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How does the capital structure of small-cap VC-backed US companies influence their growth trajectory?

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Abstract

This paper aims to examine the relationship between the capital structure of Venture Capital backed small-cap companies operating out of the US. To achieve this, a sample size of approximately 120 VC-backed small-cap companies were selected to be investigated. The companies were analyzed in a time period of 6 years, with the capital structure being the independent variable represented by assets-to-liabilities ratio as a measure, and the growth trajectory being the dependent variable represented by the change in operating revenue. We discovered a moderate positive correlation between capital ratio and growth trajectory utilizing statistical analysis and resource based view. The number of employees used to evaluate company size, however, did not significantly correlate with growth. The study can be very valuable for stakeholders and investment strategies and acts as a foundation for further investigations in this area.

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1. Introduction

1.1 Background

The growth and development of small-cap businesses have been greatly accelerated in recent years by venture capital (VC), which has had a huge impact on the global economy. Technology, healthcare, and financial sectors have all undergone radical change as a result of VC-backed businesses' promotion of innovation, creation of jobs, and stimulation of economic growth. These small-cap firms' capital structure, which consists of a combination of equity, debt, and hybrid instruments—financial securities that combine traits of both debt and equity financing—plays a crucial role in determining their growth trajectory (Tuovila, 2023).

For a variety of stakeholders, it is really important to comprehend the complex relationship between the financial structure of VC-backed small-cap companies and their growth trajectory. This knowledge can be used by entrepreneurs and business owners to choose the finance options and expansion plans that are optimal for their ventures. Investors and venture capitalists can use these insights to identify high-potential businesses and evaluate the rewards and risks of various investment opportunities. Governments and politicians can also make use of this knowledge to create efficient programs and policies that assist the expansion of small-cap companies and encourage economic growth.

Given the growing significance of VC-backed small-cap companies in the current global economy, it is crucial to conduct a thorough examination of the variables affecting their capital structure and growth trajectory. By investigating how these factors interact, this study seeks to fill a vacuum in the literature and offer insightful information to business people, investors, and policymakers who want to make the most of small-cap firms' capacity for innovation and economic growth.

But what do we mean by Venture Capital? Venture Capital is a sort of private equity and type of financing that investors direct and provide toward startups that have a high potential for growth in the long-term (Hayes, 2023). This capital comes from well-off investors, investment banks

and other financial institutions. It doesn't always come in the form of money but also as technical and managerial expertise (Hayes, 2023). Venture capital is mostly allocated towards small companies with a high growth and expansion potential (Hayes, 2023).

In the context of this study, small-cap VC-backed firms are those with a market value of \$250 million to \$2 billion US dollars (Barone, 2023). According to their market capitalization mentioned before, companies are often categorized as "small cap" in the financial world (Baker & Martin, 2011). By concentrating on small-cap VC-backed companies, we are able to study a market segment that is active, full of potential, but also rife with dangers and uncertainties.

Further, this study has limited the data sample to US companies. Several factors impacted the decision to focus the investigation on businesses situated in the United States. In general, the venture capital market in the United States is the largest and most established in the world (Gompers & Lerner, 2001). The US is home to a large number of VC-backed enterprises in a variety of industries, allowing for a full and insightful analysis. The financial and regulatory climate in the United States has also had a considerable impact on the development of the venture capital industry today, making it an ideal location to research the dynamics of capital structure in VC-backed companies (Kaplan & Strömberg, 2001). By focusing on US corporations, it is hoped that this study will provide insights that are both locally appropriate and potentially transferable and useful in other contexts.

Therefore, this thesis aims to make two significant contributions to our knowledge of the growth of small-cap VC-backed enterprises. Firstly, by connecting capital structure to company growth, it adds to the corpus of existing research. Secondly, it provides managers and investors in these organizations with useful information by showing the effects of capital structure choices on growth.

1.2 Problematization

The existing study on small-cap enterprises that are backed by venture capital has not thoroughly studied the relationship between their capital structure and growth trajectory. The vast majority of the available research is centered on the effect that venture capital financing has on overall business performance. This research mostly ignores the intricacies of capital structure composition as well as the impact that this has on growth. In order to fill this research gap, a more in-depth analysis of the ways in which capital structure affects the strategic decisions and outcomes of small-cap VC-backed enterprises is required.

1.3 Purpose

The purpose of this thesis is to study the relationship between the financial structure of small-cap companies that are supported by venture capital and the growth trajectory of those companies. This study aims to improve our understanding of the role that capital structure plays in defining the strategic direction of small-cap VC-backed companies by conducting an in-depth investigation into a variety of capital structure configurations and the distinct consequences each of these configurations has for the growth and expansion of a company.

1.4 Research question

The guiding research topic for this thesis is:

- *“How does the capital structure of small-cap VC-backed US companies influence their growth trajectory?”*

1.5 Research limitations

This research acknowledges a number of limitations, each one of which has the potential to limit its applicability. To begin, the research will be limited by the availability of data on the capital structure of small-cap VC-backed companies in the US. Furthermore, by only including US

companies the generalizability of the study may be diminished due to differing geographical factors such as regulatory frameworks and laws. However, the aim is still for the findings to be applicable to small cap VC-backed companies that operate under similar laws and regulatory frameworks as those in the US. Secondly, the primary focus of the thesis will be an investigation into the relationship between capital structure and growth trajectory. This will be done without taking into consideration some, but not all other factors that may be significant, such as the macroeconomic environment or the expertise of the management. In conclusion, the focus on small-cap companies may make it more difficult to generalize the findings to larger venture capital-backed businesses. In spite of these limitations, the study aims to provide important new insights into the complex connection that exists between the financial structure of small-cap VC-backed companies and the strategic decisions those companies make. Lastly, the amount of time we have available to perform our investigation and analysis is limited.

2. Literature Review and Theoretical Framework

2.1 Literature review

The study of the literature provides a summary of the theories and studies that have been done on how the capital structure of small-cap VC-backed companies affects their growth trajectory. To lay the groundwork for the next theoretical framework and analysis, this section analyzes important works and viewpoints on venture capital funding, international business expansion, and capital structure theory.

2.2 Resource-Based View, Financial Structure and Small Firm Growth

The Resource-Based View (RBV) is a well-known theoretical paradigm that describes how resources affect a firm's competitive advantage and performance. According to the notion, a firm's distinct resources and competencies can be used to develop strategies that result in a sustained competitive advantage (Barney, 1991). When applied to small business growth, the RBV becomes critical in understanding how resources, particularly financial resources, influence performance.

Chittenden, Hall, and Hutchinson (1996) provide useful insights on the significance of financial resources in small firm growth. The authors observe that small enterprises' access to capital markets and, as a result, their financial structure have significant implications for their growth. According to the authors, small businesses frequently suffer from a “financial gap”, a circumstance in which enticing investment prospects cannot be realized due to a lack of available external capital.

This financial disparity might be regarded from the perspective of RBV as a limitation in the firms' resources, hence limiting their potential for expansion. Small businesses must actively organize their financial resources to close this gap. The financial resources they employ, whether stock or debt, create their financial structure and, as a result, determine their growth trajectory (Chittenden et al., 1996).

The researchers emphasize that financial structure is a strategic decision that can have a major impact on a firm's success, not only a product of capital market and firm-level features. Small businesses with a flexible financial structure that can adjust to changing market conditions are more likely to have a competitive edge, supporting the RBV's principles.

According to Chittenden et al. (1996), the ability of a firm to successfully acquire and manage financial resources is a valuable capability that can differentiate successful small firms from their less successful competitors. It reaffirms the notion that resources are more than just inputs to production and may serve as the foundation for strategic decisions that influence business growth and performance.

However, while the financial structure can be a strategic resource for small businesses, it is not without its issues. The authors explore many financial structural difficulties, such as the cost of external funding, the risk of a financial crisis, and agency challenges that small businesses must manage in order to achieve long-term success.

2.3 Capital Structure Theory and Venture Capital Financing

The combination of debt, equity, and hybrid instruments that businesses utilize to finance their operations and expansion is examined by capital structure theory. Specifically focusing on venture capital funding and how it affects businesses' capital structure decisions, Cumming (2005) examines the capital structure in venture finance. The study emphasizes how crucial it is to take into account the distinctive features of venture capital funding when examining the capital structure of VC-backed enterprises because these businesses have different opportunities and difficulties than non-VC-backed businesses. Cumming's work offers important new understandings into the variables that can affect the growth trajectory of small-cap VC-backed enterprises by investigating the interplay between venture capital financing and capital structure.

The article “ Adverse selection and Capital Structure: Evidence from Venture Capital” provides insight into how the capital structure decisions of VC-backed companies affect their risk-taking,

internationalization efforts and their growth trajectory (Cumming, 2005). The article uses original empirical research to examine the relationship between capital structure and the performance of VC-backed companies (Cumming, 2005). To conduct this research, a large sample of 10,000 VC-backed companies from around the world was used. The statistical methods used to analyze the data include Ordinary Least Squares regression analysis and logistic regression analysis (Cumming, 2005). The author takes into account firm-specific factors and industry characteristics that may affect the relationship between the performance of VC-backed firms and their capital structure (Cumming, 2005).

Key findings made in the article by the author include that capital structure has a seemingly big impact on the growth trajectory of VC-backed companies. It is shown in the research that VC-backed companies financed with a higher degree of debt tend to grow slower than those with lower levels of debt. Cumming explains this by pointing to the fact that highly leveraged firms are more sensitive to financial distress and are therefore less able to invest in growth opportunities (Cumming, 2005). However, it is also shown throughout the article that companies with higher levels of debt tend to be more risk-taking in order to generate higher returns. This behavior is illustrated by the incentive for high leveraged firms to generate big returns in order to avoid default (Cumming, 2005).

