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**Evaluating Venture Capital Performance:
the Effectiveness of VC Strategies in Generating Returns and
Managing Risk**

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TABLE OF CONTENTS

Abstract.....	3
Introduction	4
1. Chapter One: Understanding venture capital fundamentals in Europe	6
1.1 Research overview: objectives, research questions, relevance and implications	7
1.2 Definitions and characteristics of VC investments.....	7
1.3 Comparison to CVC	9
1.4 VC strategies and approaches.....	12
1.5 Setting the scene: the European VC sector.....	16
2. Chapter Two: methodology and research: evaluating risks and returns.....	23
2.1 How do we measure performance? Existing frameworks to assess VC investments.....	23
2.2 Identifying Key Performance Indicators (KPIs).....	30
2.2.1 Managing strategically risk in VC investments: techniques and approaches.....	34
2.2.2. Return maximization: how to gain more?	42
2.3 Research design and choice	44
2.4 Sample group selection.....	46
2.5 Survey	47
3. Chapter Three: Considerations and discussion on VC strategies and performances.....	53
3.1 Results and limitations of the study.....	53
3.1.1 Evaluation of VC strategies in managing risk	57
3.1.2 Evaluation of VC strategies in generating returns	59
3.2 Implications for VCs and recommendations for European policymakers.....	69
Conclusion	72
References and Bibliography.....	73

Abstract

Venture capital (VC) is a form of private equity financing for high-risk and high-potential startups. Because of the increasing role played by VC in boosting economic growth and innovation, it becomes paramount to study the effectiveness of the strategies used to manage external risk and maximize returns. In this context, this thesis centres its exploration on the European VC landscape. A survey was conducted over the course of three months to understand the relationship between VC's financial performance and the main risk management and return maximization techniques identified by the literature. The results obtained suggest a compelling statistical association between risk management practices and their performance, specifically when portfolio diversification and co-investment strategies were in place. Similarly, the examination of the techniques aimed at maximizing returns uncovered a significant statistical association with financial performance, particularly in cases where strategic partnerships with other VCs were established. As these are dependent variables, when one of them changes the other will change as well. Given the observed link between collaboration and partnerships among VCs (both co-investment and strategic partnership variables) and performance, it becomes imperative to underscore the importance of fostering and enhancing cooperation. This underlines the dual significance of collaboration: as a means to mitigate risk and simultaneously boost returns. At the European level, initiatives should be actively promoted to facilitate and incentivize cooperation among VCs across and within borders.

Introduction

The world of venture capital (VC) represents a dynamic and transformative force within the entrepreneurial landscape: spurring innovation, fostering economic growth, and nurturing the dreams of visionary startups. In the European context, this financial ecosystem has evolved into a critical pillar of support for emerging ventures, catalysing their development and success. In fact, venture capital, as a specific form of financing tailored exclusively for high-risk and early-stage companies, provides the necessary capital and support to startups that show significant growth potential. In this view, VC not only helps the transformation of unique and new ideas into tangible business ventures but also promotes economic progress and the creation of employment opportunities.

Understanding the dynamics that regulate this sector is crucial for both policymakers and the financial actors involved, as their strategic decisions depend on the vital insights gained from comprehending the ever-evolving nature of venture capital. This will be done by focusing on the European geographical area. Despite the common belief that the US represents a more fertile ground for these types of investments compared to other countries, the European VC ecosystem has significantly grown over the latest years (Pitchbook, 2023). 2021 marked the record-breaking year for VC in Europe – startups reached historic highs, fuelled by strong investor confidence and a flourishing entrepreneurial backdrop. Conversely, in 2022, the investment volume in European startups experienced a decline compared to previous year. Investors' sentiment in Europe was impacted by a mix of factors which included: high inflation, rising interest rates and weak economic growth (Pitchbook, 2023). Although recessions and downturns have affected the overall appetite in financial markets, non-traditional investors, such as Corporate Venture Capitalists, have continued to invest significant capital in VC rounds, highlighting the importance of these alternative forms of venture financing in Europe. In March 2023, the unexpected downfall of Silicon Valley Bank came as a surprise, impacting the banking industry and the VC ecosystem – which highly relied on SVB for its funding. SVB failure has shed light not only on the considerable risk that banks encounter when serving a single sector but also on the substantial amount of funding generated by VC that, if not properly managed, can have significant consequences for the world economy. For this reason, this work aims at contributing to the financial literature on venture capital, by on the one hand, analysing the overall trends, characteristics and data of the sector and, on the other hand, investigating the effectiveness of the strategic practices that VC use to manage external risk and maximise returns. The first chapter will present the general definitions, and actors of the VC ecosystem, making specific

reference to European trends and preferences. After having introduced the general topic, the second chapter will delve into the core of this research, analysing the frameworks used to assess venture capital's performance – including The Discount Cash Flow model, the Weighted Average Cost of Capital (WACC) and the Leverage Buy Out (LBO) Valuation Models – making specific reference to the two critical strategic KPIs of this work: risk management and return maximization. As for the first, the primary strategies identified by the literature to mitigate external risk are: portfolio diversification, specialization, co-investment with other VCs, and providing operational support to portfolio companies. Likewise, because the techniques regulating risk management and return maximization often intersect, some of the strategies found in the literature to manage risk are also key in maximizing returns, namely the main strategies found are: offering operational and strategic support to portfolio companies, establishing strategic partnerships for portfolio companies and assisting startups in raising subsequent financing rounds. In the second chapter, the survey structure of the experimental research conducted will be presented. Lastly, the third chapter containing findings and limitations of the research will be addressed, focusing on the implications resulting from the experimental data collected, opening the way for further research on the topic.

1. Chapter One: Understanding venture capital fundamentals in Europe

In the 20th century, financial globalization followed by a growth in savings and an increase in risk investments allowed for the creation of new forms of corporate financing, known as venture capital (VC) and private equity (PE). The increasing role that VC plays in Europe suggests that investigating its functioning is paramount to effectively assess and improve its performances. Understanding VC fundamentals requires exploring the key principles and dynamics that underpin the vibrant and constantly evolving European VC ecosystem. Venture financing has emerged as a vital catalyst for driving innovation and its study delves into the core functioning of VC investments, starting from an overview of the rules and structures that govern it up until the features that shaped the European VC.

Recently, venture capital has witnessed significant developments and has become a widely debated topic, especially in the wake of the banking crisis started in March 2023. In fact, on March 10th 2023, Silicon Valley Bank (SVB) collapsed, raising increasing concerns over the startup and VC ecosystem. SVB represented the sixteenth largest bank in the US constituting a central part of the Silicon Valley and serving almost half of all venture fund-backed startups and countless investors¹. SVB failure has shed light not only on the considerable risk that banks encounter when serving a single sector – early-stage companies and VC in this case² – but also on the substantial amount of funding generated by VC that, if not properly managed, can have significant consequences for the world economy. Moreover, as financial markets were rattled, VC emerged as a vital source of funding for innovative startups in the European Union (EU), playing a crucial role in driving economic growth, technological advancements and job creation through the establishment of new business ventures (Subhash, 2006; Maksim Malyy and Zeljko Tekic, 2018). Although many believe that VC is a phenomenon mainly characterising the US, over the years European countries have caught up with US trends: in 2022 Europe alone reached a deal value equal to 43.5 billion euros (Pitchbook, 2023), as will be better analysed throughout this chapter. Hence, it stands clear that analysing the effectiveness of the strategies used by VCs is crucial to have a comprehensive overview of the dynamics regulating this sector, while allowing to spread awareness of the best performing techniques to be used at the national and international level.

¹ Retrieved. Aliaj, O. and Hammond, G. (2023). Silicon Valley Bank shutdown leaves start-ups anxious about their funds. *Financial Times*. 10 Mar. Available at: <https://www.ft.com/content/15b28803-c962-43ee-9f43-50f6463ca63e>

² Retrieved. Gompers, P. (2023). *Silicon Valley Bank's Focus on Startups Was a Double-Edged Sword*. [online] Harvard Business Review. Available at: <https://hbr.org/2023/03/silicon-valley-banks-focus-on-startups-was-a-double-edged-sword>.

1.1 Research overview: objectives, research questions, relevance and implications

This thesis aims at analysing the performance of VC firms in generating returns for their investors, while exploring the strategies that they use to manage risk and maximize the value of their holdings. It will investigate the relationship between investment strategies and performance outcomes of venture capital companies, making specific reference to the European landscape where VC is growing significantly (Pitchbook, 2022). This work aims at contributing to the field by addressing the question: what are the best-performing strategies that venture capitalists use to manage risk and maximise their investments?

To answer such question, the first chapter will be articulated as follows. (1.1) It will start by analysing the fundamentals of venture capital, studying definitions, features and data, to offer an overview of its functioning; (1.2) it will then move on to compare the nature of VC with that of corporate venture capital (CVC), underlining similarities and differences and their respective implications. After having introduced the core concepts, (1.3) this research will assess the various strategies that characterise VC investments. This will be done by analysing data, studies and reports. Lastly, (1.4) a detailed overview of venture capital performances in the European landscape will be presented, highlighting European trends on: the preferred stage of investment, the prevailing sector of investment, the geographical distribution of deals by region and the main exit activities.

1.2 Definitions and characteristics of VC investments

As underlined by the OECD, in modern knowledge-based economies, the path to economic growth and job creation increasingly hinges on the ability to foster successful innovation³. This calls the attention on the need to adequately finance innovation and innovators, that often lack the economic resources that are required to put their ideas and projects into practice. Venture capital, as a specific form of financing tailored for high-risk projects, plays a key role in facilitating this crucial connection⁴. By providing the necessary capital and support to companies with significant growth potential, VC fuels the transformation of unique and new ideas into tangible business ventures, thereby promoting economic progress and the creation of employment opportunities. Hence, understanding its functioning and performances results pivotal in providing a research basis to support innovation and development.

³ Retrieved. *Venture capital and innovation*. Available at: <https://www.oecd.org/sti/inno/2102064.pdf>

⁴ *Supra*.

While there is no universally accepted definition or classification for private equity and venture capital, we can rely on the broad or general definition found in the literature. These two terms are often used interchangeably, however, although strictly related, these are distinct concepts. As emphasised by Gallo and Verdoliva (2022), private equity is generally recognized as a broader concept compared to venture capital, which can be considered as a subset or specific category within the realm of private equity. On the one hand, private equity refers to all institutional investments made in high-risk capital over a medium to long-term period with the objective of improving the invested company's value, ultimately leading to higher capital gains upon disinvestment (Gallo and Verdoliva, 2022). Venture capital, on the other hand, is generally defined as a form of private equity that offers financing and support to small businesses or startup enterprises that are not quoted on the stock market and that are considered to have a long-term potential. Based on what affirmed by the OECD, VC investments generally involve: a longer time horizon, an inherent level of risk, a collaborative partnership with management, and the expectation of capital gains rather than dividend payments⁵. Due to the high-risk nature of investing in such companies, venture capitalists acquire equity stakes with the goal of generating substantial returns if the venture-backed company achieves success. The lack of an established definition can be connected to the differences that characterise these concepts across countries. For instance, as suggested by Gallo and Verdoliva (2022), despite the collective efforts of terminology harmonization, US and Europe show distinctive approaches to PE and VC investments. The US marks a clear distinction between private equity and venture capital, where VC only covers early-stage and high-growth investments in innovative startups. In short, the US has a restrictive definition of VC, which excludes buy-outs and buy-ins⁶ (Gallo and Verdoliva, 2022). Conversely, the EU has adopted a more extensive perspective on such distinction that reflects the above stated definitions. Here, private equity entails investments in unlisted companies aiming at generating returns, while VC is a form of PE that offers fund in a specific phase of the startup lifecycle⁷.

In the venture capital ecosystem, the majority of startups and companies financing is made by private independent funds that raise capital from financial institutions, however several actors and schemes

⁵ *Supra*.

⁶ The term buy-outs indicate the acquisition of a company or a controlling stake of the company by the existing management team. In most cases, the buy-out procedure is carried out through a merger, acquisition, or division of control participation (Gallo and Verdoliva, 2022). Instead, buy-ins refers to the acquisition of the company by an external management team or investor.

⁷ Interestingly, based on the definition given by BVCA, in Great Britain, PE refers to investments made in mature companies with a focus on buyouts and growth capital. At the same time, VC is used to refer to early-stage investments. Nonetheless, in most studies, the two terms are used interchangeably.

exist⁸. For instance, it is increasingly common that established companies make investments in innovative ventures, this type of investment is known as Corporate Venture Capital; based on the forecast made by Dushnitsky, in 2023 an increase in CVC is expected to take place. According to what affirmed by Dushnitsky, “the number and value of CVC deals will rise ahead of those seen in VC generally. In fact, given the nature and scope of CV scouting and their ability to spot innovation trends early, corporate venture may be the key driver of which sectors emerge over the coming year. And thus, will influence VC trends, rather than the other way round” (Tech.eu, 2023). Moreover, in certain countries, there are other forms of venture capital actors, such as the so-called “business angels” or “angel investors”. This term refers to private individuals who directly invest their asset in private enterprises⁹. Other actors include limited partners (LPs) – institutional investors investing in venture capital – and government agencies or other public institutions that financially support the startup environment.

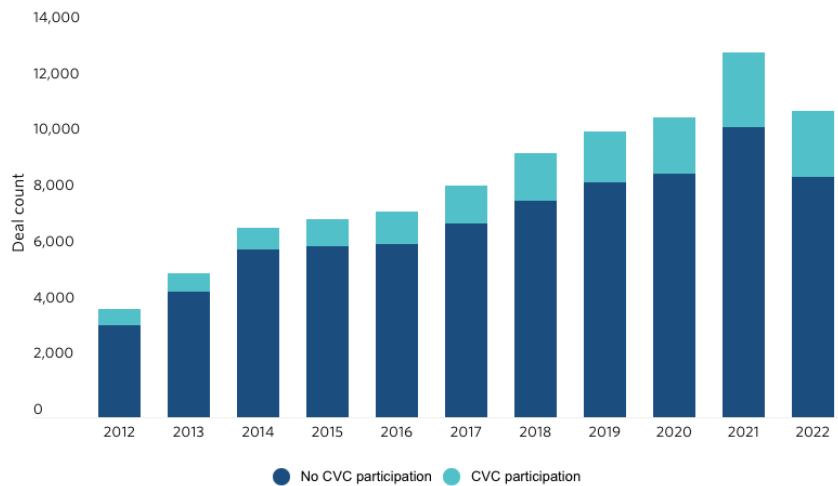
1.3 Comparison to CVC

As above-mentioned, the venture ecosystem involves also other forms of financial support offered to early-stage companies. In this setting, CVC is now playing a significant role: 2023 marked the record year for CVC deals. Taking a look at Table 1.1 below one can already notice the peak reached by CVC in 2021. According to Hodgson (2023), notwithstanding the fact that corporate venture capitalists reduced their investments compared to previous year, in 2022 they remained involved in over 20% of all European VC rounds. Although the number of deals closed in CVC in 2021 was higher, in 2022 CVCs were involved in 21.7% of all European VC rounds, this represents the highest annual percentage to date and is thus worth analysing this phenomenon when considering the European landscape (Hodgson, 2023). This is particularly important because, as can be understood from the data, CVC involvement allowed a higher number of early-stage companies to receive funding, thereby boosting innovation.

⁸ *Supra* at page 2.

⁹ Retrieved. *Business angels*. Available at: https://single-market-economy.ec.europa.eu/access-finance/policy-areas/business-angels_en

Table 1.1: CVC percentage in EU deals over the years



Source: Pitchbook, 2023

CVC entails those investment activities carried out by established companies to support corporations in early-stage startups or emerging companies. Landmark examples of CVC are represented by Google Ventures – that to date counts over 8 billion dollars in assets under management and 400 active portfolio companies¹⁰ – Microsoft Ventures and Intel Capital¹¹, just to mention a few. The increasing importance of CVCs over the latest years can be attributed to several reasons. The most compelling one has to do with the structure of CVCs that constitutes an advantage during economic downturns (Hodgson, 2023). Their structure is built in a way that allows them to continue investing during periods of economic crisis, because the majority of them invest in evergreen funds and rely on the parent company’s balance sheet, their budgets are typically determined before market shifts and, for this reason, they usually successfully navigate economic crisis (Hodgson, 2023). Interestingly, according to Drover et al. (2017), CVCs can actually become more prolific during economic fluctuations.

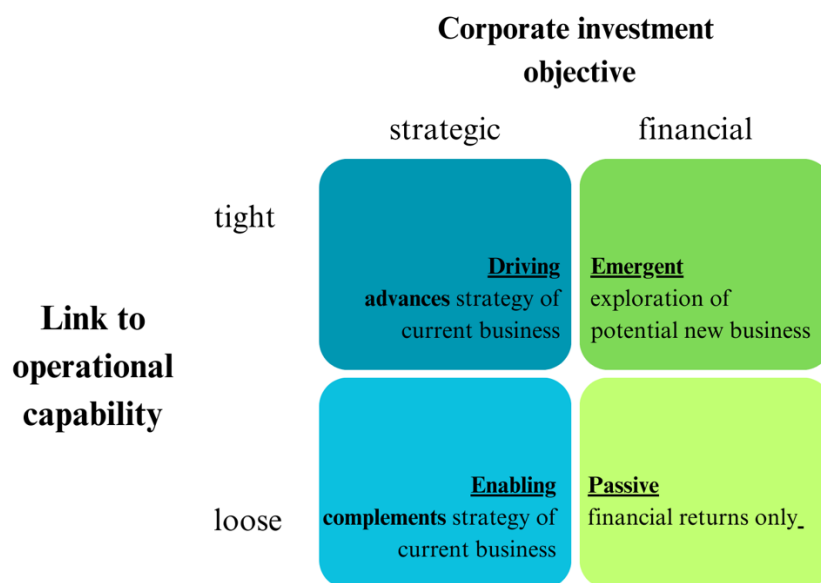
Another difference from traditional VCs that positively impacts CVCs’ performances has to do with the well-established network that big companies can rely on. On this, in a recent interview Dushnitsky underlined how “partnering with a CVC builds credibility and can act as a *stamp of approval* [...] not to mention the real-world, on-hand experience and support [that CVCs can bring]” (Tech.eu, 2023). Credibility and reliability are two aspects that often get in the way of traditional VC funding, but these are not encountered by CVCs. These two features of corporate ventures underline what has been

¹⁰ Retrieved. Google Venture – about. Available at: <https://www.gv.com>

¹¹ More information on these two are available at: <https://m12.vc> and <http://www.intelcapital.com>

defined by Chesbrough as the dual dimension of corporate VC. Indeed, Chesbrough (2002) suggests that CVC has two main objectives, or dimensions: first, to gain strategic insight – meaning it aims at increasing the sales and profits of the firm itself while exploiting synergies with the new ventures – second, to gain financial returns – that are reached when the corporation performs as well as or better than private VC investors. CVCs investments usually are not driven entirely by only one of the two dimensions, rather they fall somewhere in the middle of these two poles. To better understand how Corporate VC investments classify, one can rely on the four-quadrant structure developed by Chesbrough (2002), illustrated in Table 1.2. This four-quadrants map is obtained when analysing the major driver between the two corporate investment objectives– namely financial and strategic goals – and the degree of linkage – either tight or loose – that exists between the operation of the CVCs and the venture-backed company.

