



# **VC Strategies: A Comparative analysis of ESG Scores, IPO Valuations and Venture Capital Fund types.**

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## **Abstract**

The study of Environmental, Social, and Governance (ESG) factors within the frameworks of Independent Venture Capital (IVC) and Corporate Venture Capital (CVC) has gained increasing relevance in recent years due to the evolving priorities of investors and the transformative impact of venture capital. This thesis investigates the impact of ESG factors and financial performance metrics on the valuation processes within the venture capital ecosystem (VC) contributing to the current body of literature by also checking if those findings are replicated in the split up samples.

This research reveals that while no statistically significant difference is found between the ESG scores of CVC and IVC-backed firms, the governance pillar score is statistically different for the two CV categories. Additionally, a multiple regression model also shows no significant relationship between the Post Offer Value (POV) and the overall ESG score; however, a positive and significant relationship was found between the Environmental Pillar and POV. Finally, further multiple regression models reveal that Total Assets, Net Income, ROA, and Time since IPO are statistically significant predictors of POV at the 0.01 significance level, with Total Assets being the strongest positive predictor.

This study contributes to the current body of literature by providing real-world data and insights into how venture capital firms, integrate ESG criteria. While it validates some of the current findings, it challenges others overall by adding depth to our understanding of how ESG scores influence VC investment strategies.

**Keywords:** Corporate Venture Capital, Independent Venture Capital, ESG

## **Abstrato**

O estudo dos factores ambientais, sociais e de governação (ESG) no âmbito do capital de risco independente (IVC) e do capital de risco empresarial (CVC) tem vindo a adquirir uma relevância crescente nos últimos anos devido à evolução das prioridades dos investidores e ao impacto transformador do capital de risco. Esta tese investiga o impacto dos factores ESG e das métricas de desempenho financeiro nos processos de avaliação no âmbito do ecossistema de capital de risco (CV), contribuindo para o atual corpo de literatura ao verificar também se essas conclusões são replicadas nas amostras divididas.

Esta investigação revela que, embora não seja encontrada uma diferença estatisticamente significativa entre as pontuações ESG das empresas apoiadas por CVC e IVC, a pontuação do pilar de governação é estatisticamente diferente para as duas categorias de CV. Além disso, um modelo de regressão múltipla também não mostra uma relação significativa entre o valor pós-oferta (POV) e a pontuação geral ESG; no entanto, foi encontrada uma relação positiva e significativa entre o pilar ambiental e o POV. Por último, outros modelos de regressão múltipla revelam que o Ativo Total, o Resultado Líquido, o ROA e o Tempo decorrido desde a IPO são preditores estatisticamente significativos do POV ao nível de significância de 0,01, sendo o Ativo Total o preditor positivo mais forte.

Este estudo contribui para a literatura atual, fornecendo dados reais e perspectivas sobre a forma como as empresas de capital de risco integram os critérios ESG. Embora valide algumas das conclusões actuais, desafia outras em geral, acrescentando profundidade à nossa compreensão de como as pontuações ESG influenciam as estratégias de investimento de capital de risco.

**Palavras-chave:** Capital de Risco Empresarial, Capital de Risco Independente, ESG

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## **Glossary**

<b>CRSP</b>	Center for Research in Security Prices
<b>CVC</b>	Corporate Venture Capital
<b>EBITDA</b>	Earnings Before Interest Taxes Depreciations and Amortizations
<b>FDA</b>	Food and Drug Administration
<b>IPO</b>	Initial Public Offering
<b>IV</b>	Instrumental Variables
<b>IVC</b>	Independent Venture Capital
<b>NVCA</b>	National Venture Capital Association
<b>POV</b>	Post offer value
<b>SCR</b>	Sociedade de Capital de Risco
<b>SIC</b>	Standard Industrial Classification
<b>SPSS</b>	Statistical Product and Service Solutions
<b>VC</b>	Venture Capital
<b>VEIC</b>	Venture Economics Industry Codes
<b>WRDS</b>	Wharton Research Data Services

## 1. Introduction

Historically, Venture Capitalists have played an essential role in supporting innovation and economic growth by providing early-stage firms with risk capital, strategic guidance and access to their deep knowledge base and extensive network within specific industries. These resources continue to enable early-stage firms to overcome many challenges that occur in their development and commercialisation stages (R. Florida et al., 1988).

Venture Capital investments are highly associated with growth in startups which indicates the need of the market for risk capital where growth is promoted through the investments made (Antonio Dávila et al., 2003). It has been shown that VC's positively impacted efforts towards innovation in the European Union, both in early-stage innovation and at later stages (A. Faria et al., 2014). By providing these early-stage ventures with not only financing but also strategic guidance and access to valuable networks, VC's have proven to have played a pivotal role in nurturing disruptive and transformative businesses (J. A. Timmons et al., 1986).

Early stage ventures historically often struggled with securing loans from traditional sources since they typically are not profitable in their inception phases, this hurdle was enhanced for small, highly innovative technology companies due to heavy R&D activity, risk, and firm's information asymmetries (Paul A. Gompers et al., 2001). Originally, the funding for these ventures came from bootstrapping, angel investors or government initiatives. Even in the R&D activity, we are faced with the macroeconomic impact of venture capital, namely that they have contributed to economic growth through catalyzing innovation and a higher social return than public R&D (Bruno van Pottelsberghe de la Potterie et al., 2004).

Since its inception, the whole industry has been constantly evolving where we could observe multiple trends in the way they operate but also as to what investments they pursued. During its infancy stages, funds tended to invest in broad range of industries, over time however, we can notice that VC firms often specialized in more specific industries and often times follow trends like we witnessed during the 'dotcom' era (F. Bertoni et al., 2019).

The academic research regarding investments in the VC universe has increased, mainly due to its economic impact for the overall economy. They have financed SME's (Small and medium-sized enterprises) for over 50 years where they catalyze innovation and disruptive technologies (Gompers & Lerner, 2001).

This performance is well captured by the growth numbers that represent the VC industry as a whole, where in 2023 we saw an influx of 315B into the tech space through VC investments globally (Dealroom.co, 2023).

The venture capital (VC) industry typically focused their investments on ventures with significant growth prospects that had potential for large financial returns (Greenwood et al.,2022)( W. Sahlman.,1990). Evidently this statement holds true for mainly Independent Venture Capital (IVC) but still applies well to the overall VC industry, even though the incentives that influence the investments decision making process for Corporate Venture Capital (CVC) tend to be broader. The VC landscape is experiencing an evolution towards a more holistic approach. This evolution is fueled by an acknowledgement of the importance of Environmental, Social and Governance (ESG) factors in the investment making process. This is reflected through a greater emphasis on sustainability and responsible business practices, but also by the understanding that these factors may influence the financial returns and even the long-term risk profile of these investments.

With the inherent ties to large corporations that CVC firms exhibit by design, they have additional objectives that reach further than strict financial gain, e.g. driving innovation or acquiring new technologies. However, even for them, a strong ESG performance can be seen as a positive factor that may influence a ventures' viability (G. Giese et al.,2019).

This thesis aims to contribute to the growing body of knowledge on VC investments and ESG factors by analyzing the impact that ESG might have on financial valuations and how this further affects the decision-making process of both IVC and CVC fund types.

The presented research investigates to what extend ESG contributes to the investment decision-making process of both IVC and CVC funds. Specifically, it examines whether there are any statistical significant differences to be observed in the average ESG score of IVC and CVC investments. Further, it explores the impact of an firms ESG score on IPO valuations. Finally, it investigates the links between a firms financial performance indicators and their post offer value (POV).

Taking into account the current existing research gap on the topic, especially regarding a distinction between IVC and CVC and the drive towards using ESG-scores in their investment decision-making process, I suggest the following research questions:

*1- Do IVC and CVC investments differ significantly in their ESG focus, as measured by their mean ESG score?*

*2- Does the ESG score of a company have a significant impact on its post offer value?*

*3- Do a company's financial performance indicators, including total assets, net revenue and net income explain its post offer value?*

The differences between IVC and CVC have not been examined in depth in the existing literature, neither has the relationship between ESG scores and IPO valuations. This thesis aims to study the relationship between the ESG scores and the POV and verifies if those finding vary significantly between IVC and CVC funds. It does so by analyzing the past 23 years of data considering Venture Capital backed investments that had an exit through an initial public offering. For the topics researched in this paper, it is essential for the researched firms to have undergone an IPO process. During this process, they are obliged to publish their financial statements and make their ESG score publicly available. This data is necessary to investigate potential links and gain a deeper understanding of their relationships. With this thesis, the aim is to delve deeper into the complexities of the ecosystem they operate in, focusing specifically on the impact of current trends on their investment making decisions. More specifically the study will be diving deeper into the impact of environmental, social and governance (ESG) factors on the valuation of IPO's, while keeping in mind the nuances that play a role. Given the closed-off character of the industry VC's operate in, this thesis aims to see whether the results published in the existing body of literature can be supported by the results of this paper this paper. In particular, the findings of G. Giese (2019) have inspired the research questions of this thesis. In particular, the link they discovered between ESG performance and valuation was instrumental in the composition of this study's research questions.

A secondary significant contribution of this thesis is the way it explored core mechanisms that drive the relationship between the venture capital fund type and its implications on other factors such as ESG scores and valuations. This thesis further enables a deeper identification of the key elements dictating the influence that CVC and IVC exhibit over their portfolio firms Environmental, Social and governance score and their financial performance. Better understanding the underlying dynamics at play is crucial to gain a full understanding of the industry. It may help shape investment strategies, but also support governments and companies

in structuring the policies which directly and indirectly affect the whole ecosystem in which they operate in. Adding to the findings of Barber et al. (2021) which adds to a more holistic understanding of investors rational and underlying reasoning. This study aims to do so by further exploring all the factors affecting the relationship between firm types and business outcomes and ESG factors.