The strengths of the article lies in its insights into a large number of VC-supported companies and how their capital structure affects their performance and strategy decisions. The study's findings also have significant practical implications for policymakers, investors, and entrepreneurs in the venture capital industry. Furthermore, strengths lie in the study's research methods and its statistical analysis of its data, as well as the control of firm-specific and industry-level characteristics that may have implications on the relationship between the capital structure and the performance and internationalization strategy of these firms.

The main weakness of the article may be that it was written approximately fifteen years ago. With an economy that has changed drastically over the same time span, there is some risk that the findings in the article could be outdated. Factors such as the internet and born globals were not as prominent back in 2006, when the article was published, and are therefore not included in

the analysis, leading to factors that have a great impact on today's economy being left out of the study.

Overall, "Adverse Selection and Capital Structure: Evidence from Capital Structure" written by Douglas J. Cumming highlights the importance of capital structure decisions in relation to the growth and internationalization of VC-supported companies. Cumming's findings suggest that firms should take their capital structure into careful consideration when making decisions regarding growth and the development of strategy, and through a balanced approach to debt and equity financing, the growth prospects of VC-backed companies can be optimized while minimizing the risks associated with financial distress (Cumming, 2006). While the study has its limitations, its methodology and insight into the topic at hand provides an important piece of information and research for both practitioners and researchers.

Moreover, Douglas J. Cumming in another article "Capital structure in venture finance" a primarily theoretical approach is used to analyze the relationship between capital structure and the growth trajectory and global strategy of VC-backed companies. The author mainly relies on existing academic research, industry data, and case studies to support his arguments. The paper focuses on the relationship between the capital structure of these firms and their ability to obtain sustainable growth (Cumming, 2007). The importance of capital structure in shaping decision-making by VC-backed companies is further highlighted.

The paper begins by reviewing the existing literature on capital structure and venture finance. A theoretical framework is then developed in order to help the reader understand the role of capital structure in shaping the decision-making of VC-backed firms (Cumming, 2007). Cumming makes the point that the way the capital structure is set up has an effect on the firm's ability to attract follow-on investments, engage in mergers and acquisitions, and expand into new markets (Cumming, 2007). Further, the author also draws on data from industry surveys and reports to provide insight into the capital structure of VC-backed firms to further provide more data in the capital structure components compared to its "Adverse Selection and Capital Structure: Evidence from Venture Capital" (2005).

Throughout the paper, the author uses case studies to illustrate the arguments made and gives real examples of how the growth trajectory and the global strategy of VC-backed companies can be impacted by their capital structure. For example, a pair of cases he mentions are the cases of Facebook and Google who have maintained low levels of debt while experiencing rapid growth into new markets (Cumming, 2007).

One of the key findings made by Cumming in his article is that venture-backed companies tend to have lower leverage ratios compared to non-VC-backed firms, which is due to the fact that venture capital firms require a significant stake of the backed company's equity share in exchange for their investment (Cumming, 2007). As a result of that, VC-backed companies have less access to debt financing, which can potentially impact their growth trajectory (Cumming, 2007). However, the potential benefits of a low-leverage capital structure for VC-backed companies are also highlighted in the paper. The author notes that these firms should have the ability to maintain more flexibility in their decision-making process and avoid the risks that come with high levels of debt (Cumming, 2007).

Further, other important notations are made by Cumming in the context of the research question of this paper. The author discusses the impact the capital structure has on the global strategy applied by VC-backed firms and it is noted that the internationalization of these companies is mainly facilitated by their ability to access global markets and that depending on how their capital is structured, they may have more or less flexibility when doing so (Cumming, 2007).

While the paper does bring forth strong arguments, it also possesses some weaknesses that may limit research. The article includes no original empirical studies made by Cumming himself; instead, the article is mainly based on case studies and a range of other sources that he uses to develop his theoretical framework. While the case studies do give an insight into certain situations where the points he makes have been applicable to real-world situations, an overreliance on them leads to the question of the generalizability of the findings and situations being a valid concern. Moreover, the author further cites several studies and data sources that give a degree of credibility to his findings, but some of the analysis is based on assumptions and

hypothetical scenarios, and as a result, the conclusions made in the article may not be fully aligned with the real world experiences of VC-backed companies.

Further, the article's focus on the capital structure may lead to other factors that affect the growth trajectory and global strategy of VC-backed firms being overlooked. For example, the quality of the management team, the competitive landscape of the industry, and the strength of the company's intellectual property are all overlooked. Cumming also leaves out cultural differences, regulatory barriers, and the availability of local talent and resources, which are traditionally seen as factors that impact the success of firms in foreign markets. Due to this, the article can be perceived as overly simplistic.

In conclusion, the strengths of this article in relation to this paper's research question lie in its theoretical framework, the case studies it does use, valuable insights into VC-backed companies, and the relevance of the topic Cumming discusses.

2.3.1 VC financing moral hazard, learning and adaptation

Additionally, Bergemann and Hege's (1998) work "Venture capital financing, moral hazard, and learning" provides excellent insights into venture capital financing, which will further develop the thesis.

Venture capital financing, according to Bergemann and Hege (1998), is critical to addressing moral hazard issues that can arise between investors and entrepreneurs. They emphasize the notion that moral hazard can lead to unproductive investments or poor resource allocation. According to the authors, venture capitalists are well-equipped to address such difficulties due to their considerable expertise in managing high-risk investments and their ability to provide both financial and non-financial support in the form of mentoring, strategic guidance, and networking opportunities. Because of their vast expertise in managing high-risk investments, the authors believe venture capitalists are well-equipped to manage such difficulties.

Bergemann and Hege (1998) study the learning component of venture capital financing as well as the moral hazard that it entails. They suggest that by monitoring and analyzing the growth of the companies in their portfolios, venture capitalists can help lessen the information asymmetry that exists between investors and entrepreneurs. Continuous learning and evaluation allow venture capitalists to make more educated investment selections and alter their tactics in response to those judgments. This, in turn, can lead to more efficient resource allocation, which can enhance growth prospects for venture-backed companies.

Based on the research of Bergemann and Hege (1998), it is reasonable to conclude that venture capital investment can have a considerable impact on the growth trajectory of VC-backed enterprises. Because of their management of moral hazard and information asymmetry difficulties, venture capitalists are able to facilitate the deployment of resources toward value-enhancing initiatives, which encourages the growth and development of the portfolio companies in which they have invested. This dynamic is compatible with the theory, which states that the financial structure of companies supported by venture capitalists influences their growth trajectory by providing access to critical resources and skills.

Despite the fact that Bergemann and Hege's (1998) article does not focus entirely on foreign growth methods, their views on venture capital financing are useful to this sector. When venture capitalists provide both financial and non-financial support to their portfolio firms, they are able to aid them in negotiating the complexity of entering new markets, managing risks, and overcoming entry barriers. Furthermore, venture capitalists engage in a learning and assessment process that can inform the development of customized international expansion strategies that take into consideration the characteristics and dynamics of local markets.

Bergemann and Hege (1998) conducted research that focuses on the importance of contracts in venture capital financing. They talk about how the structure of contracts between venture capitalists and entrepreneurs can assist align incentives and limit the danger of moral hazard. Because well-designed contracts can promote better decision-making and resource allocation, this aspect of venture capital funding may have ramifications for the growth trajectory and worldwide expansion strategies of venture-backed companies.

Finally, Bergemann and Hege (1998) provide important insights into the function of venture capital financing in alleviating moral hazard issues, facilitating learning, and ultimately altering the growth trajectory of VC-backed enterprises. These findings can be applied to our paper, which contends that the capital structure of VC-backed firms has a substantial impact on the companies' international expansion plans by providing access to critical resources, experience, and guidance, which is a crucial part of the growth trajectory of many firms. The authors' examination of contracts emphasizes the significance of aligning incentives between entrepreneurs and venture capitalists in order to support the growth and expansion of VC-backed enterprises.

2.3.2 Venture and human capital importance in growth

Another article whose incorporation can develop our thesis is "On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital" by Massimo G. Colombo and Luca Grilli (2005) which provides useful insights into the impact of human capital and venture capital on the growth of high-tech start-ups, which is relevant to the thesis topic.

Colombo and Grilli (2005) study the factors that contribute to the formation of high-tech start-ups, emphasizing the importance of founders' human capital as well as venture capital investment. They argue that the interplay of these factors can have a significant impact on the growth trajectory of high-tech start-ups. This point of view is consistent with the thesis topic since it highlights the significance of capital structure and human capital in developing growth.

The authors argue that founders' human capital, such as education, work experience, and managerial abilities, might have a direct impact on the growth of high-tech start-ups (Colombo & Grilli, 2005). They argue that entrepreneurs with greater human capital levels are more likely to make better strategic decisions and drive firm growth. Furthermore, Colombo and Grilli (2005) believe that venture capital investment can supplement founders' human capital by providing the necessary financial resources and experience to foster the growth of high-tech start-ups.

According to Colombo and Grilli (2005), venture capital investment and founders' human capital are positively related to the growth of high-tech start-ups. This study shows that the financial structures of VC-backed companies may have a significant impact on their growth trajectory and global expansion strategies. Venture capitalists can help high-tech startups overcome the challenges of rapid expansion and entry into new markets by providing both financial resources and expertise.

Colombo and Grilli (2005) analyze the potential interaction effects of founders' human capital and venture capital investment. They discover that venture capital funding can enhance the positive impact of founders' human capital on the growth of high-tech start-ups. This interaction effect underscores the need to examine both human capital and capital structure when analyzing the growth trajectory and foreign expansion strategy of VC-backed enterprises.

Additionally, Colombo and Grilli (2005) underline the importance of industry-specific factors in identifying high-tech start-up growth drivers. They argue that the impact of founders' human capital and venture capital financing on growth may differ across industries due to differences in technology and market factors. This conclusion is significant for the thesis because it implies that the industrial backdrop in which VC-backed enterprises operate may influence the impact of capital structure on the growth trajectory.

