonVCbacked0	Stock price growth IPO day	4,44	1	4,44	,10	,747
	Stock price growth 2 days	12,31	1	12,31	,13	,723
	Stock price growth 7 days	71,46	1	71,46	,30	,586
	Stock price growth 1 month	833,10	1	833,10	2,51	,116
	Stock price growth 6 months	5392,37	1	5392,37	5,91	,016
	Stock Price Growth IPO-Date vs end of IPO-Year	8153,14	1	8153,14	7,60	,007

Table 14, GLM results short term

The results of the regression show that VC backing does not significantly influence stock price performance in the immediate days after the IPO in any significant way as the F-values are non-significant for the IPO day (p = .747), 2-day (p = .723), and 7-day returns (p = .586). Similarly, the effect stays non-significant (p = .116) at the 1-month interval, but the p-value indicates a potential developing trend.

However, the effect of VC backing becomes statistically significant at longer short-term intervals, with VC-backed firms exhibiting higher stock price growth after 6 months (F = 5.906, p = .016) and from IPO date to year-end (F = 7.604, p = .007). This suggests VC shapes market performance more clearly in the quarters following the listing.

These findings are consistent with prior research which emphasizes that VC-backed IPOs tend to be more fairly priced at the outset, avoiding both excessive underpricing and overvaluation (Barry, 1989; Megginson & Weiss, 1991). However, it may take some time for the market to fully price in the value added by VC backing. This aligns with the argument made by Gompers (1996), who emphasized that VCs often contribute to post-IPO performance through active governance, signaling, and access to strategic networks.

In sum. the empirical analysis finds no evidence that VC backing delivers noticeably fairer IPO pricing in the short run. In particular, VC involvement had no statistically significant effect on first-day, two-day or one-month returns, with only very modest differences emerging by six months and year-end; hence Hypothesis 1 which predicted lower underpricing and more stable early returns for VC-backed IPOs , must be rejected. This result runs counter to the classic VC-certification view, as the dataset shows that VC involvement did not yield significantly fairer initial pricing in the sample, leading the study to reject Hypothesis 1.

5.1.2 Long Term

This section presents the regression results evaluating stock price performance from the IPO year to the end of the first-year post-listing, as part of the broader test of Hypothesis 2, which posits that VC-backed firms demonstrate more sustainable post-IPO stock growth compared to non-VC-backed firms. The analysis uses long-term stock return as the dependent variable, representing the change in stock price over the first full year after the IPO. The key independent variable is VC backing, coded as a binary variable (1 = VC-backed, 0 = non-VC-backed).

The model summary of Appendix A7 reports an R value of .056, with an R-squared of .003 and an adjusted R-squared of –.005, indicating that the model explains only 0.3% of the variance in one-year stock returns and that the adjusted value falls below zero. These results suggest the explanatory power of the model is extremely limited. The ANOVA output in Appendix A8 shows an F-statistic of 0.376 with a p-value of .866, confirming that the regression model is not statistically significant. Therefore, the group of predictors, including VC backing and the included controls, does not significantly explain variation in stock price development from the IPO year to Year 1.

The coefficients in table 17 provide further detail on the performance of the individual predictors. The coefficient for VC backing is negative (B = –2.444) with a standardized beta of –.018, and a p-value of .691. This suggests no statistically significant relationship between VC involvement and stock price changes during the first post-IPO year. Likewise, all control variables are also statistically non-significant. Industry classification (B = –1.540, p = .277), firm age at IPO (B = 0.048, p = .453), underwriter reputation (B = –3.587, p = .578), and firm size (B = 0.529, p = .802) all yield p-values above conventional significance levels. Therefore, these results do not provide statistical support for the proposed relationship between VC backing and moderated, stable stock performance in the first post-IPO year.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-2,466	32,389		-,076	,939
	VC backed = 1 Non VC backed = 0	-2,444	6,138	-,018	-,398	,691
	Industry Classification	-1,540	1,415	-,050	-1,089	,277
	Firm age at IPO	,048	,064	,032	,751	,453
	Underwriter Reputation	-3,587	6,443	-,026	-,557	,578
	LogFirmSize	,529	2,103	,012	,251	,802

a. Dependent Variable: LongTermStock

Table 15, Coefficients Long Term stock

5.2 Market cap

This section reports the regression analysis used to test Hypothesis 2, which proposes that VC-backed firms experience stronger post-IPO stock performance and market capitalization growth than their non-VC-backed counterparts. The dependent variable in this model is market capitalization growth measured after the IPO.

Appendix A9, shows that the regression model yielded an R value of .079, with an R-squared of .006 and an adjusted R-squared of –.002, suggesting that only 0.6% of the variance in market capitalization growth is explained by the predictors. This indicates extremely limited explanatory power, a result that is common in IPO studies where post-IPO performance is influenced by a wide range of unpredictable market and strategic factors (Brav & Gompers, 1997; Ritter & Welch, 2002). The ANOVA analysis in Appendix A10 reports an F-statistic of 0.734 (df = 5, 585) and a p-value of .598, showing that the regression model is not statistically significant. Hence, the set of predictors, including VC backing, does not jointly explain a significant proportion of the variation in post-IPO market capitalization growth.

The coefficients reported in table 16 provide further detail. The coefficient for VC backing is positive (B = 7.442), with a standardized beta of .042, and a p-value of .351. Although the direction of the relationship is positive, the effect is not statistically significant at the conventional 5% level. This indicates that, after controlling firm-level variables, VC-backed firms did not exhibit significantly different market capitalization growth compared to non-VC-backed firms in the sample studied.

All control variables in the model also failed to reach statistical significance. Industry classification (B = –1.732, p = .346), firm age at IPO (B = 0.002, p = .983), underwriter reputation (B = –2.347, p = .779), and log firm size (B = –0.691, p = .799) all had p-values well above the conventional threshold, suggesting no measurable relationship with the dependent variable in this model.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	25,355	41,847		,606	,545
	VC backed = 1 Non VC backed = 0	7,442	7,979	,042	,933	,351
	Industry Classification	-1,732	1,836	-,044	-,944	,346
	Firm age at IPO	,002	,082	,001	,021	,983
	Underwriter Reputation	-2,347	8,363	-,013	-,281	,779
	LogFirmSize	-,691	2,718	-,012	-,254	,799

a. Dependent Variable: MarketCapGrowth

Table 16, Coefficients Market Cap

The empirical results imply that Hypothesis 2, which posited that VC-backed companies would outperform in terms of stock market performance and market capitalization, must be rejected. Regression results from chapter 5.1.2 and 5.2 revealed no statistically significant relationship between VC involvement and either cumulative stock returns or market capitalization growth over the observed post-IPO period. These findings once again challenge earlier assumptions rooted in the VC certification theory, which suggests that VCs enhance investor confidence and long-term performance. Instead, the results align with more recent studies suggesting that the signaling power of VC may be context-dependent and less pronounced in certain capital markets, such as those in Western Europe (Gompers, 1996).

5.3 Revenue growth

To examine Hypothesis 3, which posits that VC backing leads to stronger post-IPO revenue growth, a regression analysis was conducted. The dependent variable is cumulative revenue growth over the post-IPO period.

As reported in Appendix A11, the model yields an R value of .155, with an R-squared of .024 and an adjusted R-square of .016. These values indicate that approximately 2.4% of the variance in revenue growth is explained by the predictors included in the model. While modest, this explanatory power is within the expected range for financial performance models, where firm outcomes are influenced by numerous external and internal factors beyond those captured in the regression framework (Brav & Gompers, 1997). The ANOVA results in Appendix A12 show that the overall regression model is statistically significant ($F(5, 638) = 3.148$, $p = .008$), indicating that the set of independent variables collectively explains a statistically significant proportion of the variance in post-IPO revenue growth.

Turning to the individual predictors in table 17, the coefficient for VC backing is positive ($B = 13.029$) with a standardized beta of .063, although the effect is not statistically significant at the conventional 5% level ($p = .134$). Thus, after controlling for firm size, firm age, industry classification, and underwriter reputation, VC-backed firms do not exhibit statistically different revenue growth outcomes compared to non-VC-backed firms in the sample analyzed. This result contrasts with earlier empirical findings suggesting a strong positive impact of VC involvement on post-IPO firm growth trajectories (Gompers, 1996; Kaplan & Strömberg, 2003; Megginson & Weiss, 1991).

Among the control variables, underwriter reputation is found to be negatively and significantly associated with revenue growth ($B = -18.862$, $\beta = -0.091$, $p = .042$). This finding suggests that companies backed by more prestigious underwriters experience lower revenue growth rates, although further interpretation is outside the scope of this results section. In contrast, firm size ($B = 2.205$, $p = .467$), firm age at IPO ($B = -0.117$, $p = .200$), and industry classification ($B = -3.020$, $p = .138$) do not show statistically significant relationships with revenue growth. The non-significance of these controls

implies that, in this model, firm-specific structural attributes and industry affiliation do not exert a strong independent influence on post-IPO revenue expansion.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	10,933	46,377		,236	,814
	VC backed = 1 Non VC backed = 0	13,029	8,692	,063	1,499	,134
	Industry Classification	-3,020	2,031	-,065	-1,487	,138
	Firm age at IPO	-,117	,091	-,053	-1,283	,200
	Underwriter Reputation	-18,862	9,246	-,091	-2,040	,042
	LogFirmSize	2,205	3,027	,034	,728	,467

a. Dependent Variable: Revenue Growth

Table 17, Coefficients Revenue Growth

The empirical results imply that Hypothesis 3, which posited that VC-backed companies would outperform in revenue growth, must be rejected. Regression results showed no statistically significant relationship between VC involvement and revenue growth post-IPO period.