Table 1.2 Mapping CVC investments



Source: Chesbrough, 2002

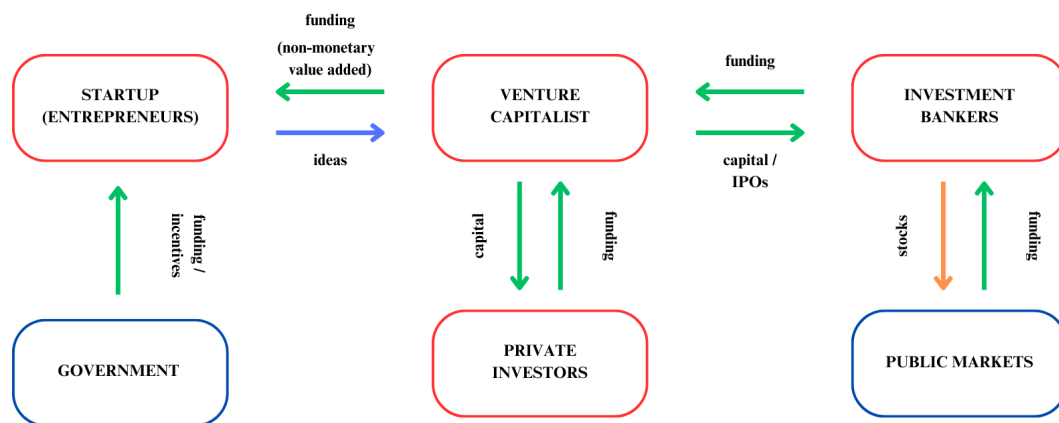
In a nutshell, CVC can represent a successful alternative to obtain economic support for innovative early-stage corporations when periods of crisis jeopardise traditional VC investments because of the strategic advantages it offers. In fact, many have underlined how CVC provides not only financial support but also access to the resources, expertise, and market knowledge of the investing corporation because of the well-functioning network and structure established companies can rely on. This synergy can accelerate the growth and success for startups, fostering innovation and market disruption in Europe.

1.4 VC strategies and approaches

Because this thesis will investigate specific KPIs of venture capital performances, it is necessary to explain the way in which this form of investment takes place. Landmark contributions to VC literature have outlined the different phases that compose VC investments. Specifically, according to Tyebjee and Bruno (1984), VCs follow a sequential five-stage process, as depicted by Table 1.3 below. These are: (i) *deal origination* – the processes through which potential investment opportunities are identified and brought forward for consideration; (ii) *deal screening* – occurring when key policy variables are defined to narrow down the investment prospects to a manageable number for detailed evaluation; (iii) *deal evaluation* – that consists in assessing the perceived risk and expected return by evaluating various characteristics of the potential venture-backed company. This evaluation leads to the decision of whether or not to invest, which is based on two crucial elements: the levels of risks and the expected returns. These, as already anticipated, will be at the core of the study conducted by this thesis and will be better analysed in the following chapter; (iv) *deal structuring* – that includes negotiating the terms of the investment, making specific reference to the equity stake the investor receives and the covenants that will mitigate investor's risk. These four phases all occur before the actual investment is carried out, instead, as suggested by its name the last step the (v) *post-investment activities* – that entail all the support and assistance that is given to the invested startup – takes place post-investment. This, as underlined by Tyebjee and Bruno (1984), includes helping in recruiting key executives, offering support in strategic planning initiatives and collecting additional financing. In this last stage, the role of VCs shifts from mere investors to actual *collaborators*. In the majority of cases, this new role is reflected either formally, in the participation in the Board of Director, or informally influencing on decisions on market, suppliers or credit networks (Tyebjee and Bruno, 1984). This cooperative approach seeks to increase the startup's chances of success while bringing the venture capitalists' interests and the long-term objectives of the invested firm into alignment. Lastly, as investors want to realize their returns on the venture-backed company within a timeframe of five to ten years after the initial investment, they actively engage in guiding the company towards potential exit opportunities such as mergers, acquisitions, or taking the company public through an initial public offering (IPO) (Tyebjee and Bruno, 1984). By driving the company towards these exit strategies, venture capitalists aim at maximizing the value of their investment and provide liquidity for their stakeholders. This evidently reflects investors' commitment to achieving favourable returns on investment.

a pecuniary one, rather it has also been referred to by the literature as “non-financial value added” (Luukkonen and Maunula, 2007; Cumming, Fleming and Suchard, 2005). This non-financial value added is constituted by all the strategic and managerial support provided to early-stage companies. Furthermore, studies show that VCs offering this kind of non-financial support activities receive a greater allocation of capital (Cumming, Fleming and Suchard, 2005).

Table 1.4: The functioning of VC firms



Source: author’s relaboration of Zider (1998)

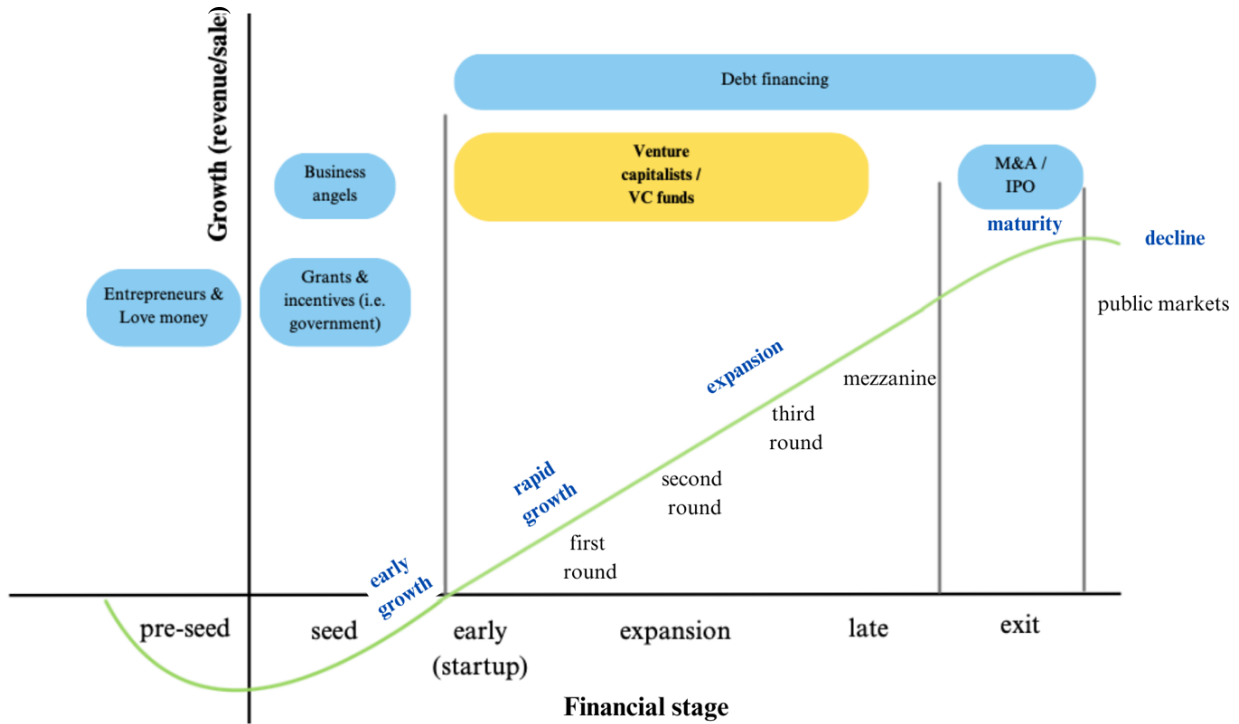
As we have seen, although PE and VC are similar concepts, they differ based on the company stage financed. In fact, funding often occurs in distinct stages or rounds, as illustrated by Table 1.5 below. Stages financing refers to the progressive rounds of investment that companies secure as they advance through different phases of growth forming the startup lifecycle (Gervasoni and Sattin, 2000). The stages of financing typically include:

1. Early-stage financing (pre-seed and seed)
2. Expansion financing
3. Turnaround financing, replacement capital financing, and buy-out (BO)

Each stage differs based on the related goals, funding sources, and investor needs. Thus, while venture capital typically focuses on investing in firms at the earlier stages of development, such as seed or start-up companies, private equity encompasses investments made at later stages and includes both buy-outs and turnaround investments (Gallo and Verdoliva, 2022). Moreover, as it will be further explored in this thesis, some have suggested that staged financing can be key in managing risk, as it can reduce information asymmetries and loss from “inefficient continuation” (Sharma and Tripathi,

2016). To better understand each one of these stages of financing, it could be useful to review the concept of a company’s lifecycle, as depicted by Table 1.3 and as described, *inter alia*, by Grant (2021).

Table 1.5: Venture-backed company’s lifecycle and financing rounds



Source: author’s relaboration of Gallo and Verdolina (2022)

As can be seen from the table, the stages of a venture can be defined in relation both to its growth in revenues and according to the type of funding it receives from the different stakeholders.

In the initial stage, in which the idea is developed, the major funding comes primarily from “family, friends and fools”, the capital received in this stage is usually referred to as “love money” because is collected based on the relationship between the entrepreneur and the investors. In this stage the entrepreneur is still developing the product or service that will be offered and that will constitute the basis of the company’s business model (pre-seed stage). During pre-seed stage, funding is also received by public institutions because innovative projects represent research and development (R&D) activities. The seed financing follows this phase, this term is used to describe the provision of funding during the experimental phase of product development or the creation of a new venture (Gallo and Verdoliva, 2022). In this stage, business angels start to show interest in the project giving an initial boost to the company’s development. During this period of the company’s lifecycle, equity financing is preferred over other forms of debt capital. This is because entrepreneurs often lack the

collateral required to secure debt financing. With the need of the company to acquire more capital to grow faster, we move from the start-up phase to the expansion one, where it finally starts receiving investment rounds through venture capital funds or venture capitalists. As previously mentioned, the VC can also decide to offer non-monetary assistance, this can include: providing a stable business network or marketing support – this helps expand and increase the company’s turnover. Following the growth stage, the company transitions into a more stable phase known as maturity. During this period, instead of looking for funds by giving equity stocks, the preferred form of financing becomes debt financing as it is less costly from the company’s point of view. While in the early and expansion financing stages, the primary focus was on augmenting sales volumes and expanding the size of the venture-backed company, during maturity the business faces a distinct set of challenges; the main concerns revolve around governance and corporate finance decisions. Lastly, when the company is fully mature, the investors will seek exit strategies, including:

- Sale to other more considerable funds or private investors
- Mergers and acquisition (M&A)
- IPO through which the fund will recover the capital invested and earn money by listing the company on the market.

Vcs usually invest in multiple stages and sectors across their overall investment strategy, the preferred stage varies across countries. Globally speaking, based on the data collected by KPMG (2023), the most invested field is software production, while the most frequent stage of investment is angel founding, although it must be stressed that these types of investments collect the smallest amount of capital¹². In Europe, in the last five years the VC sector late-stage rounds have accounted annually for the largest chunk of deal value, reaching in 2022 a deal value equal to €43.5 billion (Pitchbook, 2023). Conversely, in the US the preferred stage of investment belongs to the earliest phase of venture capital lifecycle, with a particular attention to angel-backed and seed-stage companies (Pitchbook, 2023).

1.5 Setting the scene: the European VC sector

After having given an outline of the general characteristics and the functioning of venture capital investments, it is useful to focus on the features of the European VC sector, that is the geographical area of reference of this dissertation. Before entering into details of the European sector, an important

¹² In the period ranging between 2015 and the first quarter of 2023.

consideration must be made concerning the recent collapse of Silicon Valley Bank on March 10th, 2023 that as already anticipated had significant implications also on VC¹³. According to Franklin Templeton's report on private markets (2023), the unexpected downfall of SVB came as a surprise and is expected to have broader implications for the banking industry. Importantly, their analysis stressed that although SVB's failure is not perceived as a long-term risk for private companies, it will act as a catalyst, hastening the ongoing shakeouts of valuations within the private equity and venture capital sectors. The overview of the European venture capital ecosystem will be done presenting data from 2022, as to offer a more complete analysis of the sector before the impact caused by the banking crisis.

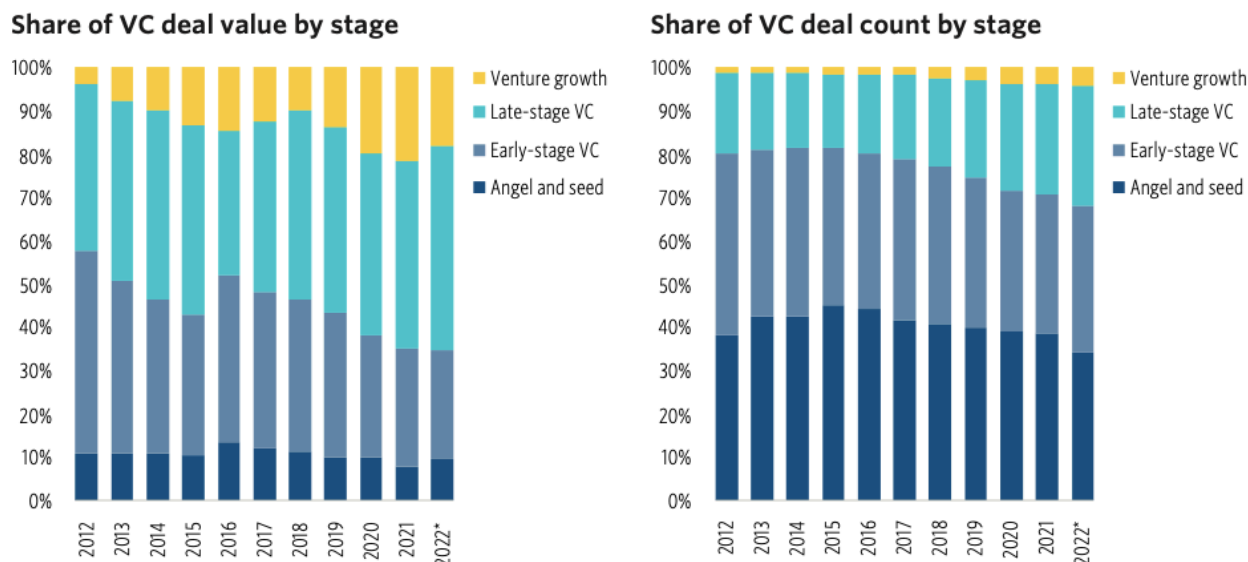
When thinking about VC and entrepreneurship, it is common wisdom to believe that the US represent a more fertile ground for these types of investments compared to other countries. Under this view, Europe has often been considered lagging behind, especially because of the increasing amount of legislation that governs it. However, a study conducted by Axelson and Martinovic (2013) demonstrated that there is no evidence of a stigma of failure for entrepreneurs in Europe, rather they found that VC's success has the same determinants both in EU and in US. Although having the same determinants of success, VC in EU and US greatly differ in other aspects. To this end, the overview of the European VC ecosystem will present the following characteristic: (i) preferred stage of investment, (ii) prevailing sector of investment (iii) European deals by region and, (iv) exit activity.

Based on the report conducted by Pitchbook (2023), in 2022 the investment volume in European startups experienced a decline compared to the same data coming from previous year. In 2022 the investors' sentiment in Europe was impacted by a mix of factors which included: high inflation, rising interest rates and weak economic growth (Pitchbook, 2023). Despite the pessimistic outlook, the value of VC deals remained relatively stable. Another crucial factor that emerges in the European data in 2022 is that although, as it has been mentioned, recessions and downturns have affected the overall appetite in financial markets, non-traditional investors (i.e. CVC) have continued to invest significant capital in VC rounds. This could be due to the nature of CVC that, as discussed, is believed to be resilient to economic downturns. Thus, it appears clear that the VC ecosystem needs to foster the growth of high-potential companies with innovative technology, R&D prospects, or valuable intellectual property (IP) to attract non-traditional investors. Moreover, a sign of the financial crisis was already evident in 2022, as it has been noticed that in Europe dealmaking landscape changed,

¹³ Silicon Valley Bank's collapse was the second largest failure of a financial institution in the US (Egan and Morrisow, 2023). Its relevant effect on VC has to do with the fact that the majority of its customers were startups and tech companies, that are the main actors populating the VC ecosystem.

showing fewer large-scale deals with high valuations that closed in the second half of 2022 (Pitchbook, 2023). This seems to suggest that there was a decrease in the frequency of investment transactions, and the companies involved experienced a decline in their valuations compared to earlier periods. Notwithstanding the changes registered in the industry, late-stage investments continue to account for the largest founding rounds in Europe, a trend that started already in 2017. Table 1.6 allows us to compare VC investments by stage in Europe both in terms of deal value, that is to say the amount of capital invested by VCs, and deal count, which instead refers to the total number of deals that have taken place over a period of time. As can be seen in Table 1.6, in terms of deal value by stage, late-stage investments have dominated the European VC landscape for ten years, followed by early-stage VC. Conversely, if we consider deal count by stage in Europe, while late-stage investments have marked an increase beginning from 2018, they no longer represent the preferred stage of investment. In fact, when taking into account the number of deals closed, angel and seed and early-stage investments represent the highest share of VC. This suggests that although there have been a considerable number of deals closed during angel and seed stage, investors in Europe allocate the majority of capital in the late stages. As we will see in the next chapter, the decision to invest more in the late stage rather than early and seed might be related to risk management considerations.