The authors also stress the significance of networks and alliances in the creation of high-tech start-ups. They argue that the ability of high-tech start-ups to create and maintain relationships with key stakeholders such as customers, suppliers, and other industry players can have a significant impact on their growth prospects. According to the findings of this study, the financial structures of VC-backed companies may have an indirect impact on their growth trajectory and global expansion aspirations by affecting their networking capabilities and access to critical industry relationships.

Lastly, Massimo G. Colombo and Luca Grilli (2005) provide useful insights into the role of human capital and venture capital financing in accelerating the growth of high-tech start-ups. Their findings can be extended to the hypothesis, implying that VC-backed companies' finance

structures have a significant impact on their growth trajectory. The authors' examination of the interaction effects between founders' human capital and venture capital financing, as well as the importance of industry-specific factors and the role of networks and alliances, highlights the importance of a comprehensive understanding of the various factors that contribute to the growth of VC-backed companies.

2.3.3 Venture Capital and Innovation

As Massimo G. Colombo's and Luca Grilli's (2005) research on innovation growth and startup promotion shows, Kortum and Lenner (2018) in their article "Assessing the Contribution of Venture Capital to Innovation" provides further support for a comprehensive analysis of the impact of venture capital on innovation. They argue that venture capital plays a substantial role in promoting innovation by providing funding and support to start-ups. Further, it is suggested that venture capital-backed firms are more likely to develop new products, file patents, and generate higher revenue compared to non-backed companies (Kortum & Lenner, 2018). Moreover, it has been found that venture capital promotes technological spillovers. Kortum and Lenner argue that venture capital-backed companies are more likely to engage in knowledge-sharing activities leading to the distribution of technologies and new ideas and that venture capital has a positive impact on both the quantity and the quality of innovation (Kortum & Lenner, 2018).

The authors further note that venture capital funding allows a unique form of financing that suits the needs of start-up companies. Venture capitalists tend to be more willing to invest in early-stage ventures and put their trust in unproven business models and high-level risks (Kortum & Lenner, 2018). As more traditional lenders tend to avoid similar factors when deciding what ventures to invest in, venture capital backing helps start-ups overcome those barriers and help them pursue more ambitious growth projects (Kortum & Lenner, 2018).

The authors, similar to Colombo and Grilli's (2005) study, also tackle the role of venture capital in the context of shaping one's global strategy. They argue that venture capital helps start-ups overcome barriers associated with internationalization, such as cultural, regulatory barriers, and

competition. One way mentioned in the text how venture capital helps startups internationalize is through networks of expertise in international markets. This leads to start-ups being able to access valuable know-how about the international markets and effective ways to enter them (Kortum & Lenner, 2018).

However, the paper includes weaknesses as well. one of them being selection bias. The study conducted by Kortum and Lenner only consists of venture capital-backed companies, which may not be representative of all start-ups, and, especially when making a study about the contrast between the two, it would be beneficial to include data regarding them both.

In conclusion, the authors provide a good overview of how innovation is affected by the presence of venture capital. Kortum and Lenner argue that venture capital plays a big role in allowing start-ups to be innovative. Their findings, as also supported by Colombo and Grilli's (2005) study, suggest that venture capital helps start-ups overcome financing obstacles, which allows them to pursue a more aggressive growth strategy as well as help them develop more effective global strategies.

2.3.4 Venture Capital financing effect on startup growth

Furthermore, another similar study by Davila, Foster, and Gupta (2003) provides insight into the impact of Venture Capitalist financing on the growth and how it affects start-ups. Their article, “Venture capital financing and growth of startup firms “ investigates this relationship and finds that VC-backed start-ups experience higher sales and employment growth compared to non venture capital backed start-ups.

They argue that venture capital can play a crucial role in shaping the growth trajectory by not only providing financial resources but also valuable guidance, expertise, and access to networks. In addition, Davila, Foster, and Gupta (2003) explore the potential moderating effects of the venture capital firm’s experience and reputation, where these VC-backed startups tend to experience higher sales and development growth than those backed by less experienced and

reputable VC firms. This observation underscores the importance of considering the specific characteristics of venture capital financing when understanding the growth trajectory and international expansion strategies of VC-backed companies.

The authors also discuss the role of venture capital financing in developing and fostering innovation of new technologies (Davila et al., 2003). As mentioned by our previous articles, they support the argument that venture capital financing helps overcome the challenges associated with the commercialization of new technologies and the development of innovative products and services. This relates to our thesis as it suggests that VC-backed companies' capital structure may influence their growth trajectory and international expansion strategies by shaping their ability to innovate and bring new technologies into the market.

The article also explores how the growth trajectory develops not only through providing the financial resources but also through the ongoing monitoring, guidance, and support provided by venture capitalists. This highlights the multifaceted nature of the relationship between capital structure, and growth trajectory.

In conclusion, Antonio Davila, George Foster, and Mahendra Gupta's article "Venture capital financing and the growth of startup enterprises" (2003) provides useful insights into the role of venture capital funding in fueling the growth of start-up firms. Their findings can be applied to the theory, implying that the capital structure of VC-backed companies has a major impact on their growth trajectory. The author's examination of the moderating effects of venture capital firm experience and reputation, as well as the role of venture capital financing in fostering innovation and the development of new technologies, emphasizes the importance of a thorough understanding of the various factors that contribute to the growth and expansion of VC-backed companies.

2.3.5 Venture Capital impact on technology

Lastly, but not least, Bertoni et al. (2010), in their paper “Venture Capital Financing and the Growth of New Technology-Based Firms: Correcting for Sample Self-Selection,” expand on the distinctive merits of venture capital within the financial literature, building on the fundamental issue of the influence of venture capital financing on the establishment of innovative technology-based enterprises. They argue that, in addition to their financial ability, venture capitalists bring value through their superior scouting capabilities (Bertoni et al., 2010). This suggests that venture capitalists have the ability to identify high-potential enterprises and provide them with much-needed finance that these organizations would otherwise struggle to achieve.

Bertoni et al. (2010) argue that venture capitalists provide their portfolio companies with more than just cash resources. They broaden their roles to include monitoring and mentoring these enterprises, thereby giving strategic assistance that can help shape the firms' growth paths. They propose a "certification" effect, in which venture capital financing increases enterprises' legitimacy, making it simpler for them to attract third-party backing. This component emphasizes the idea that a firm's capital structure, particularly with venture capital involvement, can have a considerable impact on its growth (Bertoni et al., 2010).

However, the writers do not simply make these claims in a theoretical setting. They conducted an empirical analysis utilizing a 10-year longitudinal dataset of 215 Italian new technology-based enterprises. This dataset is unique in that it includes both VC-backed and non-VC-backed enterprises, allowing for comparison (Bertoni et al., 2010).

Bertoni et al. (2010) data strongly endorses their hypothesis, suggesting that venture capital funding does, in fact, boost firm growth. Furthermore, after adjusting for self-selection, they find that the effect of venture capital on business growth is considerably stronger (Bertoni et al., 2010).

Their research provides critical insights that match with and verify the thesis's proposition by extensively examining the effects of venture capital financing and its influence on firm growth.

Furthermore, their findings underline the need of taking into account potential self-selection biases while doing empirical research on this topic.

In conclusion, the examined literature provides persuasive evidence that the capital structure of small-cap, venture capital-backed companies has a major impact on their growth trajectories. These findings are consistent with the thesis's major concept and offer support for its hypothesis. Essentially, the literature emphasizes the diverse nature of venture capital financing and its role in creating firm growth trajectories. The multiple factors at work, such as the certification effect, founders' human capital, moral hazard difficulties, and adverse selection, highlight the relationship's complexities. As a result, this literature review provides a solid framework for the thesis's following empirical investigation, highlighting the potential processes through which venture capital investment can influence firm growth.

2.4 Theoretical framework

Two key ideas—capital structure theory and venture capital financing mentioned in our literature form the foundation of this thesis' theoretical framework. The framework intends to study the relationship between the capital structure of small-cap VC-backed companies and their growth trajectory initiatives by incorporating these principles. The creation of the hypothesis and the layout of the study approach will be built upon this framework.

2.5 Hypothesis

The following hypothesis is put forth using the theoretical framework:

H0: There is no significant relationship between the capital structure and growth trajectory of small cap VC-backed companies operating in the US

H1: There is a significant relationship between the capital structure and growth trajectory of small cap VC-backed companies operating in the US

According to this theory, small-cap VC-backed businesses with a higher percentage of equity financing might be more risk-tolerant and financially flexible, allowing them to pursue ambitious growth strategies. This theory will be put to the test through empirical analysis, which will also shed light on how capital structure and growth trajectory interact in the context of small-cap VC-backed businesses.

3. Research Methodology

3.1 Research approach

As part of the Bcs. International Business program undertaken at Lund University, the authors have written and conducted a research thesis connected to the learnings and knowledge acquired during the program.

The paper aims to analyze the relationship between the capital structure of VC-backed small cap firms and their growth trajectory. While doing so, data has been collected through several websites, previous papers as well as the financial database Orbis in order to analyze and discuss the research question of the paper as well as test later mentioned hypotheses against the empirical findings discovered from the data collected.

3.1.1 Overall method

To be able to do so, a quantitative research method is constructed as a descriptive research design, which refers to the way the data is handled. Contrary to an experimental approach where the variables are manipulated in order to draw conclusions, the descriptive research method instead finds, observes, and analyzes the data (Bryman & Bell, 2017). Furthermore, as the thesis aims to analyze the growth trajectory of these firms at different points in time in order to accurately answer our research question, the descriptive method will take form as a longitudinal research design. Longitudinal research design gives the researchers the ability to look into variables at different times to see progress, process, and growth, giving a better insight into the trajectory of growth of these firms since their initial funding rounds (Bryman & Bell, 2017). More specifically, as longitudinal research methods are divided into different parts, depending on how the variables are observed the data collection and observation is conducted based on the panel study approach, as it would let the authors more effectively and accurately observe the changes in the variables that are being studied (Bryman & Bell, 2017).