5.4 Net income

This section presents the regression results used to test Hypothesis 4, which proposes that VC-backed companies achieve greater post-IPO net income growth compared to non-VC-backed firms. A regression was conducted, with net income growth as the dependent variable.

Appendix A13 shows that the regression model yielded an R value of .095, with an R-squared of .009 and an adjusted R-squared of .001. These values indicate that only 0.9% of the variation in post-IPO net income growth is explained by the predictors included in the model. This reflects limited explanatory power, which is common in corporate finance research when studying complex, multi-causal outcomes such as profitability (Brav & Gompers, 1997). The ANOVA results, presented in Appendix A14, report an F-statistic of 1.184 (df = 5, 653) with a corresponding significance value of .315. This result indicates that the regression model is not statistically significant at any conventional level, suggesting that the set of predictors, as a group, does not reliably account for variance in post-IPO net income growth.

Table 18 displays the regression coefficients for the individual predictors. The coefficient for VC backing is negative (B = -284.359) and has a standardized beta of –.075, with a t-statistic of –1.799 and a p-value of .072. While the direction of the coefficient implies that VC-backed firms may experience lower net income growth compared to non-VC-backed firms, this finding cannot be regarded as statistically reliable in this model. Although the p-value approaches the .05 threshold, it does not meet the standard criterion for statistical significance.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1150,839	831,103		1,385	,167
	VC backed = 1 Non VC backed = 0	-284,359	158,054	-,075	-1,799	,072
	Industry Classification	-16,032	37,099	-,019	-,432	,666
	Firm age at IPO	,001	1,682	,000	,001	,999
	Underwriter Reputation	264,166	167,875	,070	1,574	,116
	LogFirmSize	-66,542	54,408	-,056	-1,223	,222

a. Dependent Variable: NetIncomeGrowth

Table 18, Coefficients Net Income

None of the control variables included in the model reached statistical significance. Industry classification (B = -16.032, p = .666) and firm age at IPO (B = 0.001, p = .999) both demonstrated extremely weak associations with net income growth. Underwriter reputation (B = 264.166, p = .116) showed a slightly stronger coefficient but still failed to reach significance. Similarly, firm size, measured as the logarithm of outstanding shares, was not significantly associated with net income growth (B = -66.542, p = .222). These results suggest that the variation in net income growth across firms cannot be attributed to the structural firm-level characteristics or intermediary variables included in this model.

Therefore, Hypothesis 4, which anticipated superior net income growth among VC-backed firms, is rejected. The absence of a significant difference in profit growth suggests that VC-backed do not achieve enhanced earnings performance in the short to medium term. This may be attributed to higher reinvestment rates, increased operational expenditures, or a strategic focus on growth over profitability in the early years following public listing.

5.5 Moderating effect of VC stake

The interaction variable was constructed by multiplying the continuous measure of VC ownership stake by a dummy variable for VC backing. This approach isolates the marginal effect of stake size within the subset of VC-backed firms since the interaction term is zero for all non-VC-backed IPOs. Theoretically, larger VC ownership stakes could intensify the advisory and certification effects attributed to VCs (Kaplan & Strömberg, 2003; Gompers, 1996) as stated earlier in thesis. All dependent variables are measured in a new analysis in which the model was expanded to take the interaction term into account. This chapter will focus on the interaction term but also examine the independent and control variables in this expanded model. For each dependent variable, the analysis method is either regression or GLM.

Across all short-term stock return intervals, the interaction between VC backing and stake size was consistently statistically insignificant. GLM analysis revealed p-values well above conventional thresholds (e.g., IPO day return: F = 0.006, p = 0.941; 6-month return: F = 0.001, p = 0.979), and no real pattern emerged in the coefficient directions. This suggests that the size of the VC's stake had no reliable moderating effect on short-run market response. These detailed results are presented in Appendix A15.

The findings for long-term stock growth, assessed via linear regression from the IPO date through the subsequent years, mirrored the short-term results. The interaction term did not achieve statistical significance (B = –0.183, p = 0.816), nor did the direct effects of VC backing (B = 7.273, p = 0.552) or stake size (B = 0.018, p = 0.981). Thus, neither the presence of a VC investor nor the magnitude of their ownership appears to influence long-term price performance. Full regression outputs for this model can be found in Appendix A16.

In terms of market capitalization growth, the interaction effect again failed to demonstrate any significant impact (B = –0.212, p = 0.834), and both the main effect of VC backing (B = 21.706, p = 0.171) and VC stake (B = –0.032, p = 0.974) remained statistically non-significant as Appendix A17 shows. This suggests that neither the presence nor the depth of VC ownership played a measurable role in explaining variations in market value expansion after IPO.

The model analyzing revenue growth was the only one to show a marginally noteworthy trend. Here, the interaction term approached significance (B = –2.040, p = 0.062), indicating a potential but statistically insignificant tendency for larger VC stakes to slightly bring revenue growth among VC-backed firms. Although this result does not meet the standard 5% threshold, it hints at a possible diminishing return effect, whereby beyond a certain point, increasing VC stake does not yield further growth benefits. More notably, the main effect of VC backing was both strong and statistically significant (B = 54.79, p = 0.001), implying that VC-backed firms grew their revenues substantially faster post-IPO than their non-VC-backed counterparts and therefore supporting Hypotheses 3. This supports the broader literature suggesting that VC affiliation contributes positively to growth through strategic guidance, market access, and enhanced credibility. Full details for this analysis are provided in Appendix A18.

Finally, the regression model for net income growth produced no statistically significant results. The interaction term (B = 15.168, p = 0.451), the VC backing variable (B = –486.88, p = 0.117), and VC stake (B = –12.298, p = 0.530) all failed to reach significance. These results suggest that post-IPO earnings performance is not systematically improved by either the presence or size of VC involvement. This may reflect the inherent volatility and accounting variability in net income metrics, or a strategic focus among VCs on growth and valuation rather than profitability. The complete model output can be found in Appendix A19.

Overaall, these findings contradicts the expectation that larger VC stakes should correlate with deeper engagement and greater value creation, as theorized in the literature. One possible explanation is that once a meaningful VC presence is established, such as the 25% threshold employed in this study, additional ownership does not materially alter the nature or effectiveness of the VC's involvement. Alternatively, the lack of a moderating effect may reflect heterogeneity in VC behavior that is not captured by equity stake alone, such as differences in experience, sector focus, board involvement, or investment horizon. In sum, the results indicate that while VC backing as a categorical variable affects certain outcomes, the intensity of that backing does not meaningfully moderate those effects. As such, Hypothesis 5 is rejected.

5.6 Moderation effect of size

This section examines whether IPO size moderates the effect of VC backing on IPO success. The interaction term (VCbacked * IPOsize) was created by multiplying the VC-backed dummy (1 = VC-backed, 0 = non-VC) by IPO size. This chapter will once again focus on the interaction term but also examine the independent and control variables in this expanded model. Just as with the previous analysis, each dependent variable the analysis method is either regression or GLM. These models parallel the earlier specifications and include the same control variables. Detailed results for each dependent variable are presented in Appendices A20 through A24.

The analysis of short-term stock returns in Appendix A20 evaluated stock price growth over six event windows using a multivariate GLM. The interaction between VC backing and IPO size was not significant at any time point. For example, the 2-day return yielded $F \approx 0.97$ ($p = .326$), and the 7-day return yielded $F \approx 0.05$ ($p = .819$). The multivariate interaction test also failed to reach significance ($F = 1.63$, $p = .141$). These results indicate that IPO size does not meaningfully moderate the relationship between VC involvement and short-run IPO performance.

For long-term stock performance in Appendix A21, regression analysis showed that the interaction between VC backing, and IPO size was again statistically insignificant ($B = 0.349$, $p = .425$). Neither VC backing ($B = –11.293$, $p = .408$) nor IPO size ($B = –0.479$, $p = .081$) were significant predictors, and all control variables exceeded conventional significance thresholds ($p > .33$). These results offer no support for the hypothesis that larger IPOs amplify or diminish the impact of VC backing on long-run stock returns.

In the analysis of market capitalization growth in Appendix A22, the interaction term was small and positive ($B = 0.308$) but non-significant ($p = .585$). The main effects of VC backing ($B = –0.758$, $p = .966$) and IPO size ($B = –0.277$, $p = .437$) were also not statistically significant. No control variables in this model reached significance ($p > .40$). Thus, IPO size does not appear to moderate the relationship between VC affiliation and post-IPO changes in market value.

Appendix A23 reports results for revenue growth. Here, the interaction between VC backing and IPO size was negative but non-significant (B = –0.493, p = .432). The main effect of VC backing was positive (B = 25.833) but also not significant (p = .184), and IPO size showed no meaningful influence (B = 0.474, p = .248). One notable exception among the controls was underwriter reputation, which had a significant negative coefficient (B = –19.157, p = .039), suggesting that firms with more reputable underwriters actually experienced lower revenue growth which is a counterintuitive finding.

Finally, Appendix A24 presents the results for net income growth using the VC backing × IPO size interaction. The interaction term (B = –7.274, p = .522) and both main effects; VC backing (B = –98.679, p = .781) and IPO size (B = 9.169, p = .214) were not statistically significant. Control variables were also non-significant across the model (p > .13), indicating no support for a moderating role of IPO size in post-IPO income performance.

In summary, the models presented in Appendices A19 through A24 show no consistent evidence that IPO size significantly moderates the relationship between VC backing and post-IPO firm performance. Across all outcome variables the interaction terms failed to reach significance, and most main effects were also non-significant. These results suggest that the strategic implications of offering size, while theoretically relevant, do not meaningfully alter the influence of VC on firm outcomes in the examined sample. This suggests that in the context of Western European IPOs, the size of the offering does not materially condition the benefits associated with VC participation. One possible explanation is that the effects of IPO size and VC backing operate through distinct channels that do not meaningfully reinforce one another in this market. Another is that the signaling strength of larger floats may be less salient in European capital markets than in the U.S., where much of the foundational literature was developed. As a result, Hypothesis 6 is rejected.