Table 1.6: VC deal value and count by stage in Europe

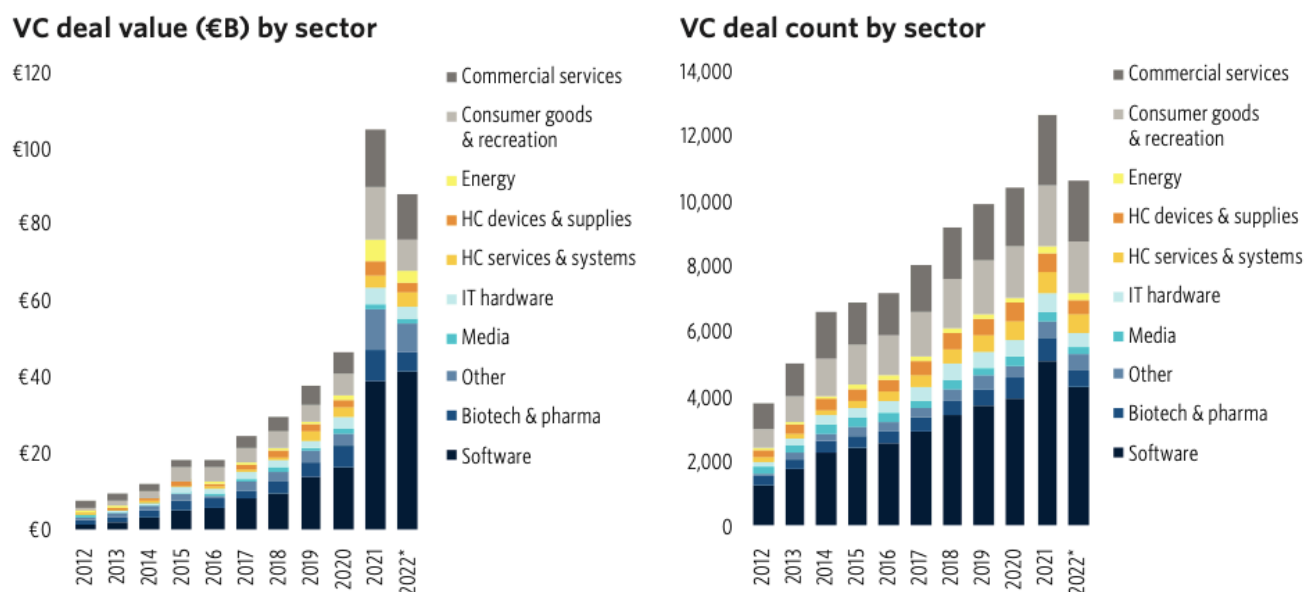


Source: Pitchbook, 2023

Another fundamental characteristic that must be underlined when analysing the European VC sector has to do with the preferred sectors of investment. The decision to invest in a specific sector might be driven by several factors, including legislation, regulatory changes, and technological

advancements. Unsurprisingly, fintech represents one of the most important sectors of investment in the VC ecosystem. In Europe alone in the past four years, VC investments in fintech have accounted on average for 20.2% of European aggregate deal value (Pitchbook, 2023). Nonetheless, it is important to note that in 2022 the increase in inflation and interest rates and the growing number of European regulations on data security have considerably impacted the situation for fintech investments. Analysing the data portrayed by Pitchbook (2023) in Table 1.7 below, it stands clear that in Europe – both in terms of deal value and of deal count – software production account both for the highest shares of VC investments and for the highest amount of capital invested, confirming the global trend reported by KPMG (2023). This preference for the software sector can be related to a multitude of factors, including the scalability of the product and the fact that early-stage companies or startups focusing on software production generally require less initial capital compared to other sectors. Lower capital intensity makes software investments more attractive to VC firms, as they can spread their investment across a larger number of companies.

Table 1.7: VC deal value and count by sector in Europe

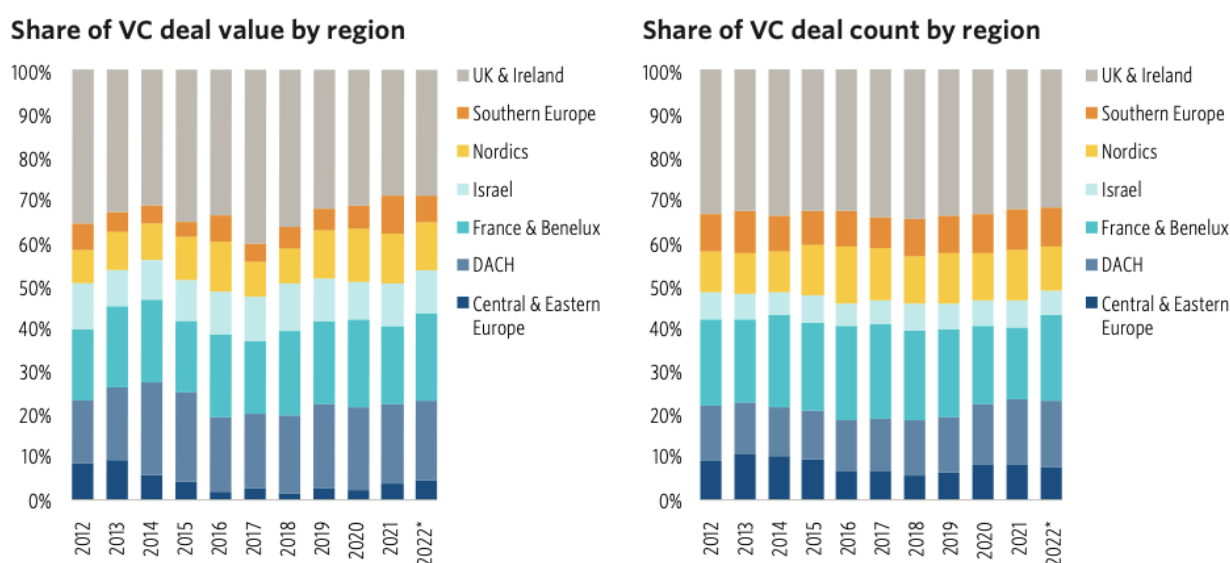


Source: Pitchbook, 2023

The analysed features of the European VC ecosystem beg the following question: regionally speaking, how is this growing amount of capital allocated in Europe? As one could easily guess, Ireland and the UK are the countries displaying the highest shares of investment, accounting for 29.4% of total European deal value in 2022 (Pitchbook, 2023). As shown by Table 1.8, this trend has been consistent for the past decade. According to Pitchbook (2023), this tendency was favoured also

by the numerous late-stage funding rounds that have driven up valuations and round sizes. Moreover, based on the study conducted in 2017 by De Simone & Partners, the UK accounted for the highest number of deals and funding invested in tech companies in Europe already in 2012¹⁴. As can be seen in Table 1.8 below, the leverage of the UK and Ireland over other European countries in the VC ecosystem is confirmed both in terms of the number of investments closed and in the amount of capital invested across the regions.

Table 1.8: VC deal value and count by region in Europe



Source: Pitchbook, 2023

The reasons behind the differences between the European VC ecosystem compared to other regions might depend on several factors. As already anticipated, the increasing amount of legislation governing EU is certainly one of the various reasons that get in the way of these types of investments. For example, Jia, Jin and Wagman (2021) found that following the 2018 adoption of the General Data Protection Regulation (GDPR) in the EU, European ventures experienced adverse consequences compared to their counterparts from the US and other parts of the world. These adverse impacts were found to be evident both in terms of the numbers and amounts raised in financing deals, with a notable emphasis on newer ventures that are focused on data and engage in business-to-consumer operations (Jia, Jin and Wagman, 2021). Likewise, Grilli, Mrkajic and Latifi (2018) found that social capital and institutions also play a significant role in economic activities, thereby influencing the development

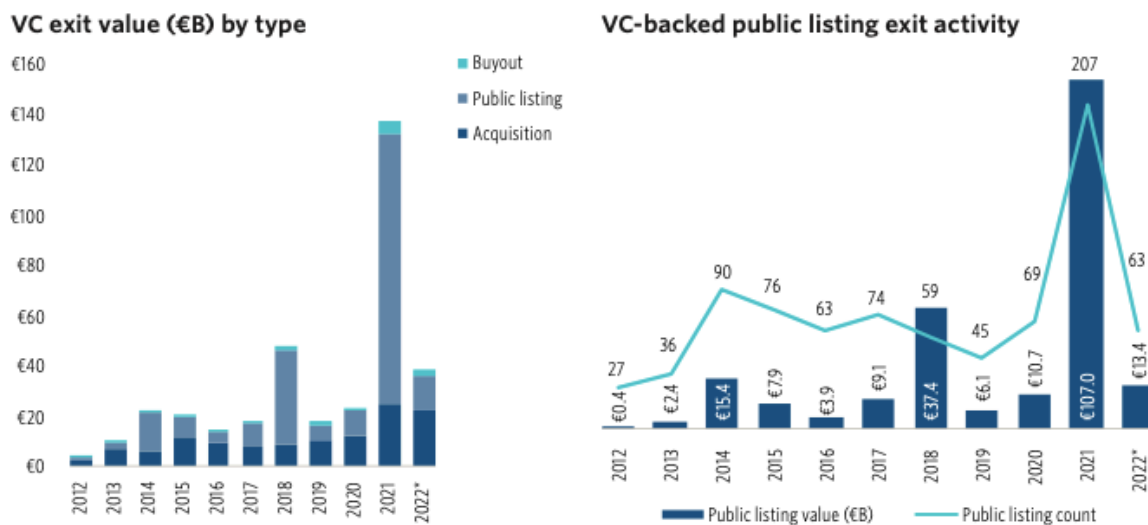
¹⁴ Retrieved. *VC Continent: Europe's Top Venture Capital Investors by Country*. Available at: <https://www.desimonepartners.com/en/news-en/111-publications/219-vc-continent-europe-s-top-venture-capital-investors-by-country.html>.

of VC. Specifically, Grilli, Mrkajic and Latifi (2018) underlined that institutions represent the most important drivers for VC and policymakers should be made aware of their effect on VC.

European exit trends also tell us important features of the industry. In 2022, despite several contributing factors – such as a decline in public equities and subdued growth predictions that reduced investor enthusiasm – the total exit value reached its third-highest level ever recorded (Pitchbook, 2023). 2022 has been a year of two halves in terms of exit activity: in the first half, a rising number of exits have been registered – accounting for 29.6 billion euros total –instead, in the second half, few exits have taken place – reaching 8.6 billion euros in exit value, a number considerably lower compared to the first period (Pitchbook, 2022).

Table 1.9 below reports both the exit value registered and the public-listing exit activity in Europe over the last ten years. As one can observe, from 2012 until 2020, exit activity has been stable with a preference over public listing followed by acquisition. 2021 saw a peak in public listing that, however, dramatically decreased a year later. The reasons behind fewer listings were linked with the price and market risk associated with exiting investments held over a long period of time (Pitchbook, 2023). Because of this disadvantageous situation for public listing, acquisitions are slowly starting to rise. Thus, considering the prevailing negative market conditions and the crowded nature of specific industries, many startups find the safety and specialized knowledge provided by a corporate acquirer appealing, and we will probably see a preference over acquisition for 2023.

Table 1.9: VC exit activity in Europe



Source: Pitchbook, 2023

To sum up, we have seen how venture capital works and what its main actors are, including non-traditional investors and CVCs that are becoming more and more relevant. The current economic situation has, in fact, greatly influenced VC performances, benefitting other forms of investments; nonetheless, VC remains strong in Europe. Having seen European preferences and trends in VC, the next chapter will dive into the analysis of KPI factors, thereby presenting the methodology used to evaluate VC performances in terms of risk management and return maximization. This first chapter will constitute the basis for the research that will further shed light on the European venture ecosystem, building upon VC structures and nature to offer a complete understanding of its functioning by using data collected directly from VCs across Europe.

2. Chapter Two: methodology and research: evaluating risks and returns

In the world of venture capital, where uncertainty and risk intertwine with innovation and potential, the ability to measure and evaluate performance and returns becomes paramount. This is even more relevant in the European perspective, as there is an ongoing debate focusing on the impact played by the EU in benefitting or hampering European VC performances. As startups and early-stage companies emerge as disruption and transformation drivers, venture capitalists have a pivotal role in nurturing these nascent ventures into global players. However, the question that echoes through boardrooms and investment panels remains: how do we measure the success of these types of investments? The answer to this question holds the key to unlocking the potential of VC. Before proceeding, a crucial consideration has to be made on how VCs manage risk and maximise returns, two factors that greatly contribute to positive or negative performances. Are risk management practices known and used in Europe and how can VCs maximise their holdings? These are the key questions that work as an engine of this research.

In this chapter, the research at the core of this dissertation will be presented; (2.1) we will start by explaining the frameworks used to assess venture capital's performance – making reference to financial indicators such as the IRR and the MOIC. It is imperative to stress the fundamental challenge lying at the heart of VC performance measurement. In contrast to conventional financial ventures, VC investments navigate within a domain where traditional measures frequently fade when measuring intangible assets – like innovation potential and market disruption. After having introduced the performance measurement techniques that can be applied to VC investments, (2.2) a more detailed overview of the Key Performance Indicators (KPIs) chosen for the assessment will be given, making specific reference to the two core indicators of this work: (2.2.1) risk management and (2.2.2) return maximization. At this point, the chapter will delve into (2.3) the analysis of the research design and choice, explaining the methodology used to conduct the study and the structure of the survey developed. Furthermore, the (2.4) sample group selection will be described, explaining the distribution of the survey and the target audience. On a final note, (2.5) the survey will be presented both in Italian and English language.

2.1 How do we measure performance? Existing frameworks to assess VC investments

To answer to the research question that is driving this dissertation, we must start by explaining the means that exist to evaluate the performance of VC investments. This is because by understanding the general framework used to assess VCs, we will then be able to grasp the relevance and the rationale lying at the core of the KPIs and techniques used to manage risk and maximise returns.

In the accounting and financial statement analysis literature, performance measurement is intended as the strategic tool used by organizations to bolster their adaptability in the face of unpredictable circumstances and dynamics (Burchell et al., 1980 cited in Heinzlmann, 2016). Moullin (2002) has greatly summarised the role of performance measurement, by stating that this practice evaluates “how well organisations are managed and the value they deliver for customers and other stakeholders”. By systematically evaluating various aspects of a company’s operations, performance measurement equips organizations with the information and data necessary to effectively respond and navigate through shifting and uncertain conditions. In addition, financial performance instruments also enable organizations to improve their situation and strategies as well as maintain a competitive edge in the market.

Academic literature states that valuation analysis is a vital step for financial actors as it helps them identify the source of economic value creation; likewise, valuation also aims at helping investors elaborate a business strategy (Penman, 2013), along with other fundamental activities – such as the identification of value drivers or public offerings operations. What we know is that business valuation holds significant importance due to the distinction that exist between value and price, with each factor influenced by distinct variables. Where the value of a company follows the classical theory definition and is intended as the economic capital of a business, that is to say “the income it will be able to yield by discounting the expected economic results” (Gallo and Verdoliva, 2022). In this conception, price indicates the market value of the firm, that is generally influenced and determined by uncontrollable and exogenous factors (Gallo and Verdoliva, 2022). When it comes to estimating financial performance of traditional investments, like stocks and bonds, experts rely on several financial instruments and metrics. Landmark valuation methods exemplified by the literature to estimate economic value and business performance can be classified into six groups:

(Gallo and Verdoliva, 2022)

- Balance Sheet
- Income Statement
- Mixed Method
- Discounted Cash flow (DCF)
- Value Creation
- Options

The results of these valuation techniques are some key ratios that give investors a clear indication on how a business is doing. These are financial key performance indicators (KPIs), that is to say metrics used to track, measure, and analyse the financial health of businesses¹⁵. Based on these ratios investors make their considerations and take financial decisions. The most relevant ratios for traditional businesses are, *inter alia*:

- Return on Investments (ROI)
- Compound Annual Growth Rate (CAGR)
- Earnings per Share (EPS)
- Internal Rate of Return (IRR)
- Cash-on-cash (CoC)

When dealing with investments in PE – including buyout and venture capital – measuring performance results fundamental for decisions on investment allocations and for compensation. Nonetheless, the measurement of VC's performance presents some difficulties, reflecting the irregular nature of its cash flows and the illiquidity of its investments (Puca, 2020). When the company being valued is high-risk and high-tech or has almost no historical data, as it is the case of startups, traditional means are not able to effectively assess performance, that is why VC also rely on other valuation methods that are not entirely comprehended in the classification previously presented. Given the risky nature of VC investments per se, fair valuations' aim is that of maximising the probability of taking the most successful investment decisions. As underlined by the literature, there is no single metric that accounts simultaneously for the three key variables of investments, namely: time, value and risk (Puca, 2020). For this reason, a multitude of metrics must be used to evaluate the performance of VCs – as it will be discussed below. According to Gallo and Verdoliva (2022), the most employed methods to evaluate performance in VC and PE are: the Capital Cash Flow (CCF)¹⁶, the Weighted Average Costs of Capital (WACC) and the Leverage Buy Out (LBO) valuation model.

¹⁵ Retrieved. Stobierski, T. (2020). *13 Financial Performance Measures Managers Should Monitor*. [online] Harvard Business School online. Available at: <https://online.hbs.edu/blog/post/financial-performance-measures>.

¹⁶ On this see: Ruback, R.S. (2002). Capital Cash Flows: A Simple Approach to Valuing Risky Cash Flows. *Financial Management*, 31(2), p.85. doi:<https://doi.org/10.2307/3666224>.

The Discount Cash Flow model

The DCF model is a method used to assess the value of a business through the estimation of its future cash flows, discounting them at present value (Gallo and Verdoliva, 2022). The process of discounting future cash flows at a given interest rate allows to consider the riskiness of the market in which the company operates. Additionally, when this model is used to evaluate risky projects, as it is in the case of VC, the discount rate tends to be higher because returns are believed to be uncertain. As affirmed by Gallo and Verdoliva (2022), in this model, the intrinsic ability to generate liquidity based on the business' assets is determined by taking into consideration: the life span of the assets, the growth rate of the company and the underlying risks resulting from the operating flows. The model is explained by the following formula:

$$w \text{ Asset} = \sum_{t=1}^{T=N} \frac{E(\text{Cash Flow}_t)}{(1+r)^t}$$

Where:

N = life span of the assets

r = discount rate of the cash flow.

Thus, the value of the business is the result of its flow added, if positive (or deducted if negative) to its net financial position. Based on the (i) value of the cash flow and (ii) of the discount rate (r) to be used (either WACC or cost of equity), two different methodologies of DCF emerge, namely the Net Present Value and the Adjusted Net Present Value.

To estimate the value of cash flows from operations (CF), also known as cash from pre-financing, the formula below is used. Cash flows represent the crucial determinants for investors and their calculation must be precise to reflect the status of the business.

$$CF \text{ operations}_t = EBIT_t * (1 - T) + DEPR_t - CAPEX_t - \Delta WK_t + other$$

Where:

EBIT = Earnings Before Interest and Taxes

T = Corporate Tax Rate

DEPR = Depreciation

CAPEX = Capital Expenditures

Δ WK = Changes in Working Capital

Other = Increases in Taxes Payable, Wages Payable, etc.

After calculating the cash flows for periods 1 to T, the terminal value (TV) is computed using the equation below:

$$TV = \frac{CF_r * (1 + g)}{r_a - g}$$

As already anticipated, the discount rate (r_a in this case) indicates the level of risk of the firm being evaluated. It is important to stress that, as scholars pointed out, this model is based on the assumption that the firm will grow forever at a given rate (g) (Gallo and Verdoliva, 2022). This value is crucial in the calculation of the formula and it is especially relevant in the case of startups and early stage companies populating the VC ecosystem. Even a small change in the growth rate used in the valuation might result in a significant difference in the assessment. When the future cash flow is calculated, we use the TV to find the Net Present Value (NPV), that is the difference between the present value of the cash inflows and the present value of the cash outflows over a given period of time¹⁷. In other words, the NPV is the current value of the cash flows at the expected rate of return of the project one is investing into in comparison to the initial investment made (Gallo and Verdoliva, 2022). The calculation when analysing long-time projects follows the following formula:

$$NPV = \sum_{t=0}^n \frac{R_t}{(1 + r_a)^t}$$

Where:

R_t = net value of cash inflows and outflows at a period t

A positive NPV indicates that the project is potentially worth the capital invested and will constitute a profit for investors, as the expected future cash flows exceed the initial investment, accounting for the opportunity cost of capital and potential risks. The greater the positive number the greater the benefit. Conversely, if the NPV of the project being valued is negative it means that this investment

¹⁷ Retrieved. Investopedia (2023). *Net Present Value (NPV): What it Means and Steps to Calculate It*. [online] Investopedia. Available at: <https://www.investopedia.com/terms/n/npv.asp>.

will not create any wealth. This ratio helps in decision-making by assessing the profitability and value of an investment over time. CF in net present value analysis accounts for two key considerations: firstly, it corrects for the risk of the investment – which is important considering that not all investment projects carry the same risk, some (like in the case of VC) have highest probability of success or failure. Thus, the discount rate will be higher for riskier investments; secondly, it considers for a concept known as time value of money (TVM) which involves relevant considerations on inflation, interest rate and opportunity cost (Gallo and Verdoliva, 2022).