## **2. Literature Review**

### **2.1. Key themes in Venture Capital research**

This chapter commences by presenting a brief history of the creation of venture capital in order to provide the necessary context to understand how Venture Capital funds were created, why they have proven to be essential in driving innovation and growth in economic development, but also how they have evolved throughout the years by constantly adapting to market trends and the political climate they operate within.

The capital but also the support provided to disruptive, young firms by Venture Capital has been proven to be crucial for driving innovation and economic growth (C. Keuschnigg et al.,2002). The industry is through it's inherit design and purpose, always influenced by market trends. VC's inherent focus lies on identifying and supporting disruptive firms and industries that mandate a constant attunement to market trends. This allows them to find opportunities that they ultimately might add to their portfolio. Through investments in firms that are driving disruptive innovation, VC's are contributing to economic transformations (J.A Timmons et al.,1986).

Historically the industry was mainly driven by financial returns, but since 2004 the market started gaining more interest in sustainability factors whom became more prominent since the emergence of Environmental, Social and Governance factors (ESG). In order to gain a full understanding of the impact that ESG has on investment decisions, it is crucial to comprehend the evolution that the industry as a whole has gone through. This structure enables providing a foundation to further investigate the impact of ESG factors.

### **2.2. Creation and evolution of Venture Capital**

With the establishment of the ARD (American Research and Development Corporation), we could witness an enormous shift in the world of corporate finance. This is considered to be the worlds first VC firm which raised capital from a diverse pool of investors including universities,

insurance companies and investment trusts (E. Sokolowska et al., 2016). The creation of the ARDC urged investors to support enterprises that were created by WWII veterans. One of their investments that further helped them prove their unique positioning and innovative strategy was their investment of \$70,000 into the digital equipment corporation (DEC) which reached a return of close to 50,000% after its IPO eleven years post initial investment. Their success has further fueled the expansion of the VC industry as a whole (National Venture Capital Association, 2024). After 1973, a new organizational model was developed, which proved to be a better fit with the industry's needs (David H. Hsu et al., 2004). This new organizational model is now better known as 'the limited partnership'.

The VC industry further development was further catalyzed in 1979 with the institution of the "Prudent Man Rule" by the ERISA (Employee Retirement Income Security Act), which allowed asset managers to assess the risk of an investment as part of a diversified portfolio, instead of each investment individually. After the Department of Labor clarified that the "The Prudent Man rule doesn't necessarily apply to all investments into VC funds, there was an increased appetite for pension funds to allocate a percentage of their assets under management into VC funds (National Venture Capital Association, 2024).

Driven by a surge in technological innovation but also tax incentives in key hubs like the US, the venture capital industry experienced explosive growth (S. Camp et al., 1992). The commercialization of disruptive technologies in dynamic market settings is linked to substantial market and financial risks, however due to its unique rate of return criteria, their participation in the equity structure and the specific capabilities of VC's to add value to their portfolio companies, they have positioned themselves in a unique position to further and implement technological developments (Florida and Kenney, 1988)(Timmons et al., 1983).

### **2.3. Venture Capital funding types (IVC & CVC)**

Another aspect of the industry that we need to understand about the VC industry as a whole is that there are currently two main types of VC funds. Corporate Venture Capitalists (CVC) and Independent Venture Capitalists (IVC) (Gompers et al., 1998)(Mcnally, 1995). Typically IVC's have a broader investment capacity where they are more focused purely on financial returns. Their organizational structure and focus on financial returns typically attracts the most investors which results in a bigger investment capacity. CVC's on the other hand are more likely to make investments into sectors that are related to the core business of their corporate fund owner, which tends to be more coherent to their strategy and goals for accumulating intellectual capital

(M. Rossi et al., 2020)(Hellman, 2002). “CVC’s never aim to lose money, however their strategic focus is essential for their success” (Cabrilo et al., 2018).

The financial structures also tend to differ between IVC and CVC funds. IVC’s are typically organized as a LLP (Limited Liability Partnership) where they raise capital to invest. CVC’s on the other hand have more possibilities to arrange themselves both from the organizational as legal point of view. Their team is typically based within a business unit where their parent corporation is their only source of capital (Chemmanur et al., 2014).

When it comes to nurturing innovation within their portfolio companies, CVC-backed ventures show more desire for innovation, which can be observed by their patenting outcome (Alvarez-Garrido and Dushnitsky, 2016). CVC-backed ventures tend to be riskier, younger and overall less profitable than IVC-backed firms. Thomas J. Chammanur et al (2013) states that CVC’s possess better industry knowledge since they tend to invest in companies with a technological link with their corporate fund owner. CVC’s tend to have a greater tolerance for financial failure given that their primary target is not primarily a financial return.

The level of control also tends to differ, where CVC’s are less involved in the decisions within their portfolio company. IVC’s often prefer a seating role with a vote rather than the board observer role that a CVC likely prefer, since they prioritize their own strategic interests (Hallen et al., 2014).

Porporato (2013) indicate that IVC’s work more closely with the ventures leadership team where they are more efficient in the allocation of their resources. They look for control over the money they invested into a firm and probably require a board seat to do so.

### **2.3.1 The Role of Venture Capital in Driving Sustainable Innovation**

Venture Capital studios are often very well connected to valuable stakeholders in their specific industries, this often times leads to innovative partnerships between their portfolio companies and other actors within their ecosystem/network (Colombo et al.,2016). The funding provided by VC’s helps drive startups towards more sustainable business practices, as seen in their contribution to Sustainable Development Goals (SDGs) (Hegeman & Sørheim,2021).

Battisti (2022) finds that ventures that are VC-backed are more engaged with SDG goals compared to non-VC-backed ventures. Other papers point out that VC’s explicitly scout for

firms that are addressing sustainability issues or who are well reasoned in their social impact, aligning well with their goals of the VC (Gaddy et al., 2017).

Specifically CVC funds appeared in recent papers as an important catalysator for innovative startups with a focus on sustainability. Typically CVC funds tend to invest in ventures that align with the interest of their mother firm. This results in investments by CVC funds into ventures who align well with their mother's sustainability goals (Döll et al.,2022).

Shuwaikh et al., (2018) provides evidence that the investment amount made by CVC funds is positively associated with transfer of knowledge. Meaning that greater investment sizes typically result in greater transfers of knowledge. They also find that this transferred knowledge contributes to a greater financial valuation of the portfolio company.

Moreover, it has been shown by Chemannur et al. (2013) that Corporate Venture Capital funds tend to back more disruptive and innovative companies that are younger, have more inherent risks and are overall less profitable than firms that are backed by Independent Venture Capitalists.

As noted in the previous section, CVC funds would be more likely to contribute a greater weight to SDG and ESG factors in their investment decision making process, due to their inherent design and mission statement. This is supported by Cheng et al. (2022), where they provide evidence that VC investments have a positive impact towards the contributions of Sustainable Development Goals (SDG) of the portfolio company. They also find that this effect is greater for ventures that are CVC backed, compared to ventures that received IVC backing. Their findings may indicate a greater willingness for CVC funds to invest in firms that are well aligned with their own ESG goals.

Based on the differences between IVC and CVC firms in regards to their investment decision making process and in the way that they prioritize ESG factors as stated by the existing body of literature on the topic, the following hypothesis for this thesis is proposed to see if those results are visible in the dataset available for this study:

*1- Do IVC and CVC investments differ significantly in their ESG focus, as measured by their mean ESG score?*

## **2.4. ESG Integration in VC: A Literature Review**

The VC industry as a whole has always been very affected by market trends and changes in the regulatory landscape. This knowledge enables us to comprehend the importance of new trends, as we have seen in the last decade, where we have witnessed growing recognition for Environmental, Social and Governance (ESG) factors within the industry. By further investigating the interplay between ESG-factors and financial outcomes, this thesis contributes to a more holistic understanding of sustainable value creation within the Venture Capital landscape.

Historically, financial returns were the primary driver in the investment decision-making process of VC's, which often times was at the expense of other broader themes such as environmental or social impact. The existing investment paradigm had typically put a greater emphasis on short-term financial profits rather than longer term sustainability goals. A growing body of research however is radically changing this notion. (H. Naffa et al., 2020) Finds that the incorporation of ESG factors into investment rational can even enhance the financial performance of the portfolio as a whole. They demonstrate that by constructing megatrend factor portfolios, they were able to generate significant alpha's while still contributing to Sustainable Development Goals (SDGs). Thereby suggesting that financial goals and ESG goals can be aligned, dispelling the existing conventional wisdom that states an inherent trade-off between the two.

### **2.4.1. ESG Integration in VC: measurement of ESG**

For this research, the ESG data was extracted through Refinitiv Eikon's DataStream. It is therefor important to highlight how this data is originally collected and measured by Refinitiv Eikon.

It entails quantitative metrics such as but not limited to: CO2 emissions, corporate wastage, resource efficiency and many other (financial) ratios. In order to gain insight into the more qualitative ESG data aspects, Refinitiv Eikon utilizes natural language processing (NLP) which enables them to analyze annual reports, news reports by reputable sources and other important data. Moreover, they incorporate data from other reputable issuers of ESG data and ratings to comprehensively provide a full picture of a firm's ESG profile.

### 2.4.2. ESG Integration in VC: Impact of ESG on financial performance and risk

The following section delves into the existing literature that has investigated relationships between Environmental, Social, and Governance (ESG) factors and their influence on business performance. The aim of this section is to highlight the underlying links that have previously been examined between how ESG factors may influence the operational side of a business, but also to future financial outcomes. By comprehensively reviewing the existing literature between ESG scores and a plethora of business indicators, the interconnections will become more visible for the reader and help provide a stronger foundation that will attribute to a more holistic view of the potential benefits and risks that are associated with ESG practices and their implementations.