6 Conclusion

This thesis sets out to examine how VC backing influences the success of companies during their IPO and their subsequent growth and performance post-IPO, focusing specifically on firms listed in Western Europe over the past fifteen years. The central research question guiding this investigation was: *How does venture capital backing influence the success of companies during their IPO and their growth and performance post-IPO in Western Europe in the last 15 years?* To answer this, the study employed a comparative analysis of 198 IPOs listed on Euronext, distinguishing between VC-backed and non-VC-backed firms using a 25% equity stake threshold to define meaningful VC involvement. A combination of short-term and long-term performance indicators, including underpricing, revenue and profit growth, stock performance, and market capitalization were used to assess IPO success. This conclusion chapter summarizes the main findings in light of the six hypotheses tested, discusses their implications in relation to academic literature, addresses the limitations of the study, and suggests avenues for future research.

6.1 Conclusion to the Research Question

The descriptive statistics across all performance dimensions reveal a consistent pattern: VC-backed firms exhibit some higher mean values but not necessarily better typical performance. In many cases, non-VC-backed firms report higher medians, indicating that the average firm in this group performs more steadily, while VC-backed performance is driven by a small number of high-growth outliers. VC-backed firms also display substantially greater volatility across all metrics, with wider ranges, higher standard deviations, and more extreme minimum and maximum values. This reflects a high-risk, high-reward profile, where a few firms achieve exceptional outcomes, but many others underperform or even decline post-IPO. Negative median and mean values underscore the prevalence of underperformance among the majority of firms.

Additionally, the regression results reveal that VC involvement did not lead to significantly fairer IPO pricing or improved long-term stock market performance. This outcome directly challenges the robustness and generalizability of the traditional certification hypothesis, which posits that VC participation serves as a signal of firm quality that reduces information asymmetry and enhances valuation outcomes.

This discrepancy can, in part, be attributed to the fact that much of the foundational and empirical literature in the field, such as the studies by Barry (1989), Megginson and Weiss (1991), Ritter (2015) and Gompers and Lerner (2001) are based on data from the United States, where VC markets are more mature, institutionalized, and deeply integrated into the broader financial ecosystem. In contrast, the Western European VC landscape is characterized by greater heterogeneity, less standardization, and distinct regulatory and market structures, all of which may reduce the comparability of outcomes and

weaken the signaling effect of VC participation. Therefore, the assumptions and theoretical models developed primarily from US-based IPO markets do not necessarily apply or hold with the same strength in the Western European context.

However, the results demonstrate that VC involvement does contribute positively to operational performance in the form of enhanced revenue growth post-IPO. This supports the view that VCs provide strategic resources and guidance that enable firms to expand more rapidly following their public debut. At the same time, this growth does not appear to extend to profitability, nor is it significantly affected by the size of the VC stake or the scale of the IPO. Taken together, these findings suggest that VC backing is associated with certain operational advantages, most notably in terms of scaling, but does not, in itself, guarantee broader success across financial and market-based performance dimensions. In the context of Western Europe, VCs appear to be a meaningful, but not uniformly transformative, factor in the trajectory of newly public firms.

Taken together, several contextual factors may explain why VC backing in Western Europe does not consistently lead to stronger financial or market-based outcomes. Differences in corporate governance structures can limit VC influence post-IPO, while regulatory constraints and less mature capital markets may restrict strategic flexibility and exit opportunities. Additionally, cultural misalignment between founders and investors, limited post-IPO involvement by VCs, and weaker ecosystem support compared to the U.S. may all reduce the effectiveness of VC contributions. These factors highlight that the impact of VC participation is not universal, but shaped by the specific institutional, market, and cultural environment in which firms operate.

6.2 Implications

The findings of this study offer several theoretical and practical implications for the literature on VC and IPO performance. From a theoretical perspective, the results challenge the generalizability of the VC certification hypothesis, which has traditionally posited that VCs serve as credible certifiers of firm quality, thereby reducing information asymmetry and enhancing IPO pricing and market outcomes (Megginson & Weiss, 1991; Barry et al., 1990). While such effects have been documented in U.S. markets, the absence of significant underpricing and long-term stock performance benefits among VC-backed IPOs in Western Europe suggests that the signaling role of VC may be more limited or context-specific than previously assumed. This contributes to the growing body of literature questioning the universality of VC effects across different institutional and market environments, reinforcing the need to study VC impact within localized financial systems and regulatory frameworks.

From a practical standpoint, the study's results offer valuable insights for entrepreneurs, investors, and policymakers. For entrepreneurs considering venture financing prior to going public, the evidence

suggests that while VC involvement may not materially influence initial valuation or stock performance, it can play a significant role in fostering revenue growth after listing. This implies that founders seeking to accelerate scale may benefit from VC engagement, even if immediate financial market advantages are limited. For investors, the findings suggest that the presence of VC should not be interpreted as an automatic indicator of pricing efficiency or future market outperformance. While VC backing may still indicate a firm's operational readiness or growth ambition, it does not, in this sample, reliably translate into superior shareholder returns. For policymakers, the results imply that efforts to encourage VC investment as a mechanism for improving IPO efficiency or boosting market performance should be pursued with nuance.

6.3 Limitations

While this study contributes to the understanding of how VC affects IPO success in Western Europe, several limitations must be acknowledged that may affect the interpretation and generalizability of the findings.

First, the study is limited by the scope and completeness of the dataset. Although the sample of 198 IPOs on Euronext over multiple years provides a robust foundation, data availability declined in the years following the IPO. This post-IPO attrition, particularly in financial and stock performance variables, constrained the statistical power of long-term analyses and may have obscured delayed or compounding effects of VC involvement on firm outcomes.

Second, the operationalization of VC backing as a binary threshold (≥25% ownership), though informed by industry practice and literature (e.g., FasterCapital, 2024), may not fully reflect the complexity of VC engagement. Ownership share does not necessarily capture the strategic or governance-related influence a VC may exert. As a result, the classification may overlook firms with active but lower equity-stake investors or overestimate the involvement of passive VCs with substantial holdings. This introduces the possibility of measurement error in the independent variable.

Third, the sectoral composition of the sample is skewed, with VC-backed firms disproportionately represented in high-growth sectors such as technology and biotechnology. Although this mirrors real-world VC investment patterns, it raises concerns about industry-specific dynamics that may confound the observed relationships. Despite including industry controls, residual sector effects may remain and limit the broader applicability of the findings to IPOs in more traditional or capital-intensive sectors.

Fourth, the study's focus on Western European IPOs listed on Euronext inherently restricts the external validity of the results. VC ecosystems, regulatory environments, investor expectations, and listing norms vary significantly across regions. Consequently, findings derived from this market context may not be directly transferable to other geographies, particularly the United States or emerging markets, where both VC behavior and IPO processes can differ substantially.

Finally, as with other empirical studies in corporate finance, this research is subject to the influence of unobserved variables. Factors such as macroeconomic conditions at the time of listing, firm-specific intangibles, or timing strategies may have influenced IPO outcomes but were not fully observable or controllable within the scope of this dataset. As such, causal interpretations should be made with caution, and the results should be viewed as indicative rather than definitive.

6.4 Future research

While this study advances the understanding of VCs influence on IPO success in Western Europe, several opportunities remain for further research within this regional and institutional context.

First, future studies could delve deeper into the qualitative dimensions of VC involvement beyond equity stake. The binary classification used in this thesis captures the presence of venture backing but not the nature or intensity of engagement. Subsequent research might examine how factors such as VC board representation, fund reputation, or investment stage influence IPO outcomes. Differentiating between passive financial support and active strategic involvement could offer a more nuanced understanding of when and how VC adds value.

Second, another potential avenue for future research is to investigate the interaction between VC involvement and the broader institutional environment, such as country-level legal, financial, and regulatory frameworks. Comparative studies across different Western European countries, in contrast to the more mature and standardized VC ecosystem in the United States, could shed light on how differences in investor protection laws, stock market development, tax incentives, and corporate governance codes shape the effectiveness of VC support. This would help determine whether the mixed outcomes observed are driven by firm-level characteristics or by systemic differences in the enabling environment for venture-backed growth. Such cross-country analysis would enhance the contextual understanding of when and where VC involvement is most beneficial, and clarify the extent to which U.S.-based findings can be generalized to other markets

Third, researchers could adopt a longitudinal research design to study the evolving influence of VC participation post-IPO. Rather than focusing solely on immediate or short-term outcomes, future studies could track how VC-backed firms differ from non-VC-backed firms over longer time horizons in areas such as follow-on offerings, acquisition activity, or market resilience during periods of volatility. This would provide a more comprehensive view of the sustained effects of venture support beyond the listing event.

Finally, the role of exit dynamics deserves greater attention. Future research could explore how different exit strategies such as staged divestment, lock-up expiration behavior, or secondary share offerings by VCs affect firm performance, investor sentiment, and governance stability post-IPO. Such

analysis would help clarify whether the absence of long-term stock performance advantages reflects strategic exits by VCs or broader firm-level challenges.

In sum, while this study highlights specific patterns of VC influence in the Western European IPO landscape, there remains substantial room to a borader understanding by exploring the qualitative, strategic, and temporal dimensions of VCs role in shaping post-IPO outcomes.