The research question of the study has been considered and thought of since the early stages of the thesis. Based on previous research and literature review an apparent theory gap was discovered, and the research question now chosen was deemed to be relevant and important to help contribute to the existing knowledge and research regarding the topic of capital structure and VC-supported firms. However, the theories used and applied to analyze the data gathered changed throughout the work process of the thesis as the construction of the paper and the research methodologies that were intended at first were later on substituted. The changes in theories and models were necessary because if that had not been done, those theories would have given limited results and therefore would have limited the paper as a whole, as both the conclusions and analysis would lose credibility and relevance.

The empirical material of this study is presented in the Empirical Findings section and is then analyzed in the Discussion section. In the Empirical Findings section, the relevant data gathered will be presented and reviewed. There, the study looks into the capital structure of the firms included. In the analysis, the findings are evaluated against the chosen theories, the research question, and the hypotheses of the paper. The purpose of the analysis is to draw conclusions regarding the relationship between the capital structure of VC-backed companies and their growth trajectory. Moreover, the purpose is also to assess if the theories chosen are applicable to the findings and analysis, and to either reject or support the hypotheses. The conclusions drawn from the findings and analysis are then presented in the Conclusion section, where the research question is answered.

3.1.2 Sampling method

As both growth and capital structure can be influenced by things such as laws, regulatory frameworks, and other geographical factors, the study aims to control these factors by only including US companies in the sample. By doing so, many geographical factors that could potentially affect the study and the relationship between the independent and dependent variables that are under investigation and therefore also interfere with the objectives of this study are eliminated from consideration as the companies included now operate under the same legal and

regulatory framework. Further, the sample is limited to small-cap VC-backed companies. Companies with a market value of between 200 million and 2 billion USD are firms that usually are considered as small cap companies (Finra, 2022). Therefore, the same range of values has been considered for small cap companies when performing this study, and consequently, only companies with market values that range between that interval have been included in the sample. Furthermore, only VC-backed companies were included in the sample. A VC-backed company, also known as a venture capital-backed firm, is a business that has received funding from venture capital firms. Venture capital is a form of equity funding provided to firms as an investment by the venture capital firm with the hope of return on that investment (Hayes, 2023). The idea of limiting the sample to only VC-backed firms is based on the unique financing characteristics of venture capital-backed firms, giving insight into how capital structure decisions may have an impact on growth within this unique financing concept. Moreover, prior research regarding capital structure and growth trajectory have mainly focused on a broader sample rather than specifying in VC-backed companies. By solely focusing on VC-backed companies, the study aims to fill the research gap on this specific subset of firms. Furthermore, data was collected within a time frame of six years, starting with the latest available year and dating back to five years prior.

By applying filters that were in line with the sampling criteria regarding the companies involved in the financial database Orbis, a population of relevant firms in this context were presented. From there, a sample of approximately 120 companies were randomly selected from the list to be part of the sample. The choice of using a random sample approach was made in order to try and ensure a representative sample of the bigger population. By randomly selecting companies from the population, each company has the same chance of being selected, and it therefore reduces the potential for selection bias. Furthermore, with random sampling, a number of statistical tests can be applied to assess the significance level of the relationship between capital structure and growth trajectory, enhancing the validity and reliability of the conclusions of the paper.

The sample size of approximately 120 companies was selected in order to try and ensure the statistical power of the tests run on the sample in order to identify a relationship between the dependent and independent variables, considering that some companies may potentially be

removed from the sample as factors such as missing data and extreme outliers could potentially cause the sample size to shrink.

3.1.3 Operating revenue as a measure of growth

The aim of this study is to assess whether there is a relationship between the capital structure and growth trajectory of US small cap VC-backed companies. The capital structure being the independent variable, and the growth trajectory being the dependent variable. For the dependent variable, the change in operating revenue over the time period concerned in the paper was chosen to represent the growth trajectory of the sample firms. The choice of assessing growth with the help of operating revenue instead of, say, profitability was motivated by the characteristics of VC-backed companies. First of all, revenue growth is a widely used and very important KPI that gives insight into how a company's income from its business has changed over time and therefore providing information on how well a company attracts customers and expands its customer base (Paddle, nd). Furthermore, in the case of VC-backed companies that, in many cases, are in their somewhat early stages and may therefore be more concerned with the growth of the business and its market position rather than collecting profit, resulting in them reinvesting their earnings in the business and its operations. Furthermore, as venture capitalists fund the VC-backed companies and in turn gain a share of ownership, their ownership share increases in value with growth in market value, therefore they may tend to be more concerned with growth rather than profit, leading to a further incentive to reinvest. Therefore, operating revenue was deemed to give a more accurate description of the financial performance of the companies involved compared to profitability.

3.1.4 Assets-to-liabilities ratio as a measure of capital structure

The independent variable used in this study is the capital structure of the sample firms. Capital structure being the way companies finance their operations through a combination of equity and debt. In order to quantify the capital structure of the sample firms to be able to perform a statistical analysis and to provide coherent results, the assets-to-liabilities ratio was calculated for each firm involved in the study. The assets-to-liabilities ratio was deemed appropriate for the

calculation of capital structure as it gives a comprehensive picture of the overall balance of the companies' resources and financial obligations and therefore gives an accurate image of how these companies finance their operations (Hayes, 2023). Furthermore, the assets-to liabilities ratio is an easily interpreted measure. It is presented as a ratio between assets and liabilities, an assets-to-liabilities ratio of over 1 suggests that the assets of the company exceed their liabilities. The ability to easily interpret the results of the measure brings value to the analysis as it allows for coherent communication and understanding of the results presented, leading to a more transparent process of developing and understanding the conclusions made. Moreover, the assets-to-liabilities ratio is a widely accepted and fundamental measure in assessing the capital structure of firms and has been used in prior research studies such as Frank, M.Z. & Goyal V. K. (2009) and Huang, G. & Song, F.M. (2006) who both center around the subject of capital structure and how it is impacted by, and how it impacts firms' operations.

3.1.5 Spearman's rho correlation coefficient

To determine whether there exists a correlation between two variables, there are different statistical methods that could be used to help establish the relationship, however, in the case of this study and the characteristics of the data sample and analysis, the Spearman correlation coefficient was deemed to be the most appropriate alternative to ensure accurate results and conclusions. First of all, the aim of this study is to try and identify whether there is a relationship between the capital structure and growth trajectory of US small cap VC-backed companies, meaning it is not necessarily restricted to identifying a linear relationship between the two variables. Spearman's rho is a nonparametric measure of correlation that does not assume a linear relationship between variables. Spearman's rho instead measures the strength and direction of the monotonic relationship between the two variables (Laerd, 2018). A monotonic relationship is a relationship that does one of the following: (1) as the value of one variable increases, so does the other variable; or (2) as the value of one variable increases, the other variable decreases. The Spearman's rho can give you values called the R-value between -1 and 1, where -1 indicates a perfect negative relationship between the variables and 1 indicates a positive relationship between the variables. Further, the R-squared value gives an insight into how much of the

variation in the dependent variable the independent variable is responsible for (Laerd, 2018). By using Spearman's rho, the statistical testing is able to capture any consistent trends or patterns.

Furthermore, certain characteristics of the Spearman's rho makes it the most applicable to this study. The fact that Spearman's correlation coefficient does not assume that the data follows any specific distribution (Bryman & Bell, 2017). This is advantageous when studying capital structure and growth trajectory, as those variables may not follow a normal distribution due to factors such as industry-specific characteristics or company-specific dynamics. Moreover, Spearman's rho is less sensitive to outliers compared to other correlation measurements, allowing for fewer outliers being removed from the data sample and resulting in a more reliable assessment of the relationship between the capital structure and growth trajectory in the presence of skewness.

3.2 Choice of theory

Based on the research question and the research design, a theoretical framework was chosen. The choice of theory was a process conducted through the reading of previous research papers and other sources that were deemed relevant and connected to the research question of this paper. Through studying previous literature, the authors were able to narrow down the selection alternatives to a point where a choice was easier to make. As the paper aims to conduct research regarding the potential relationship between the capital structure of VC-backed companies and their growth trajectory, the material and learnings used to analyze the data were derived from different relevant previous research papers as well as appropriate academic literature. The theory was chosen on the basis of being relevant and important to the research question.

By assessing the relevancy of certain economic theories, it was deemed that the most appropriate to help reach conclusions regarding the research question was the resource-based view. As the resource-based view acknowledges the fact that there is a heterogeneity regarding resources between different companies, it can help study how the allocation of financial resources, such as debt and assets, influences the abilities and capabilities of the firm.

3.3 Research design

In designing a methodology to analyze the relationship between variables and the trajectory of those variables over time, as is the case for the dependent variable growth trajectory in this study, it is essential to incorporate a research design that has the ability to enhance the credibility and consistency of the research and the chosen firms included in the statistical testing. These considerations resulted in the use of a descriptive research design, meaning that the variables will not be manipulated in order to capture patterns or tendencies but instead observed. Moreover, the paper will follow a longitudinal methodology to accurately capture the trajectory of the variables over time.