An ESG score consists of 3 focus areas, namely:

**Environmental factors** – These indicate the ventures’ physical impact on the world. This includes their greenhouse gas emissions and waste generation but also the rate at which they consume valuable resources such as water. Due to rising awareness of the risks posed by climate change and the scarcity of precious resources that result into global challenges, companies that operate with practices that are deemed unsustainable can face a multitude of operational and financial risks (J. Schulte et al., 2018). Some of these risks include:

Regulatory risks, since ventures around the globe are faced with increasingly stricter environmental regulations. These may impact the venture by imposing carbon pricing, restricting the extraction of scarce resources and limitations on the volume and methods of how a company may dispose of its waste (A. Baranzini et al., 2017). It has been shown that firms with a history of environmental violations are greatly affected by the damage to their reputation (H. Zou et al., 2015).

On the other hand, it can be observed that ventures that put an emphasis on their environmental efforts, are positioning themselves in a unique position where they are able to reap a range of benefits, such as cost saving. By focusing on efficiency, they lower their waste disposal costs, utility costs and decreases their operational footprint (Ki-Hoon Lee et al., 2015).

**Social factors** - These factors encompass a venture’s communication and relationships with all their stakeholders. It is not limited to strictly to its customers and staff but looks at impact

on the investors and even society as a whole. Same as with the environmental factors, strong practices can potentially lead to increased consumer satisfaction (A. Chernev et al., 2015).

Workplace conditions are an important aspect of this Pillar. The safety of the workplace conditions but also fair wages and anti-discrimination policies contribute to an overall sense of wellbeing amongst its employees. This helps the company to further attract but also contributes to retaining top talent and further improves labor productivity (Osmiriam Campuzano et al., 2018)(Z. Rawshdeh et al., 2023).

Same as with the environmental factors, we can observe that adherence to sustainable and fair practices in the social factors affect a company in more than just its financial performance. Some examples of them are:

A higher sense of customer confidence, where the effort of a venture to be transparent in their business practices, even in challenging times, reaps great benefits. It is a behavior that is perceived as very favorable by consumers and improves trust in the organization. It is shown to significantly influence the behavior of its customers and this finding remains active even after repeated interactions (K. Kanagaretnam et al., 2010).

Companies that showcase their commitments to their social commitments are perceived more favorably by consumers. This has as a direct effect that there is an increase in their brand awareness but also strengthens the emotional connection that a company has with their customers. In turn this results in more loyalty of its customers and also helps a company distinguish itself from its competitors (A. Stanaland et al., 2011).

**Governance factors** - Corporate governance entails all of the initiatives that a corporation takes in order to create a strong leadership structure that possesses the ability to make feasible strategic that are rooted in strong ethics. These factors help an organization is setting the foundations that result in sustainable practices and ultimately successes (Melis Temel et al., 2021). These factors directly contribute to different aspects benefitting the organization, some of which include:

Risk mitigation can be an outcome of having a strong governance structure that focusses on responsible decision-making and reliable risk management practices, will benefit a company by protecting its reputation, assets and safeguarding them from operational disruptions. Stronger governance structures are positively related to the financial performance, effectiveness of risk mitigation and protection of assets (Andrey G. Zagorchev et al., 2015).

By the same token, it can be observed that the inability to adhere to strong governance principles may lead to significant consequences for the organization, like lapses in integrity, which

influences organizations with weaker governance structures which in turn leads to unethical practices and even fraud or corruption. Resulting in a breach of trust between stakeholders and investors and ultimately harms all business operations (Rasha Kassem et al., 2022).

Given the extensive evidence concerning the relationship between ESG factors and a variety of business outcomes, as for example the improved operational efficiency, improved relationship with stakeholders but also risk mitigation. This thesis seeks to investigate whether these positive effects also translate into the financial valuation. It further examines the relationship between ESG factors and the POV. By doing so, the aim is to assess to what extent which ESG factors contribute to the valuation of companies undergoing an IPO.

Based upon the findings of the existing body of literature investigating the impact of ESG factors on both financial performance and risk, the following research question is proposed:

*2- Does the ESG score of a company have a significant impact on its post offer value?*

## **2.5. Impact of Financial Performance on Post Offer Value**

In order for investors to make well-informed decisions, understanding all the factors that influence the POV is essential. The last part of this thesis is focused on exploring the relationship between Financial performance metrics like total assets, net income and net revenue with a firms' POV. This adds to the existing literature providing deeper insights into how a firms' financial health impacts the valuation following a public offering.

The first variable that will be investigated is total assets. The relationship between the asset base of a company and their valuation has been explored by multiple studies, which suggest a positive correlation between the two variables. Giwoong Bae et al. (2012) find a strong positive relation between Total assets and its valuation in venture businesses, indicating that the amount of assets significantly impacts the firm value. Barine Nkonge Habakkuk et al. (2023) post similar findings. They suggest that all assets that a firm holds, ranging from equipment and property to financial assets, significantly impact the value of a firm positively. Ramadhan S et al. (2023) indicate that the value of a firms assets is positively correlating with its POV. Their findings suggest that a premium exists for firms with a substantial asset base. They also find that other financial ratios have an important role in determining the offer price of IPO's. Some of the most significant ratios they discuss is Return on Assets and Net Income, where these ratios give a deeper insight into the efficiency of a firm to generate earnings in relation to its asset base (Yadav et al., 2023).

Shareza & Ghodrati (2014), suggest that a firms' capital structure, specifically the ratio of total debt to total assets, shows an inverse relationship with the economic value added. This implies that firms with lower levels of debt relative to their total asset base are perceived as less volatile, which in turn creates a greater IPO valuation. This signals that a robust asset base can function as a buffer against market risk and contribute to more trust of investors.

Similar results are found in the existing papers examining the relationship between Net Revenue and the POV. The findings by Massal et al., (2021) align well with the hypothesis that robust streams of income contribute to an improved level of perceived stability of a firm, which in turn may lead to greater valuations. The importance of Net Revenue is further cemented by the valuation methods used by underwriters to calculate a preliminary offer price. These methods include dividend discount models, discounted cashflow models and peer group multiples. All of these models often incorporate revenue metrics, which further highlights the role of revenue metrics in determining the value of a firm (Aamir et al., 2018).

In addition, Net Income, which serves as an indicator of a firms' profitability, has been found to be value relevant as well. This indicates that this metric displays crucial information that has a significant impact on the financial valuation of the firm (Meichyel & Dewi, 2020). The relevance of Net Income on POV was further analyzed by Yadav et al. (2023), where they demonstrated that financial metrics, such as Net Income, significantly help determine the IPO price. These findings are echoed by Ramadhan S, et al. (2023), where they discovered that Net Income positively influenced offering prices. This solidifies the importance of Net Income in the intricate pricing mechanism that are applied in equity offerings.

The findings of the presented papers, which all underline the importance of financial metrics in financial valuation have served as an inspiration for the third research question of this thesis. Where the aim is to see if these results are duplicated in the analysis of the samples used in this thesis. Hereby the third hypothesis is presented:

*3- Do a company's financial performance indicators, including; total assets, net revenue and net income explain its post offer value?*

### **3. Data and Methodology**

#### **3.1. Data collection**

This chapter details the dataset used and further discloses which steps and filters were applied in order to retrieve the necessary data for further analysis. The collected samples were derived from platforms provided by Refinitiv Eikon, namely Deal screener, DataStream and WRDS (Wharton Research Data Services).

##### **3.1.1. Deal Screener Data**

Utilizing Refinitiv Eikon's Deal Screener enabled the construction of a vast and robust dataset for this study. The platform supported in identifying and extracting relevant deals which constructed the foundation for the data analysis of this thesis. The ability of the platform to filter the exit types was essential for isolating the necessary population where it automatically excluded non-VC deals. The platform also provides a filter that removed any deals where the POV was not disclosed. This further helped refine the dataset to only include the most relevant deals.

The collected sample originally consisted of 21,127 venture capital deals between Jan 1st 2000 and 31 Dec 2022. Constraints were then applied in to derive the necessary information for the topics of this thesis. By doing so any deals with incomplete data were removed. The first applied filter was the exit type, since for the specific data needs of this thesis, the ESG scores of the ventures were essential. And since these ESG scores are only published once a firm has filed for an IPO (Initial Public Offering), this necessitated deals without a recorded exit to be excluded. Subsequently, the filter for Pure VC Deal Exit was applied which includes all pure VC deals in all possible investment stages. Lastly, it was important to only get deals where the POV was disclosed. Initially, the sample thus consisted of 17,576 VC deals, of which 12,420 were IVC deals and 5,156 CVC deals. To further improve the quality of our dataset, VBA (Visual Basic for Application) code was designed for addressing remaining inconsistencies. The code was used to filter for N/A errors that were not picked up by the Deal Screener filters and deals displaying "0" were removed as well. After cleaning up the incomplete deals, the set was reduced to 1,674 deals.

##### **3.1.2. Refinitiv Eikon DataStream**

Financial data of the firms was extracted for the further analysis of the deals. This data was extracted using Refinitiv Eikon's DataStream. This supported linking the deals with financial

performance metrics. In total, there were three financial performance metrics extracted using DataStream. Namely: total assets, net income and net revenue.

Similar as with the extracted Deal Screener data, rigorous data cleaning was necessary to ensure that our set consisted of accurate data. Inconsistencies, missing values and errors were removed by the implementation of a self-developed VBA code. The use of VBA code ensured a more streamlined process which was essential in further improving the reliability of the dataset. With the combination of both deal-level data and financial performance metrics, a robust dataset was constructed where the relationship between financial metrics, ESG-scores and POV could be examined. After filtering out the firms where we did not have all the relevant information, the sample was reduced to 358 firms.