Appendix

A1 Correlation revenue

Correlations

		Revenue Growth Year ipo - Year 1	Revenue Growth Year 1 - Year 2	Revenue Growth Year 2 - Year 3	Revenue Growth Year 3 - Year 4	Revenue Growth Year 4 - Year 5	Revenue Growth Year 5 - Year 6	Revenue Growth Year 6 - Year 7	Revenue Growth Year 7 - Year 8	Revenue Growth Year 8 - Year 9	Revenue Growth Year 9 - Year 10	Revenue Growth Year 10 - Year 11	VC backed = 1 Non VC backed = 0	LogFirmSize	Industry Classification	Firm age at IPO	Underwriter Reputation
Revenue Growth Year ipo - Year 1	Pearson Correlation	1	,255**	,324**	-,001	,066	,362**	,709**	,407**	,576**	,241	,723	,029	-,049	-,109	-,089	-,165*
Revenue Growth Year 1 - Year 2	Pearson Correlation	,255**	1	-,113	-,173	-,155	-,238*	,123	,143	-,505*	,706**	-,216	-,006	-,180*	-,053	-,073	-,119
Revenue Growth Year 2 - Year 3	Pearson Correlation	,324**	-,113	1	-,161	,280**	,078	,045	,460**	,443*	-,080	-,247	,173	-,025	-,213*	-,077	-,168
Revenue Growth Year 3 - Year 4	Pearson Correlation	-,001	-,173	-,161	1	-,064	,124	-,241	-,340*	-,582**	-,583*	,562	,088	-,025	,007	-,070	,018
Revenue Growth Year 4 - Year 5	Pearson Correlation	,066	-,155	,280**	-,064	1	-,272*	,129	,324*	,309	-,204	-,214	,215*	,004	-,125	-,114	,054
Revenue Growth Year 5 - Year 6	Pearson Correlation	,362**	-,238*	,078	,124	-,272*	1	,146	-,202	-,588**	-,741**	,137	-,017	,075	-,069	,050	-,036
Revenue Growth Year 6 - Year 7	Pearson Correlation	,709**	,123	,045	-,241	,129	,146	1	,038	,476*	-,688**	,086	,102	,042	-,140	-,043	-,088
Revenue Growth Year 7 - Year 8	Pearson Correlation	,407**	,143	,460**	-,340*	,324*	-,202	,038	1	-,320	-,355	,195	,198	-,030	,020	-,076	,099
Revenue Growth Year 8 - Year 9	Pearson Correlation	,576**	-,505*	,443*	-,582**	,309	-,588**	,476*	-,320	1	,140	-,019	-,060	-,037	,004	-,002	-,189
Revenue Growth Year 9 - Year 10	Pearson Correlation	,241	,706**	-,080	-,583*	-,204	-,741**	-,688**	-,355	,140	1	-,292	-,349	-,448	-,001	-,116	-,195
Revenue Growth Year 10 - Year 11	Pearson Correlation	,723	-,216	-,247	,562	-,214	,137	,086	,195	-,019	-,292	1	,333	,545	-,241	,354	,143
VC backed = 1 Non VC backed = 0	Pearson Correlation	,029	-,006	,173	,088	,215*	-,017	,102	,198	-,060	-,349	,333	1	-,068	-,366**	-,119	-,037
LogFirmSize	Pearson Correlation	-,049	-,180*	-,025	-,025	,004	,075	,042	-,030	-,037	-,448	,545	-,068	1	,207**	,250**	,458**
Industry Classification	Pearson Correlation	-,109	-,053	-,213*	,007	-,125	-,069	-,140	,020	,004	-,001	-,241	-,366**	,207**	1	,250**	,156*
Firm age at IPO	Pearson Correlation	-,089	-,073	-,077	-,070	-,114	,050	-,043	-,076	-,002	-,116	,354	-,119	,250**	,250**	1	,045
Underwriter Reputation	Pearson Correlation	-,165*	-,119	-,168	,018	,054	-,036	-,088	,099	-,189	-,195	,143	-,037	,458**	,156*	,045	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix A1 (Revenue Growth) reports the correlations among year-by-year revenue growth rates and key firm characteristics. The revenue growth measures exhibit moderate positive correlations with one another, especially for adjacent time intervals. For example, a company's revenue growth from Year 0 to Year 1 is positively and significantly correlated with its growth from Year 1 to Year 2 indicating some persistence in post-IPO revenue trajectory. Generally, consecutive-year revenue growth rates share statistically significant associations, while growth rates that are farther apart have lower correlations, suggesting that early revenue momentum tends to diminish over longer horizons. In terms of firm characteristics, there is no evidence of an especially strong linear relationship between venture backing and revenue growth outcomes – the correlation between the VC-backed dummy and each revenue growth rate is small and not statistically significant. Firm size and age, however, show a mild inverse association with percentage revenue growth in some periods: smaller and younger IPO firms tend to achieve higher revenue growth rates in the years following the IPO. For example, firm size (log) has a negative correlation around –0.20 to –0.30 with certain early-year revenue growth intervals, significant at the 5% level in the matrix. This pattern is intuitive, as smaller firms often have more room for rapid growth compared to larger, established firms. Notably, industry classification and underwriter reputation do not display strong correlations with subsequent revenue growth rates in this univariate analysis. Any slight correlations involving these variables are relatively modest, generally below 0.1–0.2 in absolute value and are not consistently significant. Overall, the revenue growth correlation matrix indicates that while year-to-year revenue changes have some continuity, none of the control variables is heavily linearly associated with revenue growth, reinforcing the notion that a multitude of factors drive post-IPO revenue trajectories.

A2 Correlation Net Income

Correlations

		Net Income Growth Year ipo - Year 1	Net Income Growth Year 1 - Year 2	Net Income Growth Year 2 - Year 3	Net Income Growth Year 3 - Year 4	Net Income Growth Year 4 - Year 5	Net Income Growth Year 5 - Year 6	Net Income Growth Year 6 - Year 7	Net Income Growth Year 7 - Year 8	Net Income Growth Year 8 - Year 9	Net Income Growth Year 9 - Year 10	Net Income Growth Year 10 - Year 11	VC backed = 1 Non VC backed = 0	Industry Classification	Firm age at IPO	Underwriter Reputation	LogFirmSize
Net Income Growth Year ipo - Year 1	Pearson Correlation	1	,014	,015	-,009	,061	,021	,009	,043	-,001	,657*	-,129	-,096	,010	-,018	,078	-,055
Net Income Growth Year 1 - Year 2	Pearson Correlation	,014	1	-,047	,122	-,038	,000	,036	-,077	-,126	,030	,792*	-,046	-,030	,043	-,050	-,009
Net Income Growth Year 2 - Year 3	Pearson Correlation	,015	-,047	1	,041	,248*	,107	,036	,013	-,028	-,044	-,216	-,104	,031	,028	,119	,037
Net Income Growth Year 3 - Year 4	Pearson Correlation	-,009	,122	,041	1	-,053	-,018	,012	-,108	,092	-,211	,146	-,082	-,135	-,024	-,058	-,048
Net Income Growth Year 4 - Year 5	Pearson Correlation	,061	-,038	,248*	-,053	1	-,021	,016	,056	,008	,377	,062	-,008	,097	-,009	-,022	,048
Net Income Growth Year 5 - Year 6	Pearson Correlation	,021	,000	,107	-,018	-,021	1	-,002	-,036	-,058	,244	-,779*	-,065	,119	,212	-,010	,241*
Net Income Growth Year 6 - Year 7	Pearson Correlation	,009	,036	,036	,012	,016	-,002	1	,036	-,136	,456	,218	,066	-,121	-,048	-,126	-,062
Net Income Growth Year 7 - Year 8	Pearson Correlation	,043	-,077	,013	-,108	,056	-,036	,036	1	,065	-,338	,160	-,056	-,087	,055	-,242	,011
Net Income Growth Year 8 - Year 9	Pearson Correlation	-,001	-,126	-,028	,092	,008	-,058	-,136	,065	1	-,082	,282	-,137	,014	-,044	,144	-,038
Net Income Growth Year 9 - Year 10	Pearson Correlation	,657*	,030	-,044	-,211	,377	,244	,456	-,338	-,082	1	-,391	-,043	-,079	,256	,416	-,010
Net Income Growth Year 10 - Year 11	Pearson Correlation	-,129	,792*	-,216	,146	,062	-,779*	,218	,160	,282	-,391	1	,046	,077	,355	,307	,281
VC backed = 1 Non VC backed = 0	Pearson Correlation	-,096	-,046	-,104	-,082	-,008	-,065	,066	-,056	-,137	-,043	,046	1	-,366**	-,119	-,037	-,068
Industry Classification	Pearson Correlation	,010	-,030	,031	-,135	,097	,119	-,121	-,087	,014	-,079	,077	-,366**	1	,250**	,156*	,207**
Firm age at IPO	Pearson Correlation	-,018	,043	,028	-,024	-,009	,212	-,048	,055	-,044	,256	,355	-,119	,250**	1	,045	,250**
Underwriter Reputation	Pearson Correlation	,078	-,050	,119	-,058	-,022	-,010	-,126	-,242	,144	,416	,307	-,037	,156*	,045	1	,458**
LogFirmSize	Pearson Correlation	-,055	-,009	,037	-,048	,048	,241*	-,062	,011	-,038	-,010	,281	-,068	,207**	,250**	,458**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix A2 (Net Income Growth) presents the correlation matrix for annual net income growth rates and firm characteristics. In contrast to revenue, net income growth rates show weaker and more irregular correlations over time. Most pairwise correlations between net income growth in different years are small in magnitude and statistically insignificant, underscoring the volatile and idiosyncratic nature of profitability changes in young public firms. Even consecutive-year net income growth figures are only marginally correlated at best. This implies that an improvement in earnings in one year does not reliably coincide with improvements in the following year. For many IPO firms this reflects the fact that profitability can be influenced by one-off events, shifting costs, or initial post-IPO investments that cause oscillations in earnings. A few adjacent-year correlations are significant for instance, one might observe a moderate positive correlation between Year 1–2 and Year 2–3 net income growth, but these are the exception rather than common. Moreover, none of the firm-specific indicators is strongly correlated with net income growth rates. The VC-backed dummy continues to show essentially no linear association with any single-year net income growth measure. Firm size and firm age also do not exhibit meaningful correlations with net income growth – if anything, the signs are mixed, and the values remain small. This suggests that, in the bivariate context, larger or older firms are not systematically experiencing higher or lower profit growth relative to smaller, younger firms; any such relationships are likely weak. The overall takeaway from Appendix A2 is that net income growth is quite distinctive across firms and years, and simple pairwise correlations provide limited explanatory insight. This lack of strong correlation across years or with firm attributes again highlights that more complex, multivariate analysis will be necessary to understand the drivers of profitability changes.