3.3.1 Collection of data

The collection of data was conducted through different websites, previous research papers, and Orbis the financial database. Through these sources of information, the authors were able to gather both descriptive and numerical information regarding the sort of companies that are being looked into. By being able to do so, the thesis gains validity and credibility, as the findings will be more accurate. The sample of VC-backed companies used when collecting the data consisted of approximately 120 small-cap VC-backed firms that have been in operation for at least five years. The large sample size gives the results of the research greater credibility, as a sample of around 100 subjects can be assumed to be normally distributed. Further, it also provides greater generalizability as a larger sample, as mentioned, gives results more closely related to a normal distribution than a smaller sample size (Bryman & Bell, 2017). The collection of data included finding and observing the variables which are concerned with this paper. No variables were manipulated or interfered with as in line with the descriptive research design. Furthermore, data was collected over several years in order to build an understanding of and showcase the growth trajectory of the companies within the sample. By doing so, the paper holds true to its longitudinal method (Bryman & Bell, 2017) Evidently, the data collected is therefore primarily secondary quantitative data and in line with the descriptive research design.

However, there are also cons associated with longitudinal research and this type of data gathering. One of the main disadvantages traditionally mentioned with longitudinal research is that it is very time-consuming, however, this paper does not aim to analyze the growth trajectory from now into the future but from the past until now, meaning there will be no risk associated with waiting a long time for data or for the initial sample to disappear over time. While that is true, there is however a risk involved with finding an adequate number of VC-backed firms that can supply appropriate data for the right time span that is to be analyzed and discussed, as a large sample has to be conducted for the investigation to be meaningful. That is, to develop a relationship or pattern, a large amount of data must be collected and analyzed to be able to generate results (Bryman & Bell, 2017).

3.4 Conduction of analysis

The first step in the analysis was to clean and prepare the data in order to receive accurate results. This involved checking for errors, missing values, and outliers. Any errors were either corrected or removed from the sample set in order to ensure a more accurate analysis. Following that, descriptive statistics were calculated for the key variables of the data set, which include the capital structure of the companies, i.e., the ratio of assets to liabilities financing, and their growth trajectory, which is measured by the growth in revenue over time. The calculation of the descriptive statistics provides an overview of the data and the patterns within the data set.

Further, the data gathered was mainly analyzed through Spearman's rho correlation coefficient in order to detect and determine the relationship between the capital structure and the growth trajectory of the companies included in the sample. Moreover, the analysis included tests regarding possible interactions between capital structure, growth trajectory, and factors such as company size to determine whether the relationship between capital structure and company performance was diminished or strengthened through these factors.

Finally, the results found through the analysis are presented and interpreted in a clear manner in the discussion section. Further, the results are discussed in the context of previous research

regarding the relationship between capital structure and the performance of VC-backed companies.

3.5 Validity and reliability

The validity and reliability of this research paper has been carefully considered and taken into account when planning and executing the work involved with the study. Secondary sources such as previous research papers, literature, and literature reviews were chosen systematically to ensure the validity and reliability of those sources. Moreover, articles and studies used to develop a theoretical framework were all accessed through credible library sources. However, in this study, it is acknowledged that the data sample exhibits skewness, which can introduce limitations to the validity and reliability of the findings. Nevertheless, while the skewness presents challenges, several steps have been taken to ensure the validity and reliability of the data collection and analysis. Firstly, during the data collection phase, random sampling was implemented to obtain a sample representative of the target population of US small cap VC-backed companies. The data was obtained from Orbis, which is a reputable database that provides comprehensive data on company characteristics and financial performance. While it is acknowledged that Orbis itself may have limitations, it is considered to be a reliable and widely used source in the field. Furthermore, to ensure the reliability and validity of the data, statistical measurements that are suitable for skewed data were implemented. For instance, the nonparametric test Spearman's rho correlation coefficient, which is non-sensitive against violations of normality assumptions and appropriate when assessing correlations in the presence of skewness, was implemented. Lastly, the extensive use of secondary sources used to develop a theoretical framework for this study provides insight into prior studies concerned with similar fields, and the findings made in those papers are therefore comparable to the findings made in this study, providing a larger and more extensive understanding of the findings in this paper. The ability to compare the results in this thesis to prior studies and capture similar tendencies and patterns further ensures the validity, reliability, and generalizability of this thesis.

4. Empirical Findings

4.1 Descriptive statistics

4.1.1 Variable descriptions

The key variables studied in this thesis is the capital structure as the independent variable and the growth trajectory of the same small cap VC-backed companies as the dependent variable. Both variables have been calculated as interval scale variables, as neither has a true zero point, both are quantitative and can be ranked (Scibbr, nd). Growth does not, in our case, have a true zero point, as a negative change in operating revenue over the years would give us negative growth. The capital structure of the companies was calculated using a ratio of shareholders' equity + total liabilities divided by the total liabilities of the firm. As shareholders' equity equals total assets - total liabilities, by adding back the liabilities, the total equals the total assets of the firm. Then, by dividing the total with the liabilities of the firm, we receive an accurate asset-to-debt ratio representing the capital structure of these firms. A ratio of $1 \leq$ tells us that the financing structure of the firm consists of a larger share of assets than debt. Further, in order to avoid extreme values or temporary fluctuations and instead capture the central tendency of the capital structure for each company, the mean asset-to-liabilities ratio was calculated for the whole time period.

Further, the dependent variable studied was the growth trajectory of the companies included in the study. The growth trajectory of the firms was calculated by comparing the growth in operational revenue over time. In order to do so, the operational revenue of t minus five years was subtracted from the operating revenue of the last year available. By doing so, the value reached is the growth in US dollars from five years ago up until this point in time. Moreover, while the companies under evaluation are small capped there are still size differences among them, and to take that into account, the growth value was divided by the operating revenue of the company during the base year, five years prior to the year with the last available data that is. By doing so, the variable now shows the growth over the time period as a percentage change of the operating revenue from five years back, making it easier and more effective to analyze.

4.1.2 Central tendency measures

In order to gain an understanding regarding the variables and the central tendencies concerning them, the mean and the median of the two variables were calculated. By doing so, the variables are each assigned with central values that make it easier to compare them, enabling us to find differences and similarities between the two. The mean, being the average value of the variable, and the median, being the middle point of the variable, are presented below.

		Percentage_g rowth_over_l ast_six_yrs	Capital_ratio _mean
N	Valid	85	75
	Missing	41	51
Mean		126.27513	3.55937
Median		16.37597	1.11481

With the median being particularly lower than the mean on both the capital ratio and the growth variable, the table shows that there are significantly bigger differences among the larger values than there are among the smaller values. Again, a large value in the context of the capital ratio suggests that the financial structure of the firm is mainly based on assets and not liabilities. The mean of the independent variable, the capital ratio, shows us that at the middle point of the firms evaluated, the capital structure is fairly even, while at the median, the assets triple the debt financing. Further, the median growth over the six years studied is around 16,38%, while the mean is 126,28%.

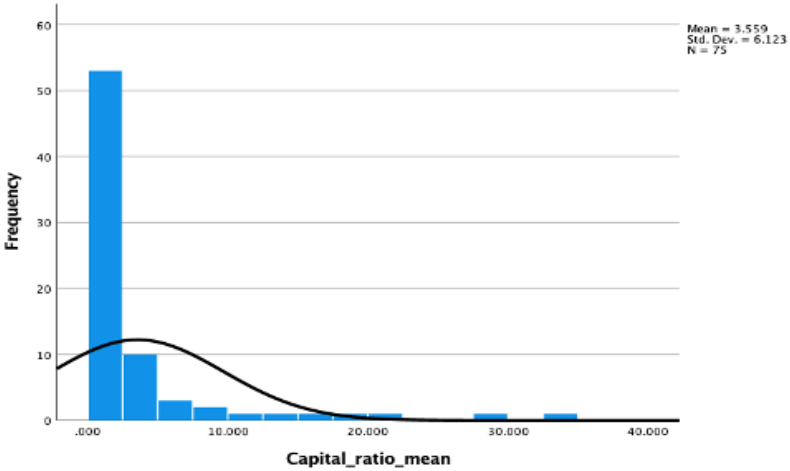
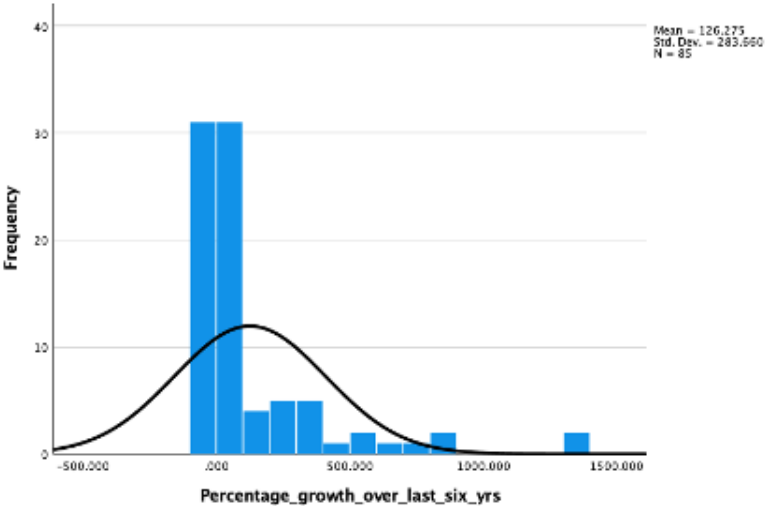
4.1.3 Dispersion measures

By including certain dispersion measures, the thesis is able to provide insight into how the data is spread and helps identify the shape of the data. Further, by assessing the dispersion of the data, the thesis is able to identify outliers and extreme values that deviate from the rest of the data set. Outliers as such can have a significant impact on the interpretation of the results and by examining measures like range, standard deviation and skewness the analysis of the data

becomes more transparent and the impact of the outliers is easier to assess. The dispersion measures and the shape of the variables is stated below.