### **3.1.3. Wharton Research Data Services**

In order to further investigate the influence of ESG-scores on the POV, these scores had to be incorporated into the dataset. The most reliable source from which to extract these scores seemed to be the platform of Wharton Research Data Services (WRDS). To ensure accuracy of the data, VBA code was designed to check for discrepancies and remove all incomplete data.

### **3.1.4. dependent variables**

#### **3.1.4.1. dependent variables: Hypothesis 1**

To investigate the first hypothesis, where the differences in ESG score's between IVC and CVC investments were analyzed, 4 independent variables were used. These scores were extracted through the Wharton Research Data Services (WRDS) platform.

##### **1. Total ESG Score –**

This score captures a venture its overall sustainability performance. It aggregates the 3 existing ESG scoring criteria (Environmental, Social and Governance) and calculates an all-compassing score. The methodology applied to result in the total ESG scores varies across agencies; therefore, it is crucial to understand the specific methodology applied to ensure correct interpretation. In this thesis, the ESG score was extracted from the Refinitiv Eikon databases.

##### **2. Environmental Pillar score –**

This score captures many factors that directly influence the firms' environmental performance. These metrics range from greenhouse gas emissions to how the firms handle resources. An

example of this is how a firm manages its water consumption, treats their wastewater, and the efforts it takes to conserve. These metrics are analyzed over a multitude of items, such as waste management, pollution and overall climate change mitigation.

### 3. Social Pilar score –

The goal of the social score is to encompass all available factors to assess how a firm interacts with their stakeholders, on all different levels. This captures every interaction, from within its operational activities, such as labor practices, but ranges to their social impact.

### 4. Governance Pilar score –

This pilar score is focused on how a firm is structured. It ranges from leadership structures to how accurate and transparent a firm is in its financial statements. Ethical conduct is at the forefront here as with the previous 3 pilar scores. Sustainable business practices where firms adhere to good ethical principles will lead to better scores here as opposed to firms that do not.

## **3.1.4.2. dependent variables: Hypotheses 2 & 3**

### 1. POV –

For this thesis's second and third hypotheses, the POV was assigned as the dependent variable. The POV serves as a proxy for a firm's market valuation upon completion of their IPO. By investigating the relationship between the POV and the ESG scores, the aim was to assess to what extent these sustainable practices contribute to a firm's market value. For the third hypothesis, the POV was regressed against more traditional financial metrics.

## **3.1.5. Independent variables**

### **3.1.5.1. Independent variables: Hypothesis 1**

#### 1. Investor type (IVC-CVC) –

In order to further investigate the potential differences in ESG scores between the investments of IVC and CVC firms, investor type was employed as the primary independent variable for the first hypothesis. This variable differentiates the two distinct groups of Venture Capital firms: Independent Venture Capital and Corporate Venture Capital. Independent Venture Capital firms have as a primary trait their independence of a corporate owning entity, which typically provides the capital for the fund to work with. This investor type is typically primarily motivated by financial returns. Contrary to IVC firms, CVC firms are owned by a corporate

entity and their investment objectives are most often in line with the corporate parent's interests. By comparing the ESG scores between both investor types, the study aims to identify disparities in the investor's focus on sustainability and other ESG practices.

### **3.1.5.2. Independent variables: Hypothesis 2**

For the second hypothesis of this thesis, the 4 available ESG scores were assigned as independent variables to further examine their potential impact on the POV. These scores were extracted through the platform of Wharton Research Data Services (WRDS).

#### **1. Total ESG Score –**

The total ESG score encompasses all the sustainability efforts made by a firm regarding the three ESG dimensions: Environmental, Social and Governance. It measures their performance in managing these intricate pillars.

#### **2. Environmental Pilar score –**

This score helps assess how a firm is performing in regards to managing their risks and opportunities in regards to the environmental pilar. This includes items like resource usage, waste management and carbon emissions.

#### **3. Social Pilar score –**

This score evaluates a firms dedication towards managing the relationship with all of their stakeholders. These stakeholders include employees, customers and even encompasses the communities in which they operate. It is focused on human rights but also determines the way firms engage with their community.

#### **4. Governance Pilar score –**

This pilar score measures the quality of the firms leadership and governance structures. It looks at compensations, composition of the board of directors and the rights that shareholders hold.

By using these independent variables, the thesis aims to investigate if there is a significant relationship between a firm's ESG performance and it's POV.

### **3.1.5.3. Independent variables: Hypothesis 3**

The third hypothesis of this thesis examined the influence of more traditional financial metrics on the POV of a firm. The third hypothesis focusses on 3 main financial metrics as the independent variables, namely:

1. Total Assets –

This metric represents the cumulative value of all the assets owned by a firm. This includes items like property, equipment and cash.

2. Net Revenue –

The total revenue generated from their day-to-day activities, such as sales of goods and services – subtracted any potential returns and discounts.

3. Net Income –

This encompasses the profit retained by a venture after all expenses and taxes are deducted. It gives a deeper insight into a firm's profitability and health of its margins.

These variables allowed us to further investigate the influence of financial metrics on the firm's valuation.

### **3.1.6. Control variables**

While investigating the second and the third hypotheses, it is crucial to control for factors that might influence the regression output. In order to control for these factors, multiple financial and operational variables were included in the regression models.

1. ROE –

Return on equity serves as an indicator for a firm's profitability relative to the investments made by the shareholders of the firm. A higher ROE indicates that a firm is more efficient in generating profit from the equity financing. The incorporation of ROE as a control variable enables us to account for how financial health potentially might influence the POV.

$$ROE = \text{Net Income} / \text{Shareholders' equity}$$

2. ROA –

Return on assets helps measure how profitable a firm is relative to its total assets. This creates a deeper insight in how effective a firm is in generating earnings from its assets. The incorporation of ROA helps control for financial efficiency and asset utilization.

Even though total assets and net income are assigned independent variables in the model used for the third hypothesis, incorporating ROA as a control variable provides a more deeper explanation of its financial performance. It allows to account for variations in profitability not strictly attributable to total assets or net income. In this setting, ROA acts as a proxy for financial efficiency which adds context to the analysis.

$$ROA = Net\ Income / Total\ Assets$$

### 3. Innovation Capacity –

This factor captures the R&D intensity of a firm. It is the ratio of R&D expenses to total revenue and serves as a proxy for a firm's focus to innovation. By making it into a ratio, it also enables to compare with other firms with different levels of revenue.

Both R&D intensity and expenses provide context into a venture's commitment towards innovation, including both in the regressions allows a more comprehensive understanding of its impact on the POV.

$$Innovation\ Capacity = R\&D\ expenses / total\ revenue$$

### 4. Time since IPO –

A control variable that tracks the time since the IPO in years was added. This allows to further examine changes in valuation over time.

### 5. Sector –

In order to assess the potential industry-specific differences between the ESG score and valuation, the industry of the portfolio company is included as a control variable. Firms are categorized according to their primary sector and helps to control for factors that might influence the dependent variable. This further assists in mitigating potential confounding effects of sector-specific trends or characteristics.

## 3.2. Methodology

### 3.2.1. Empirical modeling

The first equation presented in this thesis investigates the influence of ESG factors on the POV of the VC-backed firm that underwent an IPO. The model is represented by the following equation for the second hypothesis of this thesis:

$$1. \text{POV}_{it} = \beta_0 + \beta_1(\text{Total ESG}) + \beta_2(\text{Environmental}) + \beta_3(\text{Social}) + \beta_4(\text{Governance}) + \beta_5(\text{ROA}) + \beta_6(\text{ROE}) + \beta_7(\text{Innovation}) + \beta_8(\text{Time since IPO}) + \alpha_i + u_{it}$$

$\text{POV}_{it}$  represents the value of a firm at their initial public offering. This is measured by the POV. The independent variable  $\beta_1(\text{Total ESG})$  is the Total ESG score, which is an encompassing factor that includes all of the separate pillar scores. Subsequently, the independent variables  $\beta_2(\text{Environmental})$ ,  $\beta_3(\text{Social})$  and  $\beta_4(\text{Governance})$  represent all of the individual pillar scores. This includes the Environmental pillar score, the Social pillar score and the Governance pillar score. The control variables  $\beta_5(\text{ROA})$ ,  $\beta_6(\text{ROE})$ ,  $\beta_7(\text{Innovation})$  and  $\beta_8(\text{Time since IPO})$  represent Return on Assets, Return on Equity, the Innovation Capacity and the time in years since the firm has undergone its IPO. This empirical model includes individual-specific effects ( $\alpha_i$ ) but also the error terms ( $u_{it}$ ). This inclusion enables to account for random disturbances or ‘noise’ and heterogeneity.

The second equation of this thesis investigates the influence of financial performance metrics on the POV of the VC-backed firms that underwent an IPO process. The model is represented by the following equation for the third hypothesis of this thesis:

$$2. \text{POV}_{it} = \beta_0 + \beta_1(\text{Total Assets}) + \beta_2(\text{Net Income}) + \beta_3(\text{Net Revenue}) + \beta_4(\text{ROA}) + \beta_5(\text{ROE}) + \beta_6(\text{Innovation}) + \beta_7(\text{Time since IPO}) + \alpha_i + u_{it}$$

$\text{POV}_{it}$  represents the value of a firm at their initial public offering. This is measured by the POV. The independent variable  $\beta_1(\text{Total Assets})$  which is often used as a proxy to describe the asset base of the firm. Subsequently, the independent variable  $\beta_2(\text{Net Income})$  represents the firm's Net income. Lastly,  $\beta_3(\text{Net Revenue})$  represents the level of Net Revenue a firm has achieved. The control variables  $\beta_4(\text{ROA})$ ,  $\beta_5(\text{ROE})$ ,  $\beta_6(\text{Innovation})$  and  $\beta_7(\text{Time since IPO})$  represent Return on Assets, Return on Equity, the Innovation Capacity and the time in years since the firm has undergone its IPO. This

empirical model includes individual-specific effects ( $\alpha_i$ ) but also the error terms ( $u_{it}$ ). This inclusion enables to account for random disturbances or ‘noise’ and heterogeneity. By including the control variables, random effects and error terms, a comprehensive analysis is ensured.