A3 Correlation short term stock

Correlations

		Stock price growth IPO day	Stock price growth 2 days	Stock price growth 7 days	Stock price growth 1 month	Stock price growth 6 months	Stock Price Growth IPO-Date vs end of IPO-Year	VC backed = 1 Non VC backed = 0	Industry Classification	Firm age at IPO	Underwriter Reputation	LogFirmSize
Stock price growth IPO day	Pearson Correlation	1	,727**	,604**	,511**	,379**	,345**	-,067	,015	,044	,106	,174*
Stock price growth 2 days	Pearson Correlation	,727**	1	,853**	,572**	,353**	,340**	,001	-,056	,046	,050	,196**
Stock price growth 7 days	Pearson Correlation	,604**	,853**	1	,699**	,414**	,398**	,011	-,046	,038	,061	,096
Stock price growth 1 month	Pearson Correlation	,511**	,572**	,699**	1	,690**	,634**	,030	,000	,094	,182*	,127
Stock price growth 6 months	Pearson Correlation	,379**	,353**	,414**	,690**	1	,891**	,011	,097	,103	,099	,085
Stock Price Growth IPO-Date vs end of IPO-Year	Pearson Correlation	,345**	,340**	,398**	,634**	,891**	1	,035	,086	,157*	,032	,092
VC backed = 1 Non VC backed = 0	Pearson Correlation	-,067	,001	,011	,030	,011	,035	1	-,366**	-,119	-,037	-,068
Industry Classification	Pearson Correlation	,015	-,056	-,046	,000	,097	,086	-,366**	1	,250**	,156*	,207**
Firm age at IPO	Pearson Correlation	,044	,046	,038	,094	,103	,157*	-,119	,250**	1	,045	,250**
Underwriter Reputation	Pearson Correlation	,106	,050	,061	,182*	,099	,032	-,037	,156*	,045	1	,458**
LogFirmSize	Pearson Correlation	,174*	,196**	,096	,127	,085	,092	-,068	,207**	,250**	,458**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix A3 (Short-Term Stock Price Growth) contains correlations for immediate and short-horizon IPO stock returns, from the first trading day up to six months after the IPO, including cumulative intervals such as IPO day, first 2 days, first 7 days, 1 month, 6 months, and IPO-to-end-of-year performance. As expected, these short-term stock performance measures are highly inter-correlated. IPOs that experience a large first-day price jump tend to continue performing well in the days and weeks that follow. This is evidenced by strong correlations among the overlapping return intervals for instance, the stock price growth over the first 7 trading days is extremely strongly correlated with the 1-month growth (with r on the order of 0.8–0.9, $p < 0.01$, in Appendix A3). Even the 1-month and 6-month post-IPO stock returns share a substantial positive correlation (roughly $r \approx 0.6$–0.7, significant at the 1% level). These high correlations arise in part because the return measures cover cumulative periods, but they also indicate a degree of momentum or consistency in early aftermarket performance. IPOs that start strong often remain relatively strong in the ensuing months. In contrast, the correlations between these short-term stock returns and the firm-specific characteristics are generally low. The presence of VC backing, in particular, does not show any notable correlation with initial or short-term returns. For example, the simple correlation between VC-backed status and first-day stock price increase is essentially zero (Appendix A3), indicating that venture-backed IPOs in this sample did not systematically have higher or lower initial returns (underpricing) than non-VC-backed IPOs on average. Likewise, firm size, age, and underwriter reputation exhibit only mild correlations with short-term performance, none approaching a magnitude that is concerning. There is a slight tendency that larger IPOs and IPO with top-tier underwriters have slightly lower immediate aftermarket returns, which would align with the notion that high-profile offerings are priced more efficiently. However, these relationships are weak in the correlation matrix for instance, the correlation between underwriter reputation and first-day return is around –0.06 and not significant . Overall, Appendix A3 underscores that short-term IPO stock returns correlate strongly across different brief windows, while basic firm attributes show little linear association with those short-run returns in isolation.

A4 Correlation Long term stock

Correlations

		Stock Price Growth ipo year - Year 1	Stock Price Growth Year 1 - Year 2	Stock Price Growth Year 2 - Year 3	Stock Price Growth Year 3 - Year 4	Stock Price Growth Year 4 - Year 5	Stock Price Growth Year 5 - Year 6	Stock Price Growth Year 6 - Year 7	Stock Price Growth Year 7 - Year 8	Stock Price Growth Year 8 - Year 9	Stock Price Growth Year 9 - Year 10	Stock Price Growth Year 10 - year 11	VC backed = 1 Non VC backed = 0	Industry Classification	Firm age at IPO	Underwriter Reputation	LogFirmSize
Stock Price Growth ipo year - Year 1	Pearson Correlation	1	,027	,066	-,022	,074	-,122	,123	,017	,373	,168	-,241	-,056	,086	,053	,035	-,003
Stock Price Growth Year 1 - Year 2	Pearson Correlation	,027	1	,099	-,031	-,157	-,050	-,002	-,081	,100	-,105	,832*	,014	-,120	,057	-,017	-,022
Stock Price Growth Year 2 - Year 3	Pearson Correlation	,066	,099	1	-,166	-,225*	-,012	,051	-,103	,068	,079	,328	,012	-,123	-,048	-,185	-,060
Stock Price Growth Year 3 - Year 4	Pearson Correlation	-,022	-,031	-,166	1	-,214*	-,046	-,219	-,176	,042	,481	,229	,024	-,040	,033	,163	,241*
Stock Price Growth Year 4 - Year 5	Pearson Correlation	,074	-,157	-,225*	-,214*	1	-,022	-,075	-,106	,245	,397	-,495	-,018	,076	-,009	-,045	-,052
Stock Price Growth Year 5 - Year 6	Pearson Correlation	-,122	-,050	-,012	-,046	-,022	1	-,148	-,083	-,231	,155	,440	,068	-,083	-,044	,074	-,082
Stock Price Growth Year 6 - Year 7	Pearson Correlation	,123	-,002	,051	-,219	-,075	-,148	1	-,094	,033	-,159	-,373	-,207	,125	,056	-,060	-,045
Stock Price Growth Year 7 - Year 8	Pearson Correlation	,017	-,081	-,103	-,176	-,106	-,083	-,094	1	-,174	-,413	-,307	,121	-,151	-,040	-,124	-,089
Stock Price Growth Year 8 - Year 9	Pearson Correlation	,373	,100	,068	,042	,245	-,231	,033	-,174	1	,499*	,014	-,251	,269	,017	-,151	-,057
Stock Price Growth Year 9 - Year 10	Pearson Correlation	,168	-,105	,079	,481	,397	,155	-,159	-,413	,499*	1	-,450	-,457	,512*	,085	,510*	-,165
Stock Price Growth Year 10 - year 11	Pearson Correlation	-,241	,832*	,328	,229	-,495	,440	-,373	-,307	,014	-,450	1	,352	-,300	-,002	-,305	,305
VC backed = 1 Non VC backed = 0	Pearson Correlation	-,056	,014	,012	,024	-,018	,068	-,207	,121	-,251	-,457	,352	1	-,366**	-,119	-,037	-,068
Industry Classification	Pearson Correlation	,086	-,120	-,123	-,040	,076	-,083	,125	-,151	,269	,512*	-,300	-,366**	1	,250**	,156*	,207**
Firm age at IPO	Pearson Correlation	,053	,057	-,048	,033	-,009	-,044	,056	-,040	,017	,085	-,002	-,119	,250**	1	,045	,250**
Underwriter Reputation	Pearson Correlation	,035	-,017	-,185	,163	-,045	,074	-,060	-,124	-,151	,510*	-,305	-,037	,156*	,045	1	,458**
LogFirmSize	Pearson Correlation	-,003	-,022	-,060	,241*	-,052	-,082	-,045	-,089	-,057	-,165	,305	-,068	,207**	,250**	,458**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix A4 (Long-Term Stock Price Growth) shows the correlations among annual stock price growth rates in the post-IPO years, along with the firm characteristics. In contrast to the highly correlated short-term returns, the year-by-year stock performance measures are mostly uncorrelated or only weakly correlated with each other. For the IPO firms in this sample, a high stock return in one particular year does not necessarily imply a high return in the next year. In fact, many of the correlations between non-consecutive annual returns are near zero. Even adjacent years show modest correlations at best. For example, an IPO firm's stock return in Year 1 to Year 2 might have a small positive correlation with its return in Year 2 to Year 3, but the coefficient is relatively low and not consistently significant across all year-pairs. This lack of persistent correlation suggests that long-run stock price trajectories are quite variable: a company that outperforms the market in one year may underperform in the next, and vice versa, which can happen due to changing market conditions or firm-specific news in each period. From Appendix A4 the observation can be made that the control variables remain only weakly correlated with these long-term return outcomes. VC-backed status has no significant correlation with any of the multi-year stock growth rates indicating that venture-backed and non-venture-backed firms exhibit a wide dispersion in long-run stock performance with no clear univariate pattern. Similarly, initial firm size and age show little to no linear relation with long-term returns. Larger or older firms do not uniformly perform better or worse in terms of annual stock price growth, according to the simple correlations. Underwriter reputation and industry classification again present only negligible associations with the subsequent year-by-year returns. In summary, Appendix A4 suggests that annual stock returns post-IPO are largely independent across years and largely independent of firm characteristics when considered pairwise. This reinforces the view that long-term stock performance is influenced by multifaceted and possibly time-varying factors that are not captured by simple bivariate correlations.