Descriptive Statistics

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error
Percentage_growth_over_last_six_yrs	85	1467.625	-100.000	1367.625	126.27513	283.659822	2.738	.261
Capital_ratio_mean	75	33.090	.241	33.331	3.55937	6.122848	3.225	.277
Valid N (listwise)	74							



What this shows us is that the spread and dispersion among both variables are significant. As a general rule of thumb, with a skewness score of less than -1 or greater than 1, the distribution is

highly skewed (GoodData, nd). In the cases of the variables included in this thesis, the growth trajectory variable has a skewness of 2.738, while the capital ratio variable has a skewness of 3.225. These numbers are illustrated in the graphs, where a normality line is added to help show the skewness of the data. However, what is also true, especially for the capital ratio is that there are a few outliers that cause the severe skewness. As illustrated in the later graph, the majority of the values are clustered between 0 and 10, with a few values spanning from 10 up until 40, causing the normality of the distribution to shift, resulting in a long tail toward the higher values. Further, it can also be concluded that the different capital ratio values are more clustered around the mean compared to the growth trajectory values. With a range of 1467.625 and a standard deviation of 283.659822, the standard deviation is high, meaning the volatility of the data is high.

4.1.4 Missing data & errors

With a sample size of 126 companies, there were a few that were missing certain variables needed to perform an analysis as the one performed in this thesis. By not being able to perform analysis using those firms, those firms were excluded from the data set. There was available data from 85 companies to analyze the growth trajectory and 75 companies for the capital structure, resulting in the sample size shrinking.

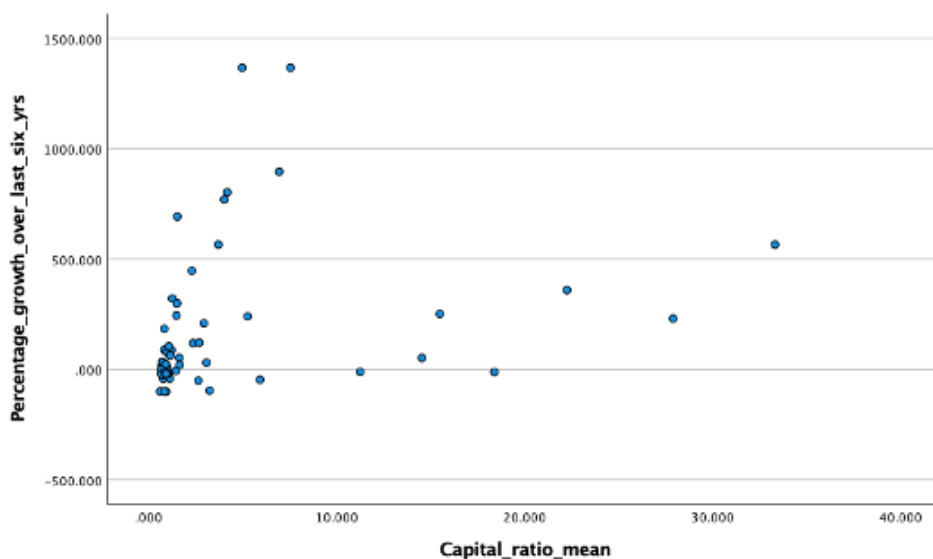
4.2 Spearman correlation coefficient results

In order to test whether there was a relationship between the growth trajectory of US small cap VC-backed firms and their capital structure, the Spearman correlation coefficient was tested. As both variables are quantitative, and the thesis aims to test their covariance, Spearman's correlation was deemed as an appropriate indicator of the impact that capital structure may have on firm growth. Moreover, due to the data observed having outliers as well as the results of the dispersion measures showing a high level of skewness, the Spearman correlation measure is more appropriate than the alternative of Pearson's correlation measure (Scribbr,nd). When applying the variables in SPSS the results of the Spearman correlation coefficient showed the following,

Correlations

		Percentage_g rowth_over_l ast_six_yrs	Capital_ratio _mean
Spearman's rho	Percentage_growth_over _last_six_yrs	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	85
	Capital_ratio_mean	Correlation Coefficient	.583**
		Sig. (2-tailed)	<.001
		N	75

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



The Spearman correlation coefficient spans between the values 1 and -1, where 1 illustrates a perfect positive correlation while -1 shows a perfect negative correlation. The table shows us that the Spearman correlation between the variables is 0.583, with a P-value of <0.001. When using the Spearman correlation coefficient, a value between 0.7 and 1 is considered a strong positive correlation, while a value between 0.4 and 0.7 is considered a moderate correlation (Thomas, 2023). In this case, the value of 0.583 suggests that there is a moderate positive correlation between the capital ratio and the growth trajectory of small cap VC-backed companies operating in the US for the last six years. Further, with a P-value of less than 0.001, there is very strong evidence to support this claim.

Further, by obtaining a Spearman correlation of 0.583, also called “R” the cause and effect relationship between the dependent variable and the independent variable can be determined. The value of R squared illustrates how much of the variance in the dependent variable the independent variable is responsible for. With an R value of 0.583, R squared equals to 0.34. An R squared value of 0.34 indicates that the independent variable is responsible for 34% of the variation of the dependent variable.

4.3 Control variable

To account for the possibility of potential confounding variables that may influence the relationship under evaluation within this thesis, the number of staff members employed at the companies included in the data was used as a control variable. The number of employees a company has hired can in many ways have an impact on the observed relationship between the dependent variable and the independent variable. The number of people employed has an impact on the labor intensity, production capacity, and human capital of the firm, and by controlling for staff, the thesis is able to isolate the key variables from the potential influence of human resources and differences in capacity constraints.

To test the correlation between the key variables and the control variable, Spearman’s correlation was used in order to accurately make an assessment of the impact of the control variable, since the key variables are being assessed using the same statistical measure. When testing for the correlation between the key variables and the controlling variable, the following results were presented.

Correlations

		mean#_of_e mployees	Capital_ratio _mean
Spearman's rho	mean#_of_employees	1.000	-.423**
	Sig. (2-tailed)	.	<.001
	N	100	59
	Capital_ratio_mean	-.423**	1.000
	Sig. (2-tailed)	<.001	.
	N	59	75

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

Correlations

			mean#_of_e mployees	Percentage_g rowth_over_l ast_six_yrs
Spearman's rho	mean#_of_employees	Correlation Coefficient	1.000	-.112
		Sig. (2-tailed)	.	.361
		N	100	68
	Percentage_growth_over _last_six_yrs	Correlation Coefficient	-.112	1.000
		Sig. (2-tailed)	.361	.
		N	68	85

In the first table, the correlation between the independent variable capital structure and the control variable is tested, showing a negative correlation of -0.423 with a P value of <0.001. The score of -0.423 indicates that there is a moderate negative relationship between the number of employees of the firm and the capital structure of that firm. Further, as the Spearman correlation is significant at 10%, a P-value of less than 0.001 indicates strong evidence supporting the claim.

The second table shows the correlation between the dependent variable growth and the control variable. Here, it is illustrated that a negative correlation of -0.112 exists between the two variables. Moreover, it is stated in the table that the P-value is 0.361. This indicates that there is a weak negative relationship between the firm's growth trajectory and the number of people hired at the firm. However, the P-value of 0.361 indicates that the finding is not statistically significant, and there is therefore not strong evidence supporting the claim.

5. Discussion

5.1 Result Analysis

5.1.1 Spearman's rho Results

As explained in the empirical findings chapter, Spearman's rho correlation coefficient ranges from values between -1 and 1. An R-value of -1 indicates a perfect negative relationship, meaning the variables move identically in opposite directions, while an R-value of 1 indicates a perfect positive relationship, meaning the variables move identically in the same direction. Values closer to 1 and -1 indicate a stronger relationship, while R-values closer to 0 indicate a weaker relationship. In this case, an R-value of 0.583 was identified between the independent and the dependent variables by Spearman's rho correlation. An R-value of 0.583 indicates that there is a moderate positive relationship between the capital structure and the growth trajectory of the firm. Furthermore, the R-value was accompanied by a P-value of less than 0.001, and as Spearman's correlation is significant at 0.1, there is strong evidence supporting this claim, and it is highly unlikely that the results are by random chance. In addition to this, an R-value of 0.583 gives an R-squared value of 0.34, indicating that the independent variable is responsible for 34% of the variability in the dependent variable, showing a rather large correlation between the two variables. Thus, given that the result also is significant, one way to interpret the result of the Spearman correlation is that the alternative hypothesis H1, claiming that there is a relationship between the capital structure and growth trajectory of small cap VC backed firms, holds true and should be accepted, and that the null hypothesis H0 should be rejected. However, what can also be concluded from the results is that while there is a relationship between the capital structure and the growth trajectory, there are also other factors that influence the growth trajectory. What these other factors may be will be discussed in the coming sections of this study.

5.1.2 Outliers

Through the course of the data retrieval, there have been some outliers that have been identified and later on removed from the data set. The reason for the removal of outliers is that certain values differed vastly from the rest of the data set in that they were extreme and affected the skewness of the data as well as the relationship between the variables in ways that were not accurately representative of the data. Certain statistical techniques were applied to identify

outliers in the data set, measures such as the interquartile range of the data were used. Another strategy was to identify outliers by the use of graphical visualization, using a scatter plot graph to identify outliers. By doing so, it was easy to visualize and pinpoint the outliers. The exclusion of these outliers allowed for a more accurate analysis of the correlation between the capital structure and growth trajectory of the firms studied, as well as a more reliable and applicable conclusion when answering the research question and hypothesis. The outliers were excluded on the basis that the extremity of the values lead to a heavy impact on the outcome of the different statistical tests, leading to results that were not credible.

However, as the removal of outliers is a subjective decision, it is recognized that the action of removing said outliers may introduce some degree of subjectivity into the analysis. Still, the removal of outliers was only conducted in order to clean up the data and to achieve a result that was accurate, credible, as well as representative of the data. Moreover, as the authors of this thesis have no personal agenda and do not put any value into the outcome of the analysis other than the results and conclusions being true and applicable, one can rest assured that the removal of outliers has been done without any bias or agenda and that the results that are presented are both honest and true.