Both these equations incorporate random effects and individual variations, where the fixed effects coefficients are robustly estimated. By employing these models, it is aimed to deliver a deeper insight into the relationships between both ESG factors and Financial performance metrics with their POV.

## 4. Empirical Results

This section aims to summarize the results obtained from the models and regressions discussed in this paper's methodology section. The descriptive statistics will be analyzed first, then the correlation matrices will be investigated, and the regression outputs and t-tests will be discussed. Given that the central point of this thesis revolves around the differences between IVC and CVC firms, the samples will be discussed separately and then compared.

### 4.1. Descriptive Statistics

#### 4.1.1. CVC sample

Table 1: Summary statistics CVC-sample

	Mean	Median	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
ESG-CVC	45.261	44.889	14.472	0.117	-0.123	11.628	83.482
Environment Pillar	30.084	23.610	22.679	0.691	-0.605	0.310	86.700
Social Pillar	52.641	52.770	18.719	0.151	-0.651	15.200	95.040
Governance Pillar	49.472	50.040	16.136	-0.120	-0.592	11.600	84.350
ROA	-0.150	-0.112	0.273	-1.364	5.770	-1.547	0.609
ROE	-0.445	-0.307	0.816	-3.284	15.070	-5.385	0.943
Innovation Capacity	3.077	0.139	15.789	9.178	89.762	0.000	158.430
Time since IPO (years)	10.939	9.586	6.240	0.689	-0.745	3.249	24.340
Post Offer value	20.483	20.203	1.220	0.656	0.006	18.249	24.201
Total Assets	652685	283324	1064938	3.586	14.729	17627	6809000
Net Revenue	335782	135960	631133	4.613	27.156	300	4888000
Net Income	-60706	-29752	207404	-5.023	42.875	-1752857	671527

Table 1 contains the descriptive statistics for the sample containing CVC-backed firms. The results will be dissected and discussed in the following section.

The mean ESG total score is 45.261, with a standard deviation of 14.472. The range of scores goes from a minimum of 11.628 to a maximum of 83.482. Overall, the slight rightward

skewness of 0.117 indicates that in the sample, a few firms tend to have an exceptionally high ESG score; at the same time, the distribution is slightly leptokurtic (with a skewness of -0.123), suggesting somewhat heavier tails than a normal distribution.

The environmental pillar score has a mean of 30.084, which is lower than the total ESG and the other pillars. This indicates that, on average, firms may have more room to improve their environmental performance. The standard deviation is relatively high at 22.679, reflecting a wide variation in environmental scores, with a minimum score close to zero and a maximum of 86.700. The skewness of 0.691 points to relatively more firms clustering towards the lower end, with a few having very high environmental scores.

The Social Pillar score has a relatively high mean of 52.641, with a standard deviation of 18.719. The distribution is slightly right-skewed and slightly platykurtic, indicating a broad but balanced range of values.

Similarly, the Governance Pillar score also shows a relatively high mean of 49.472, and the standard deviation is 16.136, indicating moderate variability. The negative skewness suggests the presence of firms with exceptionally low scores, while the kurtosis of -0.592 points to a concentration of scores around the mean. Additionally, the negative averages of ROA and ROE of -0.150 and -0.445, respectively, indicate that the sample, on average, is not profitable, which is further confirmed by the negative average net income.

The average Innovation Capacity of 3.077 clearly shows the remarkable investments in R&D of the CVC-backed firm. In fact, the distribution is heavily skewed to the right with many observations lying on the tails, as a kurtosis of 89.762 shows, perfectly aligned with the the expectation of the VC environment. The high average of total assets indicates that the firms in the sample are generally quite large. The distribution is heavily skewed to the right and very leptokurtic, with a skewness and kurtosis of 3.586 and 14.729, respectively.

#### 4.1.2. IVC sample

*Table 2: Summary statistics IVC-sample*

	Mean	Median	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
ESG-IVC	42.425	41.081	14.633	0.249	-0.195	9.363	83.482
Environmental	27.999	22.924	21.987	0.779	-0.354	0.540	88.776
Social	48.995	48.463	18.620	0.175	-0.670	7.417	94.990
Governance	27.908	22.924	21.858	0.779	-0.332	0.540	88.776
ROA	-0.102	-0.019	0.267	-1.958	6.916	-1.547	0.609

ROE	-0.568	-0.104	2.540	-9.778	117.647	-33.475	1.926
Innovation	1.513	0.069	10.497	13.777	203.815	0.000	158.430
Time since IPO	11.699	10.340	6.206	0.407	-1.090	3.132	24.378
POV	20.2929	20.078	1.303	0.349	0.855	15.79	24.428
Total Asset	1069054	300238	2560004	5.520	35.618	17627	22278000
Net Revenue	726893	210381	2951290	12.515	176.678	300	43287000
Net Income	-22296	-8281	167404	-4.173	48.320	-1752857	671527

Table two contains the descriptive statistics for the sample containing IVC-backed firms. The results will be dissected and discussed in the following section.

The mean and median of IVC-backed firms' ESG are 42.425 and 41.081, respectively, relatively lower than those in the CVC-backed sample. The standard deviation is 14.633, and, as previously, the sample ESG scores present great variability with a minimum of 0.540 and a maximum of 88.776. The social and governance pillars present similar metrics. Their averages are 27.999 and 27.908 for the environmental and governance pillars, respectively, while the social pillar's average of 48.995 is remarkably higher than that of the other two pillars. The standard deviation of the pillars ranges from 18.620 for the social pillar to 21.987 for the environmental pillar. Both the total ESG score and its pillars have a positive skewness and a negative kurtosis, indicating a broad but balanced range of values.

As for the CVC sample, the negative averages of ROA and ROE of -0.101 and -0.568, respectively, underline that, on average, the firms in the sample are not profitable, which is further confirmed by the negative average of Net Income of -22296. All the three financial variables have left-skewed, indicating that more observations are concentrated in the negative tails compared to a normal distribution. ROE shows the most extreme distribution characteristics, with a kurtosis of 117.647.

Also for this subsample, Innovation Capacity is the variable with the highest Kurtosis (203.815), which, if considered along with its rather high skewness (13.777), confirms the huge potential of IVC-backed firms. Similarly to the previous subsample, the average Time since IPO indicates that the firms are relatively mature. Additionally, the POV remains similar to that of the CVC-backed firms, which, as in the previous case, has a very low standard deviation compared to its average

#### **4.2. Correlation matrices**

In this section, correlation matrices will be presented to explore the underlying relationships between the variables used in the data analysis for this thesis. Since the primary focus of the

thesis is on the differences between IVC and CVC-backed firms, the samples will be analyzed and discussed separately.

## 4.2.1. CVC sample

Table 3: Correlation matrix CVC-sample

	Correlations											
	ESG-CVC	Environment Pillar Score	Social Pillar Score	Governance Pillar Score	ROA	ROE	Innovation Capacity	Time since IPO	Total Asset	Net Revenue	Net Income	Post Offer Value
ESG-CVC	--											
Environment Pillar Score	.738** 0.000	--										
Social Pillar Score	.787** 0.000	.624** 0.000	--									
Governance Pillar Score	.671** 0.000	.310** 0.001	.248** 0.010	--								
ROA	0.029 0.767	0.136 0.160	-0.013 0.897	0.023 0.810	--							
ROE	0.097 0.316	0.097 0.316	-0.023 0.814	0.084 0.385	.524** 0.000	--						
Innovation Capacity	-0.089 0.358	-0.049 0.613	-0.083 0.396	-0.177 0.067	-0.143 0.141	-0.062 0.522	--					
Time since IPO	.308** 0.001	.284** 0.003	.292** 0.002	0.157 0.105	0.041 0.675	.255** 0.008	-0.036 0.714	--				
Total Asset	0.008 0.932	0.096 0.324	0.032 0.740	-0.062 0.521	0.128 0.185	-0.016 0.870	-0.039 0.685	-.361** 0.000	--			
Net Revenue	-0.017 0.858	0.036 0.714	-0.042 0.663	0.028 0.774	.215* 0.025	0.078 0.425	-0.099 0.307	-.264** 0.006	.858** 0.000	--		
Net Income	0.022 0.825	0.064 0.510	-0.012 0.902	0.049 0.616	.302** 0.001	.245* 0.010	-0.083 0.395	.241* 0.012	-.327** 0.001	-.235* 0.014	--	
Post Offer Value	0.006 0.952	0.080 0.411	-0.013 0.894	0.002 0.985	0.178 0.066	-0.087 0.369	-0.072 0.459	-.472** 0.000	.683** 0.000	.594** 0.000	-.356** 0.000	--

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

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

Table 3 shows the relationships between the variables used in this thesis, including ESG scores, financial metrics, and firm-specific characteristics for the CVC-sample.

The total ESG score (ESG-CVC) exhibits strong relationships with all the ESG pillar scores Environmental (0.738\*\*), Social (0.787\*\*) and Governance (0.671\*\*), which is expected as the total ESG score is composed by aggregating the three individual pillar scores. The total ESG score also exhibits a moderate positive relationship with Time since IPO (0.308\*\*), indicating that more mature firms have stronger ESG total scores on average. This relationship is statistically significant for the total ESG score, the Environmental pillar score and the Social pillar score at a 0.01 significance level. However, the relationship between Time since IPO and the Governance pillar score is not statistically significant.