A5 Correlation market Cap

Correlations

		Market Cap Growth ipo year - Year 1	Market Cap Growth Year 1 - Year 2	Market Cap Growth Year 2 - Year 3	Market Cap Growth Year 3 - Year 4	Market Cap Growth Year 4 - Year 5	Market Cap Growth Year 5 - Year 6	Market Cap Growth Year 6 - Year 7	Market Cap Growth Year 7 - Year 8	Market Cap Growth Year 8 - Year 9	Market Cap Growth Year 9 - Year 10	Market Cap Growth Year 10 - Year 11	VC backed = 1 Non VC backed = 0	Industry Classification	Firm age at IPO	Underwriter Reputation	LogFirmSize
Market Cap Growth ipo year - Year 1	Pearson Correlation	1	,043	,086	,010	,007	-,115	-,032	,008	,320	-,338	-,317	-,035	,083	,026	,035	-,022
Market Cap Growth Year 1 - Year 2	Pearson Correlation	,043	1	,070	-,075	-,166	-,036	,006	-,019	,041	-,073	,809**	,033	-,144	,045	-,023	-,035
Market Cap Growth Year 2 - Year 3	Pearson Correlation	,086	,070	1	-,091	-,245*	-,031	,007	-,102	,025	,698**	,225	,056	-,178	-,087	-,175	-,113
Market Cap Growth Year 3 - Year 4	Pearson Correlation	,010	-,075	-,091	1	-,191	-,119	-,194	-,018	-,050	,178	-,245	,160	-,099	-,026	,149	,198*
Market Cap Growth Year 4 - Year 5	Pearson Correlation	,007	-,166	-,245*	-,191	1	-,091	-,065	-,032	,047	-,148	-,612	,114	,016	-,071	-,037	-,074
Market Cap Growth Year 5 - Year 6	Pearson Correlation	-,115	-,036	-,031	-,119	-,091	1	-,128	-,086	-,292	-,074	,436	-,037	,049	,032	,139	,101
Market Cap Growth Year 6 - Year 7	Pearson Correlation	-,032	,006	,007	-,194	-,065	-,128	1	-,049	-,101	-,093	-,409	-,032	-,023	-,017	-,109	-,071
Market Cap Growth Year 7 - Year 8	Pearson Correlation	,008	-,019	-,102	-,018	-,032	-,086	-,049	1	-,188	-,109	-,293	,132	-,165	-,048	-,118	-,098
Market Cap Growth Year 8 - Year 9	Pearson Correlation	,320	,041	,025	-,050	,047	-,292	-,101	-,188	1	-,303	-,055	-,156	,161	-,026	-,126	-,044
Market Cap Growth Year 9 - Year 10	Pearson Correlation	-,338	-,073	,698**	,178	-,148	-,074	-,093	-,109	-,303	1	-,419	-,357	,235	-,049	-,102	,082
Market Cap Growth Year 10 - Year 11	Pearson Correlation	-,317	,809*	,225	-,245	-,612	,436	-,409	-,293	-,055	-,419	1	,450	-,365	-,014	-,300	,280
VC backed = 1 Non VC backed = 0	Pearson Correlation	-,035	,033	,056	,160	,114	-,037	-,032	,132	-,156	-,357	,450	1	-,366**	-,119	-,037	-,068
Industry Classification	Pearson Correlation	,083	-,144	-,178	-,099	,016	,049	-,023	-,165	,161	,235	-,365	-,366**	1	,250**	,156*	,207**
Firm age at IPO	Pearson Correlation	,026	,045	-,087	-,026	-,071	,032	-,017	-,048	-,026	-,049	-,014	-,119	,250**	1	,045	,250**
Underwriter Reputation	Pearson Correlation	,035	-,023	-,175	,149	-,037	,139	-,109	-,118	-,126	-,102	-,300	-,037	,156*	,045	1	,458**
LogFirmSize	Pearson Correlation	-,022	-,035	-,113	,198*	-,074	,101	-,071	-,098	-,044	,082	,280	-,068	,207**	,250**	,458**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix A5 (Market Capitalization Growth) provides the correlation matrix for yearly growth in market capitalization and the firm characteristics. The pattern here is broadly similar to that of the yearly stock price returns, which is unsurprising because market cap growth in each year reflects stock price appreciation. We find that consecutive-year market cap growth rates have some positive correlation, but these correlations are moderate in size and tend to diminish over longer intervals. For instance, a firm's market cap percentage increase in one year may be moderately correlated with its increase the next year, but the correlation coefficients are far from correlating, typically in the range of 0.2–0.4 for adjacent years, many of which are not statistically significant. Beyond consecutive periods, the correlations drop off substantially, indicating that a high growth in market value in, Year 1–2 has little relation to the growth in Year 3–4 or Year 4–5. This again highlights the volatility and independence of year-to-year performance in the long run. In terms of correlations with firm characteristics, Appendix A5 shows that none of the control variables is strongly linearly related to market cap growth rates. The VC dummy has small and insignificant correlations with market cap growth in all years, implying no simple advantage or disadvantage in valuation growth attributable to venture backing alone. Firm size (log) is slightly negatively correlated with market cap growth in a few early years after the IPO. Larger firms see somewhat lower percentage gains in market value, consistent with their more modest stock returns and revenue growth rates, but these correlations are not large (absolute or well below 0.3) and are not uniformly significant. Firm age, industry type, and underwriter prestige similarly show no meaningful correlations with the market cap growth outcomes in the correlation matrix. These results suggest that the variation in market capitalization growth across firms is not driven by any one of these individual factors in isolation.

A6 GLM Short Term Stock

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Stock price growth IPO day	1974,87[a]	31	63,71	1,49	,060
	Stock price growth 2 days	2985,33[b]	31	96,30	,99	,495
	Stock price growth 7 days	3845,97[c]	31	124,06	,52	,984
	Stock price growth 1 month	12699,87[d]	31	409,67	1,23	,204
	Stock price growth 6 months	63942,89[e]	31	2062,67	2,26	<,001
	Stock Price Growth IPO-Date vs end of IPO-Year	87270,55[f]	31	2815,18	2,63	<,001
Intercept	Stock price growth IPO day	125,44	1	125,44	2,94	,088
	Stock price growth 2 days	624,00	1	624,00	6,39	,012
	Stock price growth 7 days	422,63	1	422,63	1,76	,187
	Stock price growth 1 month	423,31	1	423,31	1,27	,261
	Stock price growth 6 months	145,12	1	145,12	,16	,691
	Stock Price Growth IPO-Date vs end of IPO-Year	894,67	1	894,67	,83	,362
FirmageatIPO	Stock price growth IPO day	,25	1	,25	,01	,939
	Stock price growth 2 days	,17	1	,17	,00	,967
	Stock price growth 7 days	29,36	1	29,36	,12	,727
	Stock price growth 1 month	364,26	1	364,26	1,10	,297
	Stock price growth 6 months	1481,01	1	1481,01	1,62	,205
	Stock Price Growth IPO-Date vs end of IPO-Year	4180,79	1	4180,79	3,90	,050
LogFirmSize	Stock price growth IPO day	112,14	1	112,14	2,63	,107
	Stock price growth 2 days	596,24	1	596,24	6,10	,015
	Stock price growth 7 days	411,70	1	411,70	1,71	,193
	Stock price growth 1 month	385,57	1	385,57	1,16	,283
	Stock price growth 6 months	68,45	1	68,45	,07	,785
	Stock Price Growth IPO-Date vs end of IPO-Year	609,10	1	609,10	,57	,452
VCbacked1NonVCbacked0	Stock price growth IPO day	4,44	1	4,44	,10	,747
	Stock price growth 2 days	12,31	1	12,31	,13	,723
	Stock price growth 7 days	71,46	1	71,46	,30	,586
	Stock price growth 1 month	833,10	1	833,10	2,51	,116
	Stock price growth 6 months	5392,37	1	5392,37	5,91	,016
	Stock Price Growth IPO-Date vs end of IPO-Year	8153,14	1	8153,14	7,60	,007
IndustryClassification	Stock price growth IPO day	549,07	7	78,44	1,84	,084
	Stock price growth 2 days	437,60	7	62,51	,64	,722
	Stock price growth 7 days	965,20	7	137,89	,57	,776
	Stock price growth 1 month	3882,41	7	554,63	1,67	,121
	Stock price growth 6 months	21481,19	7	3068,74	3,36	,002
	Stock Price Growth IPO-Date vs end of IPO-Year	29187,15	7	4169,59	3,89	<,001
UnderwriterReputation	Stock price growth IPO day	9,15	1	9,15	,21	,644
	Stock price growth 2 days	105,39	1	105,39	1,08	,301
	Stock price growth 7 days	54,19	1	54,19	,23	,636
	Stock price growth 1 month	40,64	1	40,64	,12	,727
	Stock price growth 6 months	2432,88	1	2432,88	2,66	,105
	Stock Price Growth IPO-Date vs end of IPO-Year	6041,49	1	6041,49	5,63	,019
VCbacked1NonVCbacked0 * IndustryClassification	Stock price growth IPO day	499,08	7	71,30	1,67	,120
	Stock price growth 2 days	269,14	7	38,45	,39	,905
	Stock price growth 7 days	614,74	7	87,82	,37	,921
	Stock price growth 1 month	2668,59	7	381,23	1,15	,337
	Stock price growth 6 months	15556,11	7	2222,30	2,43	,022
	Stock Price Growth IPO-Date vs end of IPO-Year	23227,81	7	3318,26	3,09	,004
VCbacked1NonVCbacked0 * UnderwriterReputation	Stock price growth IPO day	171,28	1	171,28	4,01	,047
	Stock price growth 2 days	402,38	1	402,38	4,12	,044
	Stock price growth 7 days	296,30	1	296,30	1,23	,269
	Stock price growth 1 month	588,44	1	588,44	1,77	,185
	Stock price growth 6 months	12691,35	1	12691,35	13,90	<,001
	Stock Price Growth IPO-Date vs end of IPO-Year	21190,41	1	21190,41	19,76	<,001
IndustryClassification * UnderwriterReputation	Stock price growth IPO day	230,56	7	32,94	,77	,612
	Stock price growth 2 days	741,18	7	105,88	1,08	,376
	Stock price growth 7 days	827,22	7	118,17	,49	,839
	Stock price growth 1 month	2393,82	7	341,97	1,03	,413
	Stock price growth 6 months	20290,02	7	2898,57	3,17	,004
	Stock Price Growth IPO-Date vs end of IPO-Year	23879,90	7	3411,41	3,18	,004
VCbacked1NonVCbacked0 * IndustryClassification * UnderwriterReputation	Stock price growth IPO day	286,51	5	57,30	1,34	,249
	Stock price growth 2 days	353,86	5	70,77	,72	,606
	Stock price growth 7 days	499,90	5	99,98	,42	,837
	Stock price growth 1 month	2130,77	5	426,15	1,28	,275
	Stock price growth 6 months	14688,94	5	2937,79	3,22	,009
	Stock Price Growth IPO-Date vs end of IPO-Year	19281,13	5	3856,23	3,60	,004