The discount rate (r), which has been already presented above, is estimated using the Capital Asset Pricing Model (CAPM) which is illustrated by the following formula:

$$r_e^U = r_f + \beta^U * (r_m - r_f)$$

Where:

r_f = the risk-free rate

β^U = unlevered beta

r_m = market rate of return on common stocks

$(r_m - r_f)$ = market risk premium

The CAPM model has been said by scholars to include in a single formula sectoral risk and company-specific risk. This model is widely used to calculate the cost of equity – that is to say the return given to shareholders as compensation for the risk they undertake by investing in the company's stock. Based on the above-stated formula, one of the main issues of the CAPM model remains that of choosing the right risk-free rate (r_f) based on two fundamental aspects: the time horizon and the geographical area reference (Gallo and Verdoliva, 2022). The geographical area of reference is particularly important because each country has specific ratings and specific risk-free rates. Also the market risk premium, $(r_m - r_f)$, is of equal importance for investors, since it measures the additional return that they expect to gain by investing in a diversified market portfolio, as opposed to a risk-free investment. Indeed, investors are exposed to two types of risks: specific risk and systematic risk. The specific one is industry-specific (unlevered beta or β^U) and company-specific (levered beta). Systematic risk, instead, has to do with the country in which the firm operates and is active. Although estimation on the market premium differ significantly, the PE and VC market studies generally use a risk premium between 5% and 6% (Gompers, Ivashina and Ruback, 2019).

Weighted Average Cost of Capital (WACC)

Among the various methods used to value companies through the DCF technique, the Weighted Average Cost of Capital (WACC) metric and the Free Cash Flow (FCF) stand out not only in the case of traditional investments but also for VC investments. The FCF represents the hypothetical cash that a company has left after it has covered all its operating expenses, taxes, and capital expenditures needed to maintain and expand its business. Instead, the WACC tells us about the relevant information on the financial structure of the firm and it represents the rate at which the FCF needs to be discounted (Gallo and Verdoliva, 2022). Because of its nature, the WACC can be computed for companies financing their activities with both equity and debt. The WACC is calculated using the following formula:

$$WACC = K_e \times \frac{E}{E + D} + K_d \times \frac{D}{E + D} \times (1 - T)$$

Where:

K_e = cost of equity capital

$\frac{E}{E+D}$ = represents the weight of equity in the capital structure

$\frac{D}{E+D}$ = represents the weight of debt in the capital structure

K_d = cost of capital

$(1 - T)$ = is the tax shield

Hence, the WACC represents the opportunity cost of operating net capital and is computed as the weighted average of the costs of the different sources of financing of the firm (Gallo and Verdoliva, 2022).

Leverage Buy Out (LBO) Valuation Models

The Leveraged Buyout (LBO) valuation model is a financial analysis method used to determine the value of a company through a hypothetical acquisition scenario. This valuation model is frequently used in the venture capital and private equity market to determine the right amount to be paid by investors to acquire a target company achieving satisfying returns. The LBO valuation requires first to forecast the company's revenues and net income over a couple of years – usually a five-years period is estimated. The LBO model is applied to identify the free cash flow that (when positive) will

be used to pay debt. In the case of a negative cash flow, the firm will require additional debt to fund its activities (Gallo and Verdoliva, 2022). VC and PE investors use specific performance indicators to determine the exit value of the company during the terminal year. Such exit value is determined using the EBITDA valuation multiples or revenues multiples. As said, the LBO model helps calculate the potential amount an investor can allocate for the target company, aiming for a suitable profit from the investment. Nevertheless, this value relies on the maximum level of debt the company can handle and the profit gained from the capital invested during the acquiring process. These factors can be evaluated through two distinct strategies (Gallo and Verdoliva, 2022):

- Establishing a desired Internal Rate of Return (IRR)
- Determining the cost of capital using the CAPM approach

2.2 Identifying Key Performance Indicators (KPIs)

As previously stated, KPIs are fundamental to carry out a proper analysis of financial performance. In the case at stake, some specific KPIs have been selected to conduct the research, aiming at understanding: first, the preferred methodology through which performance is being assessed by venture capitalists; second, the way in which risk – specifically external risk – is effectively managed and mitigated in VC; and third, the techniques employed to maximise returns. The two latter points will be addressed in the following subparagraphs.

The IRR is the main performance indicator used to assess VC's performance (Phalippou, 2008). The IRR is the rate at which the NPV of future cash flows from the investment will be equivalent to zero. In other words, IRR is the discount rate that equates the present value of expected cash inflows with the present value of cash outflows. The formula to calculate the IRR is as follows:

$$0 = NPV = \sum_{t=1}^T \frac{C_t}{(1 + IRR)^t} - C_0$$

Where:

CF_t = net cash inflows at period t

C_0 = total initial investment costs

IRR = internal rate of return

The first step requires projecting the cash flows of a period that ranges between 3 and 5 years (Gallo and Verdoliva, 2022). Then, the maximum level of debt that the target firm can bear is calculated. After the cash flows have been forecasted, the Multiples method is used to assess the value that the target company could have at the time of disinvestment. Private equity and venture capital investors evaluate the IRR by considering their equity investment in the prospective company and their expectations for the value of their equity stake upon exit. Usually, the value of the company's debt is subtracted from the total exit valuation; this subtraction is often done by projecting the target firm's expected debt payments over time, creating a debt schedule that reflects the repayment of the outstanding debt.

First off, the value arising from intermediate debt payment is obtained by subtracting a smaller amount of debt from the exit value – that is value of the company at the time of exit – than the total debt outstanding at the beginning of the deal. However, this value is still captured by the equity, given that the debt is gradually paid off in the following years, thus the increasing value resulting from these debt payments is considered a benefit to the equity investors. The overall enterprise value, including both equity and debt, is improved through various means. These improvements include factors such as enhancing EBITDA, improving the company's operational performance, and increasing revenue growth (Gallo and Verdoliva, 2022). Multiples' variation has an impact: if a PE firm gains control of the target company, its ability to influence the company's operations can lead to an expansion of exit multiples¹⁸. Hence, if the private equity firm can sell its ownership stake in the company at a higher multiple, it can result in greater returns. In a nutshell, determining the IRR of an equity investment in an LBO valuation model involves considering: the value created by debt payments, the benefit to equity due to gradual debt repayment, improvements in company performance, and the potential influence of valuation multiples on exit proceeds.

As explained by Gallo and Verdoliva (2022), once the expected IRR is obtained, investors can compare the IRR of their equity investment to their hurdle rate. The hurdle rate is the maximum rate of return an investment must receive to be considered beneficial. Hurdle rates can vary based on different factors. These factors include the size of the company, the industry it operates in, the stage of the company's development, the country's economic conditions, and more. Generally, LBO hurdle rates range between 20% and 30% (Gallo and Verdoliva, 2022). The hurdle rate is one of the most relevant metrics in the VC ecosystem to evaluate how a business is doing. This rate is generally calculated as a percentage and “it represents the risk-adjusted rate of return that investors are willing

¹⁸ In this context, exit multiples refer to the valuation multiples used to determine the company's value at the time of exit.

to accept”¹⁹. In practice, the hurdle rate sets the standard against which the fund’s performance is measured: if the fund or investment falls short of attaining this minimal return, it could mean that investors may not realize any profits²⁰. Hence, observing the overall trend of surpassing the hurdle rate helps understanding the performance of the VCs²¹. In fact, learning about the hurdle rate tells us vital information on returns and on the sustainability of the performance. In PE typically the hurdle rate is set around 7-8%²², whilst in the context of VC, fund managers typically implement a hurdle rate in the range of 6% to 8%²³.

Interestingly, scholars pointed out that the Rate of Return (RoR) – that is the actual rate at which an investment grows over a specific period that accounts for all cash flows, capital appreciation, and income earned – experienced by investors might differ from the IRR (Phalippou, 2008). In other words, the way investments perform in reality (RoR) might not align with the projected return rate (IRR) calculated for decision-making; this discrepancy might affect the motivations and goals of asset managers and investors (Phalippou, 2008). For instance, the author suggests four issues created by the use of the IRR: first, it gives distorted incentives for the timing of cash flows and grouping of funds (Phalippou, 2008); second, it biases volatility upward. Third, especially in the case of venture capital and buyout investments, also average performance measures are upward biased. Lastly, using IRR provides incentives to significantly alter cash flows. Because of the increasing numbers of studies underlining the pitfalls of the IRR, one could think that many investors are starting to divert towards other ratios to estimate VC’s financial performances²⁴. For example, the Modified IRR (MIRR) might represent a good alternative method to estimate performance (Phalippou, 2008). Therefore, in terms of performance assessment, it will be interesting to investigate whether IRR is

¹⁹ Retrieved. Shankar, V. (2023). *Decoding VC Investments: A Beginner’s Guide To Understanding VC Metrics*. [online] Inc42 Media. Available at: <https://inc42.com/resources/decoding-vc-investments-a-beginners-guide-to-understanding-vc-metrics>

²⁰ Ibid.

²¹ Clearly, if the overall trend of surpassing the hurdle rate is positive it indicates that the investments made by a VC fund or portfolio of investments have consistently generated returns that exceed the minimum required rate of return. Conversely, when the overall trend is negative it implies that the investments have consistently fallen short of the return rate.

²² Retrieved. Lehman, R. (2023a). *Hurdle Rate (Preferred Return) in Private Equity | Moonfare*. [online] www.moonfare.com. Available at: <https://www.moonfare.com/glossary/hurdle-rate-preferred-return#hurdleratevsirr>.

²³ Retrieved. Knott, C. (n.d.). *The Risk-Return Profile of Venture Capital*. [online] www.capnamic.com. Available at: <https://capnamic.com/post/the-risk-return-profile-of-venture-capital>.

²⁴ On this see: Sparks, A. (2021) and Phalippou (2008).

still frequently used between VCs to assess how businesses are doing – as it will be later analysed throughout the survey conducted in this work.

Another common measure used to evaluate performance for VC is the Multiple of Invested Capital (MOIC) or Equity capital (Puca, 2020). The MOIC is the total value of all shares (comprehending both realized and unrealized value) divided by the initial investment²⁵.

$$MOIC = \frac{\textit{Realised value} + \textit{Unrealised value}}{\textit{Initial investment}}$$

The MOIC represents the overall return multiple achieved by an investment. Due to the changing timing of exit transactions, at any given moment the MOIC does not only consider realized profits, meaning the cash generated from sold investments. Instead, the MOIC combines the value of the investments that have been sold with the value of investments that are still active – represented in the formula by the unrealised value. Combining realized and unrealized value is relevant not only to investment funds holding multiple securities but also to individual assets; this reasoning can be applied also to the collection of companies held within a private market fund.

Another critical aspect to be considered to evaluate VC's overall performance requires measuring successful exits. This term indicates a situation in which an investor or firm decides to sell, liquidate or transfer their investment stake generating substantial returns. Successful exits are generally evaluated using, *inter alia*, two fundamental metrics: the IRR and the CoC return. The IRR, as previously explained, calculates the annualized rate of return on an investment over its holding period. Likewise, the CoC estimates the actual cash distribution received from an investment compared to the total capital invested. In other words, it calculates the amount of capital an investor receives after an exit has taken place as a percentage of the initial amount investment (Sparks, 2021). Unlike the IRR ratio, the CoC is not dependent on when the exit actually takes place²⁶. The formula to calculate the CoC is as follows:

²⁵ Retrieved. Lehman, R. (2023). *Multiple on Invested Capital (MOIC) Definition | Moonfare*. [online] www.moonfare.com. Available at: <https://www.moonfare.com/glossary/multiple-on-invested-capital-moic/#whyismoicimportantinprivateequity>.

²⁶ Retrieved. jason.flores (2023). *Returns Analysis (IRR & CoC)*. [online] Macabacus. Available at: [https://macabacus.com/venture-capital/returns#:~:text=Cash%2Don%2DCash%20\(%22](https://macabacus.com/venture-capital/returns#:~:text=Cash%2Don%2DCash%20(%22).

$$CoC = \frac{\text{Cash distribution received}}{\text{Total capital invested}} \times 100\%$$

Clearly, venture capitalists can estimate this value only at the end of the reporting period when they will receive distribution from the IPO or acquisition. In any case, both metrics – IRR and CoC – offer valuable insights into investment performance, but they highlight different aspects of the returns achieved.

After having seen what are the instruments that investors can use to estimate the overall performance of VC investment, we will now focus on the risk management techniques and return maximization approaches that exist in the realm of VC, that will constitute the basis of the research. As a matter of fact, the survey constructed in this work is built on the valuation models presented in this chapter, but it will make specific reference to the risk management and return maximization practices that strategic investors undergo to obtain better results in VC.

There are many reasons why the risks and returns of VCs differ from those of traded stocks – even when considering factors like their risk sensitivities (betas) and common characteristics such as industry, small company size, and financial attributes (Cochrane, 2001). According to Cochrane (2001), there are three main reasons justifying these differences. The first reason is that VC investments are often less liquid compared to publicly traded stocks and investors might require a higher average return on their investments to compensate for this lack of liquidity. Secondly, because VC investments are typically made in larger amounts, the risk and return of a single VC investment can have a substantial impact on the overall investment portfolio. The third reason has to do with the monitoring and mentoring role played by investors in early-stage companies, resulting in some cases in the representation in the Board of Directors; this level of involvement can influence the company's operations and strategic decisions. According to Cochrane (2001), compensation for this active role could potentially contribute to a higher measured financial return for VC investments.

Let's now dive into the analysis of the risk management techniques that can be used for VC investments and what KPIs will be inserted in the research.

2.2.1 Managing strategically risk in VC investments: techniques and approaches

As investors navigate the intricacies of this high-risk, high-reward domain, they are confronted with the challenge of identifying, assessing, and mitigating risks while optimizing the potential for

substantial returns. Risk is defined by Aven (2010) as the “probability and severity of adverse effects”; hence, it stands clear that risk must be managed to overcome undesired situations. In the realm of VC, where innovative ideas intersect with uncharted markets, strategic risk management techniques and approaches play a crucial role in shaping the outcomes of investments. VCs encounter both internal and external risks when providing funding to entrepreneurs (Kaplan and Strömberg, 2004). On the one hand, Internal risks stem from the information asymmetries and conflicts of interest arising between VCs and entrepreneurs –this is the so-called *agency risk* (Wang et al., 2009). External risks, on the other hand, originate from the surrounding environment and typically lie beyond the control of either party – these include: *market risk, technological risk and financial risk* (Wang et al., 2009; Proksch et al., 2016). The strategies employed by venture capitalists to address the first type of risk, namely internal, have been extensively studied by scholars. Instead, risk management practices targeting external risks have received limited attention. Even less attention has been paid to *failure risk*, which is among the most severe risk for VCs.

Indeed, it is easy to guess that the most concerning and evident risk for VCs is startup failure, which according to data occurs to 90% of startups over time²⁷. Notwithstanding the relevance of this data, it must be highlighted that elevated failure rates are not exclusive to startups, traditional businesses in the first years of life face the same challenge. This concept aligns with the phenomenon of “liability of newness” according to which newer firms face more difficulties and a greater risk of failure than established firms (Coleman, 2004). However, one could point out to the fact that when startups are supported by VCs they have greater possibilities of success, in effect the majority of these failures tend to happen in the initial phase of the start-up lifecycle (Switters, Tegeo and Pujol, 2017). Nonetheless, even in this case data indicate a harsh reality: around 75% of venture-backed companies fail²⁸. Considering the European ecosystem alone, startup failure rate is equivalent to 89%, confirming the global trend, and for venture-backed companies there is 12% of success rate²⁹. Therefore, it is paramount for VCs to understand the reasons behind startup failure to properly address the issue. In the study by Cantamessa et al. (2018), it was highlighted that there are several reasons behind startup failure – ranging from having the wrong business model to facing unfaithful customers, as shown in Table 2.1 below. They found that there are two main reasons behind startup

²⁷ Retrieved. Kotashev, K. (2022). *The Ultimate Startup Failure Rate Report [2019]*. [online] Failory.com. Available at: <https://www.failory.com/blog/startup-failure-rate>

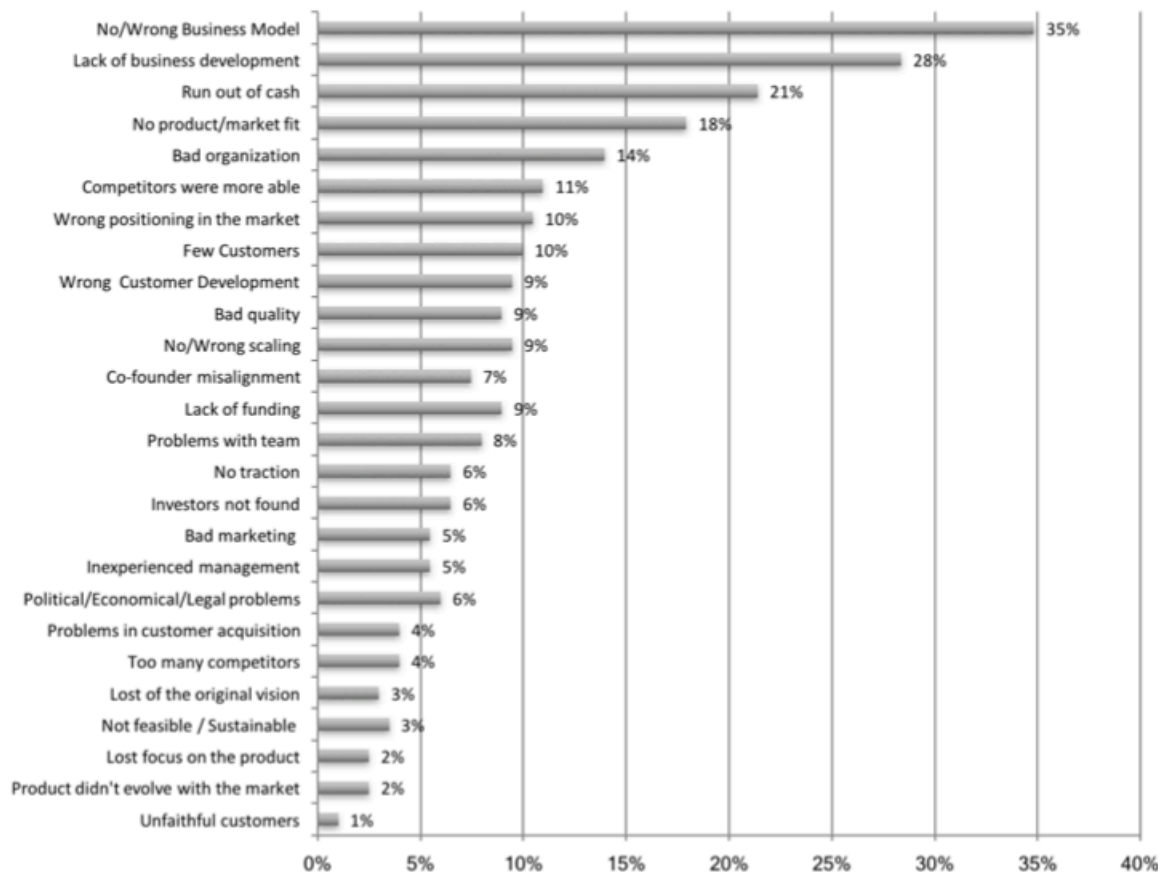
²⁸ *Supra*.