Return on Assets (ROA) exhibits a strong positive correlation (0.524\*\*) with Return on Equity (ROE), suggesting that firms that have a strong profitability relative to their equity base are also more profitable relative to their asset base. ROA also exhibits a positive relationship with Net Revenue (0.215\*) and a slightly stronger positive correlation with Net Income (0.302\*\*), suggesting that firms with an increased ROA tend to have a higher Net Income and Net Revenue. Return on Equity (ROE) exhibits a weak positive relationship with the Time since IPO metric (0.255\*\*), indicating that more mature firms tend to have a better return for their equity base. ROE is also positively correlated with Net Income (0.245\*), suggesting that firms with a greater Net Income tend to have a higher return on their equity base.

Time since IPO exhibits a weak negative correlation with POV (-0.322\*\*), indicating that more mature firms tend to have a lower POV. Time since IPO is also negatively correlated with both Total Assets (-0.361\*\*) and Net Revenue (-0.264\*\*) both significant at a 0.01 significance level and positively correlated with Net Income (0.241\*), significant at a 0.05 significance level.

The POV has strong positive correlations with both Total Assets (.835\*\*) and Net Revenue (.840\*\*) and a negative correlation with Net Income (-.553\*\*), all significant at a 0.01 significance level. The strong positive correlations indicate that larger companies that reach greater Net Revenue levels reach greater valuations. The somewhat unexpected negative correlation between POV and Net Income suggest that firms with a greater Net Income tend to have lower valuations. These findings will be further investigated in this thesis, through means of regressions. Total assets has a strong positive relationship with Net Revenue (.858\*\*) and a moderate negative correlation with Net Income (-.327\*\*).

Net Revenue shows to have a weak negative relationship with Net Income (-.235\*), suggesting that a greater Net Revenue tends to result into lower levels of Net Income.

## 4.2.2 IVC sample

Table 4: Correlation matrix IVC-sample

	Correlations											
	ESG-IVC	Environmental Pillar Score	Social Pillar Score	Governance Pillar Score	ROE	ROA	Innovation Capacity	Time since IPO	Total Asset	Net Revenue	Net Income	Post Offer Value
ESG-IVC	--											
Environmental Pillar Score	.714** 0.000	--										
Social Pillar Score	.807** 0.000	.628** 0.000	--									
Governance Pillar Score	.713** 0.000	.998** 0.000	.628** 0.000	--								
ROE	0.047 0.462	0.022 0.734	0.036 0.571	0.021 0.746	--							
ROA	-0.032 0.620	0.047 0.456	-0.073 0.253	0.051 0.422	.337** 0.000	--						
Innovation Capacity	-0.034 0.593	-0.025 0.700	-0.019 0.764	-0.024 0.704	-0.010 0.874	-.137* 0.030	--					
Time since IPO	.211** 0.001	.177** 0.005	.131* 0.039	.169** 0.008	.138* 0.030	0.063 0.323	-0.048	--				
Total Asset	0.074 0.245	.144* 0.023	.136* 0.032	.147* 0.021	0.034 0.591	.127* 0.046	-0.034 0.590	-.171** 0.007	--			
Net Revenue	0.034 0.593	0.099 0.120	0.046 0.472	0.100 0.114	0.037 0.560	0.098 0.123	-0.034 0.593	-0.053 0.402	.686** 0.000	--		
Net Income	-0.009 0.886	0.033 0.599	-0.042 0.509	0.034 0.591	.139* 0.028	.373** 0.000	-0.108 0.088	.170** 0.007	.169** 0.008	0.085	--	
Post Offer Value	.136* 0.032	.208** 0.001	.179** 0.005	.207** 0.001	-0.005 0.932	.138* 0.029	-0.024 0.706	-.462** 0.000	.529** 0.000	.299** 0.000	-.134* 0.035	--

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

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

Table 4 shows the relationships between the used variables in this thesis, including ESG scores, financial metrics and firm specific characteristics for the IVC-sample.

The total ESG score (ESG-IVC) exhibits strong relationships with all the ESG pillar scores Environmental (.714\*\*), Social (.806\*\*) and Governance (.713\*\*). The total ESG score also exhibits a moderate positive relationship with Time since IPO (.211\*\*), indicating that more mature firms on average have stronger ESG total scores. This relationship between time since IPO and the pillars is statistically significant for all the individual and total ESG scores at a 0.01 significance level, except for the Social pillar score, here it is only statistically significant at a 0.05 significance level.

All three pillar scores exhibit a weak positive relationship with total assets, significant at a 0.05 significance level. Environmental (.144\*) Social (.136\*) and Governance (.147\*).

Return on Assets (ROA) exhibits a moderately strong positive correlation (.337\*\*) with Return on Equity (ROE). ROA also exhibits a weak negative relationship with Innovation capacity (-.137\*), a weak positive relationship with Total Assets (.127\*) and a stronger positive correlation with Net Income (.374\*\*), suggesting that firms with an increased ROA tend to bring in greater levels of Net Income and Net Revenue.

Return on Equity (ROE) exhibits a weak positive relationship with the Time since IPO metric (.152\*), indicating that more mature firms tend to have a better return for their equity base. ROE also has a weak positive correlation with Net Income (.140\*), suggesting that firms with a greater Net Income tend to have a slightly higher return on their equity base.

Time since IPO exhibits a weak negative correlation with POV (-.314\*\*), indicating that more mature firms tend to have a lower POV. Time since IPO is also negatively correlated with both Total Assets (-.170\*\*) and Net Income (-.171\*\*).

The POV has positive correlations with both Total Assets (.671\*\*) and Net Revenue (.353\*\*) and a negative correlation with Net Income (-.288\*\*), all significant at a 0.01 significance level. These findings will be further investigated in this thesis, through means of regressions.

Total assets has a strong positive relationship with Net Revenue (.686\*\*) and a moderate correlation with Net Income (-.169\*\*)

### 4.3 Difference in ESG focus between CVC & IVC

In order to investigate the first hypothesis of this thesis, specifically whether there is a statistically significant difference in the mean ESG score between CVC and IVC investments, a t-test with two samples assuming unequal variances is performed.

Table 5 shows the results for the mean ESG Total score comparison between both samples.

*Table 5: Welch's t-test for ESG total score*

<b>T-Test : Two-Sample Assuming Unequal Variances</b>				
<b>Variable</b>	<b>Mean CVC</b>	<b>Mean IVC</b>	<b>Difference</b>	<b>T-statistic</b>
ESG Total score	45.261	42.439	2.822*	(1.689)
ROE	-44.482	-56.816	12.334	(0.689)
ROA	-0.150	-0.101	-0.049	(-1.558)
Firm Size	12.670	12.847	-0.176	(-1.286)
Innovation capacity	3.077	1.507	1.570	(0.947)
Time since IPO	10.939	11.739	-0.801	(-1.115)

\*\*\*Significance for the t-test for differences in means at the 1% level

\*\*Significance for the t-test for differences in means at the 5% level

\* Significance for the t-test for differences in means at the 10% level

The results in the t- statistic (1.689\*) combined with its p-value (0.093) imply that there is a difference in the average ESG Total scores between the CVC- and IVC sample, however, it is not considered strong enough to be statistically significant at the 0.05 significance level for a two-tailed test. It is only significant at the 0.10 significance level for a two-tailed test, suggesting that while there may be an inclination for CVC firms to invest in firms with higher ESG Total scores, the differences are not deemed significant enough to be conclusive.

A significant difference in ROE is observed between the CVC and IVC samples; however, the findings are not statistically significant, with a p-value of 0.491. This aligns with the results of Benkraiem et al. (2023), who also found no significant difference in ROE. Similarly, while there is a notable difference in ROA between the two samples, the results are not statistically significant, with a p-value of 0.120.

Similarly, for the other control variables, firm size, innovation capacity, and time since IPO, the observed differences are not statistically significant at the 0.05 significance level. Based on the findings proposed by the conducted t-test, the results fail to reject the null hypothesis that there is a significant difference between the average ESG score of the portfolio companies CVC and IVC funds. It can, therefore, not be concluded that the data support the first hypothesis of this thesis.

Even though these findings are not deemed statistically significant, further analysis and potentially larger sample sizes could uncover more significant differences.

### 4.3.1 Robustness tests

To enhance the quality and robustness of the analysis regarding ESG scores and venture capital firm types (CVC and IVC), additional variables were introduced, and further t-tests were conducted to explore differences between the firm types across individual ESG pillars. The three ESG dimensions were examined separately through t-tests to determine whether the observed differences in the mean ESG score were driven by specific pillar scores or influenced by other factors.

Table 6: Robustness check for Welch's t-test

<b>T-Test : Two-Sample Assuming Unequal Variances</b>				
Variable	Mean CVC	Mean IVC	Difference	T-statistic
ESG Total score	45.261	42.439	2.822*	(1.689)
Environmental pillar score	30.084	27.997	2.087	(0.807)
Social pillar score	52.641	48.956	3.685*	(1.713)
Governance pillar score	49.472	27.906	21.566***	(10.382)

\*\*\*Significance for the t-test for differences in means at the 1% level

\*\*Significance for the t-test for differences in means at the 5% level

\* Significance for the t-test for differences in means at the 10% level

The robustness check suggests that variations in the Governance pillar score may largely drive the difference in the mean ESG total score between CVC and IVC firms. The differences in the Environmental pillar score are not statistically significant at any significance level, while the Social pillar score differences are only significant at a 0.10 significance level. However, the

Governance pillar score shows a highly significant difference at a 0.01 significance level. This difference in governance likely plays a significant role in the overall variation in ESG performance between CVC and IVC-backed firms.