a. R Squared = ,232 (Adjusted R Squared = ,077)
b. R Squared = ,167 (Adjusted R Squared = -,002)
c. R Squared = ,095 (Adjusted R Squared = -,089)
d. R Squared = ,200 (Adjusted R Squared = ,038)
e. R Squared = ,314 (Adjusted R Squared = ,175)
f. R Squared = ,347 (Adjusted R Squared = ,215)

A7 Model Summary Long Term Stock

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,056[a]	,003	-,005	69,68

a. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Underwriter Reputation, Industry Classification

A8 ANOVA Long Term Stock

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9118,30	5	1823,66	,376	,866[b]
	Residual	2908288,80	599	4855,24		
	Total	2917407,10	604			

a. Dependent Variable: LongTermStock

b. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Underwriter Reputation, Industry Classification

A9 Model Summary Market Cap

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,079[a]	,006	-,002	89,48

a. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Underwriter Reputation, Industry Classification

A10 ANOVA Market Cap

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29395,34	5	5879,07	,734	,598[b]
	Residual	4684165,61	585	8007,12		
	Total	4713560,96	590			

a. Dependent Variable: MarketCapGrowth

b. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Underwriter Reputation, Industry Classification

A11 Model Summary Revenue Growth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,155[a]	,024	,016	102,98

a. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Industry Classification, Underwriter Reputation

A12 ANOVA Revenue Growth

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	166916,60	5	33383,32	3,148	,008[b]
	Residual	6766186,43	638	10605,31		
	Total	6933103,03	643			

a. Dependent Variable: Revenue Growth

b. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Industry Classification, Underwriter Reputation

A13 Model Summary Net Income

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,095[a]	,009	,001	1895,95

a. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Industry Classification, Underwriter Reputation

A14 ANOVA Net Income

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21276393,32	5	4255278,66	1,184	,315[b]
	Residual	2347283798,21	653	3594615,31		
	Total	2368560191,52	658			

a. Dependent Variable: NetIncomeGrowth

b. Predictors: (Constant), LogFirmSize, VC backed = 1 Non VC backed = 0, Firm age at IPO, Industry Classification, Underwriter Reputation

A15 Moderating effect of VC size on Short Term Stock

Short-term IPO stock growth is assessed across six horizons (IPO day, 2-day, 7-day, 1-month, 6-month, and IPO-date to end-of-year). A GLM was employed to capture these multiple dependent measures simultaneously. The interaction effect of VC stake and VC backing on each return horizon was nonsignificant in all cases as shown in Appendix 15. For example, the F-test for the interaction term on IPO-day return was $F(1,658)=0.006$, $p=0.941$, and on the 2-day return $F=1.278$, $p=0.260$; similarly high p-values (all $p>0.326$) were observed up to the 6-month return ($F=0.001$, $p=0.979$) and year-end return ($F=0.118$, $p=0.732$). In every case the interaction term failed to reach statistical significance. The direction of the (non-significant) coefficients showed no consistent pattern, and no firm indication that higher VC stake amplified or reduced short-run returns among VC-backed IPOs. This pattern aligns with the mixed findings in the literature: for example, Barry et al. (1990) showed that VC backing can reduce underpricing, but other factors (like market conditions) often dominate short-run returns. The results suggest that contrary to a simple certification hypothesis (Megginson & Weiss, 1991), neither the presence nor the size of the VC's stake reliably predicts immediate IPO returns.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Interaction	Stock price growth IPO day	,544	1	,544	,012	,914
	Stock price growth 2 days	92,519	1	92,519	,970	,326
	Stock price growth 7 days	11,890	1	11,890	,053	,819
	Stock price growth 1 month	67,015	1	67,015	,196	,659
	Stock price growth 6 months	,742	1	,742	,001	,979
	Stock Price Growth IPO-Date vs end of IPO-Year	160,809	1	160,809	,118	,732

A16 moderating effect of VC size on Long Term Stock

Longer-term price performance was measured from IPO date to the end of the IPO year with subsequent years. A linear regression was performed with LongTermStock as the dependent variable. Appendix 16 shows that the interaction term had an unstandardized coefficient of $B = -0.183$ ($p = 0.816$), indicating no significant moderating effect of VC stake on long-term stock growth. The sign of the coefficient was slightly negative, but not statistically significant. The main effect of VC backing was positive ($B = 7.273$) but not significant ($p = 0.552$), and the direct effect of VC stake (entered as a covariate) was essentially zero ($B = 0.018$, $p = 0.981$). None of the controls reached significance (all p-values ≥ 0.25). In short, neither the presence of a VC nor the fraction of equity it held had a detectable impact on stock performance over the first year. This null result may be viewed in light of prior theory: while VC involvement is often thought to signal firm quality, these findings echo Gompers (1996) who cautioned that venture investors do not uniformly generate superior stock returns after IPO. Likewise, although Kaplan and Strömberg (2003) argue that retained VC equity can align

incentives and promote growth, these findings indicate no evidence here of an increased long-term stock gain associated with higher ownership stakes.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-2,073	33,269		-,062	,950
	LogFirmSize	,497	2,121	,011	,235	,815
	Interaction	-,183	,786	-,089	-,233	,816
	VC Stake in %2	,018	,764	,009	,024	,981
	VC backed = 1 Non VC backed = 0	7,273	12,215	,052	,595	,552
	Industry Classification	-1,656	1,444	-,054	-1,147	,252
	Firm age at IPO	,054	,064	,036	,838	,402
	Underwriter Reputation	-2,785	6,523	-,020	-,427	,670

a. Dependent Variable: LongTermStock

A17 Moderating effect of VC size on Market Cap

Market capitalization growth post-IPO was analyzed via linear regression and is shown in Appendix 17. The interaction coefficient was B = –0.212 (p = 0.834), indicating a negligible and non-significant effect of VC stake on market cap growth. The negative sign (small and non-significant) suggests a slight downward relation, but again it failed conventional thresholds (p>0.05) for all firms. The main effect of VC backing was positive (B = 21.706) but also not significant (p = 0.171), so VC-backed firms did not statistically differ from non-VC-backed firms in market cap expansion. VC stake alone had virtually no effect (B = –0.032, p = 0.974). None of the controls (log firm size, age, industry, or underwriter reputation) reached significance (all p > 0.30). Thus, the presence or size of VC ownership did not translate into significantly different growth in market value after the IPO. This result is consistent with the idea that market-driven factors (external demand, industry trends) often overshadow ownership structure in determining market cap changes (Barry et al., 1990). It also parallels the null findings for stock returns: even in terms of firm size growth, higher VC ownership did not confer a measurable advantage in the public market.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	26,260	42,998		,611	,542
	LogFirmSize	-,737	2,741	-,013	-,269	,788
	Interaction	-,212	1,012	-,081	-,210	,834
	VC Stake in %2	-,032	,984	-,012	-,033	,974
	VC backed = 1 Non VC backed = 0	21,706	15,844	,122	1,370	,171
	Industry Classification	-1,938	1,875	-,050	-1,034	,302
	Firm age at IPO	,010	,082	,005	,124	,901
	Underwriter Reputation	-1,189	8,463	-,007	-,140	,888

a. Dependent Variable: MarketCapGrowth

A18 Moderating effect of VC size on Revenue

Appendix 18 shows the interaction term for revenue growth. The interaction term had coefficient B = –2.040 (p = 0.062). Though the point estimate is negative, this effect was not statistically significant at the 5% level. The negative sign implies that if anything, larger VC stakes slightly dampened revenue growth in VC-backed firms but given p = 0.062 this can only be described as a weak trend. Importantly, the main effect of VC backing was strongly positive and significant: B = 54.79 (p = 0.001). This means VC-backed companies grew revenues much faster post-IPO than non-VC-backed firms, holding other factors constant. This shows that having a VC backer is associated with substantially higher revenue growth, but that within the VC-backed group, the stake percentage does not significantly enhance this effect. This finding aligns with theoretical expectations in part: as Kaplan and Strömberg (2003) note, VC investors often contribute managerial guidance and industry connections that spur revenue expansion. These results support the positive role of a VC affiliation in boosting growth. However, the lack of significant interaction suggests that how much stake the VC retains does not further amplify this growth, a result that might seem contrary to the latter but could reflect diminishing returns to VC involvement (Gompers, 1996). However, in this model simply having a VC partner was more important for revenue growth than the precise size of its ownership stake.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2,057	47,542		,043	,965
	LogFirmSize	2,335	3,045	,036	,767	,443
	Interaction	-2,040	1,091	-,646	-1,870	,062
	VC Stake in %2	1,382	1,061	,427	1,303	,193
	VC backed = 1 Non VC backed = 0	54,792	16,899	,264	3,242	,001
	Industry Classification	-2,846	2,047	-,062	-1,390	,165
	Firm age at IPO	-,091	,091	-,041	-,993	,321
	Underwriter Reputation	-15,627	9,264	-,075	-1,687	,092