²⁹ Retrieved. Mahr, A. (2020). *The hard truth about startup failure in Europe*. [online] stryber.com. Available at: <https://www.stryber.com/insights/the-hard-truth-about-startup-failure-in-europe#:~:text=As%20per%20our%20definition%2C%20this>.

failure during the first year of life of the company: the lack of a business model (24%) and business development (28%) (Cantamessa et al. 2018); followed by running out of cash (24%), and inexperienced management (12%). The overall results obtained throughout the startup lifecycle suggests that the leading roots for failure have to do with the lack of managerial perspectives and startups' business development (Cantamessa et al. 2018).

Hence, venture capitalists have developed specific strategies to tackle these types of risks, the straightest forward being carrying out a thorough due diligence before the investment. In fact, as it has been comprehensively discussed previously, evaluating the startup financial performance is key to spot potential red flags. However, this type of assessment has to be accompanied by considerations that cannot be grasped by financial ratios, including the potential of the technology used and the cohesion of the team. This latter, in particular, has been proven to be one of the building blocks of startups' success (Gul, Ghafar Khan and Ajmair, 2022). Specifically, Gul, Ghafar Khan and Ajmair, (2022) found that the long-term survival and achievements of the startup heavily depends on the quality of interpersonal and social interaction of the managing team.

Table 2.1: Reasons behind startup failure



Source: Cantamessa et al., 2018

As anticipated, internal risks stemming from VC investments have to do with the information asymmetry that characterises the relationship between investors and entrepreneurs, also known as principal-agent problem (LiPuma and Park, 2013; Proksch et al., 2016; Sapienza and Gupta, 1994). The principal-agent issue in VC was greatly summarised by Kut, Pramborg and Smolarski (2006): “The agent (the entrepreneur or manager) has more information about the business than the principal (the fund manager), resulting in problems with adverse selection (misrepresentation by the entrepreneur) and moral hazard (the difficulty of aligning the interest of the entrepreneur or manager with that of the venture capitalist)”. Because of bounded rationality, both parties are inclined to opportunistic behaviour and, having no means to verify the actions of entrepreneurs, venture capitalists face the inability to write contracts (Wang et al., 2009). This asymmetric relationship gives rise to what the literature has defined as *agency risk* (Lu, Hwang and Wang, 2006).

The literature on agency risk is vast and uses diverse geographical areas of interests, nevertheless most of the studies agree on the strategies and approaches that can be undertaken by VCs to mitigate agency risk. These include: involvement in directory board, financial contracting, milestone-based financing, and gradual provision of capital (Proksch et al., 2016). Conferring an active role and representation in the directory board allows VCs to closely monitor the startup’s progress and influence its direction³⁰. Likewise, the literature suggests that financial contracting helps mitigating agency risk as it involves setting up specific financial agreements between the VC and the startup, that usually include terms related, for instance, to equity ownership and preferred returns to align both parties’ interests³¹. Lastly, milestones-based financing and gradual provision of capital are approaches based on providing capital to the startup in stages when certain predetermined milestones are achieved. In this way, investors make sure that the startup meets its expected progress before receiving further financing³². Overall, these strategies help mitigate agency risks by aligning the

³⁰ On this see: Tang, Y., Wu, M., Cao, Q. and Zhou, J. (2014). How Venture Capital Institutions Affect the Structure of Startups’ Board of Directors. In: *Proceedings of the Eighth International Conference on Management Science and Engineering Management*. Springer, Berlin, Heidelberg. doi: https://doi.org/10.1007/978-3-642-55122-2_75

³¹ On this see: Tan, J., Zhang, W. and Xia, J. (2008). Managing Risk in a Transitional Environment: An Exploratory Study of Control and Incentive Mechanisms of Venture Capital Firms in China. *Journal of Small Business Management*, 46(2), pp.263–285. doi:<https://doi.org/10.1111/j.1540-627x.2008.00243.x>.

³² On this see: Kut, C., Pramborg, B. and Smolarski, J. (2006). Risk Management in European Private Equity Funds: Survey Evidence. *The Journal of Private Equity*, 9(3), pp.42–54; Kut, C., Pramborg, B. and Smolarski, J. (2007). Managing financial risk and uncertainty: The case of venture capital and buy-out funds. *Global Business and Organizational Excellence*, 26(2), pp.53–64. doi:<https://doi.org/10.1002/joe.20132>.

interests of both parties, ensuring that the startup's performance is closely monitored, and providing a structured approach to funding based on achievements.

While internal risks have gathered substantial scholarly attention, it is imperative to note that these concerns have been extensively examined in existing literature, as presented above. Conversely, external risks, which are of significant importance, have been comparatively underexplored – resulting in a dearth of comprehensive analysis. For this reason, this thesis will exactly tackle the external risk management techniques used in Europe. Before diving in the analysis, it is paramount to understand what is the external risks characterising the VC ecosystem. Analysing the literature, the term external risk describes those risks caused by factors that are outside the VC and venture-backed company's control, these include: *technological risk*, *market risk* and *financial risk* (Proksch et al., 2016). Technological risk, or technical risk, indicates the risk and challenges associated with investing in a technological project of uncertain quality (Cumming, Fleming and Schwienbacher, 2005). Assessing technological risk is crucial for venture capitalists since they must evaluate whether a product developed by the potential venture-backed company is market-ready or if there is a need of further assistance (Proksch et al., 2016). In short, technical risk encompasses the potential for technical hurdles, market acceptance issues, and competitive dynamics that can affect the success of technological companies. This concept is strictly linked to another form of external risk known as market risk. Market risk refers to the risk associated with the commercialization of an innovative product or technology (Proksch et al., 2016). This involves considerations on the potential impact of external economic, industry, and market factors on the performance and returns of the investment. According to Fiet (1995), “market risk depends upon the size, growth and accessibility of the market, and on the existence of a market need”. Undoubtedly, in the case of new innovative startups receiving VC funding, market risk is higher than for established companies, because startups often explore markets where equilibrium among the five forces has yet to be reached (Porter, 1980)³³. Financial risk, instead, refers to the adverse financial outcomes or losses that VC investors might face due to factors related to the financial health, structure, and performance of startups. Because of the broad factors encompassed by financial risk, Kut, Pramborg and Smolarski (2007) identified two sub-categories: portfolio management-related risk and macro risks (meaning related to volatility and macroeconomic drivers). Others instead have stressed the relevance of the liquidity risk within financial risk considerations. Liquidity risk indicates the risk of not being able to exit from the

³³ The well-known concept of the five forces theorised by Porter in 1979 identifies five key sources to analyse the level of competitive pressure faced in a specific industry highlighting strengths and weaknesses – the five forces are: competition in the industry, the potential of new entrants into the industry, power of suppliers, power of customers and the threat of substitute products.

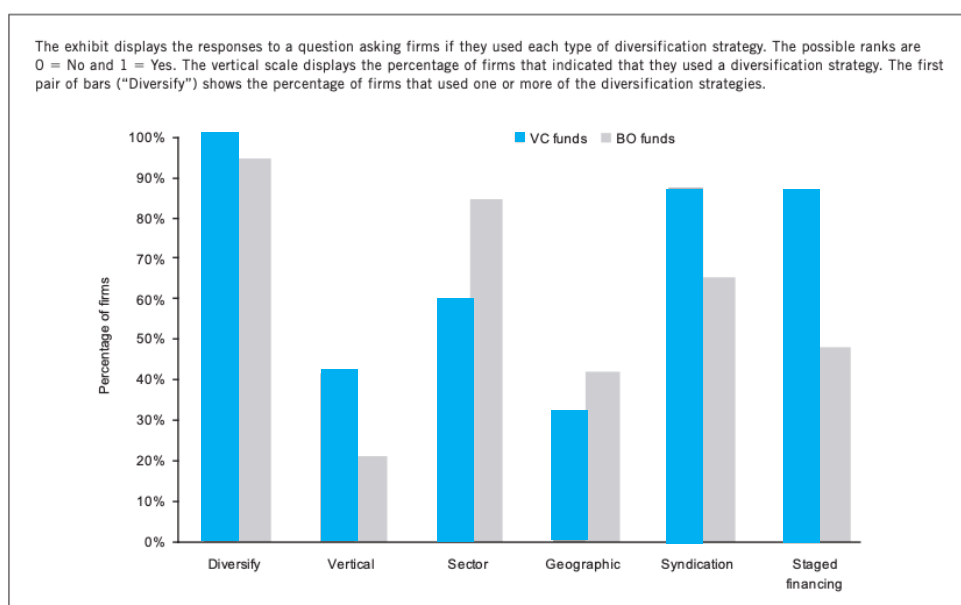
investment and being forced either to remain for longer periods in the venture or sell the share at a low price (Cumming, Fleming and Schwienbacher, 2005).

As we have seen, VC investments are undeniably exposed to a multitude of risks – both internal and external – but it is important to acknowledge that there exist various strategic risk management techniques that empower VC investors to navigate these challenges effectively. For instance, the literature points out to portfolio diversification as an extensive risk management procedure. Portfolio diversification is an effective means of controlling risk exposure through unsystematic risk reduction (Kut, Pramborg and Smolarski, 2007)³⁴. This technique requires spreading investments across a variety of ventures within a VC's portfolio to reduce the impact of individual failures and to increase the potential for overall returns. As a matter of fact, by investing in a diverse range of startups simultaneously risk is spread across multiple companies, and the failure of one of them does not jeopardise the whole portfolio. Rather, in the case of diversified portfolios, the impact of the failure is offset by the success of the other companies present in the portfolio. Furthermore, Weidig (2002 as cited in Kut, Pramborg and Smolarski 2007) proposes that by diversifying, which involves increasing the number of invested startups, the tendency for returns to be skewed in one direction is reduced. This means that extreme gains or losses from individual startups are less likely to dominate the overall performance of the fund. Diversifying the portfolio does not only imply investing capital across a great number of different startups, a well-diversified portfolio also includes investments in startups across different investment stages (early-stage, growth-stage, etc.), industries (i.e. technology, healthcare, consumer goods, etc.), and geographic locations (different countries or regions) (Kut, Pramborg and Smolarski 2007). Thus, diversification aims at including in the portfolio companies that are not related to one another to reduce volatility and risks. By investing in startups at different stages of development and across diverse sectors, venture capitalists can harness a broad spectrum of growth opportunities while minimizing the impact of sector-specific downturns. This dual-layer diversification strategy enhances the portfolio's resilience, enabling VC investors to capture emerging trends, balance risk exposure, and optimize their potential for overall portfolio success. After all, nobel prize winner Markowitz once said that in investing “diversification is the only free lunch”, because by diversifying investors can enjoy higher returns without taking on additional risks. The study conducted between 2003 and 2004 on 142 European VCs and BO by Kut, Pramborg and Smolarski (2007) found that in practical terms although almost all interviewed firms

³⁴ Total risk, which represents the variability in returns of assets, comprises two elements: systematic risk (what we have previously called market risk,) and unsystematic risk. As previously stated, systematic risk emerges from the impact of market or economy-wide factors on the returns of each individual asset. Unsystematic risk, on the other hand, originates from unique influences related to firms, industries, or specific assets (Norton and Tenenbaum, 1993). Moreover, VCs are exposed, a priori, to a great amount of unsystematic risk in their portfolios (Norton and Tenenbaum, 1993).

diversified their portfolio, just few funds actually invested vertically (meaning relative to existing projects) or geographically. Kut, Pramborg and Smolarski (2007) revealed that portfolio risk management is not extensively carried out and further research should be done to address the situation. However, through the results of the survey it will be investigated whether 17 years later European VCs are still reluctant on diversifying their portfolios or if instead the majority of them now employs diversification practices in their business. As can be seen in Table 2.2 below, based on findings by Kut, Pramborg and Smolarski (2007) the most common diversification strategy is syndicating investments (or co-investment), followed by investing in other sectors of the economy, and the use of staged financing.

Table 2.2: VC portfolio diversification



Source: Kut, Pramborg and Smolarski 2007

Kut, Pramborg and Smolarski (2007) also found that co-investment with partners is a widespread technique for VCs. Co-investment is a practice that involves multiple investors jointly investing in a company. In effect, co-investment is an important risk management practice that helps investors in situations of information asymmetries, a feature that as we have seen characterises venture capital investments. As suggested by Lerner (1994), collaborative investment is a better way to evaluate the information provided by potential portfolio companies. This approach helps address information gaps and uncertainties. In addition, in first-round of investments experienced venture capitalists mainly collaborate with investors that they believe have similar experience in syndicating. This is because, another VCs' willingness to invest in a promising startup not only confirms the positive evaluation carried out by the VC but it also allows the sharing of risks between the co-investors and brings more

expertise to the companies. In other words, as stated by Lerner (1994), co-investment provides VCs with an opportunity to validate their ideas by comparing them with insights from other knowledgeable sources. Bygrave (1987, 1988 as cited in Norton and Tenenbaum, 1993) proposed that venture capitalists will invite other venture capitalists to take part in deals when they believe that they can provide specialised knowledge and added value to the investments. As investment rounds progress, experienced VCs extend their collaborations to both experienced colleagues and investors with less expertise (Lerner, 1994; Admati and Pfleiderer, 1994). Studies have also pointed out that in the case of co-investment the reputation of parties involved is crucial: a positive reputation contributes to successful collaboration and investment decisions (Wright and Lockett, 2003). Clearly, well-established funds with a track record of success have a valuable reputation that makes them attractive partners for co-investment, serving as an additional incentive for syndication (Manigart et al., 2002).

Scholars have also suggested that an alternative to diversification practices is specialization in VC investments (Kut, Pramborg and Smolarski, 2007; Norton and Tenenbaum, 1993). Specialization involves focusing on specific technologies or products. By having in-depth knowledge of these specific areas, investors gain a significant information advantage. This means they are better informed about the intricacies and potential of the technologies or products they specialize in (Kut, Pramborg and Smolarski, 2007). Indeed, because of the significant fixed cost associated with gaining expertise, specialization has become an alternative to portfolio diversification: instead of spreading investments across various startups, investors might choose to focus their investments on a specific area where they have a deep understanding. Bygrave (1987, 1988 as cited in Norton and Tenenbaum, 1993) suggested that high degrees of specialization can result pivotal to mitigate risk as well as to gain access to networks, information, and deal flow from other VCs. The research by Norton and Tenenbaum (1993) found robust empirical evidence that VCs control portfolio primarily risk through specialization practices, more than portfolio diversification.

Lastly, offering operational support to startups can further diminish external risk – thereby constituting the non-financial value added that venture capitalists can offer to entrepreneurs. Operational support provided by venture capitalists can occur mainly in the form of strategic consulting, networking, and financial management assistance. This support goes beyond financial backing and assists startups in navigating challenges and uncertainties. By offering valuable expertise and guidance, VCs help startups make informed decisions, refine their strategies, and establish crucial connections. This proactive involvement enhances startups' operational efficiency, accelerates growth, and ultimately contributes to risk management. With VCs' support, early-stage companies

can navigate uncertainties more effectively, while also optimizing their operations and mitigating potential drawbacks.

In a nutshell, the literature and evidence of VC investments suggests that to manage risk several approaches can be undertaken. In particular, portfolio diversification, specialization and co-investment with other VCs stand out as the most significant ways to mitigate external risk. Likewise, providing operational support proves fundamental in helping startups throughout their journey. Given the small attention received by external risk management, the survey will be conducted following the above-analysed techniques aiming at investigating what are the most used approaches in Europe and their effectiveness.

2.2.2. Return maximization: how to gain more?

Return maximization stands at the forefront of VC strategies and goals, serving as a central pillar in the world of innovative investments. As venture capitalists navigate the difficult path of risk and opportunity, their strategic choices are intricately woven to extract the highest potential returns from their portfolios. As previously analysed, financial performances can be assessed through several ratios and indicators that tell us about the gains that are being generated by VC investments. In the case of VC, it has been illustrated that IRR, MOIC and successful exits are the most feasible ratios to measure the health of the business. Nonetheless, we have not yet mentioned the ways in which VCs can maximise their returns throughout the startup's lifecycle. It is important to stress that risk and returns are two interrelated factors: by reducing and mitigating risks in VCs, the returns generated will be undoubtedly higher. For this reason, many of the previously presented risk management approaches can be used also with the goal of return maximization. As underlined by Lauterbach, Welppe and Fertig (2007), rather than focusing exclusively on enhancing potential returns investing in riskier assets, VCs have the chance of employing a range of tools to actively influence the mitigation of risk and the increase of profits.

For instance, it is evident that offering operational and strategic support to portfolio companies can be key in boosting the empowerment received by the startup while reaching greater results. On this, in a recent interview, Rudowski and Pawłowski (2022) – general partner at Level2 – affirmed that although the capital provided to startup can be seen as a first-level support, the real value is the one that goes beyond financial bonds encompassing support in startups' business development and scaling. In fact, after the initial investment, venture capitalists can provide startup with invaluable guidance and expertise, helping them navigate challenges, define and improve business strategies,

and optimize operational efficiency. This approach can sometimes include: mentoring, providing access to industry insights, and helping in decision-making. Aligning their in-depth experiences with startups' needs, VCs not only enhance the chances of success but also drive higher returns. This strategy exemplifies the symbiotic relationship that exists between VCs and their invested companies, where the infusion of operational and strategic support fosters accelerated growth, value creation, and ultimately, enhanced returns on investment.

Another strategy adopted by VCs to maximise return is through the establishment of a strategic partnership, where VCs leverage their networks and connections to facilitate valuable alliances, collaborations, and partnerships that can significantly help startups reach their objectives. In this sense, as we have seen in Chapter One, corporate venture capital has proven to be even more relevant to reach a wider audience. In VC, strategic partnership might encompass joint ventures, distribution agreements, or collaborations with established industry players. Moreover, Hellmann (2002) concluded that when it comes to financing methods, syndicated financing – where multiple investors collaborate to provide funding – commands a higher valuation compared to pure venture capital financing – where a single venture capital investor provides funding. In effect, it is in the interests of VCs to have successful companies in their portfolios and offer them support through their connections, directly impacting their returns. By strategically aligning their portfolio companies with key partners, VCs unlock access to resources, markets, and expertise that might otherwise remain elusive to unexperienced startups. These connections amplify the potential of growth of startups and help them achieve higher market results, scalability and increased valuation (Hellmann, 2002).