#### 4.3.2 Sensitivity analysis

A Levene's test for equality of variances was performed to ensure the robustness of the t-test conducted between two samples with unequal variances, where the mean Total ESG scores of CVC and IVC firms were compared. This test assesses whether the variances of the two samples differ significantly. The results of Levene's test were non-significant, with a p-value of 0.758 and an F statistic of 0.095, indicating no significant difference in variances between the CVC and IVC samples. These results validate the use of Welch's t-test, a robust version of the t-test that does not assume equal variances.

#### 4.4 Impact of ESG factors on Post Offer Value

To investigate the second hypothesis of this thesis, which examines whether ESG has a significant impact on POV, multiple regression models were created and analyzed.

Table 7: Impact of ESG factors on POV

ESG Model regressions	
Independent variables	CVC & IVC
ESG	-0.021 (0.008)
Environment Pillar Score	0.165** (0.004)
Social Pillar Score	0.107 (0.005)
Governance Pillar Score	0.071 (0.004)
ROA	0.167*** (0.228)
ROE	-0.002 (0.028)
Innovation Capacity	-0.027 (0.005)
Time since IPO (years)	-0.534*** (0.009)
R <sup>2</sup>	0.327
Number of observations	358

a. Dependent Variable: POV

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

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

\* . Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

The regression in Table 7 analyzes the relationship between ESG factors, such as ESG total score, Environmental Pillar score, Social Pillar score, and Governance Pillar score. Standard errors are denoted in parentheses. The model is estimated with random effects.

The regression results show a meaningful positive relationship between the environmental pillar and POV, with the environmental pillar being the only significant ESG metric at the 0.05 significance level, having a coefficient of 0.165. In contrast, the main ESG score and the social and governance pillars are nonsignificant. Beyond ESG factors, ROA and time since IPO are the only significant coefficients at the 0.01 significance level. While ROA positively impacts POV, a longer time since IPO is associated with a lower POV. The R<sup>2</sup> value of 0.327 indicates that the model explains 32.7% of the variability in POV, suggesting a moderate fit.

#### 4.4.1 Robustness tests

To test the robustness of the regression model results presented in Table 7, the sample was split between the CVC-backed firms and the IVC-backed firms, creating 2 separate regression models to compare and analyse the results.

Table 8: Robustness test ESG model

ESG Model regressions			
Independent variables	CVC & IVC	CVC	IVC
ESG	-0.021 (0.008)	0.033 (0.024)	-0.007 (0.009)
Environment Pillar Score	0.165** (0.004)	0.185 (0.007)	1.507 (0.048)
Social Pillar Score	0.107 (0.005)	-0.005 (0.012)	0.132 (0.006)
Governance Pillar Score	0.071 (0.004)	-0.002 (0.012)	-1.294 (0.048)
ROA	0.167*** (0.228)	0.213** (0.455)	0.174*** (0.279)
ROE	-0.002 (0.028)	-0.090 (0.157)	0.000 (0.029)
Innovation Capacity	-0.027 (0.005)	-0.055 (0.007)	-0.018 (0.007)
Time since IPO (years)	-0.534*** (0.009)	-0.520*** (0.018)	-0.537*** (0.011)

R <sup>2</sup>	0.327	0.310	0.341
Number of observations	358	108	250

a. Dependent Variable: POV

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

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

\*. Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

Interestingly, when CVC and IVC-backed firms are analyzed separately, the environmental pillar loses its statistical significance, indicating it has no meaningful impact on POV for both groups. This robustness check reveals that ESG metrics have little to no significant impact on POV in these models, as none of the ESG-related variables show statistical significance when CVC and IVC-backed firms are examined separately. The direction and significance of ROA and Time since IPO do not change, although minor variations are recorded in the magnitude of the coefficients. These two variables remain the only statistically significant coefficients at the 0.01 significance level. It is then confirmed that the ROA positively impacts POV while the Time since IPO has a negative effect. The R<sup>2</sup> values suggest that these models explain approximately one-third of the variance of POV, which implies that other variables could be beneficial if included or that a linear relationship model is not able to capture the whole variance of the dependent variable.

#### 4.4.2 Sensitivity analysis

In order to analyze the sensitivity and robustness of the results described by the original regression model in table 7, a Variance Inflation Factor (VIF) analysis was performed, where the cut-off value was every value greater than 5. Since a value of 10+ was observed for Total ESG score, this variable was removed due to its high collinearity with the other ESG factors. Industry variables were then included to further analyze the robustness of the results.

Table 9: Sensitivity analysis ESG model

ESG model regressions			
Independent variables	CVC &		
	IVC	CVC	IVC
Environmental Pillar score	0.118 (0.004)	0.169 (0.006)	1.241 (0.048)
Social Pillar score	0.162*** (0.004)	0.098 (0.007)	0.183** (0.005)
Governance Pillar score	0.073 (0.004)	0.049 (0.007)	-1.075 (0.048)
ROA	0.087* (0.004)	0.094 (0.007)	0.111* (0.048)

ROE	(0.244)	(0.460)	(0.303)
	-0.003	-0.102	-0.001
	(0.027)	(0.147)	(0.029)
Innovation Capacity	0.000	-0.009	0.003
	(0.005)	(0.006)	(0.007)
Time since IPO	0.524***	0.524***	0.522***
	(0.009)	(0.018)	(0.012)
Academic educational services	-0.030	-0.065	-0.015
	(0.537)	(1.065)	(0.638)
Basic materials	-0.023		-0.020
	(0.743)		(0.769)
Consumer cyclicals	-0.010	0.025	-0.008
	(0.181)	(0.380)	(0.214)
Consumer non-cyclicals	-0.031	-0.109	0.007
	(0.330)	(0.542)	(0.423)
Energy	-0.044	-0.118	-0.011
	(0.364)	(0.741)	(0.429)
Financials	-0.050	-0.009	-0.051
	(0.279)	(0.744)	(0.311)
Healthcare	0.250***	0.353***	0.195***
	(0.149)	(0.249)	(0.189)
Industrials	-0.118**	-0.106	-0.110*
	(0.247)	(0.614)	(0.280)
R <sup>2</sup>	0.373	0.414	0.373
Number of observations	358	108	250

a. Dependent Variable: POV

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

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

\*. Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

After the removal of the Total ESG score and inclusion of the Industry variables, the Environmental Pillar score is no longer statistically significant. Controversy, the Social Pillar score became significant at the the 0.01 level in the combined sample and significant at the 0.05 level in the IVC samples. All ESG pillars' coefficients showed a positive direction in all samples except for the Governance Pillar score in the IVC sample. While the Time since IPO maintained its significance level, magnitude and direction, the level of statistical significance decreased drastically for the ROA variable. When it comes to industry effects, Healthcare is statistically significant at the 0.01 level in all 3 samples, notably it has a negative coefficient indicating that it contributes negatively to the POV. Industrials is significant at the 0.05 level in the combined sample and at 0.10 level, similarly exhibiting a negative coefficient. Overall, the R<sup>2</sup> did not change remarkably.

#### 4.5 Impact of financial performance on Post Offer Value

For the third hypothesis of this research, whether financial performance indicators have a significant impact on the POV, multiple regressions models were created and analyzed.

Table 10: Impact of financial performance on POV

<b>Financial performance model regression</b>	
<b>Independent variables</b>	<b>CVC &amp; IVC</b>
Total Assets	0.517*** (0.000)
Net Revenue	-0.095* (0.000)
Net Income	-0.251*** (0.000)
ROA	0.194*** (0.208)
ROE	-0.007 (0.024)
Innovation Capacity	-0.036 (0.004)
Time since IPO	-0.340*** (0.008)
R <sup>2</sup>	0.482
Number of observations	358

a. Dependent Variable: POV

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

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

\*. Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

As was normal to expect, total assets positively contributes to increasing the POV, with a significance level of 0.01 and a coefficient of 0.517. Conversely, an increase in net income and net revenue, although the latter is significant at 0.10 significance level, decreases POV, indicating that higher revenue or profitability do not necessarily translate to higher POV, while unprofitable firms may enjoy a better POV. This can be expected to some extent, as VCs usually invest in firms with high potential, although often still unprofitable.

Aligned with the previous findings (see Section 4.4), ROA and Time since IPO are both significant at 0.01 significance level and have a positive and negative impact, respectively. ROE and Innovation Capacity are nonsignificant at a 0.05 significance level. Interestingly, a model

without ESG metrics that includes financial performances had an  $R^2$  of 0.482, against the 0.327 obtained in Section 4.4.

#### 4.5.1 Robustness test

In order to analyze the sensitivity of the results described by the original regression model, additional variables were introduced. Additionally, CVC and IVC are here considered both altogether and separately. The variables and the multiple regression output are summarised in Table 11, from which it is evident that Total Assets maintains a positive statistically significant impact, at a 0.01 significance level, on POV in all models, with a coefficient of 0.533 in the combined sample, 0.564 in the CVC sample, and 0.568 in the IVC sample.

As in Section 4.5, Net Revenue and Net Income have negative coefficients across all the samples, although they are not always significant at a 0.05 significance level. The ROA maintain a positive and significant relationship with POV, although it shifts from a significance level of 0.01 in the combined sample to 0.05 in the IVC sample and 0.10 in the CVC sample. The Time since IPO variable is consistently and statistically significant across the three samples, indicating that firms with longer times since their IPO tend to have lower POV values. In terms of industry effects, there is considerable variation. Financials is statistically significant in the IVC and combined samples, with a coefficient of -0.122 in both cases, indicating that being in the financial sector negatively impacts POV in the IVC-backed firms. Healthcare is significant in all three samples, negatively impacting POV. Industrials shows a significant negative effect in the combined and IVC samples.