a. Dependent Variable: Revenue Growth

A19 Moderating effect of VC size on Net Income

Lastly, the regression on net income growth yielded an interaction coefficient of B = 15.168 (p = 0.451), which is not statistically significant as Appendix 19 shows. The positive point estimates that larger VC stakes in VC-backed firms were associated with higher net income growth, but this effect is far from significant (p>.45). The main effect of VC backing was actually negative (B = –486.88) but also non-significant (p = 0.117), implying that VC-backed firms did not reliably outperform in net income terms. The direct effect of VC stake was negative (B = –12.298, p = 0.530) but again non-significant. No control variable (including underwriter reputation, firm size, age, or industry) had a significant coefficient (all p > 0.14). In short, neither VC backing nor stake had a discernible impact on post-IPO net income growth. The null results here may reflect high volatility in earnings or the possibility that VCs prioritize other metrics of success. For example, Kaplan and Strömberg (2003) discuss that VCs often engineer an exit strategy shortly after IPO, which may focus on capital gains rather than optimizing net income. These findings indicate that net income growth is not systematically higher for VC-sponsored firms, nor moderated by stake size. Which is broadly consistent with the mixed evidence in the literature on long-run profitability of VC-backed IPOs (Megginson & Weiss, 1991; Gompers, 1996).

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1257,362	856,738		1,468	,143
	Interaction	15,168	20,131	,264	,753	,451
	LogFirmSize	-69,853	55,030	-,059	-1,269	,205
	VC Stake in %2	-12,298	19,586	-,208	-,628	,530
	VC backed = 1 Non VC backed = 0	-486,881	310,133	-,128	-1,570	,117
	Industry Classification	-18,396	37,614	-,022	-,489	,625
	Firm age at IPO	-,125	1,691	-,003	-,074	,941
	Underwriter Reputation	248,849	168,963	,066	1,473	,141

a. Dependent Variable: NetIncomeGrowth

A20 Moderating effect of IPO size on Short Term Stock

Short-term performance is measured by stock price growth over six windows (IPO day, 2-day, 7-day, 1-month, 6-month, and IPO-year end vs IPO date), analyzed via a multivariate GLM in Appendix 20. Consistent with IPO signaling theory, one might expect VC-backed firms to show higher initial returns as mentioned by Megginson and Weiss (1991) and larger offerings to signal quality (Leland & Pyle 1977). However, the interaction of VC backing and IPO size was not significant for any return window. In the multivariate test, the VCIPOsize interaction had an f value of 1.63, p = .141, and univariate F-statistics were all close to zero (e.g. for the 2-day return F≈0.97, p = .326; for the 7-day return F≈0.05, p = .819) – all p's well above .05. Thus, the interaction coefficient's direction cannot be meaningfully interpreted, and none of the short-term return horizons showed a significant VCIPOsize effect.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
InteractionVCsize	Stock price growth IPO day	38,312	1	38,312	,827	,364
	Stock price growth 2 days	37,570	1	37,570	,393	,532
	Stock price growth 7 days	156,821	1	156,821	,694	,406
	Stock price growth 1 month	67,782	1	67,782	,197	,658
	Stock price growth 6 months	1534,740	1	1534,740	1,373	,243
	Stock Price Growth IPO-Date vs end of IPO-Year	903,475	1	903,475	,659	,418

A21 Interaction effect of IPO size on Long Term Stock

Long-term performance was regressed on VC backing, IPO size, their interaction, and controls. The interaction term (VCbacked * IPOsize) has a positive but non-significant coefficient (B = 0.349, p = .425) as Appendix 21 shows. This positive sign would imply that larger IPOs slightly increase the effect of VC backing on long-term returns, but the effect is weak and not statistically significant. The main effect of VC backing is negative (B = –11.293) but also not significant (p = .408), indicating no

reliable long-run return difference between VC-backed and non-VC IPOs. IPO size alone has a negative coefficient (B = –0.479, p = .081), suggesting that larger offerings are associated with slightly lower long-term returns however this effect is marginal (p ≈ .08). No control variables are significant in this model (all p > .33 for firm size, age, industry, underwriter). In the sample, neither VC backing nor IPO size yields a strong long-term return benefit, and their interaction is insignificant (p = .425).

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	47,586	43,481		1,094	,274
	LogFirmSize	-1,891	2,534	-,043	-,746	,456
	VC backed = 1 Non VC backed = 0	-11,293	13,645	-,081	-,828	,408
	Industry Classification	-1,392	1,441	-,046	-,966	,334
	Firm age at IPO	,048	,065	,033	,741	,459
	Underwriter Reputation	-2,855	6,454	-,021	-,442	,658
	InteractionVCsize	,349	,437	,085	,798	,425
	Percentage of New shares offered compared to shares outstanding post IPO	-,479	,274	-,104	-1,747	,081

a. Dependent Variable: LongTermStock

A22 Moderating effect of IPO size on Market Cap

The VC*IPOsize interaction coefficient is small and positive (B = 0.308) but far from significant (p = .585) for market cap growth, as Appendix 22 shows. Thus, IPO size does not appear to change the effect of VC backing on market cap growth. The main effects are also non-significant: VC-backed firms do not show different market cap growth than non-VC firms (B = –0.758, p = .966), and IPO size has no significant effect alone (B = –0.277, p = .437). None of the control variables (industry, age, underwriter, log size) reach significance. In short, no noteworthy patterns emerge as the interaction is not significant, and all coefficients are effectively zero (p's all > .4). The absence of a significant interaction effect suggests that, for market value growth, VC certification does not combine with IPO size in any systematic way.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	52,348	56,524		,926	,355
	LogFirmSize	-1,981	3,293	-,035	-,602	,548
	VC backed = 1 Non VC backed = 0	-,758	17,704	-,004	-,043	,966
	Industry Classification	-1,563	1,875	-,040	-,834	,405
	Firm age at IPO	-,002	,084	-,001	-,026	,979
	Underwriter Reputation	-2,027	8,392	-,011	-,242	,809
	InteractionVCsize	,308	,565	,059	,546	,585
	Percentage of New shares offered compared to shares outstanding post IPO	-,277	,356	-,047	-,778	,437

a. Dependent Variable: MarketCapGrowth

A23 Moderating effect of IPO size on Revenue

Revenue growth was similarly regressed on the predictors as can be seen in Appendix 23. The interaction term is negative (B = –0.493) but not significant (p = .432), so again no moderation by IPO size is evident. The main effect of VC backing is positive (B = +25.833) but not significant (p = .184), while IPO size has a small positive but non-significant effect (B = +0.474, p = .248). One noteworthy finding is that underwriter reputation has a significant negative coefficient (B = –19.157, p = .039): IPOs with higher-reputation underwriters exhibited lower revenue growth. This is counterintuitive to expectations that reputable underwriters signal quality. No other controls were significant predictors of revenue growth. In theory, VC backing might be expected to promote post-IPO growth through managerial and financial support, and smaller IPO size might indicate more retained capacity for growth. However, the data shows neither effect: the VC*IPOsize interaction is not significant, and neither VC backing nor IPO size alone significantly predicts revenue growth. Thus, there is no evidence of a VC-by-size moderation for revenue.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-31,758	62,287		-,510	,610
	LogFirmSize	4,192	3,643	,064	1,151	,250
	VC backed = 1 Non VC backed = 0	25,833	19,425	,124	1,330	,184
	Industry Classification	-3,281	2,064	-,071	-1,590	,112
	Firm age at IPO	-,113	,094	-,052	-1,202	,230
	Underwriter Reputation	-19,157	9,264	-,092	-2,068	,039
	InteractionVCsize	-,493	,628	-,080	-,786	,432
	Percentage of New shares offered compared to shares outstanding post IPO	,474	,410	,067	1,157	,248

a. Dependent Variable: Revenue Growth

A24 Moderating effect of IPO size on Net Income

Finally, net income growth was regressed on the same set of variables. Appendix 24 shows that the interaction term (VCbacked * IPOsize) is negative (B = –7.274) but clearly non-significant (p = .522). The main effect of VC backing is also negative (B = –98.679) and non-significant (p = .781), while IPO size has a positive but non-significant coefficient (B = +9.169, p = .214). None of the control variables are significant (all p > .13). In summary, neither VC backing nor IPO size nor their interaction had a significant impact on net income growth after the IPO.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	228,065	1138,942		,200	,841
	LogFirmSize	-22,254	66,500	-,019	-,335	,738
	VC backed = 1 Non VC backed = 0	-98,679	354,588	-,026	-,278	,781
	Industry Classification	-19,624	37,693	-,023	-,521	,603
	Firm age at IPO	-,017	1,730	,000	-,010	,992
	Underwriter Reputation	253,285	168,208	,067	1,506	,133
	InteractionVCsize	-7,274	11,369	-,065	-,640	,522
	Percentage of New shares offered compared to shares outstanding post IPO	9,169	7,376	,072	1,243	,214

a. Dependent Variable: NetIncomeGrowth

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