On a final note, the literature also points out to assisting portfolio companies in raising subsequent financing rounds as a strategic manoeuvre that VCs can employ to maximize returns. VCs recognize that a well-timed and successful follow-on funding is essential to ensure startups' sustained growth (Milosevic, Le Pendeven and Fendt, 2018). Leveraging their industry insights and connections, VCs guide startups through the complexities of fundraising, positioning them to secure additional capital at favourable terms. Furthermore, Milosevic, Le Pendeven and Fendt (2018) found that, as can be easily understood, better-skilled VCs are more likely to secure follow-on financing for startups through syndication. This is because their advanced skills serve as “positive signal” to their fellow investors. By collaborating with these skilled VCs in syndication, other investors feel confident that the startup is being backed by knowledgeable and capable professionals who can effectively support the entrepreneurs in their journey. This strategic involvement showcases their commitment to the long-term success of their portfolio companies. By successfully ensuring subsequent founding

rounds, venture capitalists provide startups with important resources and also increase their value. This prepares the startups for better returns as they keep growing and innovating.

As we have seen, in VC the techniques regulating risk management often intersect with the approaches that can be undertaken to ensure return maximization. In effect, controlling these two factors results fundamental to successful VC investments. Because of their paramount importance, this thesis has elaborated a survey to be distributed to European VCs aiming at evaluating how risk and returns are managed, what are the preferred techniques and how such techniques impact performance. The structure and content of the study will be explained and described in the following pages.

2.3 Research design and choice

In order to investigate the preferred methodologies employed in the European VC ecosystem to manage risk and maximise returns a survey has been developed and distributed. The goal of this survey is that of finding an answer to the research questions: what are the strategies that venture capitalists use to manage risk and maximise their investments? Are these techniques effective in helping VCs improve their performances?

To do so we build on the knowledge presented in this chapter aiming at pointing out to the KPIs, ratios and methodologies that VCs use to (i) assess performance, (ii) manage risk and (iii) maximise returns. Similar work has focused mainly on risk management practices alone, Kut, Pramborg and Smolarski (2007) targeting European funds in the realm of private equity, classifying funds based on the stage of financing: early-stage for venture capital funds or later-stage for buy-out funds. Notwithstanding the importance of their study that reached 142 interviewed funds, the research only addressed risk factors. On the contrary, the present study also targets return maximization practices with the goal of providing a more holistic analysis of the sector while also contributing to the understanding of this increasingly relevant topic. Cochrane (2001) was among the first to recognise that risk and returns for VCs differ from those of traditional investments, explaining that there are several reasons for these differences: “First, [in VC] investors might require a higher average return to compensate for the illiquidity of private equity. Second, private equity is typically held in large chunks, so each investment might represent a sizeable fraction of the average investor’s wealth. Finally, VC funds often provide a mentoring or monitoring role to the firm. They often sit on the board of directors, or have the right to appoint or fire managers. Compensation for these contributions could result in a higher measured financial return”. Another research that accounted for returns and

risks simultaneously was carried out by Gompers and Lerner (1997) that assessed risk and return by analysing investments made by a single venture capital firm. Although the literature contains several examples of research investigating aspects of risk and returns in VC – and mostly PE in general – none of the studies currently available estimate the preferred practices of VCs in risk management and return maximization in Europe and their effectiveness.

The survey method was chosen exactly to this end, since it is one of the most practical ways to carry out research. Survey methodology is easier to distribute and it is also the fastest way to collect results since it can be filled whenever depending on the interviewees' availability. In effect, researchers often favour surveys compared to face-to-face interviews due to their potential to reach a broader audience online and to ask standardised questions (Babbie, 2017). A more time-consuming methodology approach would be that of interviewing single VCs on the topic. This could be particularly useful to understand the reasons behind their preferred choices but would go outside the purpose of this work and would also take longer to carry out.

The survey is composed of a majority of standardised closed-ended questions (specifically 10 out of 15 questions total are closed-ended). This is because, on the one hand, it is easier to compare answers and gather results and, on the other hand, shorter surveys clearly allow for shorter completion time – which has greater possibilities of receiving answers from the sample group³⁵. In the case at stake, it was estimated that the completion time of the survey was approximately of 10 minutes maximum. Indeed, the survey is composed of 15 questions total that are organised as follows: the first three questions assess general information on the VC being analysed (name, geographical area of reference and preferred sector of investment), subsequently, question number four and five evaluate the investment strategy of the VC, investigating the criteria used to select investment opportunities and the preferred stage of investment. After having gathered general information on the VC at stake, the survey goes on assessing the risk management practices employed – from question six to nine. Here, the questions are both closed-ended and open-ended with the goal of allowing interviewees to offer their valuable contribution to collecting data on the preferred risk management methodologies. Following the same structure, from question ten to twelve, return maximization strategies are enquired. Both parts of the study build on the knowledge previously presented and broadly analysed by the literature. In the last group of questions, ranging from question twelve to question fourteen, the performance of the funds is assessed relying on the concept of hurdle rate previously presented.

³⁵ Retrieved. Chudoba, B. (2019). *How long should a survey be? What is the ideal survey length?* | SurveyMonkey. [online] SurveyMonkey. Available at: https://www.surveymonkey.com/curiosity/survey_completion_times/.

Question fifteen is optional open-ended feedback on the general topic of the research. In addition, some of the questions present in the survey (namely question number: 1,2,3,4,7,8,9) allow for the selection of multiple answers simultaneously to obtain a clearer overview of the VC ecosystem. Lastly, before the start of the survey a disclaimer on privacy and data treatment was inserted as to ensure that information provided by the interviewees are treated as confidential and with research purpose only.

The survey was distributed using the Qualtrics platform, which can be accessed online, and that allows for personalization of the distribution methods, including: email invitations, embedding surveys on websites, sharing survey links via social media, utilizing QR codes, and integrating surveys with other systems³⁶. Moreover, an important aspect to be underlined is that since the mother tongue of the author is Italian and the geographical distribution includes Italy within the European countries being analysed, the survey was elaborated both in Italian and English language. The idea at the basis of this choice is that many prefer to complete surveys in their own language as to ensure the comprehension of the questions asked. Nonetheless, the questions' structure and meaning remains the same for both surveys. Although Qualtrics allows for internal translation of the surveys, the translation was carried out autonomously by the author, double-checking financial terminology through the use of academic books written in Italian.

2.4 Sample group selection

The sample was selected based on the research question targeting exclusively VCs in Europe. To this end, several strategies were used to identify possible VCs belonging to the sample group. Since the research question of this thesis addresses the practices used by European venture capital firms the survey is distributed only to firms that identify themselves as such. Therefore, the statements of each actor involved in the study will be closely monitored with the goal of including only VCs operating in Europe. In the first place, the database of the European Private Equity and Venture Capital Association (EVCA) was used to identify VCs operating at the European level and their email address of reference³⁷. Secondly, following the same technique, the Italian private equity and venture capital association – namely the Associazione Italiana del Private Equity, Venture Capital and Private Debt (AIFI) – website was used to identify reference persons of each VC firms to send the survey in Italian language³⁸. It must be stressed that all websites included in their database PE and VC firms together,

³⁶ For more information please visit: <https://www.qualtrics.com> [online]

³⁷ See: <https://www.eesc.europa.eu/en/policies/policy-areas/enterprise/database-self-and-co-regulation-initiatives/75>

³⁸ See: <https://www.aifi.it/it/home>

but it was possible to flag manually or automatically for VCs exclusively. The same approach was also used for Spain, where the SPAINCAP association provided relevant information on Spanish VC firms³⁹. Other fruitful contributions were given by the British Private Equity & Venture Capital Association (BVCA)⁴⁰ and the German Private Equity and Venture Capital Association (BVKAP)⁴¹. Other experts were contacted using LinkedIn⁴² by navigating on VCs LinkedIn pages.

2.5 Survey

In the following pages the survey developed is presented both in English and Italian language.

Survey

Initial message:

Dear Participant,

We kindly invite you to take part in a short questionnaire that will inform a research project on evaluating the performance of venture capital firms in the Europe. Specifically, this survey focuses on assessing the effectiveness of the strategies adopted by VC firms in generating returns and managing the risks associated with investments. Your contribution is key to gaining valuable insights and building an accurate overview of the industry.

Completing this survey will only take a few minutes of your time (approximately 10). The information provided will be treated as confidential and used for research purposes only.

Thank you in advance for your cooperation.

Survey

1. What is the name of the company you work for?
2. In which country does this venture capital firm primarily operate?
 - Italy
 - France
 - Germany
 - United Kingdom
 - Other (please specify)
3. In which of the following sectors is the company primarily specialized?
Multiple choice
 - Technology
 - Life Sciences / Biotechnology
 - Renewable Energy

³⁹ See: <https://spaincap.org/en/>

⁴⁰ See: <https://www.bvca.co.uk>

⁴¹ See: <https://www.bvkap.de/25.html>

⁴² See: <http://linkedin.com>

- Consumer Products
- Other (please specify)

Part Two: Investment Strategies

4. What criteria does the company use to select investment opportunities?

Multiple choice

- Technological Innovation
- Experience and cohesion of the team
- Market Size
- Scalable Business Models
- Other (please specify)

5. In which stage does the company primarily invest?

Multiple choice

- Seed / Early stage
- Series A
- Series B
- Late stage
- Other (please specify)

Part Three: Risk Management

6. What are the strategies used to mitigate risks?

Multiple choice

- Portfolio Diversification
- Co-investment with other VCs
- Specialization in specific sectors
- Operational support to portfolio companies (e.g., strategic consulting, networking, financial management support)
- Other (please specify)

7. Do you use financial / insurance tools to mitigate investment risks?

- Yes (please specify)
- No

8. How are risks related to the investment portfolio monitored and evaluated?

9. How is portfolio diversification managed to reduce risks?

Multiple choice

- Investing in different sectors
- Investing in different stages
- Investing in multiple geographical areas

Part Four: Maximizing Returns

10. How is your investment performance measured?

Multiple choice

- Internal Rate of Return (IRR)
- Multiple of Invested Capital

- Successful Exits (IPOs, acquisitions)
- Other (please specify)

11. What are the strategies adopted to maximize returns?

Multiple choice

- Operational and strategic support to portfolio companies
- Strategic partnerships for portfolio companies
- Assistance in raising subsequent financing rounds
- Other (please specify)

12. What are the factors that have primarily contributed to the success of the investments of your company?

Part Five: performance

13. What is the hurdle rate defined?

14. What is the overall trend of surpassing the hurdle rate?

Multiple choice

- Positive
- Negative

15. What are the critical factors / prospective challenges that according to you impacted the performance?

Optional Feedback

Do you have feedback or any additional comments you would like to share regarding the performance of venture capital firms in Europe?

Questionario

Messaggio iniziale:

Gentile partecipante,

La invitiamo a partecipare ad un breve questionario per una ricerca mirata a valutare le prestazioni delle società di venture capital nel panorama europeo. Il focus dell'indagine è la valutazione dell'efficacia delle strategie adottate dalle società di VC nel generare rendimenti e nel gestire i rischi associati agli investimenti. Il suo contributo è fondamentale per ottenere insight preziosi e delineare un quadro accurato del settore.

Il completamento del questionario richiederà solo pochi minuti del suo tempo (circa 10). Le informazioni fornite saranno trattate con la massima riservatezza e utilizzate esclusivamente a fini di ricerca.

La ringraziamo anticipatamente per la gentile collaborazione.

Questionario

Parte uno: Informazioni generali

1. Qual è il nome della società per cui opera?
(domanda aperta)
2. In quale paese opera principalmente la società di venture capital?
 - Italia
 - Francia
 - Germania
 - Regno Unito
 - Altro (specificare)
3. In quale dei seguenti settori è specializzata principalmente la società?
Più di un'opzione selezionabile
 - Tecnologia
 - Scienze della vita / Biotecnologie
 - Energie rinnovabili
 - Consumer products
 - Altro (specificare)

Parte due: Strategie di investimento

4. Quali criteri utilizza la vostra società per selezionare le opportunità di investimento?
Più di un'opzione selezionabile
 - Innovazione tecnologica
 - Esperienza e coesione del team
 - Dimensione del mercato
 - Modelli di business scalabili
 - Altro (specificare)

5. In quale fase la vostra società tende principalmente ad investire?

Più di un'opzione selezionabile

- Seed / early stage
- Serie A
- Serie B
- Late stage
- Altro (specificare)

Parte tre: Gestione dei rischi

6. Quali strategie vengono utilizzate per mitigare i rischi?

Più di un'opzione selezionabile

- Diversificazione del portafoglio
- Coinvestimento di altri VCs
- Specializzazione in settori specifici
- Supporto operativo alle aziende in portafoglio (e.g. consulenza strategica, networking, supporto nella gestione finanziaria)
- Altro (specificare)

7. Utilizzate strumenti finanziari / assicurativi per mitigare i rischi negli investimenti?

- Sì (specificare)
- No

8. Come vengono monitorati e valutati i rischi relativi al portafoglio di investimenti? (**domanda aperta**)

9. Come viene gestita la diversificazione del portafoglio per ridurre i rischi?

Più di un'opzione selezionabile

- Investendo in diversi settori
- Investendo in diverse fasi di sviluppo
- Investendo in più aree geografiche

Parte quattro: Massimizzazione dei rendimenti

10. Come viene misurata la vostra performance di investimento?

Più di un'opzione selezionabile

- Tasso interno di rendimento (IRR)
- Multiplo del capitale investito
- Successful exit (IPO, acquisizioni)
- Altro (specificare)

11. Quali strategie vengono adottate per massimizzare i rendimenti degli investimenti?

Più di un'opzione selezionabile

- Supporto operativo e strategico alle aziende in portafoglio
- Partnership strategiche per le aziende in portafoglio
- Aiutare nella raccolta di round di finanziamento successivi
- Altro (specificare)

12. Quali sono i fattori che hanno contribuito principalmente al successo degli investimenti della vostra società? **(domanda aperta)**

Parte cinque: performance

13. Qual è l'hurdle rate definito?

14. Qual è il trend generale di superamento dell'hurdle rate ?

- Positivo
- Negativo

15. Quali sono i fattori critici / le criticità prospettiche nella performance?

Feedback opzionale

Ha qualche altro commento o feedback che vorrebbe condividere riguardo la performance delle società di venture capital in Europa? **(domanda aperta)**

3. Chapter Three: Considerations and discussion on VC strategies and performances

In this last chapter, we delve into a comprehensive examination of VC strategies and performances within the European landscape. As the VC industry continues to evolve, it is imperative to dissect the multifaceted approaches employed by VCs and their implications. This chapter aims to shed light on the complexities of VC and their impact on investment performances, providing valuable insights into the effectiveness of these strategies in generating returns and managing risk. By analysing the results collected using the survey, it will be possible to formulate answers to the question: what are the best performing strategies that venture capitalists use to manage risk and maximise their investments?

Before going in the proper description of the answers collected and its underlying implications, this chapter will firstly (3.1) give indication on the number of answers collected, the geographical allocation, stage and sector distribution of the responding actors. Following the (3.2) overall result interpretation, the study will make particular reference to the two core topics being enquired by this research: (3.2.1) risk management techniques and (3.2.2) return maximization strategies. At this point, (3.3) the implications stemming from the study for VCs and the potential recommendations for European policymakers will be addressed.

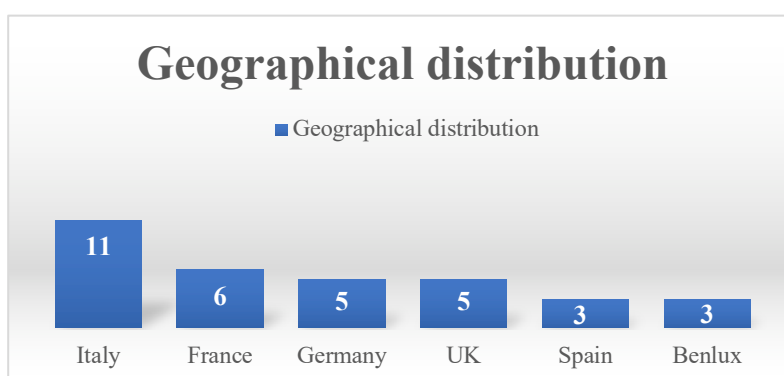
3.1 Results and limitations of the study

Although an extensive number of VC firms has been contacted, through email and LinkedIn, only a limited number of answers that can be considered complete and extensive has been collected. Specifically, the amount of European VC firms contacted is 104, and the number of full answers collected is 25, with a response rate of approximately 20.04%, which is equivalent to three out of ten people providing a response. The difficulty encountered in the collection of data has to do with two fundamental issues. In the first place, the data collection occurred in the summer period, many of the people contacted were on holiday leave and this highly jeopardised the response collection. Secondly, because the study required disclosing information concerning the performance and the strategies of the business, many decided not to answer as to avoid leaks of information. Nonetheless, a privacy disclaimer was already inserted in the survey stating that the data collected were going to be treated as confidential. On a final note, as will be later discussed throughout the chapter, some of the questions inserted in the survey are not intended to be used to answer to the research question of the study but they offer an interesting analysis of the VC ecosystem in Europe. In practical terms, because

this study only considers a small number of respondents, future studies need to be conducted to further enlarge the sample and improve the research on the effectiveness of risk management and return maximization strategies.

All things considered, the answers collected provide an interesting description of the European landscape and they address directly the research question of this work. The first three questions of the survey asking general information on the companies analysed allow us to understand the characteristics of the VCs examined. In the first place, the geographical distribution of the companies' operations was enquired. In fact, question number two allowed multiple selection, giving the possibility to respondents to identify the countries where the companies they work for operates. Multiple selection was chosen because, as explained in previous chapters, many VCs undertake geographical diversification as a risk management technique or generally prefer to address several national markets as to increase their returns. The sample group of reference is geographically spread across Europe, and almost all firms selected more than one country where they operate, offering an interesting insight into the diverse landscape of European VC investments – as can be seen in Table 3.2. Among the 25 firms, Italy stands out with the highest representation as 44% of companies flagged Italy among the countries in which they carry out operations. The fact that the survey was distributed in Italian and English, undoubtedly helped increased the number of answers collected in Italian. France follows closely behind with a percentage of 24%, reflecting its substantial presence in European VC investments. UK and Germany secure the third spot with a representation of 20%, demonstrating their robust activity in the VC landscape. Spain secures a representation with a percentage of 12% VC firms interviewed. Likewise, the Benelux region – encompassing Belgium, the Netherlands, and Luxembourg – collectively contributes to a percentage of 12%, illustrating the collaborative efforts within this cluster. Together, these firms provide a comprehensive overview of VC activity across European countries, each with its own distinct contribution.