Table 11: Robustness test Financial performance model

<b>Financial performance model regressions</b>			
<b>Independent variables</b>	<b>CVC &amp; IVC</b>	<b>CVC</b>	<b>IVC</b>
Total Assets	0.533*** (0.000)	0.564*** (0.000)	0.568*** (0.000)
Net Revenue	-0.112** (0.000)	-0.076 (0.000)	-0.117* (0.000)
Net Income	-0.231 (0.000)	-0.155** (0.000)	-0.213 (0.000)
ROA	0.148*** (0.228)	0.160* (0.389)	0.148** (0.285)
ROE	-0.003 (0.024)	-0.106 (0.119)	0.002 (0.025)
Innovation Capacity	-0.023 (0.004)	-0.041 (0.005)	-0.014 (0.006)

Time since IPO	-0.328*** (0.008)	0.209*** (0.015)	0.334*** (0.010)
Academic educational services	-0.010 (0.470)	-0.010 (0.833)	-0.006 (0.562)
Basic materials	-0.007 (0.655)		-0.003 (0.680)
Consumer cyclicals	-0.012 (0.158)	0.103 (0.306)	-0.028 (0.188)
Consumer non-cyclicals	0.000 (0.290)	0.012 (0.450)	0.013 (0.374)
Energy	-0.041 (0.332)	-0.049 (0.598)	-0.029 (0.395)
Financials	-0.112*** (0.248)	-0.022 (0.600)	-0.122** (0.279)
Healthcare	-0.143*** (0.129)	-0.149* (0.203)	-0.126** (0.164)
industrials	-0.102** (0.218)	-0.149 (0.510)	-0.104** (0.249)
R <sup>2</sup>	0.509	0.866	0.611
Number of observations	358	108	250

a. Dependent Variable: POV

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

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

\*. Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

## 4.5.2 Sensitivity analysis

To test the robustness of the regression model results presented in Section 4.5, the sample was split between the CVC-backed and IVC-backed firms, creating two separate regression models to compare and analyse the results.

Table 12: Sensitivity analysis Financial performance model

<b>Financial performance model regressions</b>			
<b>Independent variables</b>	<b>CVC &amp; IVC</b>	<b>CVC</b>	<b>IVC</b>
Total Assets	0.517*** (0.000)	0.474*** (0.000)	0.550*** (0.000)
Net Revenue	-0.095* (0.000)	0.040 (0.000)	-0.096 (0.000)
Net Income	-0.251*** (0.000)	-0.182** (0.000)	0.230*** (0.000)
ROA	0.194*** (0.208)	0.216** (0.369)	0.183*** (0.260)
ROE	-0.007 (0.024)	-0.095 (0.120)	-0.003 (0.026)

Innovation Capacity	-0.036 (0.004)	-0.048 (0.005)	-0.025 (0.006)
Time since IPO	-0.340*** (0.008)	-0.233** (0.014)	0.346*** (0.010)
R <sup>2</sup>	0.482	0.572	0.479
Number of observations	358	108	250

a. Dependent Variable: POV

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

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

\*. Correlation is significant at the 0.10 level (2-tailed).

Standard errors in parentheses

Across all three samples, Total Assets, Net Income, ROA, and Time since IPO show consistent and strong relationships with POV (POV). These variables maintain the same direction across the models and are statistically significant at a 0.05 significance level. Although the magnitude of the coefficients varies slightly among the samples, the relationships remain robust. Total Assets influences the POV the most, with a coefficient between 0.474 in the CVC sample and 0.550 in the IVC sample, while Time since IPO was the heavier detractor, with consistently negative coefficients across all models. This suggests that the average value of IPO's has increased over the years. Interestingly, Net Revenue did not pass the robustness check, as it shows a statistically significant relationship with POV in the combined sample, but becomes nonsignificant when analyzed separately in the CVC and IVC samples.

Finally, the higher R<sup>2</sup> is found in the CVC sample, where the model explains 57.2% of the CVC-backed firms' POV variability, showing that the model has more explanatory power for CVC-backed firms.

## 5. Limitations and avenues for future research

As with every research paper, the quality of the findings in this thesis are completely dependent on the quality and reliability of the data that was collected. In this final part, some potential limitations to this thesis will be highlighted and some suggestions towards future studies will be given. The first barrier that was encountered during this study, was that reliance on the trustworthiness in the data. Where some inconsistencies were found in the platforms and databases that were provided. During tests that were performed to verify data, inconsistencies were reported, which heavily impacted the timeline of the study. Thomson Reuters was used as the main platform to extract data regarding IPO dates and industry. It was found that for some items such as ESG scores, a different score was extracted depending on which platform was

used. Meaning there were 3 avenues to extract this data from, namely, the Excel application, the web version and through codebook. After discovering inconsistencies in the values on these platforms, a very big subset had to be filtered out which significantly decreased the sample sizes. Later on, when the Financial performance information was extracted, another potential hidden issue was uncovered, where the only identifier that seemed to work across the different platforms was the ticker code that were found on Thomson Reuters platform.

While moving to the WRDS platform, Compustat-IQ more specifically, to extract accounting data such as revenues, R&D expenses, Net Income, etc, it became clear that often times the platform did not recognize the ticker or chose the wrong item, which resulted in every item having to be extracted manually. Evidently, this created an extreme amount of manual work which moved the timeline in which this thesis could be finished back by a lot, but also exposed the results to human errors and reduced the samples that could be used. The time lost verifying data and manually extracting data could have complemented my research. Hence why it is proposed that further research should take these issues into consideration.

The results of this thesis are also completely dependent on the classification used by Dealscreener to categorize CVC and IVC-backed ventures, which significantly reduces the reliability of the presented results.

Given the plethora of issues that were encountered with extracting the data, a somewhat backward approach had to be applied in order to still study meaningful research questions. Instead of formulating research questions solely based in gaps in the existing body of literature, an approach was used where to focus lied on uncovering which reliable data could be extracted and verified, where then was assessed which findings could be extracted from these samples. This because a lot of the data was not available, not verifiable or simply not reliable. This evidently resulted in a significantly reduced sample size.

Florian Berg et al. (2020) also uncovered some limitations regarding the disparity in ESG rating provided by different agencies stemming from differences in how the data was collected and analysis methodologies. The main discrepancies he uncovered were the measurement divergences, scope divergences and applied weight divergences. All of which evidently impacts the value of the findings in this research.

As a proposals towards future research, all of the listed limitation should be explored and where possible resolved. larger sample sizes, inclusion of qualitative analysis and more industry specific analysis could greatly benefit the validity and credibility of the work.

## **6. Conclusion and implications**

This paper investigates the differences between the VC fund types when it comes to ESG integration, which is still an understudied topic. Secondly, it investigates the impact of ESG and financial performance metrics on the valuation of VC-backed IPOs while verifying that these results hold up in both the IVC and CVC samples. To ensure the reliability of the findings presented in this paper, robustness checks and sensitivity analysis are used.

Initially, this paper checks for statistically significant differences in the mean ESG scores among the two fund types, checking if the results can validate Cheng et al. (2022), which states that CVC funds would be more likely to contribute a greater weight to ESG factors compared to IVC funds in their investment making process.

After investigating the differences between the CVC and IVC samples, this study shows that there is no statistically significant difference at a 0.05 significance level between the ESG score of the CVC and IVC-backed firms (See Section 4.3), although such a difference is significant at a 0.10 significance level. Interestingly, a robustness check reveals that there is a statistically significant difference between the averages of the governance pillar score at a 0.01 significance level (see Section 4.3.1). These findings provide insight into the relationship between the fund type and ESG performance.

Although the results are mixed, they fall in line with the findings of Battisti et al., (2022), who proved the positive impact of CVC-funds on the ESG performance of their portfolio companies. Further research, preferably with greater sample sizes and a broader range of variables, is needed to generalize these results and provide a more comprehensive understanding of this relationship.

Secondly, this thesis investigates the relationship between POV and the ESG score (Total and individual pillar scores); it checks whether the results found by G. Giese (2019), where a statistically significant positive correlation between ESG scores and valuation was found, can be replicated in the sample used in this thesis, but also whether those findings are present across both samples.

The results indicate that there is no statistically significant relationship between the total ESG score and POV, although there is a positive, meaningful relationship between the environmental pillar and POV with a significance level of 0.05. Specifically, a model composed of ESG, its three pillars, ROA, ROE, innovation capacity, and Time since IPO, explained 32.7% of POV variability.

Finally, the relationship between POV and a firm's financial indicators was investigated. Notably, a multiple regression model composed of Total Assets, Net Revenue, Net Income, ROA, ROE, Innovation capacity, and Time since IPO as independent variables were iterated. Total Assets, Net Income, ROA and Time since IPO were statistically significant at a 0.01 significance level, with Total Assets being the higher positive predictor and Net revenue being significant only at a 0.10 significance level. The model, which accounted for 48.2% of the POV's variability, revealed that an unprofitable firm may enjoy a higher POV than a profitable one. These findings support the conclusion of Giwoong Bae et al. (2012), who found a positive relation between total assets and firm value. They also provide support for Ramadhan S et al. (2023), who found a positive correlation between a firm's assets and its POV.

The findings suggest that financial performance indicators are the main drivers of the POV in VC-backed firms. Even though the limited impact of ESG was captured in the models, they might still influence investors and even the long-term performance of the firm. The relationship between financial performance and POV was proven to be robust across the different fund types and sectors. The observed variations suggest that fund type characteristics and industries may still influence this relation.

This thesis aims to contribute to the existing body of literature exploring all aspects of a firm that influence its POV but also to add to the overall Venture Capital industry literacy. Lastly, by exploring a current gap in the research, this thesis may help expose previously uncharted areas where the intricate differences between CVC and IVC funds can be further explored.

As the last part of this conclusion, it is to be noted that the findings of this thesis hopefully contribute to the transparency of a very closed-off industry, where much of the data is not publicly available and oftentimes not as reliable as would be necessary in order to gain valuable insights. Future research should attempt to increase the sample sizes and include more control variables in order to improve these findings.

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