5.2 Theoretical Explanations and Support

5.2.1 Resource-Based View (RBV) and Capital Structure Correlation

According to the Resource Based View (RBV), a firm's distinctive resources and skills are critical in making strategic decisions and establishing a competitive advantage (Barney, 1991). Our data supports this viewpoint, showing a significant relationship between the financial structure of small-cap venture capital-backed companies and their growth trajectory.

Capital structure ratio values are more tightly concentrated around the mean than growth trajectory values, resulting in a skewed distribution. However, some capital ratio values range from 10 to 40, causing the normality of the distribution to shift and resulting in a lengthy tail toward higher values. Such skewness in capital structure ratio values (3.225) indicates a

divergence from the normal distribution, which may signify that enterprises with greater capital ratios are outliers.

We discovered that the Spearman correlation coefficient between the capital structure ratio and the growth trajectory is 0.583, with a P-value less than 0.001. This suggests a moderately strong association between the companies' capital structure and their growth over the last six years. A P-value of less than 0.001 provides substantial evidence to support this assertion, validating the notion that the capital structure has a major influence on the firm's growth trajectory.

Moreover, according to the Resource Based View, enterprises with a higher proportion of equity funding (higher capital ratio) are theoretically better positioned to leverage their internal resources and skills, hence boosting growth. Free of the payback restrictions associated with debt, equity financing provides these organizations with the essential financial flexibility to invest in strategic initiatives that fully exploit their particular advantages, ultimately fueling growth (Myers, 1984).

The independent variable (capital structure) accounts for 34% of the variation in the dependent variable (growth trajectory) and has an R-squared value of 0.34. The remaining 66% is due to other factors that were not taken into account in our model, pointing to other potential variables that could influence growth. According to the RBV, resources include intangible assets such as managerial skills, reputation, strategic relationships, and so on (Barney, 1991). As a result, our findings highlight the need for additional research into other factors driving the growth of small-cap VC-backed enterprises.

In essence, our findings, together with the RBV, highlight the importance of a firm's capital structure choice in exploiting its particular resources and capabilities to achieve growth. They imply that companies that choose larger equity financing have better growth prospects, which is useful information for founders, investors, and governments alike. Our findings support the beneficial impact of venture capital (VC) on the growth of small-cap enterprises. According to Bertoni et al. (2010), venture capital financing has a big impact on the future expansion of sales and employment at portfolio companies. This is especially true when VC-backed companies use

resources wisely to promote business expansion. Our results are consistent with existing data, showing a moderate association between the capital structure of small-cap VC-backed companies, and their growth trajectory, which is strongly influenced by VC funding.

Also, our findings seem to support those of Cumming (2005) and Titman and Wessels (1988) regarding capital structure. These writers noted that a variety of elements, including market conditions and firm-specific features, can influence the choice of capital structure. According to our data, VC-backed companies with a greater capital structure ratio typically have a greater growth trajectory, which lends credence to Cumming's (2005) claim that capital structure has an impact on venture capital.

Finally, the study of Chittenden, Hall, and Hutchinson (1996) based on the Resource Based View provides an important lens through which to interpret our results. They argued that small firms could leverage their unique resources to achieve growth, which aligns with our findings that VC-backed firms with more financial resources (a higher capital structure ratio) tend to exhibit stronger growth trajectories.

5.2.2 The Role of Firm Size (Number of Employees)

Adding the number of employees as a control variable to the debate adds another level to our research. The number of employees can be thought of as a proxy for firm size, which is an important statistic to examine while researching the organization's growth and capital structure.

According to our findings, the number of employees (firm size) and capital structure has a moderate negative connection of -0.423, with a P-value less than 0.001. This implies that smaller businesses, i.e. those with fewer employees, have a greater capital ratio. According to the Resource-Based View (RBV), this could be understood as smaller enterprises exploiting their particular resources to gain access to equity finance (Barney, 1991). According to RBV, small enterprises may be better positioned to exploit and maximize their resources due to their unique qualities, allowing them to manage a higher capital structure ratio (Barney, 1991). The statistical significance of this correlation provides compelling evidence that this relationship exists.

However, there is a weak negative connection of -0.112 between the firm's growth trajectory and the number of employees, with a P-value of 0.361. This shows that the firm's size and growth have a weak and statistically negligible link. One possible explanation for this is that, while the number of personnel can reflect the size of operations, it does not always translate into growth (Lockett, A. 2005). Market conditions, innovation, managerial skills, and other factors that aren't always related to the size of the firm can all have an impact on growth (Barney, 1991). The RBV theory goes on to say that a firm's resources and capabilities, not its size, determine its potential for growth (Barney, 1991).

In sum, these data point to the complex interactions between company size, capital structure, and growth. They suggest that smaller enterprises may support a greater capital structure due to their particular resources and competencies, but the number of employees has no meaningful impact on their growth trajectory. This underpins the Resource Based View's importance in comprehending the intricacies of business growth and the function of capital structure in this process (Barney, 1991).

5.3 Limitations and considerations

5.3.1 Limitations

Revenue Limitations

The decision to use the difference in revenue from the base year compared to the last available year as the measure for the growth trajectory of the firm may present a limitation to the study due to the nature of revenue and the level of information it presents. Important to note is that revenue fails to account for costs and expenses, leading to it also failing to account for the profitability of the firm. Meaning, a company may experience revenue growth, but if costs and expenses increase at the same, or a higher rate, the profitability of the firm may be compromised. This can be viewed as a limitation, as the profitability of the firm is a relevant measure when trying to assess the financial performance of the company. However, profitability could not be accounted for as the data needed to assess the profitability was not available for the companies included in this study. Profitability would otherwise be an interesting addition to the discussion of the impact

of capital structure on growth, as one would be able to see patterns between capital structure and profitability, revenue growth and profitability, as well as how the capital structure of the firm would impact the pattern between the two. For example, a company with a lower assets-to-liabilities ratio may experience less profitability compared to a company with a higher assets-to-liabilities ratio with the same revenue growth would, as the cost associated with repaying the debt used to finance the company would dampen the profitability of that same company.

Further, while revenue growth accounts for the increase in financial earnings, it fails to account for other dimensions of growth. Most importantly, it fails to recognize the market share of the company. In growing industries, a number of companies may experience revenue growth; however, they may not all experience an increase in their market share, meaning a company could experience revenue growth while still losing ground to competitors within the same industry. However, accounting for market share was deemed not possible as it is a variable that is not very clear or publicly available. As new players enter and exit industries frequently, the market share of the companies within that industry changes at the same rate, making it difficult to consider when performing this study.

Database Limitations

The limitations of this study also extends to the use of one singular database. In order to attain information about the companies needed to make certain calculations and to come up with key variables for all the companies involved, the extent of which information was gathered for this study exceeded financial reports and previous papers, thus the need for a financial database was deemed instrumental for the gathering of data, in this case, Orbis was used. Even though Orbis is viewed as a credible database, one could consider it as a limitation due to the fact that the data used and the variables created are solely based on the information provided by Orbis, resulting in a heavy reliance on Orbis. Furthermore, the data would be difficult to cross-check as other databases would not present the same companies in the same order when applying the filters used to target the relevant companies. However, as Orbis has available data on close to 450 million companies and the data it presents is considered easily comparable, one of its main

strengths lies in the fact that the data provided on one company is easy to compare to other companies within the Orbis database (Bureau Van Dijk, nd).

Industry Variations

This paper does not account for differences in industry climates and patterns and how those conditions might impact the dependent variable, growth trajectory. Data on what industries the companies operated in was however collected, but the results proved to be statistically insignificant. A Spearman correlation test was conducted for the dependent variable's growth trajectory against the industry codes of the companies included in the study in order to assess how much of the variability of the dependent variable could be attributed to which industries the companies operated within. When running the test, the following result was presented.

Correlations

			Percentage_g rowth_over_l ast_six_yrs	Industry_cod es
Spearman's rho	Percentage_growth_over _last_six_yrs	Correlation Coefficient	1.000	-.127
		Sig. (2-tailed)	.	.314
		N	85	65
	Industry_codes	Correlation Coefficient	-.127	1.000
		Sig. (2-tailed)	.314	.
		N	65	97

The table shows a correlation coefficient of -0.127 which indicates a weak negative correlation between the two variables. However, it is also important to note that the significance level of the test is 0.314 and as Spearman's rho is significant at 0.1=10%, the results are not significant and were therefore excluded from the study. By failing to account for industry conditions, the study fails to take market dynamics such as competitive landscapes, market sizes, and regulatory environments into consideration. However, by only including US companies, the study reduces some of the variations included in differing industries, as companies from the same country often operate within the same economic, legal, and regulatory environment. By only studying US companies, the data regains its homogeneity, which helps control for country-specific factors that could influence the relationship being investigated.

Time frame Limitations

When conducting the study, data regarding the companies included in the study was taken from a time frame of six years. The decision of using a time frame of six years was made with regards to factors such as lagged effects and statistical power. The impact of decisions regarding capital structure have on the growth of the company may not be immediate but instead could take time before it starts to have an impact. By including a six year long frame, the study allows for those potential lagged-effects to become apparent and therefore gives a more accurate picture of the relationship between the growth trajectory of the firm and its capital structure. Furthermore, as the study aims to identify the relationship between capital structure and the growth trajectory of the firms, a six year window was deemed as an appropriate time frame to be able to see the trajectory of the growth, allowing for more observations and therefore enhancing the precision. However, by using a six year time frame, the study is also limited to that window, meaning, the study will fail to account for effects that take longer than six years to materialize. That could be long-term effects of factors involved with capital structure decisions, such as certain investments and strategic initiatives. An area where such results may take longer to be materialized would be an investment in the research and development branch of the firm.