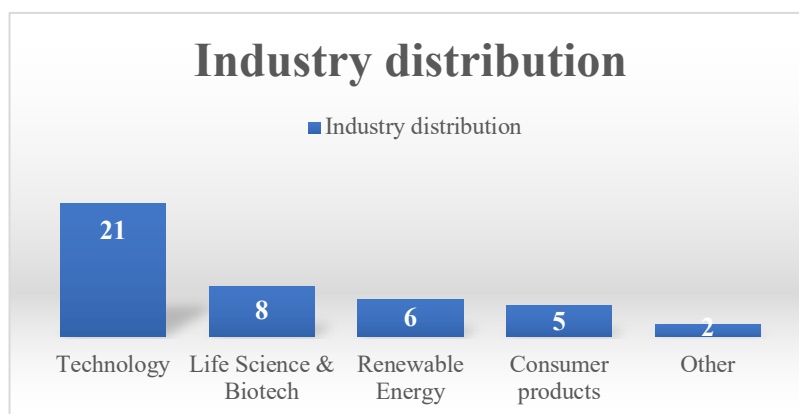
Table 3.1: Geographical distribution of respondent VC



The final question on the general characteristics of the firms interviewed tells us about the industry distribution across the sample group – as depicted by Table 3.2. The industries proposed by the survey were four: technology, life science and biotech, renewable energy and consumer products. They were purposely chosen as broad categories as they encompass a wide range of goods and services. Nonetheless, interviewees were also given a fifth option – labelled as “other” – to be filled with specific sectors that were not comprehended within the four groups. Also in this case, multiple selection was allowed, since as stated by the literature many VC firms diversify not only in terms of geography but across industries as well. Although many in question number 9 – as will be discussed later – stated that they diversify across sectors, 48% of the interviewees chose one single sector in which they primarily operate. This seems to suggest that there is an incoherence in their response. However, such choice could be due to several reasons. Overall, it can be said that since the categories proposed encompass a wide range of sub-sectors, they could diversify within the same broad category. For instance, the technology industry encompasses several products and services, including software development, fintech and AI. Hence, in this case for VCs it is possible to diversify within the technology industry while still primarily investing in a single sector. Moreover, because the question uses the word “primarily” some have chosen the category to which the majority of the startups in their portfolio belong. This does not imply that they do not invest in other sectors. As can be observed in Table 3.2, a significant majority of 84% of the VC firms interviewed demonstrate a keen interest in the technology sector, reflecting the enduring appeal of technological innovation and disruption. In a complementary fashion, 32% of these firms also direct their investments towards life sciences and biotechnology, indicative of the growing importance of healthcare and life-enhancing solutions in the VC space. The commitment to sustainability is evident as well, with 24% of firms engaging in renewable energy investments, a sector poised for transformative change. Similarly, a slightly smaller 20% of VC firms choose to invest in consumer products, reflecting a dedication to enhancing everyday experiences. Lastly, two firms have underlined in the blank option that they are sector agnostic, a term that indicates that investments are made regardless of the sector. Overall, the preference over the technology industry across the interviewed firms confirms the European trend registered by Pitchbook (2023)⁴³.

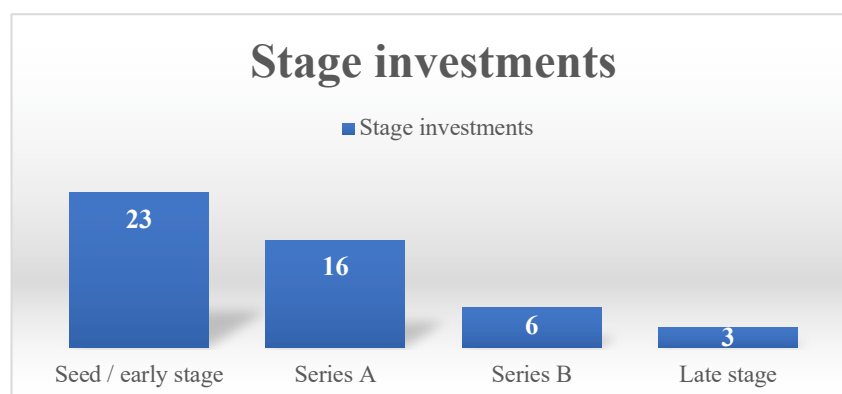
⁴³ As explained in Chapter 1.5.

Table 3.2: Industry distribution of respondent VC



Moving to the questions assessing VCs investment strategies, question number five addresses the primary stage of investment. Also in this case, four multiple selection options were provided with a fifth blank option labelled as “other”. The four options are as follows: seed /early stage, series A, series B⁴⁴ and late stage. Almost all VCs have selected more than one option. The distribution of funding stages, as depicted in Table 3.3, underscores a prevailing inclination towards seed and early-stage investments among the surveyed firms, accounting for a substantial percentage of 92%. Below, series A commands a significant share at 76%. Meanwhile, series B and late-stage investments constitute 24% and 12%, respectively, reflecting a more focused allocation of resources in these later-stage categories. Also in this case, the data collected confirms the European trend according to which, in terms of deal numbers, angel and seed and early-stage investments represent the highest share of European VC investments (Pitchbook, 2023)⁴⁵.

Table 3.3: Stage investment distribution of respondent VC



⁴⁴ The term series A indicates a funding stage that occurs once the startup has already undergone previous phases achieving key milestones. Series B is the funding round that follows Series A and usually occurs when a startup has already achieved a certain level of growth, in terms of revenue, customer base, and market presence. Series B rounds typically involve larger funding amounts than Series A and may be used to prepare the company for future growth and, in some cases, an eventual exit strategy.

⁴⁵ On this see chapter 1.5.

At this point, the survey goes on exploring the three core areas of reference of this thesis:

1. Risk management techniques
2. Return maximization techniques
3. Performance assessment of VCs

The goal is that of understanding what are the techniques of risk management and return maximization resulting in good performances measured based on the trend of surpassing the hurdle rate.

3.1.1 Evaluation of VC strategies in managing risk

As for the first part on risk management techniques, question from six to nine help us have an overview of the situation. Question six asks participants what are the strategies they undertake to mitigate risk, based on the literature the answers proposed are: portfolio diversification (PD), co-investment with other VCs (CO), specialization in specific sectors (SP) and operational support to portfolio companies (e.g., strategic consulting, networking, financial management support) (OP). Also in this case, because these strategies are often combined multiple selection is allowed and a fifth blank option – labelled as “other” – is given. The distribution of the answers, as described by Table 3.4 below, shows a significant majority, comprising 84% of the surveyed VCs, emphasizing co-investing with their peers to leverage collective expertise and resources, thereby sharing the risk associated with individual investments. Moreover, 76% underlined portfolio diversification as a key risk mitigation technique. This highlights their commitment to spreading risk across a variety of investments to safeguard against potential losses. In contrast, a slightly smaller yet significant 60% extends operational support to their portfolio companies, indicating their commitment to enhancing the prospects of their investments through hands-on involvement. A notable 32% of VCs, however, choose to specialize in one sector, demonstrating a focused approach that seeks to capitalize on deep industry knowledge. This data confirms the result achieved by Kut, Pramborg and Smolarski (2007), according to which portfolio diversification and, what they refer to as syndication, meaning co-investments with other VCs are the most used practice among European VCs⁴⁶. The research findings also provide a contemporary perspective on the work by Kut, Pramborg and Smolarski (2007). Given that their study dates back to 2007, this research serves as a valuable update, offering insights that reflect the current landscape of VC in Europe. The survey conducted also expands their study as it also enquires return maximization practices, as will be illustrated in the following pages.

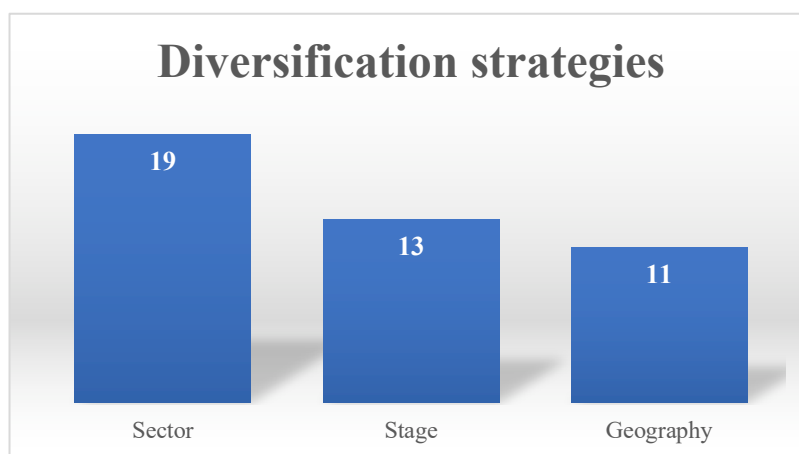
⁴⁶ On this see chapter 2.2.1

Table 3.4: Risk management strategies distribution of respondent VC



Question nine deepens on the forms of diversification that each VC undertakes. In effect, as previously elaborated, diversification strategies can imply diversification across stages, sectors and geographies of investments. This question allowed for multiple selection because these strategies are often combined. As illustrated by Table 3.5 below, the interviewed VCs exhibit a diverse range of diversification strategies in their investment portfolios. A predominant 76% of the VCs prioritize diversification across sectors, spreading their investments across various industries to minimize risk and maximize opportunities for growth. Moreover, 52% of the firms also opt for diversification across stages, indicating a commitment to balancing investments in startups at different development phases, from seed to late stage. Notably, 44% of the VCs also implement diversification across geographies, showcasing a global perspective in their investment approach.

Table 3.5: Diversification strategies distribution of respondent VC



To further study the practices used by VCs, question number seven investigates the use of financial and insurance tools used to mitigate risk, as to offer an alternative to the above-mentioned mitigation

strategies. This is a closed-ended question, necessitating either a “yes” or “no” response, although requiring a written specification when selecting “yes”. All participants responded negatively, hence this question did not yield any actionable insights or implications for the study.

Question eight is the only open-ended question of the section on risk management practices that asks participants how risks related to the investment portfolio are monitored and evaluated. The answer to this question does not contribute to formulating a proper response to the research question, nonetheless it gives us a more comprehensive understanding of the VC landscape in Europe, and it provides interesting insights from the industry. To avoid displaying all 25 answers singularly, we can summarise the arguments received in two main points:

- Continuous monitoring of performance of portfolio companies: many participants stressed that to ensure success and avoid risk they regularly carry out internal monitoring of startup’s performance to intervene when needed (the frequency of the meeting varies, some have stated that this occurs quarterly or semi-annually, others have not specified the timing) . Some have underlined that this activity is often done with the participation of other national and international peers that can help support the startup. Thus, the collaboration among VCs seems to be not exclusively limited to co-investment but extends to *co-support*.
- Appropriate due diligence pre-investment: participants have emphasised that due diligence helps identify potential risks associated with a selected startup. By comprehensively researching a startup’s financials and management team, VCs can better understand the risks they are taking and take steps to mitigate them. Some have also pointed out to due diligence as a way to identify legal or compliance issues that could impact the investment, that seems to be a relevant problem for portfolio companies.

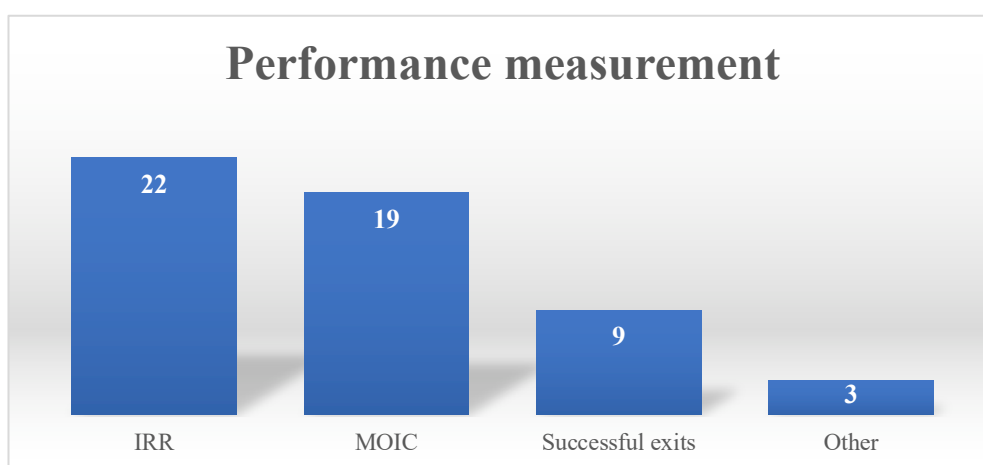
3.1.2 Evaluation of VC strategies in generating returns

The second part of the survey, from question ten to twelve, enquires return maximization practices of participants. In the first place, question ten assesses the preferred techniques used by VCs to measure performance, this is a multiple selection close-ended question that allows selecting four options based on the literature: Internal Rate of Return (IRR), Multiple of Invested Capital, Successful Exits (IPOs, acquisitions). Lastly, a fifth blank option – labelled as “others” – is given to participants to specify other forms of measurement. Table 3.6 below illustrates the diverse methods employed by venture capital professionals to measure investment performance. In a significant majority of cases,

approximately 88%, the Internal Rate of Return (IRR) emerges as the preferred metric for gauging performance. Notably, 76% of respondents also opted for the Multiple on Invested Capital (MOIC) as a supplementary measure, reflecting its popularity as a complementary evaluation tool. A smaller yet noteworthy segment, constituting 36%, also included Successful Exits such as IPOs and acquisitions in their performance evaluation criteria, highlighting the significance of these outcomes in the VC industry. Moreover, 12% of respondents indicated the use of other measurement tools, underscoring the diversity of approaches taken by VC professionals to assess the success of their investments.

Interestingly, the option “other” in this answer was selected by three interviewed firms to signal the use of two fundamental instruments that have not been inserted in the above-mentioned questions, the answers provided are useful to complement the overview of the VC sector. Firstly, participants underlined the use of the Distributions to Paid-In Capital (DPI) as KPI used to measure performance. The DPI value is equal to “the cumulative value of all investor distributions expressed as a multiple of all the capital paid into the fund up to that time”⁴⁷. Another measure that was mentioned is the hurdle rate, previously explained in chapter two, that will nonetheless be better enquired in the following pages. The data collected with this question also provide a response to the work by Phalippou (2008) that highly criticised the use of the IRR as a mean to estimate performance, suggesting that new measures should be used. Phalippou (2008) suggested using methods like the MIRR that, however, none of the interviewed VCs signalled as technique currently in use. Rather, the majority continues to rely on the IRR as preferred method to estimate performance.

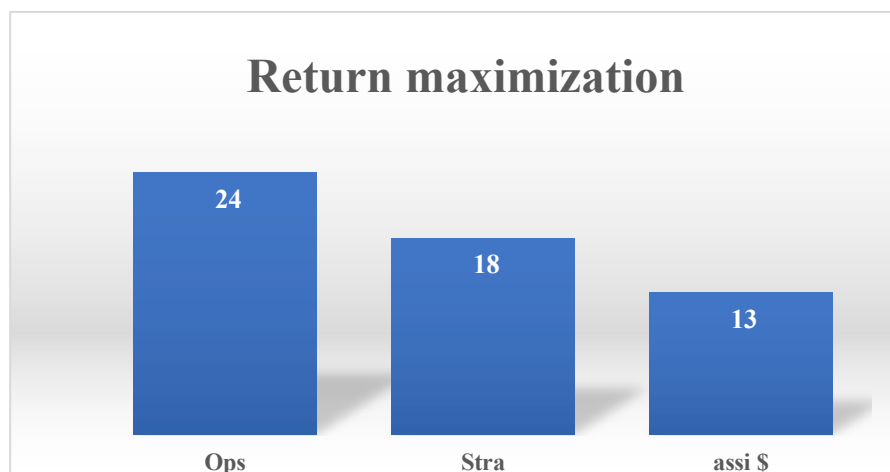
Table 3.6: Performance measurement distribution of respondent VC



⁴⁷ Retrieved. Lehman, R. (2023a). *Distributed to Paid-In Capital (DPI) Definition* | Moonfare. [online] www.moonfare.com. Available at: <https://www.moonfare.com/glossary/distributed-to-paid-in-capital-dpi>.

Question eleven assesses the strategies used by participants to maximise returns, based on the literature presented in Chapter Two the available options are: operational and strategic support to portfolio companies (Ops), strategic partnerships for portfolio companies (Stra), assistance in raising subsequent financing rounds (assi \$) – as in previous questions, because in the majority of cases these strategies are used simultaneously, multiple selection is allowed. Table 3.7 presents a comprehensive overview of the strategies commonly adopted within the VC landscape to maximize returns. Remarkably, a substantial 96% emphasized the significance of providing operational and strategic support to portfolio companies as a primary means to enhance returns. This underlines the active involvement of VC firms in nurturing and guiding their investments toward success. Additionally, a significant 72% indicated a preference for establishing strategic partnerships for their portfolio companies, highlighting the value of collaborations and alliances in amplifying returns. Furthermore, 52% recognized the importance of extending assistance to portfolio companies in raising subsequent financing rounds, reaffirming the role of VCs not only as initial investors but also as facilitators of growth through continued financial support. This graph illuminates the multifaceted and proactive approaches that VC professionals employ to maximize returns, with operational support, strategic partnerships, and fundraising assistance emerging as pivotal strategies in their investment playbook.

Table 3.7: Return maximization strategies distribution of respondent VC



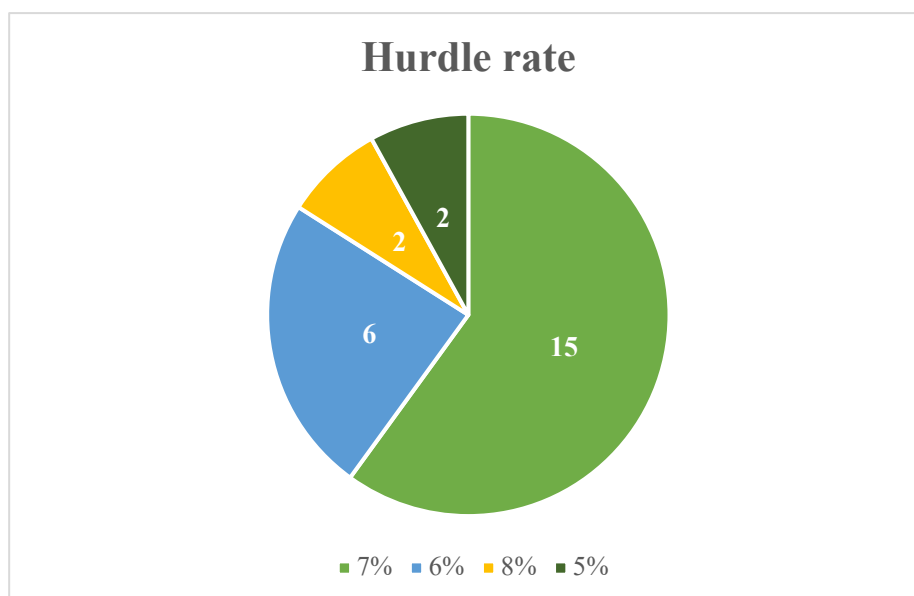
Like in the case of the questions assessing risk management practices, also here an open-ended question not linked to the research question was inserted to obtain a broader picture of the VC landscape. Question twelve asks participants about the factors that have primarily contributed to the success of the investments. Their answers can be summarised by the following points:

- **Skilled, advanced and strong team:** The central theme that emerges from all the responses gathered is the importance of the team. Participants recognised that the most part of their success can be attributed to the teams within their portfolio companies. Particularly noteworthy is their adeptness in identifying customer needs and devising innovative solutions to meet those needs. On this, one of the interviewed firms even went so far as to assert that “investors are of somewhat limited usefulness as the companies grow organically”. Thus, VC professionals recognize that, while they provide essential resources to startups, ultimate success hinges almost exclusively on the capabilities and synergy of the entrepreneurial teams.
- **Product-market fit and scalability:** Another common thing mentioned in the answers has to do with the goods or services offered by startups. Specifically, successful investments are carried out when the products and services offered have a good product-market fit and offer significant scalability. In effect, these two factors are what can contribute to reaching competitive advantage. Moreover, some have also mentioned that the product or service offered by startup must also offer significant value-add to clients.
- **Ecosystem, network and connections:** As we have seen, investors not only provide financial resources, but they often help portfolio companies in their development thanks to their network and connections. Many have stressed that having a solid and diverse ecosystem can result fundamental in determining the success of a startup since investors often facilitate introductions to potential clients, strategic partners, or industry experts, opening doors that might otherwise remain closed to startups. A dynamic and interconnected environment not only accelerates a startup’s access to resources but also fosters innovation, knowledge sharing, and collaborative opportunities.
- **Accurate selection and due diligence:** Like in the case of risk management, many have underlined that carrying out a thorough selection and due diligence undoubtedly helps selecting successful investments because it assesses the financial potential of the investments and it ensures that the investment aligns with the investor’s objectives.
- **Experience and ability of VCs:** although recognising the paramount importance of the team and of the product or service offered by the startups, participants have also underlined that experience in the field of VC investments is also crucial to be able to make the right decisions

and successfully support the startup until exit strategies. Experienced VCs can provide valuable guidance and mentorship to startups, aiding them in overcoming hurdles and making strategic decisions.