5.3.2 Considerations

Validity of variables

The variables used for this study are based on data collected from the financial database Orbis. The calculations used in order to reach the key variables are previously and widely used ratios and calculations that have been included in papers regarding growth and capital structure. When calculating for the capital structure, the assets-to-liabilities ratio was used. The assets-to-liabilities ratio gives an insight into the way the company at hand is financed. A ratio of over one indicates that the assets of the firm exceed the liabilities of the firm. This ratio has been used to measure the capital structure of firms in other research papers such as Frank, M.Z. & Goyal V. K. (2009) and Huang, G. & Song, F.M. (2006) who both center around the subject of capital structure and how it is impacted by, and how it impacts operations. By using widely used measures to compute the variable, we add validity to the thesis by ensuring that the variable is representative of what it is supposed to represent. Further, it makes the findings of the study comparable and complementary to other studies that are conducting research within similar

fields. The dependent variable growth trajectory was computed using revenue growth between the earliest year and the latest year within the six year time frame used. Revenue growth is a commonly used KPI that gives insight into the growth of the company. It helps reflect the overall performance and expansion of the company. It also has the ability to illustrate how well the firm attracts customers and generates sales (Paddle, nd). Again, using revenue growth to assess growth trajectory has been used previously when conducting research papers, for example, it was included in Richard, O. C., Devinney, T. M., Yip, G. S., & Johnson, G. (2009) which discusses a number of performance measures and indicators. The widespread use of the variables used in this thesis suggests that they have undergone examination, validation, and replication by investigators, which adds reliability to its measurements and interpretation.

Skewness of data set

As mentioned and illustrated earlier in the study, the data set analyzed exhibits a level of skewness. It is acknowledged that the skewness can introduce a level of bias within the sample data and that, consequently, the skewness can diminish the validity and generalizability of the findings made in the study. However, as also mentioned earlier in the thesis, the skewness has been considered when performing statistical tests and the analysis of the results and the process has been adapted to be better suited for the characteristics of the data. First of all, the sample set was selected through random sampling in order to try to ensure a representative sample of the population. Further, the sample was selected from the widely used database Orbis, and while the database itself may have some limitations, it is considered a reliable source of data. Moreover, to ensure the skewness has as small of an impact as possible on the results, the nonparametric statistical measure Spearman's rho correlation coefficient was used to try and identify a relationship between the capital structure and the trajectory growth. Compared to other correlation measures such as Pearson's correlation coefficient, the correlation results of Spearman's rho are more robust against skewness (Laerd, 2018). Therefore, the results of the analysis are considered to be valid, reliable, and generalizable. As the impact of the skewness has been diminished through steps of action and the relationship detected between the independent and dependent variables is on the higher end of a moderately strong relationship, it is assumed that the results are accurate and true.

6. Conclusion

6.1 Research aims

By developing a theoretical framework using prior theoretical conclusions regarding the relationship between capital structure and growth trajectory for small cap VC-backed companies operating in the US and conducting empirical studies using secondary quantitative data to reach a conclusion, the expectation of a relationship existing between the variables was developed. More so, a positive relationship between the two variables.

The aim of this study was to identify and verify if such a relationship exists through the use of an appropriate statistical analysis in order to test for a correlation between the changes in growth trajectory and capital structure. This aim has successfully been carried out by identifying a statistically supported positive relationship between the independent variable capital structure and the dependent variable growth trajectory of small cap VC-backed companies.

In this study, a sample of US small cap VC-backed companies was implemented in order to conduct a Spearman's correlation coefficient analysis on the changes in growth trajectory and capital structure within a six year period in order to reject or support the null hypothesis and answer the research question of this study. The Spearman's rho reflected a statistically significant, moderate positive correlation between capital structure and growth trajectory for the companies involved in the study. The results support the conclusion that there is a significant positive relationship between the two variables and that the null hypothesis should be rejected. However, there are other factors that influence the growth trajectory of small cap VC-backed firms that have not been accounted for, which is also reflected in the R squared value of 0.34 and the moderate positive correlation of 0.583 between the two variables.

6.2 Research objectives

The objective of this study was to, through a theoretical framework and an appropriate method, perform a statistical analysis on a sample of US small cap VC-backed firms to develop an

understanding regarding the relationship between the capital structure and the growth trajectory of the firms. So, the goal of this study was met by using accurate quantitative methods for both capital structure and growth trajectory and by using a Spearman's rho correlation coefficient analysis to prove or disprove a link between the two. The commonly used assets-to-liabilities ratio was used to develop the independent variable capital structure, and the growth trajectory was derived from operational revenue data over a span of six years.

By using commonly used measures, the method of calculating the variables allows the results of this paper to be easily studied, compared, and even contrasted with future research. Furthermore, such considerations and methodological strategies allowed for the achievement of the set objectives for this study, by allowing the study to conduct the research in a comprehensive and credible manner while also delivering insightful results and helping provide a significantly supported answer to the research question at hand. Furthermore, the application of these methods allows for the potential direction of future research within similar fields.

6.3 Practical implications

Numerous stakeholders in the entrepreneurial ecosystem, such as entrepreneurs, venture capitalists, policymakers, and business educators, stand to practically benefit from this study. The findings offer perceptions into the dynamics of capital structure and growth trajectories of US small-cap VC-backed businesses, which can guide strategic planning and decision-making. As mentioned previously, it is recognized throughout this thesis that the skewness of the data set does present challenges regarding the generalizability of the findings made in this study, however, there is confidence in the steps taken to ensure that the results presented are representative of the broader population and therefore also in the ability of the findings to have practical implications.

For Venture Capitalists

The goal of venture capitalists is to find and invest in businesses with strong growth potential. Their work requires a large amount of risk assessment and potential returns on investments. With

the help of this study, venture capitalists can better acknowledge how a US firm's capital structure, in which their investments play a big role, relates to the company's eventual growth trajectory.

This study's findings, which suggest that the capital structure may be a significant factor in determining growth, show a moderately strong positive association between the capital ratio and the growth trajectory of US small-cap VC-backed enterprises. Therefore, investors in venture capital must recognize that their choices can directly affect the potential for growth of the companies they participate in. If they are aware of this, they can strike a balance between supplying a sizable amount of cash to support growth and not overloading the company's capital structure, which might inhibit growth, (Cumming, 2008).

For Small-Cap VC-Backed Firms

For small-cap VC-backed companies, understanding the effects of capital structure on growth trajectory is essential. The Resource Based View, which emphasizes strategic resource management for growth (Lockett, A. 2005), is consistent with how this knowledge can be used to inform strategic decisions regarding accepting venture money and managing resources.

Given the evidence that a company's capital structure can affect its trajectory of growth, these companies must be careful when making strategic decisions about whether to seek out and accept venture capital funding. If this choice is well-informed, it might result in an ideal capital structure that supports and facilitates their planned growth trajectory (Colombo & Grilli, 2005).

Despite the fact that the number of employees did not considerably affect the growth trajectory, the value of human capital was not diminished. A talented workforce, for example, can offer a competitive edge and play an important role in the expansion of the company, as is supported in the Resource Based View (Barney, 1991).

For Policymakers

The results of this study may potentially have an impact on decision-makers, notably those in charge of startup ecosystems, economic development, and innovation. Policymakers can use this research to inform efforts and regulations that support the growth trajectories and ideal capital structures of small-cap VC-backed companies, potentially boosting economic growth.

6.4 Future Research

Comprehensive Case Studies

Future research should attempt to perform in-depth case studies that offer insights in order to further untangle the complexity of the relationship between capital structure and growth trajectory in small-cap VC-backed enterprises. These might focus on the specific approaches, decision-making frameworks, and operational procedures that the firms employ to decide on their capital structure. It might also explore how these companies manage their growth trajectories, their scaling strategies, and their responses to obstacles and difficulties. The internal operations of these companies would provide rich, qualitative data that could further validate or hone these results, providing insight into the macro-level findings of this study (Eisenhardt & Graebner, 2007).

Sector-Specific Analysis

Future research may focus on sector-specific studies, even though this study includes VC-backed companies in general. Numerous sectors have their own unique dynamics and sector-specific characteristics, including those in technology, healthcare, and energy. By concentrating on particular industries, it is possible to determine whether and how these specific characteristics affect the connection between capital structure and growth trajectory. For instance, industries that invest a lot in the capital may have a different trend than those that depend more on human capital (Bertoni et al., 2010).

Extended Longitudinal Studies

This study offers a moment in time view of firms' capital structures and growth trajectories. Companies, however, as well as their strategies and market circumstances, change throughout time. Future studies should take into account longitudinal studies that follow the same organizations over an extended period of time to capture this relationship's dynamic nature. These studies will give researchers deeper insights into how this relationship develops and responds to shifting business and market situations .

Comparisons with Non-VC-backed firms

Additional information might be gained by comparing the financial activities and growth trajectories of VC-backed and non VC-backed businesses. This analysis would make it clear whether venture capital has had any specific effects on a company's capital structure and, if so, how those impacts have affected the company's growth trajectory. Our results may help to clarify if the trends identified in this study are particular to VC-backed enterprises or whether they are more general and applicable to various types of firms.

International Perspective

Future research could widen the scope by incorporating enterprises in various nations or economic circumstances, whereas this study concentrated on the United States only. It may be possible to gain valuable insights and draw more generalized conclusions by looking at how various economic, cultural, and regulatory settings affect the link between capital structure and growth trajectory.

Exploring the Role of Human Capital

According to this study, the number of employees, which is frequently used as a proxy for firm size, had no visible influence on the growth trajectories of the organizations. If we take into consideration the quality of human capital, which includes elements like the skill sets of the employees, the experience of the management team, and the general organizational culture, the results can be very different. Future studies might concentrate on how these aspects of human capital affect the capital structure and growth trajectory.

Future research can expand on the groundwork established by this study by examining these topics in greater detail and, by doing so, providing even richer and more insightful insights into the dynamics of capital structure and growth trajectories in small-cap VC-backed enterprises.

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