Coming to the final part of the study, the performance of the VC firms has been assessed to understand the effectiveness of the strategies applied by each to manage risk and maximize returns. From question 13 to 15 performance assessment is carried out. Question 13 asks participants what is the hurdle rate of the VC firm they work for. As stated by the literature, generally the hurdle rate for VC ranges between 6% and 8%⁴⁸ and this is consistent with the data collected, although there is an outlier of 5% registered by two of the interviewed firms. Hurdle rates serve as a critical benchmark for VC investments, and their variability within this group provides valuable insights into the investment landscape. The distribution of the hurdle rate is as depicted in Table 3.8 with an average mean value of 7%. Notably, the majority of respondents, comprising 60% of the sample, indicated a hurdle rate of 7%. This suggests a prevalent confidence in this specific rate among VCs. A substantial 24% of respondents identified a hurdle rate of 6%. Additionally, 8% of participants each reported hurdle rates of 5% and 8%. This diversity in rates underscores the range of investment strategies and risk tolerance levels among VC professionals. It also highlights that some VC firms may adopt more conservative or aggressive investment targets based on their unique investment objectives.

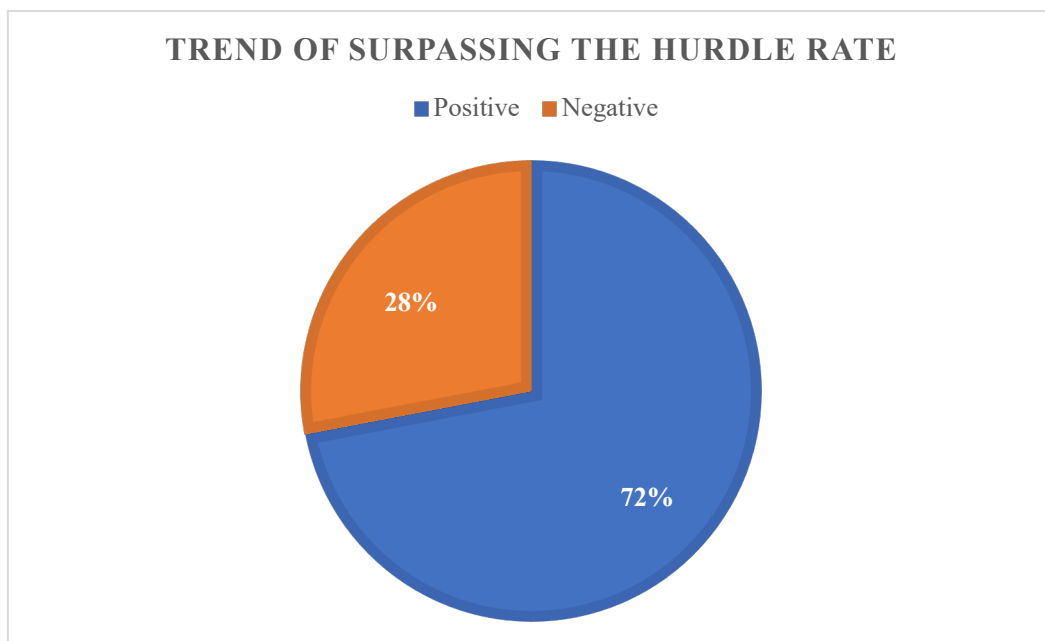
Table 3.8: Hurdle rate of respondent VC



⁴⁸ On this see chapter 2.1.

Moreover, question fourteen addresses the trend of surpassing the hurdle rate reported by the firms. This question allowed selecting between either “positive” or “negative” trend. Table 3.9 captures the overarching trend regarding the ability VC firms to surpass their established hurdle rates. The data reveals that a substantial 72% of participating VC firms report a positive trend in consistently exceeding their hurdle rates. This majority signifies a prevalent confidence within the industry, suggesting that a significant portion of VC firms is meeting and surpassing their set benchmarks, indicating sound investment strategies and performance. Conversely, 28% of the surveyed VC participants acknowledged a negative trend in surpassing their hurdle rates. While this represents a smaller segment of respondents, it highlights the existence of challenges or adjustments in some VC firms’ investment strategies. These findings underscore the dynamic nature of the sectors, where some firms excel in consistently outperforming their expectations, while others may face hurdles that impact their ability to do so.

Table 3.9: Trend of surpassing the hurdle rate of respondent VC



But could this negative and positive trend be influenced by risk management strategies and return maximization practices? In other words, is there a statistical association between the respondents’ choices of risk management and return maximization practices and their performance results?

Because the data are collected as qualitative variables, in order to assess if there is any statistical association between the data the chi-squared test and related p-value⁴⁹ must be calculated for each specific strategy used by the respondents and their respective trend of performance. For each variable, the result obtained are listed below.

Part One – Risk Management practices

1 – Portfolio diversification strategy

Chi-squared	5.85491507
Degrees of freedom	1
p-value	0.01553361

The chi-squared value obtained is equivalent to 5.8 suggesting that there is some level of association between the use of portfolio diversification as a risk management strategy and the performance of VCs. The chi-squared statistic measures the extent to which the observed data deviates from what would be expected under the assumption of no association. In this case, a higher chi-squared value indicates a stronger association. At the same time, the chi-square test indicates a p-value of 0.015. Since this value is evidently lower than the significance level set at 0.05, it means that the null hypothesis – which states that there is no linear relationship between the variables– is rejected. In other words, the result tells us that portfolio diversification is statistically associated with VC performance at a 5% significance level. Overall, based on these results, we can conclude that, in the case at stake, there is a statistically significant association between using portfolio diversification and performance change. Hence, using portfolio diversification as a risk management strategy is indeed effective in impacting VCs’ performance. However, it is important to note that statistical significance does not imply causation, and other factors may also be influencing VC performance. This is true for all the results obtained.

2 – Co-investments with other VCs strategy

Chi-squared	5.21778156
Degrees of freedom	1
p-value	0.02235705

⁴⁹ This was done using the excel functions “test.chi.quad”.

Similar to the case of portfolio diversification, The chi-squared value of 5.21 suggests that there is some level of association between co-investment with other VCs and the performance reported by respondents. Here, once again, the p-value obtained – equivalent to 0.022 – suggests that co-investment with other VCs is statistically linked to VC performance as it rejects the null hypothesis.

3 – Specialization strategy

Chi-squared	0.526669
Degrees of freedom	1
p-value	0.46801066

The chi-squared value obtained from this computation is of 0.52, suggesting that there is a very weak or negligible association between the use of specialization as a risk management practice and VC’s performance. In statistical terms, a lower chi-squared value indicates that the observed data does not deviate significantly from what would be expected under the assumption of no association. In addition, the p-value obtained is equivalent to 0.46 thus it is not statistically significant, thereby imposing to accept the null hypothesis. Based on these results, it does not appear that there is a statistically significant association between using specialization as a risk management strategy and performance of VCs for the interviewed VCs.

4 – Operational support strategy

Chi-squared	1.19047619
Degrees of freedom	1
p-value	0.27523352

The chi-squared value resulted from the last strategy is equivalent to 1.19, underlining there is a modest level of association between providing operational support to portfolio companies and the performance of VCs. Moreover, because the p-value obtained is of 0.27, there is limited evidence to reject the null hypothesis, which implies that there may not be a substantial association between providing operational support to portfolio companies and the performance.

Part Two – Return maximization practices

1 – Assistance in raising subsequent financing

Chi-squared	0.32560033
Degrees of freedom	1
p-value	0.56826133

The chi-squared test produced a chi-squared value of 0.32 and a p-value of 0.56. These results indicate that there is no statistically significant association between providing assistance in raising subsequent financing and the performance of the VCs analysed. In practical terms, this means that this particular return maximization strategy does not appear to have a substantial impact on the overall performance of VCs, at least within the parameters of this analysis.

2 – Operational and strategic support strategy

Chi-squared	0.40509259
Degrees of freedom	1
p-value	0.52447088

Likewise, the chi-squared yielded a value of 0.40 and a corresponding p-value of 0.52. These results seem to suggest that, also in this case, there is no statistically significant association between offering operational and strategic support to portfolio companies and the performance registered by VCs. Based on this analysis, it appears that providing such support does not have a substantial impact on the overall performance of VCs, at least within the scope of this study. However, as previously, it is important to stress that statistical significance does not necessarily capture all potential nuances, and the effectiveness of this support strategy could still vary depending on specific circumstances or other unaccounted factors.

3 – Strategic partnerships strategy

Chi-squared	4.09580499
Degrees of freedom	1
p-value	0.04298975

The results of the statistical analysis examining the association between the performance of VCs and their decision to establish strategic partnerships with other VCs are noteworthy. The chi-squared test produced a chi-squared value of 4.09 and a p-value of 0.042. These results indicate that there is a statistically significant association between the VCs' performance of respondent firms and their involvement in establishing strategic partnerships with other peers. This seems to suggest that VCs who actively engage in such partnerships may experience an impact on their overall performance.

It is essential to acknowledge that while statistical significance is described by the values of chi-squared calculated for each variable, further research would be beneficial to uncover the underlying dynamics of the sector while helping to gain a deeper understanding of the relationship between support strategies and VC performance. In acknowledging the findings of this study, it is imperative to bear in mind that correlation is not causation, emphasizing the need for cautious interpretation of statistical relationships and the need for future research to delve deeper into causative factors of this analysis.

Question fifteen requires expressing the critical factors and prospective challenges that impacted the performance registered. This is particularly useful to capture the view of actors that are inside the VC ecosystem and to gather useful insights. Those who have provided an answer to such question have focused on three main topics:

- **Difficulty of exit strategy:** Exit strategies pose a formidable challenge as they are often contingent on external market conditions. A delayed exit can tie up capital and hinder portfolio diversification, affecting overall performance.
- **Increased number of write offs:** The rising number of write-offs within a VC portfolio can erode overall returns. Unsuccessful investments divert resources and attention from more promising opportunities.
- **Economic instability caused by Covid-19 pandemic:** The economic instability induced by the COVID-19 pandemic has disrupted startups across industries, making it difficult for VC firms to predict and manage risks effectively. The uncertainty in revenue projections and market dynamics has forced VCs to reassess valuations and potentially write down investments, negatively impacting performance.

- Specific characteristics of national markets that negatively affect performance: National market idiosyncrasies can present hurdles for VC firms. Regulatory complexities and market fragmentation in different countries can lead to challenges in scaling portfolio companies.

The optional feedback section, despite receiving limited attention from survey participants, has proven to be a valuable resource for gaining insights into the concerns of key stakeholders within the ecosystem. One recurring theme that emerged from the comments gathered revolves around the growth prospects that VCs is expected to reach in Europe in the coming years. While a subset of respondents highlighted the necessity of such growth to facilitate the emergence of mega-rounds and heightened capital investments, mirroring the trends observed in the United States, others have instead emphasised the peculiarity of the European VC. They pointed out that European VC is characterized by its distributed presence across its important centres throughout the continent, as opposed to being concentrated in a single geographical area. Notably, one comment of particular significance highlighted that in this setting “collaboration is essential, not just for co-investing, but also for information exchange”.

3.2 Implications for VCs and recommendations for European policymakers

Having presented the statistical data enquiring the statistical association between risk management practices and performance, we can finally try to answer to the research question posed using the data collected. Before doing that, it is important to stress that since the study consisted of a modest sample size of only 25 participants, it is imperative to exercise caution when interpreting the results, as they may not be broadly generalizable. Instead, these findings should be viewed as a preliminary exploration of the topic, paving the way for future research endeavours in this area.

For what concerns risk management strategies we have seen that, according to the literature, the main techniques used to mitigate external risk in VC focus on: diversifying the portfolio, co-investing with other VCs, specializing in specific sectors and offering operational support to portfolio companies. The chi-squared and p-values resulting from the study of statistical association conducted revealed interesting findings on the effectiveness of these strategies based on the analysis of the investment performances. In effect, the chi-square test, which comprehends both the chi-square and the p-value, tells us that – for the interviewed firms – there is a relationship between portfolio diversification and co-investment strategies and the performance registered. Since these are dependent variables when

one of them changes, the other will change as well. This does not necessarily mean that portfolio diversification and co-investments are the only factors influencing the performance, however the decision of whether or not to undertake such strategies seems to have an impact on the performance that VCs will have. For this reason, at the individual level, VCs should pay particular attention when deciding which strategies to apply to mitigate external risk, particularly taking into consideration diversifying their portfolio and co-investing. VCs should consider spreading their investments across a variety of startups and industries to reduce risk and potentially enhance returns, while balancing to ensure that diversification does not dilute expertise or focus. Likewise, collaborating with other VCs in investment opportunities can provide access to larger funding rounds and shared expertise – VCs may want to actively seek out more partnerships and co-investment opportunities to leverage these benefits. In addition to the significant associations found between portfolio diversification, co-investment strategies, and investment performance, it is important to note that these risk management techniques are just a part of the multifaceted landscape of VC. While these findings emphasize their influence on performance, it is essential to recognize that other factors may also play crucial roles. Nonetheless, the observed relationships underscore the strategic significance of portfolio diversification and co-investment decisions within the industry, prompting further exploration of their dynamics and potential synergies with other determinants of VC success in future research endeavours.

In the context of return maximization strategies, this analysis, relying on the chi-squared test, has revealed a noteworthy statistical association between the establishment of strategic partnerships with other VCs and their performance. Remarkably, this discovery aligns seamlessly with our earlier findings regarding risk management strategy on co-investment. Indeed, existing literature has consistently underscored the pivotal role of collaboration among VCs, emphasizing its dual significance: as a means to mitigate risk and simultaneously boost returns. Whether driven by the desire to distribute and split risk among participants or by the aspiration to pool capital resources and collectively enhance returns, the outcome inevitably reflects on VC performance. The interplay between risk management and return maximization strategies, both rooted in collaboration, underscores the intricate dynamics shaping the industry. On the contrary, the other return maximization and risk management practices included in the study have not highlighted any statistical association to VC performance. However, as already pointed out, further research should be carried out as to ensure a more comprehensive and wide analysis of these strategies' effectiveness.

The implications of these results obtained extend beyond individual VCs and touch upon the dynamics of the European VC ecosystem as a whole. At the European level some important considerations for policy makers and institutions can be made. Firstly, given the observed link between collaboration and partnerships among VCs (both co-investment and strategic partnership variables) and performance, it becomes imperative to underscore the importance of fostering and enhancing such collaboration. Initiatives should be actively promoted to facilitate and incentivize cooperation among VCs across and within borders. To achieve this several initiatives should be considered. For instance, a key activity could be that of organizing regular cross-border networking events and conferences specifically designed to bring together VCs from all over Europe. These types of events are useful to not only encourage partnerships and knowledge spill-outs but could also be a way to share best practices and data. Similarly, international online platforms are also used to promote cooperation. Although it is true that many of these initiatives are already in place, because of the growth that VC in Europe has registered over the years these projects should start to receive more attention and funding. Generally speaking, policymakers and governments should start to divert more of their interest towards projects involving VC. To this end, European bodies should encourage government bodies and industry associations to provide support, incentives, and funding for collaborative initiatives. Similarly, incubators and acceleration plans should involve, through the support of European institution and favoured by national legislation, multiple VCs working together to nurture startups. These programs are particularly important because they foster collaboration and innovation while supporting the growth of promising companies. Secondly, because of the relevant statistical association found between portfolio diversification strategies and performance, European policymakers should promote policies and initiatives that encourage diversification strategies within the European VC ecosystem. For example, if it is true that diversification helps mitigate external risk, policymakers may consider providing incentives and support to VCs that actively engage in portfolio diversification. This can be done through tax incentives, grants, or funding programs that reward VCs for spreading their investments across a broader range of startups and industries. A more general, although fundamental, implication could be that of developing specific educational programs and resources aimed at VCs, startups, and entrepreneurs, emphasizing the benefits of diversification as a risk management strategy. This can help disseminate knowledge and best practices.

In a nutshell, the study's findings reveal numerous individual and collective implications regarding the effectiveness of risk management and return maximization practices in the venture capital industry. However, it is crucial to emphasize that further research in this area is essential to gain a more comprehensive understanding and provide precise guidance for VCs embarking in this journey.

Conclusion

This thesis has dealt with the evaluation of VC performance to study the effectiveness of the strategies used in generating returns and managing risk. Specifically, this work has tried to answer to the question: what are the best-performing strategies that venture capitalists use to manage risk and maximise their investments? To answer to this question a survey has been elaborated to target VCs operating across European countries. Through the use of open-ended and closed-ended questions, it has been possible to gather relevant data and formulate important considerations for the European VC ecosystem. The findings highlight that, for risk management among the four analysed techniques, a statistical association has been found between (i) portfolio diversification and (ii) co-investment strategies and financial performance of funds. In line with this result, studying return maximization practices, the research revealed the existence of a significant statistical association between the (iii) establishment of strategic partnerships with other VCs and financial performance. These findings reinforce the earlier discoveries regarding the pivotal role played by collaboration in VC risk management strategies. Existing literature consistently emphasises the dual significance of collaboration: as a means to mitigate risk and simultaneously boost returns. The intricate interplay between risk management and return maximization strategies, both rooted in collaboration, shapes the dynamics of the venture capital industry. Conversely, other practices examined in the study did not exhibit statistical associations with VC performance, underscoring the need for further research to explore these areas comprehensively.

The implications of these results extend beyond individual VCs and touch upon the broader dynamics of the European VC. At the European level, there are significant considerations for policymakers and institutions. Firstly, given the observed link between collaboration and partnerships among VCs and performance, it becomes imperative to foster and enhance such collaboration actively. Initiatives should be promoted to facilitate and incentivize cooperation among VCs across borders, including cross-border networking events, online platforms, and support for collaborative projects. Secondly, due to the statistical association found between portfolio diversification strategies and performance, European policymakers should encourage policies and initiatives promoting diversification within the European VC ecosystem. Tax incentives, grants, and funding programs that reward VCs for spreading their investments across a broader range of startups and industries can be explored. Lastly, developing educational programs and resources emphasizing the benefits of diversification as a risk management strategy can disseminate knowledge and best practices.

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